

Project Ex Post Evaluation
Rural Roads Improvement Project II, 2014-2023
Cambodia

Country: Kingdom of Cambodia	Sector: Agriculture, Rural Development and Biodiversity
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Validation date of evaluation report: December 2025	

Project number: CKH1152
Contracting authority: Ministry of Rural Development of the Royal Government of the Kingdom of Cambodia,
Amount: AFD € 35 million loan (Overall project cost ~€168.9 million) Single disbursement,
Disbursement rate: 18/2/2015 AFD Board approval.
Commitment date: 19/5/ 2015 Loan Agreement.
Completion date(=): 30/9/2023 (financial closure).



Project Objectives

Outcome: A safe, climate-resilient, and cost-effective rural road network that provides all-year access in agricultural areas of ten project provinces.

Impact: Improved access to markets, jobs, and social services for at least 1,000,000 people across ten provinces.

Objectives/ Outputs:

1. Rural Road Improvements across parts of ten provinces
2. Strengthened capacities for rural roads asset management.
3. Rural road safety and community awareness program (on HIV/AIDS and human trafficking)
4. Efficient project management
5. Enhanced Mekong River Island Connectivity

Conclusions of the Evaluation

The Rural Roads Improvement Project II (RRIP-II) was the second of three RRIP projects undertaken in Cambodia between 2010 and 2025. RRIP II (2014-2023) was designed as an ambitious multisectoral project with five primary outputs, centred around upgrading and climate proofing 1,200km of rural roads infrastructure across 10 provinces including five islands on the Mekong River in Cambodia. RRIP II Project implementation ended in December 2022 and was financially closed in 2023. The project rehabilitated and paved 1,286km of rural roads, across ~120 sections, (~1,180km were sealed with double bituminous surfaced treatment (DBST), and ~106km were concrete roads). 88% of the US\$192.49 (~€168.9 million) provided for the project from multiple sources¹ was invested in rural road improvements. These improvements have contributed to improved livelihoods for at least 1.5 million people living in 155 communes traversed by the improved climate resilient roads.

Surveyed project beneficiaries in villages and communes along the rehabilitated and upgraded project rural road sections, reported an average 45% increase in household incomes, compared to the pre-project situation. With 30% of households reporting household income increases of more than 50% from business and livelihood activities, or improvements in access to employment opportunities attributed to the project improved roads.

83% of project beneficiaries surveyed reported improvements in access to health, education, and other services with average travelling time of nine minutes compared to 24 minutes according to the project baseline. Significant improvements were also reported made in accessing district centre services including referral hospitals, with trip times cut in half.

The four other project components had also made progress towards their assigned performance indicators. However, these indicators were frequently easily achievable or poorly phrased and often did not effectively reflect the activities to be undertaken under the components.

- Road infrastructure achievements did not reach initial project quality expectations, as the rehabilitated and upgraded rural roads remain at risk from a combination of:

¹ Project financing and support came from Agence Française de Développement (AFD); the Asian Development Bank (ADB); The Government of Australia; the Export-Import Bank of Korea (KoEXIM); Nordic Development Funds (NDF) and Strategic Climate Funds (SCF) of the (global) Climate Investment Fund (CIF).

- i. **Deficiencies of the applied now dated technical designs² and specification in the absence of statutory minimum technical requirements especially for T1 and T2 categories of rural roads³ at the time of project implementation**, especially with regard, the absence roadside drainage and runoff channels for the rural roads. The applied specifications were based on a previous project's guidance (in the 2,000's). The timing of and application of geotechnical testing during the three phases of detailed designing for each road section (2015/2016, 2016-2017, 2020) were also deficient, being too spread out⁴ to give a true insight into the needed loading bearing capacities of existing ground conditions along project roads.
- ii. These resulted in **rehabilitated project roads having structural deficiencies, often unable to carry the increasing loads being transported on them**, as improved rural roads often attracted heavier vehicles diverting to them to avoid weight stations on national roads which hastened deterioration on some road sections. The area of greatest deficiency is likely in the road subgrade/embankments, on top of which the project climate-resilient paving double bitumen sealed surface treatment (DBST) or concrete paving was installed. This resulted in more rapid road deformation and pavement breakup on many of the observed roads. As DBST paving is susceptible to rapidly fail if supporting road structures are deficient or if regularly monitoring and needed maintenance is not promptly undertaken to seal cracks and tackle potholing.
- iii. **Inadequate road shoulders in terms of size and quality**: The project had required that road shoulders should be sealed (a target of the project's gender action plan) with this requirement mentioned in the phased detailed design reports for the civil works. The decision to only use laterite soil on the road shoulders reduced the paved area of project roads. Wider road shoulders were and are a frequent demanded by residents and sub national authorities in districts and communes along project roads. The limited paved width of project roads and the lack of maintenance on road shoulders have raised road safety concerns due to the volumes and types of traffic using project roads forcing residents off the roads.
- iv. **The lack of road-side drainage and runoff channel consideration** in the phased project road designs has resulted in standing water and pooling on the side of some of the paved section roads. This has and is affecting the road base as the water percolates into and negatively affects the road structure, hastening deterioration of project supported road, with this 'pooling' often occurring at the interface of the paved/sealed road surface and the unsealed road shoulders.
 - Project supported objectives for rural road maintenance and sustainability is questioned. While national budget allocations for rural road maintenance provided to the Ministry of Rural Development has increased and achieved the target (US\$14.46 million for 2023 which would equate to ~US\$320 per km for the reported 45,4211km of the national rural road network, its use and application are concentrated at national level. The provincial allocations to PDRDs is insufficient for them to pro-rata cover their provincial rural road portfolios, causing PDRDs to prioritize only those rural roads in greatest need, let alone "project roads" (a project target) unless they have structurally failed.
 - The efficiency of supported tools and initiative such as the rural road asset management system (RRAMS), and the piloting of the ambitious output and performance- based contract (OPBC) and axle load (overload) control (ALC) activities were unsatisfactory as they suffered from under scaling and time framing. The RRAMS is centralized at the national level and is infrequently updated, as provincial departments of rural development (PDRDs) and district administrations have little to no resources to regularly monitor their provincial rural road networks. Nor can they update the system, as gathered data must be sent to the Ministry for reviewing, loading, and updating later. While the OPBC concept has great potential, it was poorly supported and not being effectively taken up or mainstreaming.
 - The project supported the establishment, equipping and training of several teams from the ministry to undertake axle load control activities. However, the sustainability and effectivity of the actions undertaken on overloading vehicle control are still to be demonstrated, as fragmented legal and regulatory issues and gaps persist and hinder effective action on the impacts of overloaded vehicles on rural roads.
 - Rural road overloading control needs to be delivered locally to be sustainable, which it is not. Additionally, multiple stakeholders noted that they required an effective and practical regulatory framework for rural road overloading control which is lacking (as what exists does not work). This will require an interministerial approach to delegate and enable combined actions by police and subnational authorities to enable and ensure enforcement against overloaded vehicles.

² Initially developed and proposed in the mid-2000s, but never formally adopted by the Ministry a rural road standard.

³ The Cambodian Ministry of Rural Development (MRD) categories rural roads into four categories T1-T4, with T1 Rural Roads connecting areas with national or provincial roads or linking provincial and districts centres. T2 rural roads connect Municipal or districts centre with commune centre, T3 connect communes with each other, while T4 rural roads connect communes with villages, or are roads within villages.

⁴ It was reported and found that geotechnical testing was one per 6.5km of road for the first phase, 1 per 5km for the second phase, while for the third phase it was 1 per 2km.

- The innovative OPBC approach was to be applied to at least one civil works (contract) package (CW) later increased to two packages, after the AFD financing was mobilised. By the end of the project, eleven road sections in two provinces under the two civil works packages covering 216 km of project roads. However, one of the project consultants pointed out that only US\$9/km per year was allocated for the OPBC component of the roads contract under CW14 and its duration was too short only adding 12 -24 month when ideally a 60month period should be considered to cover up to one period of periodic maintenance.
- The two social/community-based subcomponents were incorporated into the project; the road safety and HIV/AIDS and Human Trafficking Awareness Prevention (HHTAP) subcomponents were delivered but likely had limited long-term impacts. While the HHTAP did engage with over 380,000 people along project roads (59% female), other reported beneficiaries are just cumulative counting of the same people, while there was a project reported population of 1.5 million in the communes traversed by the project supported roads across the ten provinces.

The road safety programme “barely got out of the office”. It only engaged about 60,000 people (44% female). While the component consultants did deliver a wealth of data and design inputs including on safe school zones, it is unclear whether they were incorporated into for first two rounds of detailed road designs⁵ as these were completed by the time the component consultants were mobilized (September 2017). Overall, this did not result in significant community or school engagement along project roads, as road crashes and issues of persistent poor road behaviour were frequently commented upon by project stakeholders and surveyed households.

- The road crash rate was a poorly framed indicator and not aligning with national and international Sustainable Development Goals (SDG) frameworks and resulting mortality and morbidity were not effectively considered. Overall findings/ results are likely counter intuitive. As the incidence of crashes has increased, as have resulting road deaths which was mentioned by responsible local stakeholders. A common occurrence of rural road improvement projects as improved roads changes behaviours, increase driving speeds, volumes, and types of traffic on improved road so more crashes and resulting injuries and deaths are occurring. On multiple roads observed, the road and cross drainage infrastructure were not widened enough or lit at night which has contributed to reports of multiple crashes at the narrowed sections of project roads, particularly at night.
- Overall, there is an urgent need for rural road sector reform to clarify who is doing what, where, how, with what resources. As multiple government and subnational actors have been mandated to operate in some activities for rural roads, but the share of responsibilities remains unclear. The current build/rehabilitate, neglect and repeat practices are not sustainable, and shouldn't be allowed to continue, as constructed rural road are not reaching their design life often due to the lack of effective planning and delivery of rural road maintenance services, which place significant budgetary/ financing demands and constraint on the economy.

Rationale, Objectives and Methodology of the Evaluation

The (ex-post) evaluation was launched in May 2025 to provide Agence Française de Développement (AFD), the Royal Government of the Kingdom of Cambodia and its Ministry of Rural Development's Rural Road Department and other stakeholders with key lessons learnt from the implementation of the Second Rural Roads Improvement Project (RRIP2) and its impacts. The aim of the ex-post evaluation was to contribute to ensuring the sustainability of rehabilitated rural roads, in the context of other rural infrastructures projects supported by AFD in particular the Rural Infrastructure Development Programme for Cambodia (RID4CAM) project. The stated expectations for the ex-post evaluation were focused on the

- Quality of the road rehabilitated: technical design, quality of the work supervision.
- Capacity of local and international contractors to successfully complete assigned tasks.
- Involvement of the technical office for rural roads of MRD's provincial departments in road selection, follow-up rehabilitation, technical advice, maintenance, and overload prevention.
- Factors that have led to increased incidents road traffic crashes: drivers' behaviour (speed, alcohol consumption, awareness campaign etc.) and road technical design/construction (road of less than 3.5 m of carriageway, narrow bridge, safety sign, etc.).
- Financing of the maintenance of road: budgetary and technical issues.

The ex-post evaluation diverged from standard international development evaluations defined by the Organisation for Economic Cooperation and Development (OECD) Development Assistance Committee's (DAC) development evaluation framework of; relevance, coherence, effectiveness, efficiency, impact and sustainability, and its guiding principles, as these have been partially reported upon by others (ADB). The ex-post evaluation was to address five key questions posed by AFD in the terms of reference these are summarized as:

⁵ By project end exemplary school safety zone (traffic calming) were installed for 10 schools across five project provinces with five schools in one province.

1. The relevance of the project's dimensioning;
2. The Project's operating modes and management: were the operating modes and intervention methodologies adapted to the project's objectives?
3. Have the resources been provided or made available by all responsible parties within the desired timeframe so that the planned activities can be carried out, at the planned cost (or lower cost)?
4. What level of sustainability can be expected both from the funded infrastructures and the implemented processes?
5. To what extent have the objectives of the intervention been achieved?

Evaluation Methodology

A team of local professionals were commissioned to undertake the evaluation, they proposed and employed a mixed methods approach to gather and garner information and insights from project beneficiaries and stakeholders to validate and qualify the reported project targets and achievements or progress toward these. The applied approach included:

- **A Desktop Review:** Analysing publicly available and provided project documents, technical designs, quarterly and component reports, financial audits, and consultant completion reports.
- **A Rural Road Visual Technical Assessment of 28 (21 selected + seven additional road sections) out of 120 rural road sections⁶ across nine of the project's 10 provinces were undertaken.** These spanned ~430km of the 1,286kms of rural roads paved by the project, representing both DBST and concrete roads, the timing of their project implementation between 2016-2022, and their geographical spacing across the provinces. The team also reviewed the project supported interventions on the five targeted Mekong River islands (one health centre, 450 household latrines, the rehabilitation of fifteen existing irrigation ponds, 15 demonstration household biogas digesters, 40 solar pump and 20 irrigation systems). The rural roads assessment component also used the findings from the innovative 'road lab pro' smart application⁷, to gather international (road) roughness index (IRI) data on travelled road sections, which can be used to monitor road section quality.
- **Key Informant Interviews (KIIs):** were undertaken with the Ministry of Rural Development, the Ministry of Interior responsible for subnational administrations, nine Provincial Departments of Rural Development (PDRDs), Supporting development partners (the Asian Development Bank (ADB), the Government of Australia (GoA), the Republic of Korea (via KoEXIM), the Nordic Development Fund (NDF), the Strategic Climate Fund (SCF) of the Climate Investment Fund (CIF), and the Royal Government of Cambodia (RGC) were also consulted.
- **(Focus) Group Discussions (FGDs)** were conducted at multiple administrative levels, representatives from district and commune administrations were involved. The group discussions often involving other local stakeholders' including from Operational (Health) Districts (ODs), district traffic police units, representatives of district Economic and Community Development Office (ECDOs), responsible for assigned rural development functions and activities including for rural roads. Representatives from project road-side schools, and commune health clinics also participated in some commune discussions. In all, 12 District Administrations and 17 Commune Administrations were consulted, across nine of the 10 project provinces. FGDs were also organised and undertaken with nine of 10 provincial departments of rural developments (PDRDs).
- **Beneficiary Household Survey:** A statistically representative survey of 412 households was undertaken along the 21 sampled road sections⁸ and visited Mekong islands (three of five), to represent the reported 1.5 million population (PEC 2021) (~ 357,143 households) in communes traversed by all the project roads. The survey was undertaken to ascertain the impacts of the project roads on beneficiary communities, and covered household perceptions of their economic status and changes in these, road benefits, changes in access to social and other services, maintenance, employment, and participation in awareness programmes supported or changed by the project.

Initial Project Logic and Actual Implementation

The Second Rural Roads Improvement Project (RRIP-II) emerged out of the growing need to hasten and expand the social and economic development of Cambodia, as it transitioned from a decade of development relief assistance to a growing

⁶ Asian Development Bank's project completion reports erroneously reported 142 road sections completed, when only 120 were completed as table 4.6. 3, indicated a total 86 road sections completed due to 49 road against the actual 27 on the Mekong Islands the cumulative figure was 64.

⁷ Road Lab Pro is an innovative smart application to gather road roughness data; it was developed by the World Bank in collaboration with private sector research institutions to operate on smart mobile devices.

⁸ The survey was undertaken on 21 road sections, seven additional road sections were only reviewed technically, as they were close to or connected to sampled road sections.

stable economy with a rapidly growing population. The country was and remains categorized (till 2029) as a Least Developed Country (LDC) and eligible for international development assistance and concessional financing. At the time of project's conception, limited and dilapidated rural infrastructure following two decades of conflicts had been recognised as a continuing significant barrier to poverty alleviation and development objectives. Peace and national reconciliation brought by the 1991 Paris Peace Accords had succeed. The fact that national level infrastructure connecting the provinces and the country to the region had been progressively restored in the 1990s and early 2000s.

However, rural areas and infrastructure, lagged and were falling further behind urban and a few growth areas. Previous emergency rehabilitation of rural transport networks and infrastructure were also starting to deteriorate. This situation was compounded by (i) challenges in mobilising investments and financing for rural infrastructure, and (ii) continuing deficiencies and weaknesses in institutional staffing and capacities for rural roads planning, management, operations, and maintenance. The deterioration of rural transport infrastructure was being intensified by increasing traffic volumes and changes in vehicle types using rural roads. In response to these needs and requests from the Government of Cambodia, development partners expanded their support for the rural transportation and development sectors and enable access to parallel investments being made in social and economic infrastructure.

RRIP-II evolved out of and expanded the coverage of the first phase of Rural Roads Improvement Project (RRIP-I) which had been developed in the late 2000s and implemented across seven provinces between 2010 and 2016. It replicated and built on these experiences and was intended to be a more ambitious rural transportation infrastructure and development project including climate resilience and social impacts. The project was initially planned to rehabilitate and pave 1,200km of rural roads, later scaled back to 729 km because of delays in mobilizing financing resources. The project progressively brought together concessional loans and grant funding from a wide range of development partners coordinated by the ADB which returned the project target to 1,200km of rural roads rehabilitated and upgraded.

The project was design was coordinated by the ADB, with their project framework, formats, and approaches used including the use of a (i) financing agreement incorporating a binding Design Monitoring Framework (DMF) and (ii) parallel gender action plan (GAP). The DMF contained 16+1 performance indicators to be progressively reported upon and achieved (see table 3). The additional indicator was the project amendment to increase the total project beneficiaries to 1,000,000 people. Overall, the project was developed around five component outputs (OPs).

Table 1 RRIP-II, Original and Revised Project Component Summaries

OPs	Name	Description
1	Rural road improvements	This was the project's main activity and involved the rehabilitation and upgrading of 120 selected rural roads. The project reprofiled selected roads, replacing or adding (a limited number of) road crossing drainage structures (bridges and culverts). It added 300-400mm of crushed stone aggregate to enable the installation of the all-weather paving mainly double bitumen sealed treatment (DBST) on 92% of the roads or concrete on 8% of the roads. It also financed (i) the 'green planting' sub-component which involved grassing and planting of trees on road verges and embankments to stabilise and reduce flood erosion and dust generation on along the roads, as part of the project climate resilient approach. (ii) the detailed design and implementation supervision costs to support the project.
2	Rural road asset management	This was envisaged as a technical assistance and capacity building component: It continued to enhance MRDs rural road asset management activities initiated under RRIP-I (2010-2016). Contributed to updating and digitizing MRD's existing road asset management data for its geographical information system (GIS). The project was also intended to strengthen the ministry and its provincial departments of rural developments (PDRD) on the use of the rural road asset management information system and related capacities to enhance MRD's rural road maintenance planning and investments roles and activities. This component also supported MRD to establish, equip, and capacitate a planned seven teams for vehicle overloading prevention (through axle load control). The component was also intended to build MRD's capacities to reduce the use of 'force account' (undertaking the work themselves) practices. One of the component indicators was to increase the annual operation and maintenance budget for project roads from a benchmarked \$268 per km in 2013 to \$310/km by 2020.
3	Rural road safety & community awareness program	This component was made up of two sets of activities, providing support for: (i) Evolving the community-based road safety awareness programme activities initiated under RRIP-I along project roads. and (ii) a HIV/AIDS and human trafficking awareness and prevention (HHTP) programme. Part of the component's aims was to strengthen the capacities of the then recently (2012) established social and environment office (SEO) in MRD. It was also used to support the conducting of a sex disaggregated baseline socio-economic survey of project beneficiaries.
4	Project management support	Component 4 aimed at continuing to strengthen the capacity of MRD to provide project management support for efficient and effective project implementation. It was also intended to support the effective implementation of the project's Gender Action Plan (GAP) to promote substantial women's employment and gender impacts by incorporating gender mainstreaming

		into the five project outputs. Lessons learned from RRIP I, was to ‘strengthen MRD’s focus more on all outputs equally as the tendency has been somewhat inclined towards road improvement activities. This was to be achieved through increased MRD staff resources for social, gender, and safeguards areas. Other indicators for this output included (i) the number of project management unit (PMU) personnel was to increase to 22 persons, 14 males and 8 females); and (ii) the participation of PMU staff in a series of training events on gender, social safeguards, resettlement, the HHTPP, and road safety in 2018–2019.
5	Connectivity improvements for (five) Mekong River islands	This component was targeted at a cluster of five island in the Mekong River on the provincial border between Kampong Cham KohMitt, (Koh Samrong, Koh Soutin, and Koh Thmei) and Tboung Khmum provinces (Koh Pir). It was to support two subcomponents (i) the rehabilitation island roads (~50km) and the upgrading of boat jetties to enable improve climate resilient access and connectivity, as well other planned small scale civil works for water management interventions to minimize flooding; and (ii) the development a climate change adaptation development framework and support identified associated investments for a range minor activities (originally agriculture, renewable energy, tourism, and water supply, etc.). these are to be designed and implemented during the project, this component was also to support a community-based emergency management system (by providing two boats for emergency medical transport). After piloting the approach, the idea was to replicate it in other similar areas with remote access.

By project end supporting financial resources came from ADB, Agence Française de Développement (AFD), the Government of Australia (GoA), Nordic Development Funds (NDF), Strategic Climate Funds (SCF) of the (global) Climate Investment Fund and Government of Cambodia contributions (RGC). Parallel financing was also provided by and managed by the Government of Korea (GoK). Cumulatively US\$192.49 million was mobilized for the project’s implementation.

Table 2 Financial Resources Mobilised by Source and Type/Modality for the RRIP-II

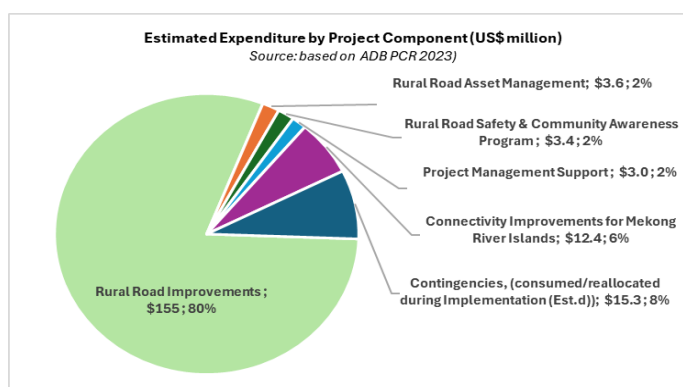
Dev. Partner	Modality	Original Financing (2014)	Additional Financing (2015)	Budget Sub-totals	Report Actual Expenditure
AFD	Loan		40	38.31	38.31
ADB	Loan	54		54	46.07
GoA	Grant	6.67	11.85	18.52	17.57
NDF	Grant	5.18		5.18	4.92
SCF	Loan		7	7	6.92
SCF	Grant		9	9	9.00
RGC	Contributions	11.16	6.63	17.79	14.38
		77.01	74.48	151.49	
GoK	Loan	41		41	41
			Total	192.49	

Note: Figures rounded off, and minor difference due to currency exchange rates applied at different times during implementation

Figure 1 Reported RRIP-II Project Expenditure by Output Components

In terms of project expenditure of the financial resources made available. ~88% was progressively consumed by the rural roads' improvement component (output 1), including the unused contingencies which were reallocated to roads in 2020.

The remaining four project components consumed considerably less resources, even knowing the large expectations for these components (see Table 3). This was particularly true for the HIV/AIDS and human trafficking sub-components under output 3, which were originally envisaged have provincial levels impacts (as roughly 8 million people resided in the 10 project provinces at the time of project commencement (MoP/ UNFPA, 2014), which was clearly unrealistic with the available resources. However, this indicator was apparently never adjusted or corrected during the seven years of project implementation (2015-2022).



Output five, the Connectivity Improvements for (five) Mekong River islands, spent 6% of the project budget, with this component financed ~27 all-weather concrete roads (~57km). While the remaining three project components (#2, #3, and #4) cumulatively consuming ~6% of the total budget.

Project Operation and Implementation

The project was managed and implemented by a project management unit (PMU) within the Department of Rural Roads of the Ministry of Rural Development (MRD) to which was attached a Social and Environmental Office (SEO) previously established under the RRIP-I project. The RRIP-II project was to support increasing staffing of the PMU and their capacity building from a benchmarked 12 members (including five women) in 2012, to a target of 22 personnel (including 8 women). This was actually one of the project's performance indicators for output four. By project end in 2022, it was reported that 31 personnel were assigned to the PMU 2020 (including eight women).

Project Observation

It is worth observing from a gender perspective, that women's participation in the project's institutional host actually fell; from 42% to 26% and the project contributed to this. As the project target realistically reduced women's participation to 36% (22 PMU personnel with eight women). Gender participation rates and more importantly gender empowerment are hard to achieve, they require clear institutional commitments, roadmaps and timeframes to train, capacitate and advance women participation and acknowledge their performance based on merit.

The project made considerable use of technical assistance consultancies to support and implement the project, which is a common but an unsustainable practice. **RRIP-II's implementation seemed excessive, as it was supported by seven consortia/ teams of consultants across the five project outputs.** Six of consortia were internationally led and one nationally led. Three consulting teams provided technical detailed design and implementation supervision (DDIS) support (of project procured contractors) for the rural road improvement component. One consortium supported the original financed and later (post 2020) additional roads sections approved for improvement after a major budget reallocation in 2020 (of US\$ 18.5 million for five packages of additional civil work covering 17 road sections ~70km in length, including flood damage repairs on a previous upgraded road section in Kampong Speu province and the replacement of a bridge). In all, 64 road sections (~557km) were overseen by this firm from early January 2015- December 2022, which were deliver through 12 clustered construction packages. The same firm with a different team make-up was contracted from January 2016 to support the additionally financed roads sections 32 road section (412km) across nine (9) packages, including one cancelled, split into two and rebid, due to identify poor progress and performance of an international contractor. A third firm supported the 24 Korean financed road sections, totalling 317km across three provinces starting in April 2015.

A fourth firm delivered the training inputs and support for the Rural Roads Asset Management (RRAM) component for rural roads management and maintenance planning. It also trained the seven vehicle overloading teams under the National Axle Load Control Section under the Rural Road Department, established in October 2019.

Two firms supported The Rural Road Safety & Community Awareness Program component, and its two sub-programme (i) Community Based Road Safety Work was supported by an international firm, the same as the lead DDIS consultancy, while the (ii) HIV/AIDS and human trafficking awareness and prevention (HHTP) programme was supported by a national firm. The fourth project component was supported by the lead DDIS firm, while the last project component the Mekong River Island Connectivity component, was supported by an international firm.

Rural road improvement construction work made up the vast majority of the project, consuming ~88% of the financial resources provided for the project (~\$170 million). Civil works for the 1,286 km of improved roads across the 120 road sections completed, were procured and contracted across 30 civil works packages, aligning with the three phases and the mobilisation of financial resources; the original in 2014 and additional financing in 2015 and a third following the budget reallocation of underused contingencies in 2020. 13 of the awarded contract packages were undertaken through international competitive bidding, and 17 contracts were through national competitive bidding procedures, with one of the international contract's was cancelled for poor performance, splits into two, and reprocured nationally.

Project Progress, Achievements and Validation

The evaluation validated the reported progress and achievements of the RRIP-II effectively implemented from January 2015 to December 2022; it also made observations on some of the reported baseline and applied indicators:

Table 3 RRIP-II Project Objectives, Performance Indicators, Achievements and the Evaluation's Validation and Observations

Results Chain	Project Performance Indicators	Project Reported achievement	Evaluation's Validation
Project Outcome: Improved access to markets, jobs, and social services across nine later changed to 10 project provinces ⁹ . Project Impact at project approval ~ 620,000 beneficiaries, increased to <u>one million beneficiaries with additional financing in 2015 (even though 1.5 million people were reported resident in the 155 communes traversed by project roads, who will have improved access to markets, jobs, and social services by 2022 (2013 baseline:0)</u>			
Outcome (Current project) Safe, climate-resilient, and cost-effective rural road network that provides all-year access in agricultural areas of the nine (10) project provinces	Current project Road crash rate in the project area decreased by 20% by 2020 (2012 baseline: 8.1 crashes per 1,000 beneficiaries)	Achieved. 261 crashes in the project area(s) in 2020, decreased by 97% (0.255 per 1,000 beneficiaries)	That baseline inferred that there were 8.1 crashes /1,000 beneficiaries and the project aimed to impact one million. <u>So indicatively 8,100 crash incidents in project areas (in 2012)</u> . While the achieved result (0.255/1000) should be 25.5 crashes per 100,000 The indicator used does not align with national or international indicators ((WHO 2015) for “crashes per 100,000 population”, and for the Sustainable Development Goals-SDGs under target 3.6 and indicator 3.6.1 (UN 2015)) of “halve the number of global deaths and injuries from road traffic accidents”. The project also appeared to have applied a national figure to the project areas as reliable crash and associated mortality data remain challenging. The reported appears to counter some of the findings from the project’s Community Based Road Safety Program Completion report (PEC 2021) which indicated that in 2021 (after the reported completion of 1,116 km of project roads ~80%, the evaluation estimated that the figure should range between 25 road crashes per 100,000 people benefiting from the project (based on the project 1,000,000 beneficiaries), while the reported 1.5 million benefiting would reduce this to 16 crashes per 100,000 beneficiaries in 2020. The Cambodian SDG framework indicator (3.7.1) is based on fatalities from traffic accidents per 100,000 population with this reported nationwide for 2020 at 10.07 deaths per 100,000 people which had increased to 10.14 death/100,000 in 2022 (RGC, 2023). While the 2020 estimated (by the evaluation) roads death/100,000 in <u>project areas</u> range between 5.5 if one million people, to 3.7/100,000 (if 1.5 million).
	Average travel time per trip on project roads decreased to 30 minutes in 2020 (2015 baseline: 0 minutes,)	Achieved. Average travel time per trip on project roads fell to 21 minutes from over 1 hour by 2022.	Average time to commune centre and key services in 2025 based on the evaluation survey of 412 households on 21 roads across nine province was 30 minutes but ranged from just “a few minutes” (<10) to 47 minutes on some road sections due to their deterioration and seasonality.

⁹ During the project development period 2012-2014, one province Kampong Cham was divided by Royal Decree at the end of 2013 into two provinces with the creation of Tboung Khmum Province, roughly along the lines of the River Mekong.

Results Chain	Project Performance Indicators	Project Reported achievement	Evaluation's Validation
	Share of the climate-resilient rural road network increased to 3.6% in 2020 (2015 baseline 1.8%)	Achieved. The share of the climate-resilient rural road network increased to 9.17% by 2022	According to the World Bank by 2022, ~10% of the national rural road network was considered paved resilient. (WBG 2024).
	The average # of days per year that the project roads are accessible increased to 365 days in 2020 (2015 baseline: 200 days)	Achieved. All project roads were accessible 365 days/year, with concrete or DBST surface and associated.	The household surveys and group discussions indicated ~10% of projects roads (12) were report impassable for some time. Ranging from hours to a couple of days due to current road conditions.
Outputs			
Output 1: Rural roads improvement	About 729 km of rural roads rehabilitated with standard provisions for all road users by 2020	Achieved: 969km rural roads rehabilitated (with ADB/others) by 2022 with 317km reported with Korean support.	Cumulatively 1,286 km of rural road rehabilitated and upgraded. ~1,180 km of DBST paved roads and ~106 of concrete roads
	Average roughness of project roads decreased to 2–3 in 2020 (2015 baseline: 6–14)	Achieved: Average roughness measured at 2.92 (December 2022)	Average roughness (IRI) across the 26 of the 27 road sections traversed was 4.76 and ranged from 3.77 on KT 3 in Kampong Thom 5.6 on PS3 in Pursat. However (i) Only 20% of road sections were consider in good condition, 71% in fair and 10% in bad condition based on the 'Road lab pro" index. If the Cambodian Ministry of Public Works and Transport (MPWT) framework is use <ul style="list-style-type: none"> 66% (18 of the reviewed road sections) are "in need of repair" being ranked poor to very poor (IRI >3.5-≤5.0). While 30% (with an average IRI >5 needing "rehabilitation and reconstruction".
	By 2020, contractors hire women for 25% of the required unskilled labour days	Achieved: 31.42% of labour days under civil works packages utilized by women (223,038 out of 720,021 total days by 2022)	As stated, but employment of community women in some locations was very low, with contractors reportedly bringing in women workers on some road section.
Overall project	Changed from about 729 km to about 1,200 km of rural roads rehabilitated with standard provisions for all road users by 2020	1,286.00 km rehabilitated: original project 557km, additional finance 412.25 km, KOEXIM 317.24 km by 2022.	As stated.
Output 2: Rural road asset management	Overall control mobile teams increased to five in 2020 (2014 baseline: 1)	Achieved: Seven sets of axle load control equipment and teams operating by 2021.	Reportedly increased to 9 sets in 2024, but unknown what is the usage and levels of possible legal enforcement as regulatory and penalty framework lacking or unworkable
	Annual operation and maintenance budget for project roads increased to \$310/km in 2020 (2013 baseline: \$268/km)	Achieved: Annual operation and maintenance budget was \$319.62/km in 2023.	Yes, overall national road maintenance allocation increased but not allocated to provincial project roads , and by the time the project roads are scheduled, they have often deteriorated significantly. This rural road maintenance budget is MRD controlled, with considerable delays in disbursement or directly delivered by MRD. Insufficient delegation to provinces and PDRDs to respond to the actual on the ground needs.

Results Chain	Project Performance Indicators	Project Reported achievement	Evaluation's Validation
Output 3: Rural road safety and community awareness program	By 2020, 40% of residents (50% women) in project provinces and all contractors' personnel participated in an HHTPP before and during civil works construction.	Achieved. Total of 415,245 residents (58% women) including 382,466 resident (women 59%), 8,854 construction workers (12.2% women), 360 members of commune and district AIDS committees (50% women). 23,565 referrals for blood test and STI services (56% women).	Indicator never adjusted from project province to project areas, though identified as an issue. As unrealistic to achieve with the resources provided. Also, cumulative figure reported likely resulting in minor double counting, most likely the figure is closer to the 382,466 equating to 38% of the 1,000,000 but only 25% of the 1.5 million reported in the 155 communes traversed by project roads.
	By 2015, sex-disaggregated baseline socioeconomic data established	Achieved. Sex-disaggregated baseline socioeconomic data was established in 2017 by SEO trained officials.	Endline report under this component was not sex disaggregated, but 75% of respondents were reported as women. So, analysis does not appear to show any gender challenges and issues for women/ girls.
	Mothers have a 30% share in community participants in road safety awareness programs by 2020	Achieved. 53,668 participants, of which 23,541 (43.86%) were mothers by 2021.	Between the two sets of campaigns under components the total number participants <60,000 considering it being reported that 1.5 million people were resident in communes along the project roads. And only ~260 out of a reported 1,430 schools with >160,000 students) were engaged (PEC 2021) this was a very low target as phrased.
Output 4: Project management support	PMU personnel increased to 22 (14 males, 8 females) in 2020 (2013 baseline: 12, 7 males, 5 females)	Achieved. PMU personnel increased to 31 (23 males and 8 females) by 2017.	While the number of personnel assigned to the PMU increased, it shows a concentration of expertise and project involved personnel at national/ central levels. Rather than to empower and capacitate provincial departments, which must support rural road operations and maintenance monitoring. Said concentration is likely increasing sector operating costs to transport and field teams to rural areas. <u>Additionally, the percentage share of women in the PMU has fallen from 5 of 12 assigned personnel ~42% in 2013. The reported result achieved of 8 women of 31 staff is just 26%.</u> In fact, the target figure of 8 women out of 22 personnel would have been 36%.
	By 2020, all PMU staff participate in training on social and gender issues (likely 22 with 14 males, 8 females) (2013 baseline: 7 males, 5 females)	Achieved. All PMU staff have participated in a series of training on gender, social safeguards, resettlement, HHTPP, and road safety. (ADB safeguard and gender trainings on 6–8 May and 20–21 November 2019; DDIS gender and safeguard training on 10 September 2019). SEO staff training on SCBRS (16-17 August 2018)	
Output 5: Connectivity Improvements for the Mekong River islands	Emergency-related deaths due to lack of access to health services from islands reduced to 0 in 2020 (2011 baseline: 15)	Achieved. Zero emergency related deaths from lack of access to health services from islands was reported in 2022.	Baseline indicator extremely high (and unsubstantiate). Would likely have happened without the project, due to the increased performance of the health sector (with the addition of at least one of the two proposed health centres). As well as other transport sector improvements such as the concrete bridge constructed connecting Koh Pen island to the mainland which effective connected three of the five islands to the mainland (with the construction beginning in 2011) and their general location close to the provincial capital (<10km away)
	29% of unskilled workdays created are for women for manual concrete paving of island roads	Achieved. Out of 83,394 unskilled labour days on concrete paving of roads, 33,554 days were utilized by women (40.23%).	As stated.

The evaluation found issues with some of the performance indicators applied (for example for the vehicle crash outcome, the single IRI figure for all roads (see table four and chart below) and the female labour/ worker share for output 1. The number of axle control teams' equipment and operating, yet no information given on activities/cases undertaken by project end for output 2. The provincial level coverage rather than project road areas for the HHAP, or the ambiguous "30% share of community participants" for the road safety, when it should have been an explication share of the general or school going populations for output 3. The two weak indicators (number of staff for the PMU, and their training) for project management output 4, and the so-called emergency deaths reduction and female labour for output 5. As many of these in hindsight, were not well suited to the actual activities undertaken for the five project components/outputs. Better adapted indicators to the actual activities/ investments made could have been considered. As it was evident that some of the indicators in the Gender Action Plan were better suited in the project Design and Monitoring Framework (DMF) for example 'the paving of the road shoulder' and 'vice-versa' i.e. the women's labour quota in the project construction activities, was better suited in the GAP.

Results of the Evaluation

The terms of reference for the ex-post evaluation assignment required that the review and reporting be structured based on five evaluation questions (EQs), these were:

EQ 1 The relevance of the project dimensioning?

In terms of geographical ambition and capacities: The project was spread too thin, stretched across parts of 10 provinces. The project would have had a greater impact if concentrated on fewer 'needier' provinces (ideally five as most PDRDs mentioned 'receiving half or the road sections they requested'). While the project did not directly target poverty reduction, as its stated strategic justification (ADB 2014) was "inclusive economic growth (IEG)" which was already going on due to the location of some project roads being relatively close the national and provincial roads networks, though there is no denying that the project opened some areas to more rapid growth and improvements. The poverty reducing roles and goals of development financing and their investment impacts through rural roads improvements should not have been 'sidelined or ignored.' A poverty filter was readily available at the time of project preparation and start up, based on the Government Identification of the Poor Households (IDPoor) Programme, which could have helped targeting and the selection of project rural roads down to commune or even village levels if needed.

Regarding the relevance of the road project's feasibility process(es), the evaluation found some issues with infrastructure designs, particularly regarding drainage and the initial technical specifications. Apparently, the Ministry of Rural Development didn't have statutory rural roads standards and specifications. While technical rural road standards support and inputs had previously been provided by another development partner's project (the South East Asia Community Access Programme (SEACAP) in the 2000s (2004-2009) they were designed for much lower vehicle volumes and types of vehicles, not for the numbers and types of (heavy good) vehicles that actually use some of the project roads. The developed standards were never formally adopted or incorporate as institution standards so could only be considered as guidance. they had been applied in the previous RRIP-I 2010-2016, and so were used by the different consulting team both during the project feasibility stage (2012-2014) and by the three DDIS consulting team for RRIP II's implementation period.

A number of issues of concern including the limited geotechnical assessments undertaken by two of the three DDIS consultants' teams (the reports from the consultant for the 24 Korean financed road sections was unavailable), as part of the three phases of detailed (road) technical design (2015-16, 2016-2017 and 2020) were found lacking. One requirement of the geotechnical assessments was the testing of load bearing capacities on project road sections prior to rehabilitation. It was found that test sites were too dispersed and taken at the height of the dry season (April/May) when ground conditions were hard. For the first batch of road sections (2015-2016), tests were only conducted every 6.5 kms, for the second batch of road sections (2016/17) tests were every 5 kms, and for the third batch of road sections (2020) every 2km (roughly aligning with the requirements (every 2,000 meters) of the Ministry of Public Works and Transport's Cambodian Road Design Standards-Part 2: Pavement (CAM PW 03-102-99)).

The evaluation is of the opinion that this spacing and resulting consideration of the subgrade bearing capacities has resulted in more rapid deterioration of project roads, as the depth of the sub-base and base aggregate layers were insufficient to carry the volumes and load on project roads. On many of the 28 road sections of 120 observed, the road surface sealing was failing, in that the surface is deforming and beginning to crack up or had failed and broken up.

Figure 2 Some Examples of Observed Failed Project Roads, Resulting from the Deficient Road Specification, Lack of Roadside Drainage and Maintenance.

<p>Jul 17, 2025 1:31:22 PM ភ្នំពេញ ខេត្ត Phnom Sruoch Kampong Speu Province</p>	<p>RRIP-II Tboung Khmum N 12° 9' 12.381\"/> </p>	<p>RRIP-II Tboung Khmum N 12° 9' 12.381\"/> </p>
<p>Road KS1, in Kampong Speu province showing the failure of the road paving/surface. Caused by daily movement of 100s' of heavy good vehicles daily servicing multiple quarries nearby.</p>	<p>A section of Road KC1, in Tboung Khmum province, showing the damage caused by the lack of roadside drains/ runoff channel resulting in pooling and road surface failure, and no timely maintenance.</p>	<p>One of the project's concrete paved roads on Koh Pir which has failed with the concrete surface broken up, note no roadside drainage/ runoffs.</p>

The three detailed design reports reviewed had mentioned sealing the road shoulders as well as the carriage way, as a target for the project's Gender Action Plan for the rural road improvement component (#1.6). This required road shoulders to have a sealed bituminous surface' to enable safer movement which was not undertaken, based on a decision of the project executing entity to provide only laterite road shoulders. The result of the non-sealing likely reduced investments for an estimated 2.5 million m2 along the 120 roads. However, in hindsight, a short-sighted decision as wider sealed roads were and are frequently demanded by local residents and project stakeholders. The original rationale for sealing the road shoulders was 'to enable wheeled carts and to reduce the burden on girls/women who haul water in rural areas, which was felt by the project (management) to be no longer valid during the project's implementation.

As mentioned, concerns about the completed road widths and shoulders were a frequent issue raised by provincial, district and commune stakeholders in that they wanted wider and better roads. The road widths on many observed road sections were variable. Many local stakeholders felt that sections of project rural roads are becoming too narrow and inadequate for the current volumes and types of traffic and the speed they travel at. This situation is making project roads increasingly unsafe, especially for school going children, non-motorized transport, and local travel on many road sections. If the shoulders had been sealed, they would have provided more overall space and 'future proofed' some road sections by providing additional space by the paving of the road shoulders. As many road shoulders observed were narrow, often overgrown with vegetation, uneven and had not been maintained.

The applied project designs did not effectively consider include roadside draining/ runoff channels. In some 'built up' areas usually coming from municipal areas or some district centres, box section drains were installed. But elsewhere, along most of the 1,286km of project roads, runoff and roadside drainage was lacking, with no consideration in the reviewed designs. This deficiency has often resulted in standing water and pooling on rural road sections as runoff has nowhere to go. Roadside pooling at the junction of the paved/sealed roads and laterite surface shoulders has clearly contributed to and hastened road deterioration. Water has appeared to have percolate into some road bases weakening them, resulting in pavement deformation and deterioration.

The applied rural road technical designs and specifications, which originally came from the SEACAP (project) in the 2000s. However, these were never formally or officially integrated or incorporated into the ministry's regulatory framework and likely contributed to design and construction deficiencies. This was especially true for the higher level T1 and T2 category rural roads at the time of project implementation¹⁰. Concerns about the variability of ground conditions have been shown to be highly variable and commented upon by the Ministry of Public Works and Transport in the three-volume statutory¹¹ "Cambodia Road Design Standards." While the project considered cross drainage for road embankment, they took little or no regard to roadside drainage and runoff channels, which has resulted in standing water/pooling on some project

¹⁰ The Cambodian Ministry of Rural Development (MRD) categories rural roads into four categories T1-T4, with T1 Rural Roads connecting areas with national or provincial roads or linking provincial and districts centres. T2 rural roads connect Municipal or districts centre with commune centre, T3 connect communes with each other, while T4 rural roads connect communes with villages, or are roads within villages.

¹¹ Based on the 2001Prakas/ Sub-decree No. 177, on Determination of official use of technical standards, for bridges and roads, dated 11 October 2001 (as updated)

roadsides. This has gone on to contribute to more rapid road/ pavement deteriorate, as the supporting structure has allowed some observed roads to deform, buckle and cause a failure of the road surfaces.

EQ2 The project's operating modes and management: were the operating mode and intervention methodologies adapted to the project's objectives?

The project was delivered in a 'top down' centralized manner from the Ministry's project management unit and its supporting teams of consultants. It was reported that the PMU made all the decisions including the selection of road sections. The Ministry's project management unit (PMU) managed and generally controlled the implementation of the project supported by their seven teams of consultants for the different project components. The PMU also reported that the project design and implementation bypassed the provincial administration level and only dealt with district and commune administrations for road selection and implementation.

Project documentation referred to provincial project coordination units at the Ministry's provincial department of rural development (PDRD). These were envisaged in the project administration manual to be multi person (with at least 4 staffs) 'to provide effective coordination of project stakeholders at provincial level, assist project technical officers from the ministry to monitor civil works, and evaluate the progress and performance of consultants and contractors. In the end, only two PDRD personnel were assigned in each province, one from the PDRD management and one engineer, often the sole rural road engineer in each province for 1,000s' of kilometres of rural roads. In fact, of the nine PDRD's met by the evaluation, most reported that rural road offices usually only had a handful of staff, three or four, to support all rural road activities across the provinces. The consulted PDRDs and Subnational Administrations (district levels) reported little or no effective delegation for the project implementation, with most PDRDs being technically understaffed to take up possible roles and district administrations generally lacking the technical and financial capacities to take up unclear rural road mandates and roles, as no effective guidance from national level (MRD) on what they are supposed to do has been adopted or issued.

Of the nine PDRD's consulted, many often felt that their roles were just to facilitate teams from the national level, and not to have technical roles and provide technical inputs. They believed some of their technical and monitoring inputs and observations both at the detailed design phase (such as on the locations and sizing bridges and culverts, road alignments, heights on some road embankment sections, roads and road shoulder widths, road side drainage etc...) and later during civil works implementation (on the quality of work, volume and types of fill materials being used) were often not effectively considered or incorporated by the detailed design and implementation supervision (DDIS) consultants teams. They felt it had led to road sustainability issues or more rapid deterioration on some road sections.

Other project stakeholder representatives from the 12 district and 17 commune administrations consulted by the evaluation made similar remarks but institutionally acknowledged that they lack the technical personnel (engineers) and capacities, so their remarks have to be considered observational but should have been considered, as they ultimately have to use the rehabilitated and upgraded rural roads on a daily basis. Subnational stakeholders mentioned that reasons often given to them for non-inclusion of their requests were usually 'insufficient fund to make changes, even though the project was well resourced with up to US\$23.86 million progressively included for contingencies. In fact, a significant portion of the contingency resources were applied to the major budget reallocation in 2020 as they were unused. There were little reported material cost increases to require the significant draw down of contingency resources.

Overall, the project contributed to centralising rural road maintenance monitoring, planning control and implementation activities at national levels. It perpetuated the existing deficiencies identified at the project design rather than the expectation of enhancing PDRDs to take up rural road maintenance roles. The project took little regard of the evolved deconcentration and decentralization approaches of the governments through it "democratic development" approaches even though MRD sits on the national steering committee. In fact, during the project, MRD transferred through the government (some) rural road functions to district administrations which were mandated by the 2019 Sub-decree #184 "On the Functions and Structure of District Administrations". This decree re-structured and re-organised district administration and transferred a range of functions (including for rural road) to the districts. However, apart from this existing on paper, many of the national ministries including MRD have not followed up on what districts are supposed to do, how to do it or with what resources, so the district capabilities on rural roads often remain in limbo.

EQ3 Whether the resources provided or made available by all responsible parties within the desired timeframe so that the planned activities can be carried out, at the planned cost (or lower cost)?

The RRIP-II project evolved out of and expanded the project approaches developed for the RRIP-I (2010-2016). Initial expectations were that the project should cover 1,200km. However, this had to be scale back to 729km at project approval in August 2014. Negotiations and issues raised by approached development partners including AFD were ongoing at the time. At the end, these issues were resolved with AFD funding a project specific institutional feasibility study and the Strategic Climate Fund undertaken internal reviews. These were all progressive resolved from later 2014-2015 and

consolidated into the additional financing amendment to the overarching loan agreement in November 2015, (see table 1 above). The only changes in the project performance were expanding the beneficiary numbers from 620,000 to one million people and the road target of increased from 729km to the initial 1,200km to be rehabilitated and upgraded, with all other project performance indicator staying the same.

Of the seven sources of project financing (table 2), four were directly administered by ADB who accounted for the funds provided. Three included AFD utilised slightly different approaches, the majority of AFD loan funding were administered by them (apart from their share towards the consulting services), with disbursements for civil works being reportedly made on “pari-pasu” (equal share) arrangement with ADB loan. However, by project end, this appear to have drifted while 100% of AFD loan was consumed, only 88% of the ADB financing was disbursed (KPMG/MRD 2023). The two other funding sources were the Korean financing which was reportedly delivered directly by them, and the Cambodian government’s contribution, which was reported on an annual basis in the independently audited accounts.

The majority of rehabilitated road sections were constructed within budget. Only one civil works package (CW3B in Kampong Speu province for eight road sections) had to be cancelled in 2020 because of poor performance and progress by the international contractor. This action only occurred after numerous ignored directives to improved progress. This contract was later split into two and rebid resulting in a significant increase in the cost for this package.

Project cost savings were achieved by a combination of; (i) cost saving from the non-sealing of the road shoulders estimated to be over two million m² along both sides of the 1,286km of road sections upgraded, as an average of 1m on both sides was to be provided. (ii) initially overstated cost estimates to cover unforeseen cost increases, and (iii) the limited widening of road infrastructure (bridges and culvert) on road sections. The nature of the road civil works didn’t require much imported materials (apart from readily available steel rebar) for some road infrastructures, as all road construction materials were sourced in Cambodia. It was noted that some of the required materials (stone aggregate, soil) had to be transported on considerable distances as the three detailed design reports report on quarries and soil sourcing sites which likely increase costs. But more than adequate financial resources were available.

EQ4 To what extent have the objectives of the intervention been achieved?

As shown in table three above, the project delivered on many of its stated target which were readily achievable as these were phrased. The rural road improvements component was targeted to deliver 1,200km of rural road but could only achieve this with the reallocation of the contingency budget in 2020, which was used to fund 17 road sections, bundled into the five civil works packages implemented from 2020 onward.

However, were the original objectives and aspiration for the project achieved? Not completely, as rural road maintenance processes practices have not greatly improved. In fact, they may have become more centralised at the ministry and further way from where they needed in the provinces. As lengthy delays persisted in accessing resources to maintain rural roads, especially for DBST roads which are particularly vulnerable to delayed maintenance.

The rural road asset management system remains a work in progress, hampered by the lack of regular and timely update as little consideration was given to the information demands needed to make it operate efficiently.

As far as the axle overloading control programme and team is concerned, while established and equipped at the national level by 2021, how it operated and performs is unknown. To be effective, the overloading control activities needs to be operational at the subnational levels probably at provincial/ district levels to monitor and ‘police’ rural roads at risk and take action to penalise abusers who damage and destroy rural roads. Project stakeholders at different levels have pointed out that the requisite regulatory framework is lacking. As it requires interministerial cooperation and guidance to be effective which apparently remains lacking as well, with different ministries remained siloed in their own sector and spheres of influence. It may require encouragement to push responsible actors together to cooperate. In the meantime, the significant investments made in rural road are put at risk by overloaded vehicle which continue to damage and destroy rural roads to the decree that further significant investment will be needed to replace damaged and destroyed roads.

The community awareness and social programme components for rural road need to be rethought and better integrated into local support systems rather than delivered by external parties. While the HHTAP did have some short impacts, it needs to be better integrated delivered with the district operational health offices and district administration and with local commune health clinic and schools in areas traversed by rural road projects. Consideration could be given to cooperating with the Cambodian Red Cross which has structures and networks down to village level and has work on both components of awareness. It appears the road safety programme was too centralized and while it delivered a lot of technical inputs, they

may have had very limited impacts. As most of the advocacy and awareness aspects of the road safety programme were short term and frequently ceased when they project support stopped.

As mentioned, the project reinforced the centralisation of rural road maintenance activities at the ministry, but lacked to strengthen the PDRDs which frequently have to identify and lead on rural road maintenance identification and demand coming from subnational administration with limited staff and limited resources. The increased staffing of the project management unit (a temporary institutional entity), actually lowered the female participation in project implementation. As PMUs frequently cease to exist once a project closes, while some personnel may roll over into new PMUs, others may be reassigned, losing the benefits of training provided.

The final component of the project Mekong River Island Connectivity was apparently originally design as a separate project but merged into RRIP II. Provided resources did contributed to climate resilient rural roads and other infrastructures on the five Mekong islands while many of the other infrastructure inputs, skills and business training had far more limited impacts. The cost of delivering the support for some of this component inputs (namely the micro financed sub-components) likely outweighed (or nearly matched the) the actual investments (US\$70,105 for 25 subprojects)¹² made. As the component technical assistance consultants ended far too early (at the end of June 2019) to follow up on many of the component inputs (the component supported infrastructure, via the 15 long pond rehabilitations, roads and jetties solar lighting , 15 (pilot) biogas digester, 450 latrines and one health post (cumulatively ~US\$741,000), were either just procured (the infrastructure in April 2019) or still under procurement (the 40 solar pump and panel systems value at ~US\$800,000) and their possible impacts.

As mentioned in other sections, the reported performance targets and indicators did not effectively represents the objectives and aspiration of the project. Much more need to be done to enhance rural road sustainability and responsiveness to local needs.

EQ5 What level of sustainability can be expected both from the funded infrastructure and the implemented processes?’

One of the objectives of RRIP-II project was to strengthen rural road maintenance processes and procedures as well as encouraging increases in national budget commitments for rural road maintenance through the rural roads’ asset management component. The project component design also talked about ending force account (“doing it themselves”) approaches but little was achieved on this. The development, direct delivery and control of ‘rural road maintenance’ subproject inputs were too focused on using government allocated budget, rather than dispersing the resources to the provinces and responsible subnational actors.

So, rural road maintenance remains highly concentrated at national level through the ministry and the project contributed to this concentration. As the institutional processes to either obtain financials resource from the national to the PDRDs or get road maintenance works undertaken are slow and time consuming, during that time, the rural road assets spiral into deterioration frequently requiring costly rehabilitation works rather than cost effective routine maintenance.

Some of the project initiatives and deliverables were to pilot (Output) Performance Based Contracting (OPBC) whereby construction contractors would continue to carry out rural road maintenance “over a 5.5-year period.” Only two of the 30 contracts for 120 road sections issued contained OPBC clauses (the project target was one of 11 at the project start). One was in Tboung Khmum province (CW1) for nine roads and one in Kampong Speu province for two roads (CW14). Jointly, these covered 11 road sections and a total of 216km. However, their actual duration was limited to just two years or less rather than the envisaged 5.5 years following the contract retention guarantee period, usually one year. One of the project’s Detailed Design and Implementation Supervision consultants highlighted in their completion report that “the budget for OPBC (activities for) CW14 was too low at just 4,797US\$ which equate 9US\$ per km”. This low investment is increasing the risk of neglecting maintenance during OPBC period, as during contract bidding, the winning contractor proposed minimum rates on it, as there were no explicit requirements during bidding. The consultant had recommended that for future OPBC Contracts / clauses, a minimum 15% of contract amount needs to be required for the OPBC item in bidding.

The out-dated technical designs and specifications guidance used for RRIP-II, in the absence of updated statutory minimum technical requirements for rural roads were not up to the volumes and types of traffic or the loads being carried on these

¹² The component TA completion report stated that direct assistance (at least one expert) for the sub- component cost US\$45,519 against the US\$66,301 disbursed for the 25 micro-projects. So ~65% of the investments. Not considering the crucially important roles of the consultant’s team leader and deputy team leader, nor other support, so the subcomponent input costs were likely higher.

roads, especially for the T1 and T2 categories of rural roads¹³ as Cambodia transitioned to a thriving economy in the 2010s. The applied specifications resulted in deficient load bearing capacities, as the existing subgrades/embankments on which project upgrading and climate resilient paving was installed were prone to waterlogging and load deformation during the rainy season. So, the loads from increasing volumes of heavily loaded (and overloaded) vehicles using the improved roads were transferred to unfit road structures, significantly reducing the project roads structural lives, then their design life (reported as for 15 years).

The average (completion) age of the project roads was four and half years (52 months) but ranged from seven years for two road sections in Takeo (CW2A) to just over two years (25 months) for 12 road sections (from the cancelled CW3B civil works package which was rebid into two packages for the eight road sections) in Kampong Speu province and CW19 for four sections spread Kampong Thom and Tboung Khmum. The evaluation’s road observations and use of two road roughness index frameworks, (i) from the Road Lab Pro application, and (ii) from the Cambodian Ministry of Public Works and Transportation (the government’s infrastructure ministry) framework on data from 26 of the 27 road sections assessed by the evaluation which covered roughly ~430km of the 1,286km of rehabilitated roads, found the following.

Table 4 Ranking of Evaluation Observed Rural Roads by (i) Road lab Pro’s IRI Framework, & (ii) Cambodia’s MPWT’s IRI Framework (26 roads out of 120, ~400km of 1,286km)

- According to the “road lab pro” application framework, 88% (23 road sections) of the project supported rural roads reviewed could be considered to be in ‘fair condition’ for their age. Having an IRI ranging from 4-6, while 12% (3 roads) were in good condition.

RoadLabPro					MPWT IRI Framework				
IRI	Rating	Sampled Road Section	Count	IRI	Rating	Priority (for Maintenance Work)	Sampled Road Section	Count	
<2	Very Good				Rank 5	Good no or small repairs			
2.0-4.0	Good	KCH2, KT3, KC12,	3		Rank 4	Fair, Small repairs			
4.0-6.0	4.0-5.0	BB7, BB9, CW16, KCH1, KSP1, KSP8, KSP3, KT1, KT4, PS2, SR2, SR5, TK1, KC1, TBK6+6A	15	<3.5	Rank 3	Poor, repair	KCH2, KT3, KT4, KT1, KC12,	4	
	5.0-6.0	CW8, KCH10, PS3, PS9, SR7, TK8, KC6, TBK5,	8						
6.0-10	Poor			3.5-5.0	Rank 2	Very Poor Severe repair	BB7, BB9, KCH2, KSP1, KSP8, KSP3, PS2, SR2, SR5, TK1, KC1, KC12, TBK6+6A (CW16-some sections)	14	
>10.0	Very Poor			>5.0	Rank 1	Bad in need of reconstruction / rehabilitation.	[CW8 (some sections reviewed) Mekong Islands] KCH10, PS3, PS9, SR7, TK8, KC6, TBK5,	8	
			26					26	

- While according to MPWT framework (ranking roads from 1 to 5, best condition) 15% of roads reviewed were in “poor condition”, needing repair (ranked 3); 53% of reviewed roads were ranked 2, in “very poor condition” and in need of ‘urgent’/ severe repairs. While 30% were ranked 1, in need of reconstruction/rehabilitation, so back where they started from.

While the overall road section rating and rankings shown above, the results do not reflect the whole story. As the road lab pro generates data on 100 metre sections of roads, the follow chart shows the findings for each of the 27 road sections reviewed.

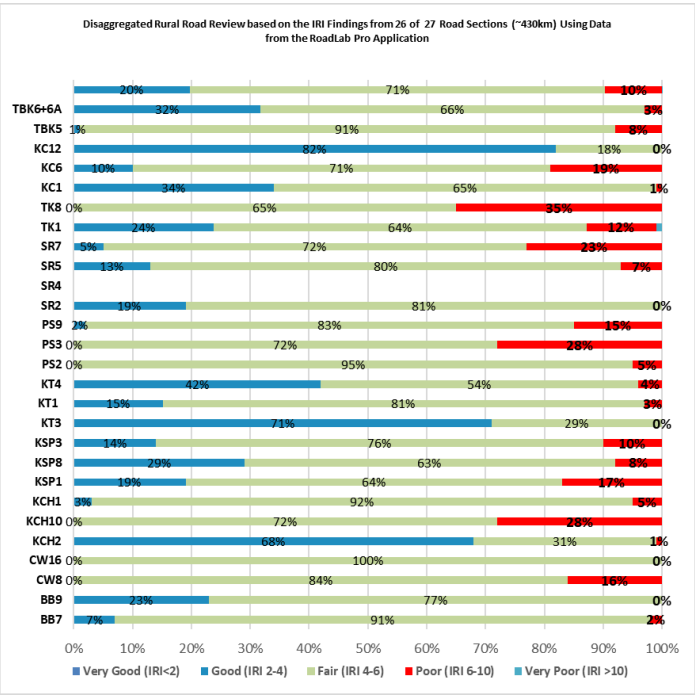
- Overall, 71% of ~430km of road sections reviewed were found to be in fair “condition” with a IRI ranging between 4-6. 20% of the road sections were considered in “good” overall condition with an IRI of between 2-4. While 10% of the road sections were in “Poor” condition. No parts of project road reviewed could be ranked “very good” (IRI <2) or “very bad” (IRI >6).
- It can be seen for some project roads (TK8, PS3, SR7 KCH10) that percentage of bad sub-sections on these roads called into question the maintenance inputs and practices being applied and durability and sustainability of the road section. During the field work in July 2025, repair works were observed on SR4 in Siem Reap Province and KC1 in Tboung Khmum province.

While the project reported that the target for national budget allocations for rural road maintenance provided to the Ministry of Rural Development had been achieved by 2020 and been surpassed, for 2023 it was reported at US\$320 per km. These resources did not directly reach (or get allocated) the provinces pro-rata to the scale of the rural road networks in the province nor do they come under the provincial and districts administrations, which since 2019 were the one of the mandated responsible stakeholders for rural roads.

¹³ T1 Rural Roads connect areas with national or provincial roads, linking provincial and districts centres. T2 rural roads connect Municipal or districts centre with commune centres.

The provincial department of rural developments are annually provided with some resources for rural road maintenance but “never enough.” They are not explicitly provided resources for the routine maintenance of ‘project roads’ as envisaged by the project. In fact, they have to prioritize the rural roads in their provincial portfolios in greatest needs, so annual routine maintenance was simply undone on most rural roads. Some of the sector maintenance budget is directly (contracted and) delivered by MRD to provinces.

PDRDs consulted and district administration acknowledge the potential of a rural road asset management system if they had access to it. While the some PDRDs personnel did participate in some of the project training and have contributed information for updating, they have little or no control over it. The system (when working, as it was unavailable during the evaluation) apparently only allowed them to print outputs. Infrequent collected data are sent to MRD for review and entry, so update is centralised and controlled by MRD. Most PDRD reported lacking the resources to monitoring their road network on a regular basis.



The situation for district administrations is different, they have also been made responsible for rural roads in their areas (by a government sub-decree #184 in 2019) when the local rural road functions were transferred from MRD to them, along with numerous other functions from ~18 different ministries. Subsector guidance and support was meant to be developed and come from the sector Ministries and their provincial line departments. But apparently, little or no guidance or support has been developed/allocated or delivered by the line ministry to the district to the district administrations. Their lack of capacity and inability to deliver rural road services is compounded by a lack of technical personnel and capacities to take up their roles.

Recommendations

Seven recommendations were made; they were not presented in any order of priority as any single recommendation would contribute to improving the operation of the rural road subsector.

Recommendations	Likely Responsibilities
<p>➤ An objective and costed rural roads sub-sector assessment and road map to contribute to ensure the sustainable operation and maintenance of rural roads in Cambodia. As subsector roles, responsibilities, and resources remain fragmented limiting effective operation. The assessment should ensure that resources and roles are more deconcentrated and decentralized as desired by the government to enhance overall effectiveness of rural road provision, operations, monitoring, and maintenance.</p>	<p>As this needs to be institutional neutral ideally either under the Ministry of Economy and Finance (MEF) to assess whether the government is getting sustainable and timely investments in rural roads provision and maintenance, or</p> <p>The Council of Ministers, as the assessment needs to explore across ministries (MRD, Ministry of Interior (for Subnational Administrations), MEF and possibly the Ministry of Public Works and Transport). For advancing sectoral roles, responsibilities, abilities, and future investment(s) in upgrading for climate resilience rural roads and their maintenance</p>
<p>➤ The scope of future rural roads rehabilitation projects should be narrowed and concentrated on fewer provinces, but increasing the numbers of road sections to be rehabilitated and upgraded in each province. With subnational (provincial and district) administration more involved in the selection of road section and implementation of future projects,</p>	<p>Greater coordinator and oversight is needed and should be delegated to Subnational Administrations in the provinces. With involved provincial administrations reviewing and endorsing district road section nominations (a process that should be documented). The provincial and district administration should play increasing roles in project implementation supervision to increase local ownership and responsibility.</p> <p>The selection of provinces and districts within these provinces (to be supported by concessional financing)</p>

Recommendations	Likely Responsibilities
<p>supported by the provincial line department guided by national ministries.</p>	<p>should concentrate on those provinces/ districts with greatest needs. Based on poverty, economic under-development (lagging behind other provinces/ districts), and remoteness/ accessibility to all weather transport infrastructure.</p> <p>Overall selection coordination and compliance could also be reviewed by an interministerial sectional panel (made up of MRD, MEF, MoI, MPWT and the Ministry of Planning for investment planning) to review and endorse provinces/ districts and road selections and the justification for these.</p> <p>Ideally this should be undertaken as soon as possible (within one year), to contribute the rural road sector reforms and advancement.</p>
<p>➤ Rural Road Technical Specifications need to be updated and enhanced to provide more durable and climate resilient rural roads. Ensure that the future Rural Road Technical Specifications framework is mandated and regulated. Ensuring clearer requirements on the content and level of detail in project design feasibility studies, including considerations of the seasonal variable of underlying ground/soil conditions, including:</p> <ul style="list-style-type: none"> ▪ Spatial interval and frequency of in-situ load bearing testing (at least one/2,000m) ▪ Stabilization of the road base and underlying ground/ embankment when needed to increasing loads bearing capacity and reduce water logging. ▪ Sealing of the whole width of rural roads both the carriageway and shoulders would contribute to future proofing of rural roads. ▪ Ensure effective roadside drainage and runoff channels to eliminate standing water and pooling on the roads. ▪ Publish weight limits for different categories on rural roads 	<p>As this falls within the mandate of MRD,</p> <p>They should be required to review, update and formally adopt contemporary Rural Roads and Related Infrastructure Technical Specifications, and related assessment and construction requirements, which align with the most up to date versions of the “Cambodian Road Design Standards” promulgated by Ministry of Public Works and Transport.</p> <p>This should be undertaken before the next round of project investments ideally with 12-24 months to strengthen the technical capacities and compliance for the rural road sector.</p>
<p>➤ The resolution of the continuing gaps and challenge confronting the rural road vehicle overloading (axle load control) system by developing appropriate coherent legislation, interministerial regulations to enable, empower, and support subnational administrations to effectively monitor, ‘police’ the rural road network and control vehicle overloading damaging rural roads at subnational levels.</p>	<p>This likely requires an interministerial approaches to coordinated and harmonize roles and responsibilities to effective control the adverse impacts of overloaded vehicles on rural road investments. Coordination and cooperation is needed between:</p> <p>The Ministry of Rural Development (MRD)</p> <p>The Ministry of Interior for subnational administrations and police involvement.</p> <p>The Ministry of Public Works and Transport (responsible for national and provincial Roads-who have extensive experience in overloading control.</p> <p>The Ministry of Economy and Finance, for insights on sector financing and sector sustainable investments and possible penalty provisions for road repairs/replacements.</p> <p>Ministry of Justice for judicial compliance.</p> <p>This is quite urgent, as rehabilitated and improved rural roads are under continuous threats from overloaded vehicles and has significant financial implication repairing and replacing road if damaged. The multistakeholder</p>

Recommendations	Likely Responsibilities
	<p>approach demands strong commitment to consolidate weak legislation and fragmented regulations so that control measures can be implemented more quickly. Effort should be made to address this within 12-18 months.</p>
<p>➤ The support to the government to develop a comprehensive institutional capacity development programme for sustainable rural roads operation and maintenance aimed at subnational administrative levels and the private sector to deliver and support the rural road subsector services.</p>	<p>This will likely require an interministerial approaches to coordinated and harmonize roles and responsibilities, and advance the roles for delegated functions, involving.</p> <p>The Ministry of Rural Development (MRD)</p> <p>The Ministry of Interior for subnational administrations and police involvement.</p> <p>The Ministry of Public Works and Transport (responsible for national and provincial Roads-who have extensive experience.</p> <p>The Ministry of Civil Service to ensure that adequately trained and competent personnel are progressively assigned to subnational administrations and unit to deliver quality services.</p> <p>This needs a more longer-term purview, as it requires multiple inputs to advance the sector. The initial assessment should be within 12 months, with the evolving institutional capacity development spread over a number of years as competent technical personnel are assigned to subnational levels.</p>
<p>➤ The government should assess and examine the impacts of informal voluntary land donations for rural roads and the need and impacts in establishing statutory rural roads (right of way) corridors (as state public land) where needed. Ensure adequate compensation is available for impacted populations.</p>	<p>This is likely to require interministerial cooperation from the MRD as well as</p> <p>the Ministry of Economy and Finance and its General Department of Resettlement (directly responsible for land acquisition and compensation issues).</p> <p>The Ministry of Land Management Urban Planning and Construction who were responsible for land demarcation and registration activities in the past.</p> <p>Land issues related to rural roads are a persist challenge and have often been sidelined through so called ‘voluntary donations’, so do need to be reviewed and addressed to mitigate the potential risk of harm.</p> <p>This should be ideally undertaken within 12-18 months or before the next round of rural road project are designed and implemented.</p>
<p>➤ For Development Partners there is a need to improve development partner coordination, cooperation, and information sharing to better review and contribute to enhance project implementation and supervision to increase the impacts of and use of financial resources provided.</p>	<p>This is an ongoing issue and needs to be better coordinated and committed to by development partners</p> <p>DPs could consider joint funding of independent sector reviews. To gain better insights into the application and sustainability of funds provided and investment made, Considering the significant investments/ commitment now being made/ requested for rural roads.</p>