KfW Development Bank

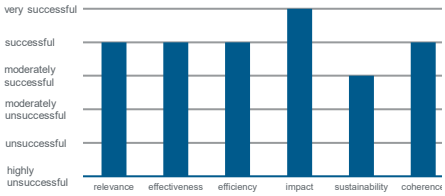
Ex post evaluation
Rural Infrastructure VI, Laos

Title	Rural Infrastructure Laos VI, Rural Infrastructure Program (RIP) VI		
Sector and CRS code	Transport and communication (CRS code: 21020)		
Project number	Investment measure: 2014 68 172, Basic and advanced training measure: 1930 05 212		
Commissioned by	Federal Ministry for Economic Cooperation and Development (BMZ)		
Recipient/Project executing	Ministry of Public Works and Transport (MPWT), Department of Roads (DoR)		
Project volume/	EUR 16.8 million/ FC grant		
Project duration	2015 (financing agreement) to 2020 (final inspection)		
Year of report	2023	**Year of random sample**	2022

Objectives and project outline

The objective at outcome level was the sustainable and year-round use of the developed rural roads and other infrastructure programmes. The objective at impact level was to contribute to improving the socio-economic living conditions of the rural population in the catchment areas of the financed infrastructure. To this end, 122 km of rural roads in Salavan Province were developed to be climate-resilient all year round and selective maintenance and climate adaptation measures were carried out on a total of 282 km of existing roads in the northern provinces of Bokeo, Luang Namtha and Oudomxay. In addition, a market in Salavan Province was improved. Through the complementary basic and advanced training measure, the executing agency's capacities for successful project implementation as well as for sustainable operation and maintenance were strengthened.

Overall rating:
moderately successful



Key findings

The project achieved a high level of developmental effectiveness. In future, however, the sustainability of the impacts can be expected to be adversely affected by the inadequate financing of road maintenance. The project was evaluated as "moderately successful" for the following reasons:

– The expansion of the rural transport infrastructure addressed a highly relevant bottleneck for the social and economic development of the target group.

– The transport infrastructure provided, combined with the fact that it was used far more intensively than expected, formed the basis for the transformative impacts in terms of income, nutrition, health and education, and aided the development and expansion of further infrastructure (drinking water and electricity supply).

– The project was highly relevant to poverty and also benefited the economic and social participation of women and ethnic minorities as particularly disadvantaged groups.

– Due to the overall major development of infrastructure combined with problematic macroeconomic conditions, financing for road maintenance is far from adequate. Improvements to this situation are not foreseeable. Added to this is the heavy strain on the road infrastructure caused by increasing climate damage. In light of this, significant losses at outcome and impact level can be expected in the future. On the plus side, there are good technical capacities, noticeable institutional ownership and commitment at local level, as well as a fundamentally suitable financing mechanism, though this does need some improvement. Viewed as a whole, sustainability – an important aspect for the impacts – is considered to be moderately successful.

Conclusions

– The development of climate-resilient rural roads lays the foundations for transformative socio-economic developments.

– The need for climate-resilient road construction is increasing, which means a greater provision of funds and an adapted maintenance concept.

– By financing maintenance and climate adaptation measures for existing infrastructure, the effects can be guaranteed and extended into the longer term.

– Despite its fundamental suitability, the Laotian financing mechanism needs to be revised to counteract the structural underfinancing of road maintenance. The revenue situation could be improved by increasing the fuel levy and/or regular collection of vehicle tax.

Ex post evaluation – rating according to OECD-DAC criteria

General conditions and classification of the project

The measure was based on the FC's long-standing commitment to the Laotian road sector, which initially promoted the development of national roads, followed by the further expansion of the road network through district roads and rural roads.

Brief description of the project

The sixth phase of the FC programme "Rural Infrastructure in Laos" (RIP VI) was intended to contribute to improving the socio-economic living conditions of the rural population in the catchment areas of the financed infrastructure. For this purpose, 122 km of rural roads in Salavan Province in the districts of Ta Oy and Samouay and the district market in the district of Ta Oy were developed for more intensive and year-round use. The project also included the financing of maintenance and climate adaptation measures on a total of 282 km of roads in the RIP I and RIP II project phases in the north-western provinces of Bokeo, Luang Namtha and Oudomxay. These were of a selective nature and were used to ensure long-term sustainability and resilience of the project measures financed under RIP I and II.

The project's target group was the rural population in the catchment areas of the project roads in the districts of Ta Oy and Samouay. At the time of the ex post evaluation (EPE), it comprised 15,844 people.

The Laotian executing agency, the Ministry of Public Works and Transport (MPWT), was supported in the design and supervision of works by a consultant financed from FC funds. A basic and advanced training measure (A+F measure) was also carried out. The aim was to strengthen the capacities of the provincial representative from the Department of Public Works and Transport (DPWT) in Salavan Province, who was responsible for project implementation, with regard to the planning and implementation of road maintenance. An exchange of experiences and refresher training for DPWT employees from the previous programme provinces were also promoted.

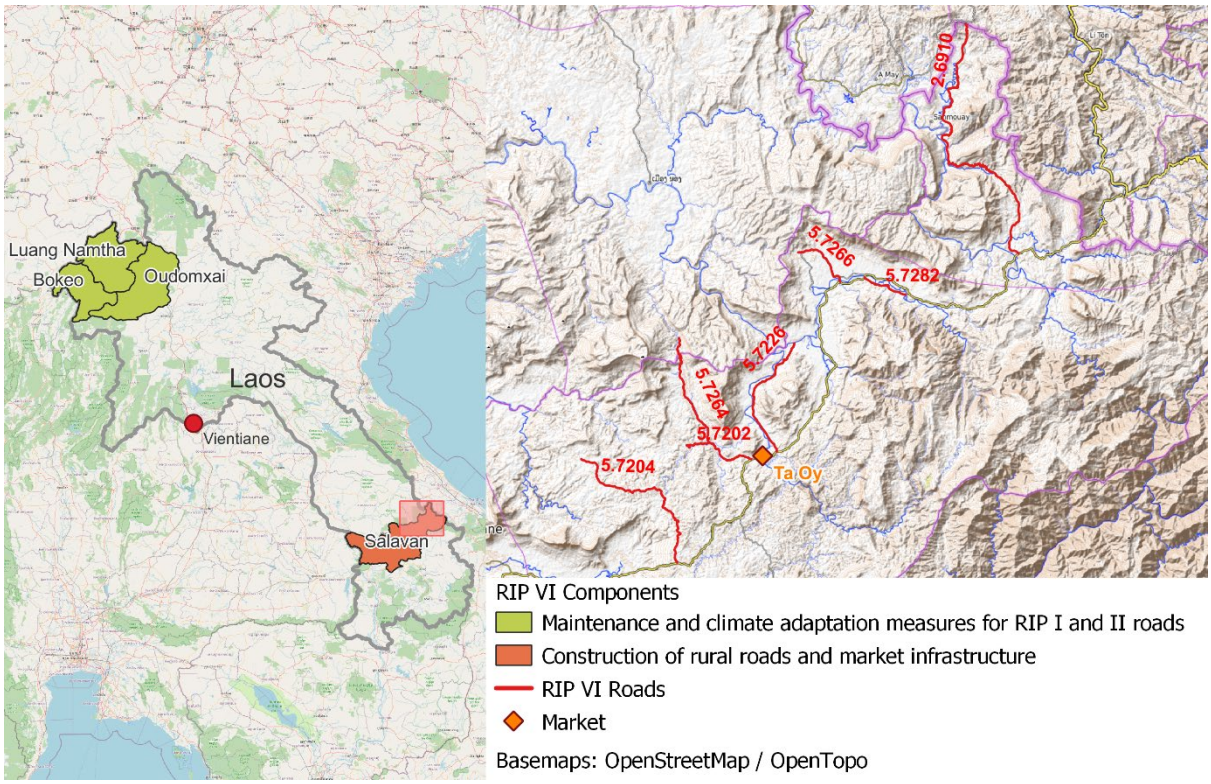
The newly developed project roads were implemented in two phases, with completion occurring in 2017 and 2019. Therefore, the roads had already been in operation for varying lengths of time by the time of the on-site visit for evaluating the project and to collect data in 2022. The evaluation of the project with regard to selective maintenance and climate adaptation measures on roads in the RIP I and RIP II project phases, which comprised around 20 % of the investment measures, is based on anecdotal evidence from the on-site visit to Luang Namtha. A systematic baseline and ex post data collection of the impact indicators was not carried out as part of Phase VI, as the measures were taken to ensure long-term sustainability.

Breakdown of total costs

		Inv. (planned)	Inv. (actual)	Training (planned)	Training (actual)
Investment costs (total)	**EUR million**	**19**	**19**	**0.8**	**0.8**
Counterpart contribution	EUR million	3	~3*	-	-
Debt financing	EUR million	16	16	0.8	0.8
of which budget funds (BMZ)	*EUR million*	*16*	*16*	*0.8*	*0.8*

* A counterpart contribution of 15 % of the costs was planned for the construction work in Salavan Province. A counterpart contribution of 50 % was agreed for maintenance measures and 15 % for climate change adaptation measures in the former RIP provinces of Luang Namtha, Oudomxay and Bokeo. The counterpart contributions provided in the project cannot be precisely quantified, as non-valuated construction materials and work services were also used.

Map and satellite image of the project country including project areas



Rating according to OECD-DAC criteria

Relevance

Policy and priority focus

The objective of the programme was in line with the targets of the Millennium Development Goals at the time as well as the current 2030 Agenda (see *Contributions to Agenda 2030*) and the German DC focus on promoting sustainable economic development in Asia. This is set out in the 2015 position paper "BMZ's New Asian policy – leveraging Asia's dynamics" and provides for the strengthening of rural value chains. One approach for doing so consists of making improvements to transport routes. The project also targeted the economic and social participation of groups with high development potential, such as women and ethnic minorities (see *Focus on needs and capacities of participants and stakeholders*), and therefore addressed the quality criteria of human rights, gender equality, alleviation of poverty and inequality reduction.

Then as now, the project's objective corresponded to the Laotian sector policy and the relevant Laotian development strategies for the transport sector, as well as for rural development and the alleviation of poverty: This prioritised both the regional integration of Laos through the development of national roads and the connection of poor regions to the transport network. In the development plans pursued over the duration of the project *(National Socio-Economic Development Plans 2011-2015/2016-2020*), the Laotian government underlined the importance of rural development for alleviating poverty and expanding the transport network for economic development, as well as for providing health and education services. The 2003 *National Growth and Poverty Eradication Strategy* (NGPES), which was pursued during the project term, highlighted road construction with a view to alleviating poverty. The project was also aligned with the Laotian 2010 climate change strategy through the climate-resilient building design (routing, surface, culverts and dewatering) planned during the project appraisal (PA).

Due to its central position between the emerging economies of China, Thailand and Vietnam, Laos is an important transit country for regional trade, but still represents a bottleneck. The Laotian government is seeking to expand important transport routes to exploit the existing development potential stemming from the regional integration of the country with China and the ASEAN regional network, as well as focus on the complementary value

chains with neighbours. This is pursued through bilateral infrastructure cooperation[1] and regional development programmes such as the *Greater Mekong Subregion Programme* supported by the ADB. The project was compatible with this strategic objective from the Laotian government insofar as it connects the rural population to the long-distance transport network, giving them access to the stronger trade and the resulting potential for economic development.

Focus on needs and capacities of participants and stakeholders

At the time of the PA in 2014, the poor rural road network was one of the central barriers to socio-economic development in rural regions of Laos. This also affected the districts of Ta Oy and Samouay in Salavan Province. The existing earth roads were insufficiently accessible by motorcycles and cars. During the rainy season, they were not passable at times due to softening and excessively high water levels at river crossings. As a result, market access for smallholders involved a great deal of effort and was a significant obstacle to development for the region. Farmers therefore mainly pursued subsistence farming, which involves the cultivation of rice using slash and burn methods on alternating pieces of land, along with some small-scale livestock farming. The population in the target regions also had very poor access to social infrastructure, such as schools and health care facilities. They likewise had limited access to the Laotian administration. Those who suffered from poor health care in particular included mothers, who usually gave birth to their children in the villages in unhygienic conditions and without professional care by health personnel. This therefore exposed them to a greater mortality risk. Furthermore, the majority of the target group was poor and suffered from malnutrition and associated childhood growth and developmental disorders. In addition, women only benefited from motorised transport to a limited extent. Moreover, the target group consisted largely of members of ethnic groups not belonging to the dominant *Lao Lum* (lowland Lao) population group and, up to that point, had been less involved in economic development and had a poorer standard of living.

The core problem, namely the poor road network and the effects arising from this, was correctly identified. The project consequently addressed the improvement of rural roads with the aim of strengthening socio-economic development and participation of the target group. The gender impact potential was taken into account in the design. No further potential can be identified ex post due to a different conceptual design.

The two target districts in Salavan Province were selected due to their particularly high poverty rates and low level of development with poor rural infrastructure. The selection of project roads in Salavan Province was in line with the priorities of the Laotian project partners and was achieved based on economic (e.g. costs per capita), socio-economic (number of people reached or agricultural potential along the road) and socio-cultural (proportion of ethnic minorities) criteria. The target group in the project areas was particularly poor, with significant untapped potential for increasing agricultural productivity and human capital.

Furthermore, the project concept was geared towards the limited capacities of the executing agency, as it included the financing of international consulting services to support the executing agency during implementation, along with a complementary basic and advanced training measure for capacity development. The basic and advanced training measure took into account the administrative capacities at all levels and was conceptually suitable for enabling the administration to operate the financed infrastructure on a sustainable basis.

Appropriateness of design

The following results chain was assumed for the measure during the appraisal: Improvement of road infrastructure in rural areas → Better transport and marketing opportunities / reduced transaction costs and times → Improvement of socio-economic living conditions (income, poverty reduction, access to public services, education and health, and social participation). These interdependent elements pursue a holistic approach to sustainable development and were plausible both at the time of the appraisal and in the present. They apply both to the newly developed roads and to the roads that have been improved through maintenance and climate adaptation. For the latter, however, the focus was on ensuring the sustainability of the effects already achieved.

The assumed results chain from the complementary basic and advanced training measure was: Provision of formal and on-the-job training → Improvement in the capacities of the executing agency at national, provincial and district level → Improvement of road management and operation. This interaction between effects was and still is plausible. The institutional capacities in the Laotian road sector, which remain weak, were a key limiting factor in developing, expanding and maintaining the road network effectively. The complementary basic and advanced

[1] It includes the relevant national roads as well as the important associated flagship projects - the train connection between China and Laos and the Thanaleng Dry Port near Vientiane. Both were financed by China and put into operation in 2022.

training measure aimed to reduce these limitations. In addition to the capacities, improving road operation is critically dependent on financing.

The impact assumptions were presented plausibly and transparently at the appraisal. The target system and the corresponding indicators are clear and appropriate (see Annex 1).

From today's perspective (and as it was perceived at the time), the measure's design, including its technical, organisational and financial structure, is considered suitable for helping to solve the core problems described above and to achieve the DC programme objective (see *Internal coherence*). Conceptually, the road design took into account the already foreseeable effects of climate change through appropriate routing, surface, culverts and dewatering. The capacities of the partner government, project executing agency and target group were assessed realistically and taken into account in the design. The target group's involvement in simple road maintenance measures[2] in the form of village maintenance committees (VMCs) was in line with the political and social system in place in the socialist Lao People's Democratic Republic. It was recognised during the appraisal that VMCs are limited in their technical and personnel performance capacity when it comes to road maintenance. The project provided the VMCs with training and equipment to help them complete their tasks as well as possible.

Response to changes/adaptability

At the conceptual level, there was no need for adjustments to be made during the course of the project. The climate risks that were particularly relevant to the project were known during the appraisal stage and did not change significantly during the course of the project.

Summary of the rating:

Through the (climate-resilient) development of rural roads based on plausible impact assumptions, the project addressed a central obstacle to development and thus the key needs of the target group for improving their economic living situation through transport connections and market integration. The project concept fits coherently into the local, national and supra-regional development strategies of the Laotian government and its development partners. This ensured that, by not being conceptually or technically overloaded, the project approach took into account the capacities as well as the potential of the target group and project participants, thereby laying the foundation for further technical and investment support (e.g. development of social infrastructure and agricultural advisory measures). The complementary basic and advanced training measure logically aimed to strengthen additional capacity for implementing the project and maintaining the roads.

Relevance: 2

Coherence

Internal coherence

The project was part of the DC programme "Poverty-oriented regional rural development" and contributed to achieving the targets of the following DC programme objective: "*The rural population in the poor regions of Laos [...] benefits in the long term from economic development in the programme regions*". The selection of target districts with particularly high poverty rates and low levels of development with poor rural infrastructure took into account the DC programme objective, and the project made concrete contributions towards achieving the intended reduction in the proportion of poor households as well as reducing transport costs and travel time.

The measure was designed to complement the German FC's previous phases on a regional basis, which initially promoted the development of national roads, followed by the further expansion of the road network through district roads and rural roads in other provinces. By ensuring continuity of support for the transport sector, synergies arising from the development of the executing agency's capacity and from exploiting past experience were leveraged between the project phases.

For the transport component, the DC programme's measures concentrated on road infrastructure, which was implemented solely by the FC. In future, the improved road connection will offer the potential for future integration with the land management component in the current DC programme.

[2] These tasks included: clearing drains, filling potholes and cutting vegetation at roadsides

The measure is consistent with the international standards to which the German DC is committed. In terms of unintended environmental and social impacts, the promotion of women, poverty orientation and risk management are of particular note here. The project contributes to the adaptation to climate change through the climate-resilient design of the roads. This therefore contributed to Germany's international climate finance responsibility, to which the German Federal Government has committed itself following the 2015 Paris Agreement on climate change. At the same time, however, the development of roads for private motorised transport (usually with a combustion engine in the local context) – from which the intended positive developmental impacts are derived – obstructs international efforts to reduce greenhouse gas emissions.

External coherence

The project supported the Laotian government's own efforts to improve the transport network, which aimed at regional integration and the promotion of rural development, through supplementary financing and technical implementation. This involved the development of the rural road network, which was challenging due to the climate and topography. The individual efforts are also reflected in the partner country's high counterpart contribution to the investment costs.

Germany's FC is the largest single donor to the expansion of rural roads in Laos and, in its long-standing partnership with the MPWT, supplements projects of other bilateral and multilateral donors (e.g. ADB, World Bank) that concentrate on long-distance and regional transport and related capacity-building. Rural roads have not been and are not promoted by these major transport sector projects.[3] The improvement of rural access roads is part of a number of rural development projects, such as the Poverty Reduction Fund (PRF) financed by the World Bank, which has been running in several phases since 2002 and is financed by a component of community-based micro-projects for social and economic infrastructure. There were synergy effects with measures taken by other donors in the area of agriculture and food security in the south of the country, in particular with the programmes financed by the World Bank, the ADB and IFAD, as well as smaller NGO activities. The focus of these were food security, market access, increased productivity, and financial and institutional support for agriculture in the poorest districts. This resulted in direct synergy effects with the FC-financed measures for rural infrastructure. In addition, there is complementary overlap with the bilateral investment cooperation with Thailand and China, which focuses on the development of Laos' transport routes through strategic infrastructure projects. The newly developed project roads in the south connect directly to the east-west corridor, while the improved roads in the north are located in the catchment area of the north-south axis between China and Thailand.

The social and economic development of the target population was also supported by government or NGO-led complementary development projects, which provided schools, medical facilities, power connections and other public services, for example. Of particular note for the project region are the above-mentioned Poverty Reduction Fund (PRF) financed by the World Bank and implemented by the Laotian government, and projects by USAID and World Vision to promote basic infrastructure such as schools, hospitals and other public services. In the EPE, the importance of improved road connections for these projects was confirmed in interviews with officials, stakeholders and the NGO World Vision. Their subsequent road construction projects, in turn, made a significant contribution to the project impacts described below.

The project was implemented by the executing agency MPWT. Accordingly, the project used the structures already established in the partner country. As is usual in Laos, there was no special project implementation unit; instead, a project manager at the MPWT was responsible for implementation. The structures and processes used for implementation and operation were established together with the executing agency in previous project phases, which were supported by basic and advanced training measures and embedded in the institution. Due to the German FC's unique selling point for the comprehensive promotion of rural roads, as mentioned above, there were no joint structures with other donors. The project executing agency's systems are used for following up on the road condition and designing construction measures.

Furthermore, through the continuation of the support provided during previous RIP phases by the national training institute, PTTI, as part of the basic and advanced training measure, already established local structures were used for longer-term capacity development. This approach is based on the needs of the project executing agency, which is also responsible for operation and maintenance after the measure is completed.

[3] ADB: Road Sector Governance and Maintenance Project, WB: Road Sector Project and individual promotion of national roads

Summary of the rating:

The project was coherent with the DC programme and consistent with international norms and standards. It complemented individual efforts and used the partner country's existing structures or helped to further strengthen effective systems and capacities through the basic and advanced training measure. It also complemented relevant development projects of other donors at national level as well as in the project region.

Coherence: 2

Effectiveness

Achievement of (intended) targets

The programme objective at outcome level was the sustainable and year-round use of the developed rural roads and other infrastructure measures by the target group.

Achievement of the target at outcome level is as follows:

Indicator[1)]	Baseline[2)]	Target value PA/EPE	Actual value at final inspection (Construction completion)[3)]	Actual value at EPE
(1) Year-round accessibility	No/limited accessibility during the rainy season	year-round	year-round	year-round **Achieved**
(2) Relative change in driving times on project roads	12.7 km/h	PA: -30 %	-61 % (32.8 km/h)	-54 % (27.8 km/h) **Achieved**
(3) Vehicle operating costs	USD 1.24/km	EPE: -15 % [4)]	-40 % (USD 0.74/km)	-35 % (0.80 USD/km) **Achieved**
(4) Average transport costs on project roads	LAK 3.080/km	PA: -20 %	LAK 2.017/km (-35 %)	LAK 1.549/km (-50 %) **Achieved**
(5) Average traffic volume on project roads	72 motorised vehicles/day	EPE: +20 % [4)]	140 motorised vehicles/day (+94 %)	193 motorised vehicles/day (+168 %) **Achieved**
(6) Proportion of female road users	12 %	PA: +10 percentage points	25 %	32 % **Achieved**

1) The indicators refer to the newly developed roads in Salavan (see brief description).
2) The baseline studies were carried out in 2015 and 2017 for the additionally included roads prior to the start of construction.
3) The data after completion of construction was recorded separately for the roads built in 2015 and for the additional roads built in 2017. The results were reported together with the final inspection in 2020.
4) Indicator/target value introduced during the EPE.

Contribution to achieving targets

As part of the main component of the project (80 % of the investment measures), seven rural roads in Salavan Province in southern Laos with a total length of approx. 122 km were developed into roads that can be used intensively and all year round (overview in Annex 3). This exceeds the 80 km planned at the PA by 53 % and is due to savings in awarding the contracts (see "Production Efficiency"). For the 122 km road, gravel made up the surface layer for 82 km and bitumen for 40 km, depending on the requirements of the respective sections. The

necessary drainage structures, culverts and bridges were installed to ensure year-round accessibility and prevent damage from water runoff. Speed bumps were installed at the entrance to villages to minimise safety risks and nuisance (dust and noise) as well as to calm traffic. In addition, width and height limitations aimed to prevent use by heavy goods vehicles. These appeared effective during the EPE, as they were still in place and no heavy goods vehicles were observed, except for road construction work. However, it was reported that small trucks for transporting agricultural products are sometimes overloaded.

In the catchment area of the roads, the market in the district capital of Ta Oy was also improved thanks to a sealed surface and sanitary facilities. According to the final inspection, sales by traders increased by 60 % within two years and the local catchment area increased by almost 100 %. By the time of the EPE the number of traders at the district market in Ta Oy rose by 155 % and the number of buyers rose by 33 % compared to the situation prior to the start of the project. During the on-site visit and in interviews, it became clear that the market is being used intensively and that women in particular are selling an increasing variety of agricultural products and handicrafts. The improvements have made it more well suited for this increase in use.

The newly developed roads can now be used by the population in the catchment area all year round (indicator 1). The improvements have more than halved the driving time (indicator 2), notably exceeding the target of a 30 % reduction. The average speed rose from almost 13 to 28 km/h. However, the journey times on the roads at the time of completion were shorter than at the EPE, as their condition has since deteriorated (see *Durability of impacts over time).* Vehicle running costs (indicator 3) fell by an average of 35 % from USD 1.24 to 0.80/km compared to the baseline as a result of the road improvements. Transport costs (indicator 4) have actually halved on average. The traffic volume (indicator 5) on the project roads increased by 168 % and now amounts to 193 motorised vehicles a day on average. As a result, road use at the time of the EPE was more than twice than assumed at the PA and has further increased since the road was completed. Use is mainly attributable to the target group itself and not to transit traffic. It is clear that part of the increase in traffic volume is related to the increase in the number of inhabitants in the municipalities within the catchment area of the roads (see *Contribution to overarching* (intended) developmental changes). The roads are also used by retailers who buy agricultural products and market goods in the neighbouring villages. The number of vehicles per household has risen in the catchment area of the project roads *(*see *Contribution to overarching* (intended) developmental changes). Cars and vans are regularly used on a communal basis or hired out for a fee.

The direct participation of women in motorised transport is recorded in the project by the proportion of female road users (indicator 6). The proportion stood at only 12 % before the roads were developed, which meant women were notably underrepresented, and rose to 32 % by the time of the EPE, now that the roads can be driven on with less effort and health risk. The objective is achieved in this regard. Although women still drive fewer vehicles than men, during the EPE it was observed that women are driven on the project roads by their husbands and picked up from work, for example. In addition, women benefit greatly from improved road connections through better access to health care services in particular (see *Contribution to overarching (intended) developmental changes*) and to marketplaces where they buy and sell. In addition, the improvement of the marketplace in the district capital of Ta Oy and, in particular, its provision of sanitary facilities, also supports women's concerns.

The complementary basic and advanced training measure included support from the executing agency, MPWT's national training institute (PTTI) in implementing training courses, the training and further education (including on-the-job training) of DPWT/OPWT employees in Salavan Province (Ta-Oy and Samouay districts) in aspects of project management, road maintenance, and maintenance training and capacity building in previous RIP provinces. By the time of the final inspection (2020), 9 courses had taken place with 1,251 participants. In addition, employees from the Ministry of Infrastructure were trained at all administrative levels in various aspects of project planning, implementation and monitoring as well as in the construction and application of the maintenance systems (including establishing a system of routine maintenance by village maintenance committees (VMCs)). The above-mentioned national training institute (PTTI) was also supported in the development of a new business concept, which was intended to strengthen the financial independence of the institute. Further technical support for the institute was provided through the modification of the curricula relevant to rural roads in the areas of maintenance, project management, tendering processes and climate change adaptation. These training structures and opportunities will continue to be used and expanded.

The selective repair and climate adaptation measures carried out in northern Laos in 2016 were suitable for preserving the impacts of the previous phase over the longer term. As part of the EPE, it was confirmed that the climate adaptation measures were able to improve passability at critical points in the design of the roads (routing, surface, culverts and drainage). However, due to the lack of mechanical routine maintenance for budget reasons, only journey speeds of 15–18 km/h can currently be achieved and ride comfort is severely restricted. Accessibility

during the rainy season was no longer guaranteed. This means the rectification measures are also effective to a limited extent in terms of their duration.

The intended target values were all (over-)achieved . In future, however, due to inadequate maintenance and, among other things, increasing climate damage, a significant downturn in the positive effects can be expected (see *Capacities of participants and stakeholders* as well as *Durability of impacts over time).* The trend reversal is already reflected in some of the indicators presented above in the time between completion of construction and the EPE (see *Achievement of (intended) targets*).

Quality of implementation

The technical design of the roads is based on Laotian standards for rural roads. The regular road width of the project roads is 4.5 m – 5.5 m, including shoulders. According to the assessment from the final inspection, this is appropriate for the volume of traffic, which was also confirmed during the EPE by the further increase in use. Similarly, the practice of applying bituminous or concrete surface sealing on steeper sections and village thoroughfares has proven to be appropriate. In addition, the already foreseeable effects of climate change were taken into account in the design of the measures through appropriate routing, surface, culverts and drainage. The quality of the structural measures was considered good within the framework of the final inspection, and the inspection during the EPE did not reveal anything to the contrary.

The EPE considers the quality of management and implementation by the executing agency and implementation consultants to be target-oriented. There was strong ownership among all project participants. Responsibility for implementation as well as capacity development through advanced training were anchored within the structures of the ministry. During the EPE, it became clear that this is very good for preserving institutional knowledge and is less tied to outside projects and financing than when separate project implementation units are used. Furthermore, the executing agencies at provincial and district level were closely involved in construction supervision and trained as part of the basic and advanced training measure to strengthen ownership and capacities for later operation. The target group was also trained in the maintenance tasks. The reporting prepared by the implementation consultant on behalf of the project executing agency is comprehensive and of good quality. The internal project monitoring and evaluation system as part of project implementation was exemplary and the data collected provided an important basis for the EPE.

Unintended consequences (positive or negative)

No unintended impacts were identified during the EPE. The use of roads by heavy goods vehicles, which could have a negative impact on residents and road conditions, was not identified. In the project, the roads were equipped with height or width limits to prevent this. However, despite increasing awareness of the increased wear on vehicles and roads, smaller vans are sometimes overloaded. During the on-site visit, representatives from the target group and the doctors surveyed reported that traffic accidents are still rare.

Summary of the rating:

The development of rural roads from simple earth roads to roads that can be driven on all year round has reduced travel times and transport costs as well as vehicle operating costs. The use of the financed infrastructure exceeds expectations. Women's participation in motorised transport has also increased since completion. In view of the trend reversal already occurring in the outcome indicators, as well as the expected further downturn in the positive effects, the effectiveness is considered good from an overall perspective.

Effectiveness: 2

Efficiency

Production efficiency

During the appraisal, the specific costs were estimated at approx. EUR 140,000/km. Although a higher proportion of relatively cost-intensive sealing was implemented compared to the original design, the specific costs for the newly developed roads in Salavan amounted to approx. EUR 100,000/km. According to the final inspection, the cost reduction resulted primarily from lower unit prices and adjustments to increase cost efficiency (without loss of quality) during the construction phase. In particular, the final inspection attributed the lower bid prices of the domestic tenders, which were below the mean value of state-financed construction work, to the better payment guarantees and the good reputation of the smooth implementation of the FC projects. The specific costs of the project

for the development of the earth roads in Salavan as well as the selective maintenance and climate adaptation measures were within the usual margin of comparable projects in South-East Asia, despite the sometimes difficult terrain, which required a large number of bridges, culverts and drainage systems.

The project was implemented from January 2015 to July 2019. In view of the quoted prices that were significantly below the estimated costs for the originally selected project roads (see above), it was possible to widen the project scope by a further three roads in Salavan based on the priorities established in the project preparation study. Compared to the original design, this extended the implementation period by one year. This is considered appropriate in view of the additional three road sections with a combined length of 32.6 km.

The cost of improving the market in Ta Oy was EUR 112,000 and is considered appropriate. As the project area in Salavan was heavily bombed during the Vietnam War, the project also involved checking for and, if necessary, disposing of remnant munitions. The costs for the implementation consultant increased due to the above-mentioned widening of the project's scope and extended duration. Nonetheless, the consulting services as a proportion of total costs were within the scope of and similar to comparable rural road construction projects. Both the the implementation consultant's services and the basic and advanced training measure were tendered internationally to ensure efficient, high-quality prices.

Allocation efficiency

The technical design of the developed roads in Salavan was appropriate in terms of traffic volume and climatic requirements (see *Quality of implementation*) while also maintaining efficient specific costs (see *Production efficiency*). In this respect, a more efficient alternative for improving the rural roads cannot be perceived. As an alternative to the addition of more roads, the standard of development for roads already developed could have been raised further with the funds available, and climate damage to the existing road network could have been minimised. However, this would also have meant that the target group reached, which benefits from the project's beneficial impacts, would have been significantly smaller in scope. With respect to the selective maintenance and climate adaptation measures on roads in the RIP I and RIP II project phases, it must be said that these could cost-effectively extend the sustainability of use and impacts of the roads in the FC's RIP I and II project phases, which were rated in an EPE in 2012 as good, although in retrospect it would have been even more efficient, from a macroeconomic perspective, to build them to be (more) climate-resilient.

The increase in the average daily traffic volume on the improved project roads, the time saved and reduction in transport costs as well as use of the market were above the target values (see *Contribution to achieving objectives/effectiveness*). Transaction costs in marketing local agricultural products and for the use of schools and health services were cut as a result of the year-round use and usability as well as improved condition of the roads (see *Contribution to overarching developmental changes (intended)).* This strengthened the economic and social participation of the target group.

From an overall perspective of rural road development in Salavan Province and the selective maintenance and climate adaptation measures in northern Laos, allocation efficiency is considered good.

Summary of the rating:

The lower specific construction costs enabled more roads to be developed and more people to benefit from improved access (production efficiency). The very good allocation efficiency of the developed rural roads is hampered by the limited success of the allocation efficiency of the selective maintenance and climate change adaptation measures. Overall, the efficiency is therefore considered good.

Efficiency: 2

Impact

Overarching developmental changes (intended)

The rural regions of Laos, where 70 % of its about 7 million inhabitants live, are characterised by difficult living conditions. The majority of the rural population lives on subsistence farming. In 2012, agriculture still contributed 27.6 % to GDP. Since then, the proportion has fallen to 15.7 % (2018). In 2020, there was a short-term increase to 16.2 % due to the downturn in the tourism and trade sectors since the start of the COVID pandemic. At the same time, the proportion of the urban population has been increasing by more than 3 % annually. The

infrastructure, in particular the rural road network and access to markets, is inadequate overall and makes economic growth more difficult. The expansion depends heavily on external support and is only progressing at a slow rate. A total of 28.6 % of the rural population was considered poor in 2020, compared to 10 % in urban areas. The proportion of the population affected by poverty is 18 % overall (World Bank, 2020). This average has fallen sharply in recent years (from 46 % to 18 % since 1993). Rising agricultural incomes were the main drivers of the reduction in poverty. This is mainly due to the progressive shift of agricultural production from subsistence farming since 2013 to the commercial production of marketable products. Nevertheless, poorly educated and poorly connected farming households, which predominantly comprise ethnic minorities, make up approximately 41 % of the poor in Laos.

The southern and northern provinces, which also included the project areas, have made impressive progress in alleviating poverty. Between 2013 and 2019, poverty rates fell in all southern provinces with the exception of Attapeu. Overall, poverty in the south fell from 29.9 % in 2013 to 17.7 % in 2019, making it the least poor of the regions at present. Poverty also declined in all northern provinces, with the exception of Sainyabuli, with Bokeo recording the largest downturn in absolute terms.

Contribution to overarching developmental changes (intended)

The objective at impact level was to contribute to improving the socio-economic living conditions of the rural population in the catchment areas of the financed infrastructure.

Target achievement at the impact level can be summarised as follows:

Indicator[1)]	Baseline[2)]	Target value at PA/EPE	Actual value at final inspection (construction completion)[3)]	Actual value at Ex post evaluation
(1) Proportion of poor households in the catchment areas of the roads	65.6 %	55 % (-10 percentage points after completion of construction) 45 % (-20 percentage points after ex post survey)	33.1 % (-29.5 percentage points) **Achieved**	**Not comparable with baseline** (Modification of recording method)
(2) Vehicles per household	0,54	EPE: +40 %	0,72 (+33 %)	0,81 (+50 %) **Achieved**
(3) Time required to reach the next market	Baseline value: 226 mins.	-30 %	-69 %	-60 % **Achieved**
(4) Budget income from market-oriented production	2.1 million LAK	+35 %	LAK 4 million (+90 %)	LAK 2.8 million (+33 %)
(5) Visit to secondary schools (Age group 11–17 years)	54.8 %	+3 percentage points	58.1 % (+3.3 percentage points)	65.1 % (+10.3 percentage points) **Achieved**
(6) Visits to health stations	4,003	≥ 7,000	6,469 (+62 %)	10,524 (+163 %) **Achieved**

(7) Proportion of births in Health stations	30 %	+30 percentage points	42 % (+12 percentage points)	83 % (+53 percentage points) **Achieved**

[1)] The indicators refer to the newly developed roads in Salavan (see brief description).

[2)] The baseline studies were carried out in 2015 and 2017 for the additionally included roads prior to the start of construction.

[3)] The data after completion of construction was recorded separately for the roads built in 2015 and for the additional roads built in 2017. The results were reported together with the final inspection in 2020.

The improvement in the economic situation of the target population intended by the project was measured based on the positive development of the proportion of poor households. The target of reducing the proportion of poor households by 20 percentage points was already significantly exceeded in the impact assessment after completion of the roads, with a reduction of 29.5 percentage points (indicator 1). In the same period, the reduction was only 10.6 percentage points due to two control routes that were not developed. In 2018, the Laotian government replaced the income-based poverty survey with a multi-dimensional approach, taking into account factors such as housing, nutrition, education, etc. As a result of the change in approach, the current poverty rates are therefore not comparable to those used at the PA. According to this new method, the poverty rate in the project's road catchment areas is 64.1 %. In view of reproducibility, the values at the final inspection are used as a proxy. As shown above, the target value was significantly exceeded.
In the villages in the project roads' catchment area, the number of vehicles per household has risen from 0.5 to 0.81 (indicator 2). This is a sign that the target group has a high need for mobility and can afford vehicles due to increased income. Cars and vans are regularly used on a communal basis or hired out for a fee.

The financed roads had transformative impacts on the integration of the previously more isolated population into the markets. This is reflected in quantitative and qualitative terms in the increase in the market-related production of cassava in particular, but also other agricultural products such as cocuss and *Machilus kurzii* tree bark,[4] as well as handcrafted items such as brooms. Network effects play a major role here, as all developed roads are directly connected to a national road that enables cross-regional and international trade with neighbouring Vietnam. Since the roads were upgraded, crops have been brought to collection points by farmers or collected directly from the townships by traders. In addition, the markets also play an important role in selling as well as supplying to households. This was being achieved 60 % more quickly at the time of the EPE (indicator 3), with costs falling to around half (see *Achievement of (intended) targets/effectiveness*). The significant increase in sellers and buyers at the district market, improved as part of the project, when compared to before the start of the project also reflects the importance of roads for connecting markets (see *Contribution to achieving objectives/effectiveness*). The roads in northern Laos on which selective maintenance and climate adaptation measures were carried out as part of the project also facilitate local market integration and internationally oriented trade – primarily rubber production for the Chinese market. Overall, the development of roads through market integration and travelling traders has led to a better range of goods and services for households.

As explained above, the improved road connection triggered a structural transformation from a subsistence economy to market production. This also had a positive effect on the target groups' income levels, which is primarily derived from agriculture. By the time construction was completed, market-based household income had almost doubled (indicator 4), while it had only increased by a third in the control group. The improved income situation enabled the population to make up for their previous shortage of rice by being able to buy more, which improved their nutritional situation. The drop in this income level in 2022 is due to travel restrictions during the COVID-19 pandemic and is in line with observations at the macro level. Nationwide, the real growth rate fell from 4.7 % (2019) to -0.4 % (2020), subsequently recovering to 2.2 % (2022)[5]. The residents and officials surveyed during the EPE reported a rapid recovery once the restrictions were removed and, in particular, once border traffic resumed.

The education situation of the target group was also improved by the better roads. Since the end of the project, a large number of villages have received better primary schools as part of development projects such as the Poverty Reduction Fund[6] and NGO projects. This has been assisted by improved road access. Students and teachers, whose numbers have increased significantly, now benefit from easier, year-round accessibility to schools.

[4] The bark of the tree commonly called the "bong tree" is cultivated in particular for the Vietnamese market and used there for the production of incense sticks. Protection and sustainable cultivation is supported by IFAD. https://www.IFAD.org/ar/web/latest/-/story/bong-tree-farming-raises-income-of-former-rice-farmers-in-laos

[5] IMF World Economic Outlook 2022

[6] Financed by the World Bank and implemented by the Laotian government.

Secondary schools are usually further away from villages and pupils commute to the schools on a daily or weekly basis. This means attendance is heavily dependent on the schools' accessibility, especially during the rainy season. Since the completion of construction, secondary school attendance has risen by around 10 percentage points to 65 % of the eligible age group of 11 to 17 years (indicator 5). During the EPE, it became clear in interviews that this continued low level and negligible attendance at universities is because local residents still lack work prospects outside of agriculture or that such prospects are not perceived as desirable. In future, however, the higher connectivity and structural change initiated as a result will form the basis for higher education dividends.

The measure made a significant contribution to improving health care for the population in the catchment area of the project roads. Through better access, new health stations could be built or existing ones could be reached more easily all year round. This was made clear during the EPE through interviews with target groups, officials and the NGOs, World Vision and World Wildlife Fund. This offer is widely accepted and visits to health stations at the time of the EPE have increased by 163 % compared to the baseline (indicator 6). Maternal and child health has improved in particular. For example, only 30 % of births in the villages took place with medical supervision before the measure, which is why 70 % were at significant risk. This proportion rose to 83 % by the time of the EPE (indicator 7), whereas in the control group it sits at just 59 %. An acceptance of birth complications as well as infant and maternal mortality was reported during the EPE. In addition, as was clear in interviews with target groups and health workers, improved transport links have also significantly improved early childhood care, as mothers and children are regularly visited by health workers after birth or can reach them more easily in emergencies. An increase in the availability of latrines in households from 7.3 % to 58.5 % was observed.

Improved road access also enabled and facilitated the development and expansion of further infrastructure. Compared to the baseline, connection to the electricity supply by households has risen from 6.7 % to 85.9 %. Development projects have also improved the supply of safe drinking water. Almost the entire project region is covered by the mobile phone network, which is used by the target group for making phone calls as well as for mobile Internet. Since the start of the project in 2015, the number of inhabitants in the municipalities in the catchment area of the roads has risen by 18 %, from 13,384 to 15,844 people by the time of the EPE in 2022, which corresponds to an average growth rate of 2.3 % p.a. and is thus above the national population growth of 1.5 % p.a.[7] It is plausible that this disproportionate increase was partly due to the positive development dynamics made possible both directly and indirectly by the improvement of the roads. The project also had a structural impact beyond the target group, as the basic and advanced training measure strengthened the executing agency's systems and capacities and enabled a cross-regional transfer of knowledge through the use of in-house advanced training and structures at the Ministry of Transport.

The above mentioned indicators refer to the developed rural roads in Salavan Province, which comprised 80 % of the investment measures. The impacts of the roads from RIP I and II – on which selective maintenance and climate adaptation measures for long-term sustainability were carried out – were rated as good in an EPE conducted in 2012. The anecdotal evidence from the on-site visit to Luang Namtha suggests the intensive use and resulting positive intended impacts on the population in the catchment areas has continued.

The intended target values were (over-)achieved at the time of the EPE. In future, significant impairment to the high development impacts can be expected, both with respect to the improved roads and the selective maintenance and climate adaptation measures; this is comparable to the trend reversal in the indicators at outcome level, which is already perceptible in some cases (see *Contribution to achieving objectives/effectiveness*, *Capacities of participants and stakeholders* as well as *Durability of impacts over time*).

Contribution to (unintended) overarching developmental changes

No unintended developmental changes were identified during the EPE. In particular, no direct adverse social and environmental impacts from the road improvements (identified ex ante as low risk) were found. Instead, the move from subsistence farming to more lucrative market production could potentially reduce the amount of traditional slash-and-burn farming to achieve self-sufficiency with rice. However, it cannot be ruled out that the conversion to cash crops and the expansion of commercial agriculture due to changes in land use and, where relevant, the expansion of land will also have adverse effects in the long term, such as changes in water run-off, pollution and nutrient pollution and erosion.

[7] https://data.worldbank.org/indicator/SP.POP.GROW?locations=LA

Summary of the rating:

The project was able to achieve transformative development impacts by improving rural roads: Improved market access by smallholders has achieved positive income effects and initiated a structural change towards increased market production and market integration of households. Regional, supra-regional and transnational network effects were developed through the connection to the national highway and Vietnam. As a result of improved road access, the supply of education and health services as well as water, electricity and mobile communications has improved – in conjunction with other development impulses.

Impact: 1

Sustainability

Capacities of participants and stakeholders

The condition of the newly improved roads in the project is, to date, still enabling good accessibility. However, selective damage from road use as well as ground and surface water was found on several sections. This has already led to reduced journey speeds, as mentioned under "Effectiveness". Damage and the resulting traffic restrictions on road sections with difficult climatic and topographical conditions were particularly noticeable.

The design of the improved project roads and selective measures (e.g. bitumen surfaces, concrete drains, larger, reinforced culverts/bridges), which are more resistant to increasingly challenging climatic conditions, have positively contributed to the intended year-round accessibility and resilience to climate-related wear. However, extraordinarily heavy rainfall incidences and flooding have already led to significant damage in some cases, including the complete destruction of a bridge built during the project, which could not have been prevented by the climate-adapted designs.

In addition to an appropriate design, sustainable road operation requires routine and periodic maintenance to prevent further deterioration and to ensure sustainability. In Laos, the condition of the roads at district and provincial level is monitored and reported to the MPWT, which then decides on the work to be carried out.

A road fund is available to the MPWT for financing the maintenance measures. This is managed by the MPWT itself and does not receive any allocations from the Laotian budget. It receives around 95 % of its fuel from a fuel charge of LAK 520 per litre sold, which it receives in full. The fixed levy amount has not been adjusted over the years and, due to inflation, the funds available fall far short of the growing needs, which are also the result of the increasingly faster development of infrastructure through external financing. In addition to inflation (around 40 % at the time of the EPE), the sharp depreciation of the Laotian currency, LAK, (annual loss of 68 % compared to the USD in October 2022) has further exacerbated the structural underfinancing of maintenance. It is also already apparent that extreme weather events caused by climate change will lead to major damage with high consequential costs, which will continue to put a strain on the budget. The submitted budgets for periodic and routine maintenance in Salavan Province show that emergency repairs after heavy rainfall have predominated since the project was completed. However, the borrowing capacity for periodic maintenance and emergency repairs is limited by the high government debt of 107 % of GDP (2022)[8], around half of which is due to Chinese loans for the expansion of infrastructure. Servicing the debt is burdening the government budget with an average of USD 1.3 billion p.a.[9] Against this background, the scope for spending on public infrastructure is very limited.

Without an adjustment to the financing of the road fund, it therefore cannot be assumed that sufficient funds will be available for maintenance and repairs. When revising the financing mechanism, in addition to an increase or adjustment of the fuel levy, the regular collection of the already established vehicle tax and its earmarking for the transport sector would also be expedient. It is not yet possible to predict when or whether a revision will take place. If necessary, external financial support could be provided temporarily here.

Simple, manual routine maintenance of the rural roads (grass cutting, clearing of drains and culverts, backfilling of small gravel potholes, clearing of small landslips, etc.) is carried out quarterly by local residents at village level. They are organised in village maintenance committees (VMCs), which were established as part of the project, trained by the executing agency's training centre (PTTI) and equipped with work materials. The VMCs also receive regular guidance and planning support from the district level of the MPWT. The VMC concept proves to be practical in application and seems to have positively influenced the ownership of the target population. Motivation

[8] IMF World Economic Outlook 2022
[9] World Bank, Lao Economic Monitor

at the EPE was high and the work is carried out regularly. However, this approach can only be complementary to routine machine maintenance, which at regular intervals restores roads to their proper condition after rainy periods. However, this is almost entirely absent due to insufficient budgets at all administrative levels. Irrespective of these difficult framework conditions, both the technical capacities and the motivation of all participants in the road sector turned out to be good at the EPE.

The district market, which was improved within the project framework and was actively used at the time of the EPE, was in good condition.

Contribution to supporting sustainable capacities

The complementary basic and advanced training measure benefited from the long-standing cooperation between the MPWT, PTTI and FC. The supported qualification programmes included:

- Organisational support for the training centre through further development of the curriculum and business model
- Strengthening of the training centre through further training of the trainers as well as a library, a laboratory and other facilities.
- Strengthening of the project executing agency at provincial and district level through training in project management, climate-adapted road construction and maintenance and management of VMCs
- Foundation, training and initial disbursement for the VMCs
- Courses to prevent social, unintended impacts (HIV/AIDS, human trafficking, road safety)

The measures mentioned above seem to have long-term and lasting effects on the ownership and capacities of those responsible in the authorities and on the beneficiaries in villages (VMC training). Continuing or further developing this approach appears to be highly worthwhile and expedient in the local context. Contributing to solving the Laotian financing deficit with regard to sustainable maintenance as described above exceeded the parameters of the project's opportunities.

Durability of impacts over time

The sustainability of the project results and impacts was largely ensured by the time of the EPE. The increasing deteriorating condition of the road due to a lack of mechanical maintenance will significantly impact the positive development contributions, but will probably not reverse them completely. It is obvious that the economic integration and supply of economic and social (primary) services will remain at least in the immediate vicinity of the townships. This applies in particular to improved education and health services, including maternal and child health. Nevertheless, the increasing travel costs associated with the deterioration, longer travel times and, in some cases, limited accessibility during the rainy season will presumably reduce the socio-economic effects, such as attendance at secondary schools, market integration and the economic efficiency of market production. This assessment also applies to the selective maintenance and climate adaptation measures on the roads in the RIP I and RIP II project phases and financed as part of the project

Summary of the rating:

In summary, the intended impacts had taken place at the time of the EPE. In future, however, a significant impairment is to be expected due to insufficient financing of road maintenance and increasing extreme weather events. Substantial improvement requires a change in the fiscal and macroeconomic situation as well as a revision of the financing mechanism. Natural disasters and the consequences of climate change place additional strain on infrastructure, and even climate-resilient developments cannot avoid significant emergency repairs from becoming necessary. However, the project component in northern Laos shows that donor financing for maintenance and climate adaptation can prolong the developmental impacts. Another positive aspect is the high level of ownership at institutional and village level (VMCs) and the excellent technical capacities in the road sector, which are also due to ongoing support from the German DC and other donors. In the event that emergency repairs as a result of extreme weather events become necessary, the state has also demonstrated that it will step in as much as possible. The Road Fund is also a fundamentally suitable instrument for financing road maintenance, but it needs to be revised to increase revenue. These points open up the prospect that the roads can be sufficiently maintained in future if the structural problems and overall economic situation improve and capital resources increase. At the time of the EPE, it is not foreseeable when and to what extent noticeable positive changes will occur. Overall, sustainability is still rated as moderately successful.

Sustainability: 3

Overall rating:

The development of rural transport infrastructure eliminated a highly relevant bottleneck for the socio-economic development of the target group and laid the foundation for transformative impacts on the income and nutrition situation as well as on health, education and the supply of electricity and water. The project was highly relevant to poverty and also benefited the economic and social participation of women and ethnic minorities as particularly disadvantaged groups.

Due to the overall major development of the infrastructure combined with declining economic growth and problematic framework conditions, financing for road maintenance continues to be inadequate. This puts the sustainability of the financed infrastructure at risk, leading in future to a significant adverse effect on the effects. This limits the impact of the technical capacities, which are good in themselves, and the tangible level of ownership. However, a complete revision of the impacts is not foreseeable, even in the event of severe deterioration, due to the structural effects of the project on the commercialisation of agriculture and improved economic and public infrastructure. In this already difficult context, there is also the increasingly heavy burden of climate damage. Given the overall context, road maintenance will be dependent on external support until further notice.

Despite the intensive use of roads and the resulting positive impacts on the target group's socio-economic situation, particularly in conjunction with other measures, the project is rated as moderately successful overall due to the limited success in terms of sustainability, which entails a high risk of significant losses at outcome and impact level.

Contributions to the 2030 Agenda

With the improved road connection (SDG 9: Industry, innovation, infrastructure), it was possible to achieve an increase in income and a reduction in the poverty rate through market integration of the target group. As a result, the project contributes to achieving SDG 1 (End poverty) and SDG 2 (End hunger) by improving the food situation. Indirect contributions were made to better health care (SDG 3: Good health and well-being), better education (SDG 4: High-quality education worldwide), while the foundations for electricity (SDG 7: Affordable and clean energy) and water supply (SDG 6: Access to clean water) were laid. The increased participation of women in motorised transport and the resulting access to public services and social participation corresponds to a contribution to SDG 5 (Equality between women and men). In its design and implementation, the project relied on existing systems, pursued a holistic approach to sustainable development and contributed to the resilience of the target group.

Project-specific strengths and weaknesses as well as cross-project conclusions and lessons learned

The project had the following **strengths** in particular:

- Very high relevance through poverty orientation and unlocking development potential
- Transformative effects by removing a crucial barrier to development
- Network effects with regional/international trade
- Promotion of economic and social participation of women and ethnic minorities
- High ownership and continuity of engagement at institutional level

The project had the following **weaknesses** in particular:

- Contributing to solving the Laotian financing deficit with regard to sustainable maintenance was outside the scope of the project
- The increase in climate change and natural disasters inevitably required a higher standard of road construction, but also increased maintenance costs

Conclusions and lessons learned:

- The increased requirements for road design, particularly in connection with climate change, will require higher standards in future project phases with regard to road sealing, drains and preserving slopes and bends. If the standard of development is not adapted to the climate, considerable repair/maintenance costs should be expected. The additional costs for a climate-adapted standard of development mean an increase in funds or a smaller project scope (fewer kilometres of road), which would be at the expense of the achievable target group size.

- In view of budget constraints and declining revenues from fuel levies, a revision of the financing mechanism for road maintenance is needed, such as an increase in fuel levies or consistent collection of vehicle tax. This would increase the costs for users. The question of social justice as well as the release of economic potential and the associated increase in income as well as the social benefit of road improvements in rural areas must be weighed against each other here.

- A revision of the financing mechanism for road maintenance should also take into account the increasing electrification of mobility, meaning these road users do not contribute to financing via the fuel levy. With its high volume of hydropower, Laos offers fundamentally good conditions for the electrification of mobility and thus more potential to reconcile climate and development goals. However, further development is complex, capital-intensive and associated with environmental and social risks. In addition, this would initially also require the generation and transmission of power to be stabilised, as the electricity supply is already unstable in the target regions.

- Financing current maintenance costs through international donors (for a transitional period) could improve the sustainability of the rural road network. However, implementation should take place through the Laotian systems, and reforms would be required to improve revenues for road maintenance in order to encourage maximum continuity and sustainability.

- The example of Laos clearly demonstrates the need for an international compensation mechanism for climate damage, which provides those countries heavily effected, such as Laos, with the funds to design their infrastructure to be climate-resilient or to reinstate infrastructure damaged by climate change by means of the required emergency repairs.

- Projects to develop rural roads are conceptually focused, making them easy to implement compared to programmes with a broader development of rural infrastructure and comprehensive advice for the target groups.

- Flood and other water damage pose a significant risk to the sustainability of road infrastructure in Laos. This also applies in other regions with heavy rainfall. Furthermore, road development contributes to a partially intended change in land use (increase in arable land, better management of natural resources and expansion of settlements), which also affects run-off. In future, it makes sense to take climate and change in land use scenarios into account as well in the hydrological studies conducted to determine risks during the planning phase of road projects.

- Approaches to the management of water catchment areas can potentially reduce the adverse impacts of climate and change in land use and thus improve extreme weather resilience. If changes in land use are to be expected as a result of infrastructure projects themselves, these should be proactively managed in parallel with the project, with a view to stabilising erosion and run-off events as well as the sustainable use of natural resources.

- The internal project monitoring was exemplary and the data collected provided an important basis for the EPE. This illustrates the importance of why monitoring/data collection for later study should accompany the project and of further development of the concept.

Evaluation approach and methods

Methodology of the ex-post evaluation

The ex-post evaluation follows the methodology of a rapid appraisal, which is a data-supported qualitative contribution analysis and constitutes an expert judgement. This approach ascribes impacts to the project through plausibility considerations which are based on a careful analysis of documents, data, facts and impressions. This also includes – when possible – the use of digital data sources and the use of modern technologies (e.g. satellite data, online surveys, geocoding). The reasons for any contradicting information are investigated and attempts are made to clarify such issues and base the evaluation on statements that can be confirmed by several sources of information wherever possible (triangulation).

Documents:
Project reporting by the project executing agency, impact monitoring of the project, maintenance budget, strategy and project documents from other donors (in particular ADB and World Bank), economic analyses, secondary specialist literature, context-, country- and sector analyses, comparable evaluations, media reports.

Data sources and analysis tools:

The project executing agency's financial reports on budgets for maintenance and emergency measures, databases, on-site data collection, the project executing agency's monitoring data, GPS and speed data, satellite images and geodata.

Interview partners:
Project executing agency, target group, other development organisations, local and regional administrations

The analysis of impacts is based on assumed causal relationships, documented in the results matrix developed during the PA and, if necessary, updated during the ex-post evaluation. The evaluation report sets out arguments as to why the influencing factors in question were identified for the experienced effects and why the project under investigation was likely to make the contribution that it did (contribution analysis). The context of the development measure and its influence on results is taken into account. The conclusions are reported in relation to the availability and quality of the data. An evaluation concept is the frame of reference for the evaluation.

On average, the methods offer a balanced cost-benefit ratio for project evaluations that maintains a balance between the knowledge gained and the evaluation costs and allows an assessment of the effectiveness of FC projects across all project evaluations. The individual ex post evaluation therefore does not meet the requirements of a scientific assessment in line with a clear causal analysis.

The following aspects limit the evaluation:
None.

Methods used to evaluate project success

To evaluate the project according to OECD-DAC criteria, a six-step scale is used for all criteria except for the sustainability criterion. The scale is as follows:

Level 1 very successful: result clearly exceeds expectations

Level 2 successful: result is fully in line with expectations and has no significant shortcomings

Level 3 moderately successful: falls short of expectations but the positive results dominate

Level 4 moderately unsuccessful: significantly below expectations, with negative results dominating despite discernible positive results

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

Level 6 highly unsuccessful: the project has no impact or the situation has actually deteriorated

The overall rating on the six-point scale is compiled from a weighting of all six individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally “successful” only if the achievement of the project objective (“effectiveness”), the impact on the overall objective (“impact”) and the sustainability are rated at least “moderately successful” (level 3).

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List of annexes:

Target system and indicators annex

Project objective at outcome level		Rating of appropriateness (former and current view)			
During project appraisal: Sustainable and year-round use of developed rural roads and other infrastructure programmes by the target group		Appropriate			
During EPE (if target modified)					
Indicator	**Rating of appropriateness** (for example, regarding impact level, accuracy of fit, target level, smart criteria)	**PA target level**	**PA status (Baseline 2015)**	**Status after completion of construction (2017/2020), Report with final inspection (2020)**	**Optional: Status at EPE (2022)**
Indicator 1 (PA): Can be used all year round	Appropriate	All year round	Not achieved	Achieved	Achieved
Indicator 2 (PA): Reduction in driving times on project roads	Generally appropriate, but adjustment of the indicator to the relative change in driving times and additional details on average speeds would be useful. NEW: Relative change in driving times on project roads.	Reduction of 30 % after project completion	Baseline value (12.7 km/h)	-61 % (32.8 km/h)	-54 % (27.8 km/h)
Indicator 3 (NEW): Vehicle operating costs		Reduction of 15 % after project completion	USD 1.24/km	-40 % (USD 0.74/km)	-35 % (USD 0.80/km) **Achieved**
Indicator 4 (PA): Reduction in transport costs on project roads	Appropriate Reformulation: Average NEW: Average transport costs on project roads	Reduction of 20 % after project completion, 2015 as baseline	LAK 3.080/km	LAK 2.017/km (-35 %)	LAK 1.549/km (-50 %)

Indicator 5 (PA): Increase in average volume of daily traffic on project roads	Appropriate Reformulation: Traffic volume NEW: Average traffic volume on project roads	Increase of 20 % after project completion	72 motorised vehicles/day	140 motorised vehicles/day (+94 %)	193 motorised vehicles/day (+168 %)
~~Indicator 5 (PA): Increase in maintenance budget in the province~~	Inappropriate as an impact indicator Maintenance financing is dealt with in the EPE as part of the DAC criterion “Sustainability”.	Increase in budget by 10 % within 4 years	LAK 25 billion	Value cannot be determined	
Indicator 6 (PA): Increase in the proportion of female road users	Appropriate The unit was changed from percent (PP) to percentage points (EPE).	Increase of 10 percentage points after project completion	22 %	25 %	32 %
~~Indicator 7 (PA): Increase in participation in school lessons (age group 6–18 years)~~ MOVED TO IMPACT	Participation in lessons is more of an indirect effect of road use, which also depends on other factors. Over the course of the project, the indicator for participation in secondary schools was changed, as it depends more on transport links due to the longer distances. NEW: Increase in participation in lessons at secondary school (age group 11–17 years)				
~~Indicator 8 (PA): Increase in households with electricity~~	Not appropriate as an outcome indicator, as this is not related to the project.	Increase of 12 % after project completion	Baseline value: 14 %	15 %	
~~Indicator 9 (PA): Training courses on maintenance and climate change by PTTC~~	Inappropriate. Indicator records output of the project and not the outcome On sustainability: The training courses conducted by PTTC on maintenance and climate change are used.	90 participants from 7 provinces take part in training courses	794 participants	9 courses with 1,251 participants (+57 %)	

Project objective at impact level		Rating of appropriateness (former and current view)			
During project appraisal: Contribution to the improvement of the socio-economic living conditions of the rural population in the project regions.		Appropriate. Project regions are defined here as the catchment areas of the financed infrastructure in Salavan.			
During EPE (if target modified): w.o.					
Indicator	**Rating of appropriateness** (for example, regarding impact level, accuracy of fit, target level, smart criteria)	**Target level PA / EPE (new)**	**PA status (2014)/ Baseline (2015)**	**Status after completion of construction (2017/2020), Report with final inspection (2020)**	**Status at EPE (2022)**
Indicator 1 (PA): Proportion of poor households in the project regions	Appropriate. Unit corrected to percentage points. Project regions replaced by road catchment areas NEW: Proportion of poor households in the road catchment areas	Reduction of 10 PP after completion of construction and 20 PP for ex post survey (usually 1–2 years after completion of construction)	65.6 %	29.5 %	Not comparable to baseline Change of measurement method
Indicator 2 (NEW) Vehicles per household		EPE: + 40 %	0,54	0,72 (+ 33 %)	0,81 (+ 50 %)
Indicator 3 (NEW): Household income from market-oriented production	Appropriate. To answer with additional description: • Which elements is the income made up of? • What level of diversification has taken place? • Has market production increased at the expense of the subsistence economy?	EPE: Increase of 35 %	LAK 2.1 million	LAK 4 million (+ 90 %)	LAK 2.8 million (+ 33 %)
Indicator 4 (PA): ~~Transport costs and~~ time taken by the population to reach the next market have fallen	Appropriate. Definition of *significance* not used correctly and not specific in its use here.	Reduction of 30 %	Baseline	- 69 %	- 60 %

~~significantly~~ in the selected regions.	No baseline was recorded for transport costs. Therefore deleted NEW: Time required to reach the next market				
MOVED: Indicator 5 (PP): Increase in participation in lessons at secondary school (age group 11–17 years)	Appropriate, in principle. Transport links are an important factor in attending secondary schools. However, there are other influencing factors, such as the capacity of the schools. Reformulation required, as it was not about participation in lessons, but the school attendance rate in the relevant age group. NEW: Increase in secondary school attendance (age group 11–17 years)	Increase of 3 PP after project completion Valuation after baseline survey	54.8 %	58.1 % (+ 3.3 percentage points)	65.1 % (+ 10.3 percentage points)
NEW: Visits to health centres	Appropriate	≥ 7,000	4,003	6,469 (+62 %)	10,524 (+163 %)
NEW: Proportion of births in health centres	Appropriate	Increase of 30 percentage points	30 %	42 % (+12 percentage points)	83 % (+54 percentage points) **Achieved**

Risk analysis annex

The absence of the Laotian government's substantial counterpart contributions due to a lack of budget funds, which was identified as an ex-ante risk, did not materialise. However, there were delays in the provision of funds, but these were pre-financed by the construction companies and did not lead to project delays or limitations in project outputs.

The risk identified ex ante of delays in awarding and processing construction contracts did materialise in a single construction lot. In the case of the most challenging road, the first construction contract had to be terminated and the measures put back out to tender due to climatic and topological conditions.

The risk identified ex ante of an insufficient provision of funds for maintenance of the project roads did materialise. In particular, due to the lack of funds, the constant wear on rural roads is not being countered by adequate routine maintenance (e.g. filling of potholes with suitable material and machine compaction or regular levelling of gravel roads).

During the EPE, no adverse social or environmental impacts from the construction of the road (identified ex ante as low risk) were found. Instead, the move from subsistence farming to more lucrative market production could potentially reduce traditional slash-and-burn farming to achieve self-sufficiency with rice. However, it cannot be ruled out that the conversion to *cash crops* and the expansion of commercial agriculture through changes in the use and, if necessary, expansion of the land will also have adverse effects in the long term, such as changes in water run-off, pollutants, nutrient pollution and erosion.

Due to a lack of financial resources, adequate routine and periodic maintenance of the roads likewise cannot be guaranteed (also identified ex ante as a risk). Involving the local population in unpaid maintenance work can only counteract this risk to a limited extent, as mechanical maintenance work is also required.

The low cost risks identified ex ante did not materialise. Instead, due to a devaluation of the Laotian currency and lower cost of the construction lots, it was possible to provide more outputs than planned.

All risks should be included in the following table as described above:

Risk	Relevant OECD-DAC criterion
(Timely) provision of counterpart contribution	**Effectiveness**
Delays in awarding and processing	**Effectiveness**
Cost risk	**Efficiency/effectiveness**
Negative (unintended) environmental and social impacts	**Impact**
Insufficient provision of funds for road maintenance	**Sustainability**
Ensuring adequate routine and periodic maintenance of roads	**Sustainability**

Project measures and their results annex

Project	Province	District	Project Road No.	Road Section	Length (Km)	Year of Competion	Remarks
RIP VI	**Salavanh**	Samouay	3.6910	Samouay - Ban Asok	42.20	*2019*	Improvement
		Ta-Oy	5.7226	15B – Ban Toumlikhao	*16.80*	*2017*	Improvement
		Ta-Oy	5.7264	15B Ban Kang – Ban Cholavieng incl. Spot Impr.	*22.20*	*2017*	Improvement
	KM	Ta-Oy	5.7266	15B Ban Lavang – Ban Lahab	*7.64*	*2017*	Improvement
(2015-2019)	91.74	Ta-Oy	5.7202	Ban Kang - Sunn - Thammong	*2.90*	*2017*	Improvement
		Ta-Oy	5.7282	15B Ban Chonamngeun to Cho Kao	*5.70*	*2019*	Improvement
	29.70	Ta-Oy	5.7204	15B Kok Bok to Soytam	*24.00*	*2019*	Improvement
	Bokeo	Houayxai/Paktha/Pha Oudom	Lot 04	RIP Road 1.1, 1.2, 1.3 & 1.8	71.30	2016/17	Maintenance/CCA
		Mueng	Lot 05	RIP Road 2.1, 2.2 & 2.6	82.00	2016	Maintenance/CCA
	Luang Namtha	Nalae	Lot 06	RIP Road 6.1, Soy 3, 6.2a and 6.2	110.80	2016	Maintenance/CCA
	Oudomxai	Pakbeng	Lot 07	RIP Road 8.1	17.60	2016	Maintenance/CCA

Recommendations for operation annex

Some recommendations for the operation of restored project roads were discussed with the project executing agency as part of the local final inspection. The report on the final inspection highlights the following aspects:

- The importance of predictive maintenance and adequate financing for maintaining completed roads was repeatedly highlighted. In particular, this also applies to maintaining axle load checks to avoid damage caused by overloaded heavy goods vehicles and therefore substantial secondary costs. As the provision of funds for periodic and mechanical routine maintenance is still not fully guaranteed, earmarked financing for the maintenance of RIP and RDP roads was discussed for the planned follow-up phase RDP III. As a result, funds would be provided from the Laotian budget and implemented by the MPWT, but at the same time the relevant development partner would be involved in terms of scope and application. For this, the project executing agencies at provincial and district level are to be further strengthened with systematic planning, the awarding of contracts, monitoring, disbursement and documentation. A similar model has been successfully implemented in neighbouring Cambodia for some time. The objective here is initially to ensure maintenance of the previous RIP roads while the FC projects are being implemented and therefore illustrate the benefits of active maintenance to the partner. Beyond the implementation period, the partner must then continue financing independently.
  Implementation: Financing is still problematic and not guaranteed due to the fiscal situation.
- The productivity of the village maintenance committees (VMCs) depends very much on the capacities of the OPWTs. OPWT employees are therefore able to perform their tasks satisfactorily. This also entails, for example, the provision of sufficient funds for petrol and travel costs.
  Implementation: The capacity and motivation of the employees is good, but the financial resources are not sufficient.
- During the implementation of the project, the responsible executing agency wanted to introduce an independent department for local roads; the department's tasks and responsibilities had not yet been fully clarified. Such a department is necessary for the purpose of supprting the provinces in operation, administration, planning and technical issues. Promoting this new department effectively should also be taken into account in future project phases.
  Implementation: This department has not yet been established, but further plans have been made.

Annex: organisation and financing of road maintenance in Laos

In Laos, the condition of the roads at district and provincial level is monitored and reported to the MPWT, which then decides on the work to be carried out.

A road fund is available to the MPWT for financing the maintenance measures. This is managed by the MPWT itself and does not receive any allocations from the Laotian budget. It receives around 95 % of its fuel from a fuel charge of LAK 520 per litre sold, which it receives in full. What is problematic here is that this is a fixed levy amount that is not linked to inflation and has not been adjusted to the (increased) financing requirements in recent years. Income from fuel levies also fell by 14 % from 2017 to 2021. This was due to the declining trend in fuel consumption (-3 % per year). This downturn was already observed before the COVID-19 pandemic and increased even further during the pandemic (2021). However, the downturn in total income was slightly less at 12.8 %, since there was an increase in the road fund's revenue from other sources such as tolls and the auctioning of vehicle registration plates. The increasing efficiency of vehicles in terms of fuel consumption and increased use of electric vehicles suggest revenue will reduce further in the future, provided the (fixed) levy amount is not adjusted.

In addition to the road fund, smaller sums are occasionally provided from the provincial or district budgets for road repairs. Budget allocations are only made from the state budget for emergency repairs (e.g. flood damage). However, according to the authorities responsible, larger funds are needed for these purposes, which would also need to be made available more quickly.

The submitted budgets for periodic and routine maintenance in Salavan Province show that emergency repairs after heavy rainfall have predominated since the project was completed. Payments to the contractors for the services provided are in arrears. At provincial level, this illustrates the increasing amount of damage caused by natural disasters and the challenge of adequately maintaining increasing road assets when maintenance and repair work is structurally underfinanced.

Overall, the financing mechanism needs to be revised. In addition to the increase or adjustment of the fuel levy, the regular collection of the already established vehicle tax and its earmarking for the transport sector would also be expedient here. Transitionally, donor-financed contributions to the road fund and road maintenance would also have to be considered.

Around 90 % of road fund expenditure is on road maintenance, of which 23 % (average 2017–2021) is on local roads, which comprise provincial, regional and rural roads. Falling revenue and expenditure are offsetting the quantitative and qualitative expansion of the road network, leading to significant structural underfinancing of maintenance work. This is exacerbated by inflation and the devaluation of the Laotian currency, the LAK, which has developed exponentially since mid-2020. The borrowing capacity for periodic maintenance measures, which would be required every 5 to 7 years, is limited by the high government debt of 107 % of GDP (2022)[1], around half of which is due to Chinese loans for infrastructure expansion. Servicing the debt is burdening the government budget by an average of USD 1.3 billion[2] p.a. Together with the sharp depreciation in currency (annual loss of 68 % compared to the USD in October 2022) and high inflation of around 40 % at EPE, there is very limited scope for spending on public infrastructure.

Simple, manual routine maintenance of the rural roads (grass cutting, clearing of drains and culverts, backfilling of small gravel potholes, clearing of small landslips, etc.) is carried out quarterly by local residents at village level. They are organised in village maintenance committees (VMCs), which were established as part of the project and trained by the executing agency's training centre (PTTI) and provided with work materials. The VMCs also receive regular guidance and planning support from the district level of the MPWT. The VMC concept proves to be practical in application and seems to have positively influenced the ownership of the target population. Motivation at the EPE was high and the work is carried out regularly. However, this approach can only be complementary to routine machine maintenance, which at regular intervals restores roads to their proper condition after rainy periods. However, this is almost entirely absent due to insufficient budgets at all administrative levels. Irrespective of these difficult framework conditions, both the technical capacities and the motivation of all participants in the road sector turned out to be good at the EPE.

[1] IMF World Economic Outlook 2022
[2] World Bank, Lao Economic Monitor

Evaluation questions in line with OECD-DAC criteria/ex post evaluation matrix annex

Key data sources:

Project completion reports (PCR):
GITEC-IGIP GmbH, 2019, Rural Infrastructure Programme Phase VI (RIP-VI), Final Report On Investment Measures Component (IMC)
GITEC-IGIP GmbH, 2017, Final Report On Training Component

Project monitoring and evaluation (PME) reporting: GITEC-IGIP GmbH, 2022

Project appraisal report (PAR): FZ, 2014

Final inspection: FZ, 2020

Relevance

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / o / +)	Reason for weighting
Evaluation dimension: Policy and priority focus			2	o	
Are the objectives of the programme aligned with the (global, regional and country-specific) policies and priorities, in particular those of the (development policy) partners involved and affected and the BMZ?	Contribution to the DC programme for rural development? Contribution to Laos development strategies/policies in the agriculture/transport sector? Contribution to climate change adaptation strategies?	PA PCR Sector reporting BMZ's new Asian policy – leveraging Asia's dynamics Sector Response Plan of the Lao EU Joint Programming Greater Mekong Subregion Program Laotian climate change strategy			
Do the objectives of the programme take into account the relevant political and institutional framework conditions (e.g. legislation, administrative capacity, actual power structures (including those related to ethnicity, gender, etc.))?		PA PCR Sector reporting			

Evaluation dimension: Focus on needs and capacities of participants and stakeholders			2	o	
Are the programme objectives focused on the developmental needs and capacities of the target group? Was the core problem identified correctly?		PAR Various background literature			
Were the needs and capacities of particularly disadvantaged or vulnerable parts of the target group taken into account (possible differentiation according to age, income, gender, ethnicity, etc.)? How was the target group selected?	How were project measures and thus the target group selected? Were the selection criteria reasonable and appropriate? How were the external effects on those affected taken into account, e.g. accident risks, health risks (dust, noise, etc.)? Special risks for children? Among other things, the project aims to increase participation from women in transport – was this specifically addressed?	PAR Various background literature			
Would the programme (from an ex post perspective) have had other significant gender impact potentials if the concept had been designed differently? (FC-E-specific question)		PAR Various background literature			
Evaluation dimension: Appropriateness of design			2	o	
Was the design of the programme appropriate and realistic (technically, organisationally and financially) and in principle suitable for contributing to solving the core problem?	What capacities did the government and the project-executing agency have during the appraisal? Was the planned set-up of the VMCs realistic and did they adapt to the capacities?	PAR			

	Was the application of Laotian road construction standards appropriate for climate resilience?	
Is the programme design sufficiently precise and plausible (transparency and verifiability of the target system and the underlying impact assumptions)?		PAR
Please describe the results chain, incl. complementary measures, if necessary in the form of a graphical representation. Is this plausible? As well as specifying the original and, if necessary, adjusted target system, taking into account the impact levels (outcome and impact). The (adjusted) target system can also be displayed graphically. (FC-E-specific question)		PAR
To what extent is the design of the programme based on a holistic approach to sustainable development (interplay of the social, environmental and economic dimensions of sustainability)?	Is the promotion of road and market infrastructure embedded in a holistic sustainability concept?	PAR
For projects within the scope of DC programmes: is the programme, based on its design, suitable for achieving the objectives of the DC programme? To what extent is the impact level of the FC module meaningfully linked to the DC programme (e.g. outcome impact or output outcome)? (FC-E-specific question)		PAR

Evaluation dimension: Response to changes/adaptability				o	No changes
Has the programme been adapted in the course of its implementation due to changed framework conditions (risks and potential)?	Did the climate project risks change during implementation and, if so, was this taken into account?	PME climate analyses			

Coherence

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / o / +)	Reason for weighting
Evaluation dimension: Internal coherence (division of tasks and synergies within German development cooperation):			2	-	The measures of the DC programme are capital-intensive, so there was no strong division of labour/complementary overlap with other instruments from the German DC
To what extent is the programme designed in a complementary and collaborative manner within the German development cooperation (e.g. integration into DC programme, country/sector strategy)?	Does the promotion of rural development complement the various programmes (TC/FC)? Which TC project did/does the project complement?	DC programme Reporting Part A			
Do the instruments of the German development cooperation dovetail in a conceptually meaningful way, and are synergies put to use?	Which TC project did/does the project complement?	Reporting Part A			
Is the programme consistent with international norms and standards to which the		PAR			

German development cooperation is committed (e.g. human rights, Paris Climate Agreement, etc.)?					
Evaluation dimension: External coherence (complementarity and coordination with actors external to German DC):			2	+	By concentrating the German DC on transport routes, complementary overlap with other development measures takes on a special level of importance.
To what extent does the programme complement and support the partner's own efforts (subsidiarity principle)?	What is the political priority of land-based transport in Laos and what efforts have been made to improve it? To what extent did the programme complement the pooling of social and public services in the so-called "Kumban centres"? Were efforts made to connect the local residents on the refurbished roads to the electricity grid and improve the water supply? What complementary rural development programmes were there for the target group to increase agricultural productivity and income diversification? How has the range of secondary education changed and is it needs-oriented?	PAR Literature research			
Is the design of the programme and its implementation coordinated with the activities of other donors?	How did/does donor coordination take place in Laos?	PAR			

Was the programme designed to use the existing systems and structures (of partners/other donors/international organisations) for the implementation of its activities and to what extent are these used?	Was there a PIU structure from other donors that was also used or replicated?	PAR
Are common systems (of partners/other donors/international organisations) used for monitoring/evaluation, learning and accountability?	Is there a central monitoring/planning/budgeting tool?	PAR Literature research

Effectiveness

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / o / +)	Reason for weighting
Evaluation dimension: Achievement of (intended) targets:			2	+	Exceedence and trend reversal that has already occurred to some extent
Were the (if necessary, adjusted) objectives of the programme (incl. capacity development measures) achieved? Table of indicators: Comparison of actual/target	--	PME			
Evaluation dimension: Contribution to achieving objectives:			2	+	Exceedence and trend reversal that has already occurred to some extent

To what extent were the outputs of the programme delivered as planned (or adapted to new developments)? *(Learning/help question)*	What services were provided in the province of Salavan? What concrete measures were carried out for the component “Maintenance and climate adaptation of previous RIP roads”? Were training measures carried out by PTTI? How many courses/participants (see basic and advanced training indicators in the PP Appendix 6)?	PBA PCR
Are the outputs provided and the capacities created used?	See indicators Additionally: Were the objectives of the basic and advanced training measure achieved? How were the basic and advanced training courses received?	PME EPE interviews and site visits
To what extent is equal access to the outputs provided and the capacities created guaranteed (e.g. non-discriminatory, physically accessible, financially affordable, qualitatively, socially and culturally acceptable)?	Is there a sufficient and affordable range of public transport services? Are public transport services used by everyone (and compatible with traditions)? Are the transport prices also affordable for persons on low incomes?	PME EPE interviews and site visits
To what extent did the programme contribute to achieving the objectives?	Additionally: Is the infrastructure used by all sections of the population?	PCR PCR PME EPE interviews and site visits
To what extent did the programme contribute to achieving the objectives at the level of the intended beneficiaries?	What role do ethnic differences play here?	FC reporting PCR PME EPE interviews and site visits
Did the programme contribute to the achievement of objectives at		Project completion report PCR

the level of the particularly disadvantaged or vulnerable groups involved and affected (potential differentiation according to age, income, gender, ethnicity, etc.)?		PME EPE interviews and site visits			
Were there measures that specifically addressed gender impact potential (e.g. through the involvement of women in project committees, water committees, use of social workers for women, etc.)? (FC-E-specific question)		PCR PME			
Which project-internal factors (technical, organisational or financial) were decisive for the achievement or non-achievement of the intended objectives of the programme? *(Learning/help question)*	Did the project-executing agency implement the project effectively? What role did the counterpart contribution play in motivating the project-executing agencies? How is the consultant's contribution to be evaluated?	EPE interviews and site visits PCR PCR			
Which external factors were decisive for the achievement or non-achievement of the intended objectives of the programme (also taking into account the risks anticipated beforehand)? *(Learning/help question)*	Was there broad support at local level?	EPE interviews and site visits PCR PCR PME			
Evaluation dimension: Quality of implementation			2	o	
How is the quality of the management and implementation of the programme to be evaluated with regard to the achievement of objectives?	How is the quality of the construction measures (expansion, rehabilitation and building) to be evaluated? How is the quality of the component "Maintenance and climate adaptation of previous RIP roads" to be evaluated?	EPE interviews and site visits PCR PCR PME			

	How is the quality of implementation by the local construction companies to be evaluated? Could a better quality have been achieved with an international construction company?				
How is the quality of the management, implementation and participation in the programme by the partners/sponsors evaluated?		EPE interviews and site visits PCR PCR			
Were gender results and relevant risks in/through the project (gender-based violence, e.g. in the context of infrastructure or empowerment projects) regularly monitored or otherwise taken into account during implementation? Have corresponding measures (e.g. as part of a CM) been implemented in a timely manner? (FC-E-specific question)		PME			
Evaluation dimension: Unintended consequences (positive or negative)			2	O	
Can unintended positive/negative direct impacts (social, economic, ecological and, where applicable, those affecting vulnerable groups) be seen (or are they foreseeable)?	Are there any direct adverse effects from the improved road connections with remote regions? Has heavy goods traffic increased? Were there adverse effects from use by heavy goods traffic, noise, dust or wear to the road? Are there axle load checks or other countermeasures (operating recommendation from the FI)? Were there more accidents? What is the environmental impact (waste, used oil, etc.)?	EPE interviews and site visits PCR			

	Have additional jobs been created in centres/factories or larger agricultural businesses?	
What potential/risks arise from the positive/negative unintended effects and how should they be evaluated?		EPE interviews and site visits PCR
How did the programme respond to the potential/risks of the positive/negative unintended effects?		EPE interviews and site visits

Efficiency

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / o / +)	Reason for weighting
Evaluation dimension: Production efficiency			1	o	
How are the inputs (financial and material resources) of the programme distributed (e.g. by instruments, sectors, sub-measures, also taking into account the cost contributions of the partners/executing agency/other participants and affected parties, etc.)? (Learning and help question)	Do the specific investment costs equate to the local standard, comparison with estimated costs in the PP and neighbouring countries Vietnam and Cambodia? How high were the costs for the market? Was the outstanding Laotian counterpart contribution paid on the final inspection? According to the PP (TC 3.09), the joint financing of periodic and mechanical maintenance was to be piloted on selected former RIP roads. Did this happen? Did the more favourable spec. costs lead to compromises in quality?	PCR			

	Is it plausible that, compared to the government projects, the lower spec. costs can be attributed to good reputation and better payment guarantees (FR TC 3.03)?				
To what extent were the inputs of the programme used sparingly in relation to the outputs produced (products, capital goods and services) (if possible in a comparison with data from other evaluations of a region, sector, etc.)? For example, comparison of specific costs.		PCR PME			
If necessary, as a complementary perspective: To what extent could the outputs of the programme have been increased by an alternative use of inputs (if possible in a comparison with data from other evaluations of a region, sector, etc.)?	Were the measures/design of the "Maintenance and climate adaptation of previous RIP roads" component adequate or were there more efficient measures?	EPE interviews (sector team, TE) Other EPE from Laos and Cambodia			
Were the outputs produced on time and within the planned period?		PCR PCR			
Were the coordination and management costs reasonable (e.g. implementation consultant's cost component)? (FC-E-specific question)		PCR PCR			
Evaluation dimension: Allocation efficiency			2	o	
In what other ways and at what costs could the effects achieved (outcome/impact) have been attained? *(Learning/help question)*	Similar to other EPE: how useful were the outputs? Can a corresponding allocation efficiency be plausibly concluded from them?	PCR PCR			

To what extent could the effects achieved have been attained in a more cost-effective manner, compared with an alternatively designed programme?	What criteria were used to determine which roads are implemented as gravel roads and which ones are sealed? Was sealing the 82 km of road useful? Would there have been cost-saving measures/a design from the component "Maintenance and climate adaptation of previous RIP roads"? (see production efficiency above)	PCR PCR
If necessary, as a complementary perspective: To what extent could the positive effects have been increased with the resources available, compared to an alternatively designed programme?	Was the selection mechanism (PP TC 3.11) efficient in terms of the greatest possible impact with the resources available? How do you assess the economic development potential of the target group? Would a more comprehensive rural development programme with roads, education, water, health and a smaller target group have been better?	EPE interviews and site visits

Impact

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / o / +)	Reason for weighting
Evaluation dimension: Overarching developmental changes (intended)			1	-	Not influenced by the project
Is it possible to identify overarching developmental changes to which the programme should contribute? (Or if foreseeable, please be as specific as possible in terms of time.)	Have the socio-economic living conditions in Laos improved? Can an evolution towards commercial agriculture be seen?	EPE interviews and site visits PME PCR			
Is it possible to identify overarching developmental changes (social, economic, environmental and their	Have the socio-economic living conditions in Laos also improved for the intended beneficiaries?	EPE interviews and site visits PME PCR			

interactions) at the level of the intended beneficiaries? (Or if foreseeable, please be as specific as possible in terms of time).					
To what extent can overarching developmental changes be identified at the level of particularly disadvantaged or vulnerable parts of the target group to which the programme should contribute? (Or, if foreseeable, please be as specific as possible in terms of time).	Have the socio-economic living conditions of disadvantaged population groups developed differently from those of other beneficiaries? Is the greater social participation of minorities and remote villages anticipated in PP TC 3.39 plausible?	EPE interviews and site visits PME PCR			
Evaluation dimension: Contribution to overarching developmental changes (intended)			1	o	
To what extent did the programme actually contribute to the identified or foreseeable overarching developmental changes (also taking into account the political stability) to which the programme should contribute?		EPE interviews and site visits PME PCR			
To what extent did the programme achieve its intended (possibly adjusted) developmental objectives? In other words, are the project impacts sufficiently tangible not only at outcome level, but at impact level? (e.g. drinking water supply/health effects)	Did the project contribute to the commercialisation of agriculture? Did the market contribute to this?	EPE interviews and site visits PME PCR			
Did the programme contribute to achieving its (possibly adjusted)	Is it plausible that the 10% increase in the population according to the final inspection can be attributed to the improvement in living conditions?	EPE interviews and site visits PME PCR			

developmental objectives at the level of the intended beneficiaries?		
Has the programme contributed to overarching developmental changes or changes in life situations at the level of particularly disadvantaged or vulnerable parts of the target group (potential differentiation according to age, income, gender, ethnicity, etc.) to which the programme was intended to contribute?	Improvement in the mobility and life situation of women in particular should be scrutinised during the EPE (e.g. mobility, visit to health stations, births with support from the health care system, economic participation). Have the life situations of disadvantaged population groups in the project area developed differently to those of other beneficiaries? Do the incomes of poor sections of the population increase disproportionately?	EPE interviews and site visits PME PCR *(The Lao Theung (the midland Lao) in rural areas make up the entire group of beneficiaries and development has been economically weaker. No further subdivision can be made here.* *Due to the large proportion of poor people in the target group, no further differentiation is possible.)*
Which project-internal factors (technical, organisational or financial) were decisive for the achievement or non-achievement of the intended developmental objectives of the programme? *(Learning/help question)*	Do the selected roads have the network character intended in PP TC 3.04? Does the market make a tangible contribution at the local level?	EPE interviews and site visits PME PCR
Which external factors were decisive for the achievement or non-achievement of the intended developmental objectives of the programme? *(Learning/help question)*	Were there other development measures in the catchment area of the project/project roads, such as electrification, expansion of capacity and staff in the socio-economic infrastructure (e.g. school construction and more teachers, construction of health stations or use of specific health personnel, promotional programmes for agriculture and marketing – or have markets been established)?	EPE interviews and site visits PME PCR
Does the project have a broad-based impact? - To what extent has the programme led to structural or institutional changes (e.g.in	Did the implementation of the FC measure and its predecessor and parallel projects have structural effects on the executing agencies?	EPE interviews and site visits PCR

organisations, systems and regulations)? (Structure formation) - Was the programme exemplary and/or broadly effective and is it reproducible? (Model character)	Has the project anchored the structure of the VMCs sustainably and will this continue to be used? Have the basic and advanced training measures contributed to institutional/structural changes?				
How would the development have gone without the programme? (Learning and help question)	What course would income development, reduction in poverty and changes in living conditions have taken without the influence of the programmes? Would the maintenance and climate adaptation measures have been feasible in the north even without the programme?	EPE interviews and site visits PME			
Evaluation dimension: Contribution to (unintended) overarching developmental changes			-	o	None noted
To what extent can unintended overarching developmental changes (also taking into account political stability) be identified (or, if foreseeable, please be as specific as possible in terms of time)?		EPE interviews and site visits FC reporting			
Did the programme noticeably or foreseeably contribute to unintended (positive and/or negative) overarching developmental impacts?	How is increased mobility assessed, for example? Is there problematic immigration or emigration, displacement, relocation or similar? Which (larger) economic projects were made possible by the infrastructure and who benefited from them or were disadvantaged as a result? What effects do changes in the value of land have as a result of the infrastructure?	EPE interviews and site visits FC reporting			

	Has heavy goods traffic increased on the roads? Are there axle load checks or other countermeasures (operating recommendation from the FI)?	
Did the programme noticeably (or foreseeably) contribute to unintended (positive or negative) overarching developmental changes at the level of particularly disadvantaged or vulnerable groups (within or outside the target group) (do no harm, e.g. no strengthening of inequality (gender/ethnicity))?	Was the development at the level of particularly disadvantaged or vulnerable groups different from that of other beneficiaries?	EPE interviews and site visits FC reporting

Sustainability

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / o / +)	Reason for weighting
Evaluation dimension: Capacities of participants and stakeholders			3	-	
Are the target group, executing agencies and partners institutionally, personally and financially able and willing (ownership) to maintain the positive effects of the programme over time (after the end of the promotion)?	Is necessary maintenance work carried out? Is the budget sufficient? What sources are there for the maintenance budget (public budget, RMF, others – see PP TC 3.24)? Can an increasing trend in the maintenance budget be seen (central/decentralised)? How have the maintenance budget (at national and decentralised level) and RMF developed (as well as the amounts planned for rural routes)?	EPE interviews and site visits EPE data evaluation PCR			

	Has the institutional organisation been sufficiently clarified? Are there enough staff? What is the staff situation/turnover like at provincial/local level? Were the staff trained as part of the basic and advanced training and subsequently by PTTI? VMCs: - Were they trained (by PTTI)? - Do you actually perform maintenance? - Only in the vicinity of the village or in more remote sections (possibly problematic according to PV TC 3.23)? - In the case of several VMCs, is responsibility organised/allocated along the road? - Are they monitored and guided by executing agencies? Is the executing agency able to provide guidance? - - Do they receive the agreed consumables (tools, materials, fuel, etc.)?	
To what extent do the target group, executing agencies and partners demonstrate resilience to future risks that could jeopardise the impact of the programme?	How is the design assessed in terms of sustainability and climate change? How significant is the design for gravel roads/partially sealed and fully sealed roads in terms of sustainability? Does the executing agency have adequate technical training with regard to climate adaptation construction? How has the provision of the maintenance budget (central/decentralised) developed in view of the difficult budget situation and the expansion of the road infrastructure? (see longevity of effects below)	EPE interviews and site visits EPE data evaluation PCR

Evaluation dimension: Contribution to supporting sustainable capacities:			3	o	
Did the programme contribute to the target group, executing agencies and partners being institutionally, personally and financially able and willing (ownership) to maintain the positive effects of the programme over time and, where necessary, to curb negative effects?	In particular: What impacts did long-term sectoral exposure have on capacities? Additionally: How are the effects of the basic and advanced training measure estimated today?	EPE interviews and site visits to the project-executing agency PCR PBE (final report, basic and advanced training measure)			
Did the programme contribute to strengthening the resilience of the target group, executing agencies and partners to risks that could jeopardise the effects of the programme?	Has climate resilience and the quality of maintenance improved?	EPE interviews and site visits PCR			
Did the programme contribute to strengthening the resilience of particularly disadvantaged groups to risks that could jeopardise the effects of the programme?	Has climate resilience improved?	EPE interviews and site visits PCR			
Evaluation dimension: Durability of impacts over time			3		
How stable is the context of the programme (e.g. social justice, economic performance, political stability, environmental balance)? (*Learning/help question*)	Possibly: What effects does a possible shift from subsistence farming to cash crops have on farmers' security of food supply and resilience? How stable is the adequate provision of funds for maintenance in the face of increasing maintenance costs due to growth in the road infrastructure and the critical budget situation? (Noticable trend?)	EPE interviews and site visits to the project-executing agency PCR			

	What additional risks result from the effects of climate change?	
To what extent is the durability of the positive effects of the programme influenced by the context? *(Learning/help question)*	What role do relations with neighbouring countries play, if any? What are the relevant political changes in Laos? What role or future do political programmes have in promoting decentralisation and the political sphere? Were there major investments (plantations, factories, coal mines, dams, etc.) that jeopardise sustainability due to overuse of the roads? Importance of axle load checks or other countermeasures (operating recommendation from the FI)?	EPE interviews and site visits PCR PME
To what extent are the positive and, where applicable, the negative effects of the programme likely to be long-lasting?		EPE interviews and site visits PCR PME