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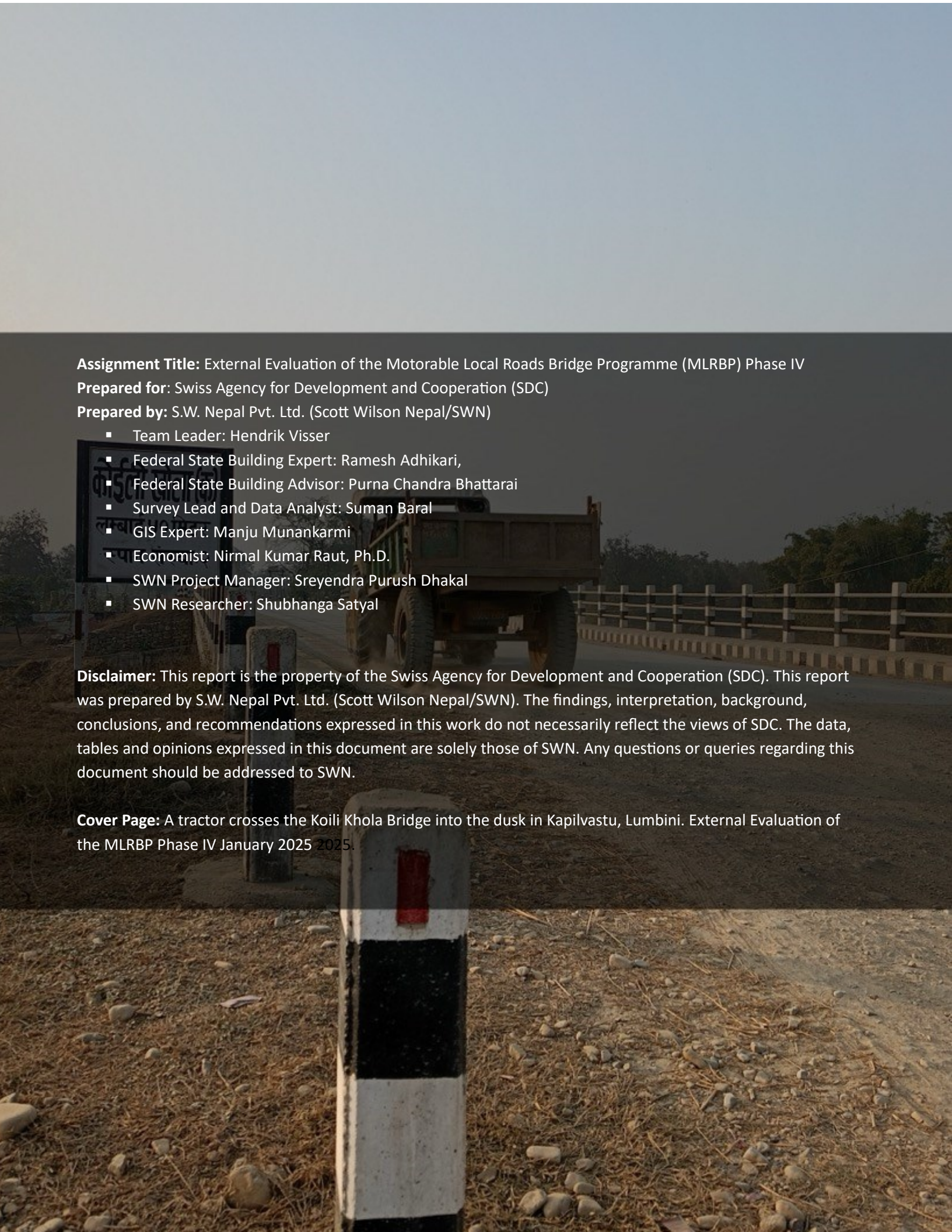


May 2025

FINAL EVALUATION REPORT

External Evaluation of the

Motorable Local Roads Bridge Programme (MLRBP) Phase IV



Assignment Title: External Evaluation of the Motorable Local Roads Bridge Programme (MLRBP) Phase IV
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Cover Page: A tractor crosses the Koili Khola Bridge into the dusk in Kapilvastu, Lumbini. External Evaluation of the MLRBP Phase IV January 2025 2025.

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Acronyms

AADT - Annual Average Daily Traffic
ADB - Asian Development Bank
ANC - Antenatal Care
APR - Annual Progress Report
BCR - Benefit Cost Ratio
CD - Capacity Development
DAGs - Disadvantaged Groups
DoLID - Department of Local Infrastructure Development (federal)
DTMP - District Transport Master Plan
EI - Engineering Institutes
EoI - Expression of Interest
ET - Evaluation Team
FACC - Federal Affairs and Coordination Committee
FGD - Focus Group Discussion
FR - Field Researchers
FY - Fiscal Year
GESI - Gender Equality and Social Inclusion
GWT - Gurkha Welfare Trust
HDM 4 - Highway Development and Management
HR - Human Resources
IDO - Infrastructure Development Office (Province)
IOE - Institute of Engineering
IRI - International Roughness Index
IRR - Internal Rate of Return
KII - Key Informant Interview
LG - Local Government
LIDPO – Local Infrastructure Development Program Office
LRBSU - Local Roads Bridge Support Unit (federal)
M&E - Monitoring and Evaluation
MEL - Monitoring, Evaluation, and Learning
MLRBP - Motorable Local Roads Bridge Programme
MoPID - Ministry of Physical Infrastructure Development (Province)
MoPITM - Ministry of Physical Infrastructure and Transport Management
MoU - Memorandum of Understanding
MoUD - Ministry of Urban Development (federal)
NPR - Nepalese Rupees
NPV - Net Present Value
NRs - Nepalese Rupees
O&M - Operation and Maintenance

O&M - Organization and Management
OD - Origin to Destination
OECD DAC - Organization for Economic Cooperation and Development - Development Assistance Committee
OMS - Outcome Monitoring Survey
PBCU - Provincial Bridge Coordination Unit
PBIMS - Provincial Bridge Information Management System
PGs - Provincial Governments
PBMSC - Provincial Bridge Management Support Consultants
PNC - Postnatal Care
PPP - Public-Private Partnership
PPS - Probability Proportional to Size
PRA - Provincial Roads Act
PRBSU – Provincial Roads Bridge Support Unit
PRM - Participatory Resource Mapping
PRN - Provincial Road Network
PRNMP - Provincial Road Network Master Plan
PSC - Prestressed Concrete
PSP - Provincial Support Programme
R&D - Research and Development
RCC - Reinforced Cement Concrete
RED - Road Economic Decision
SCF - Standard Conversion Factor
SDC - Swiss Agency for Development and Cooperation
SDE - Senior Divisional Engineer
SWN - S.W. Nepal Pvt. Ltd. (Scott Wilson Nepal)
TA - Technical Assistance
TID - Transport Infrastructure Directorate
ToR - Terms of Reference
TOR - Terms of Reference
VOC - Vehicle Operating Costs
YPO - Yearly Plan of Operation

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1 Introduction

1.1. MLRBP-IV Objectives and Results Framework Indicators

The main goal of the Motorable Local Roads Bridge Programme Phase IV (MLRBP-IV) is that people in all seven Provinces economically and socially prosper through better connectivity provided by Bridges. Under this overall goal, there are two outcomes:

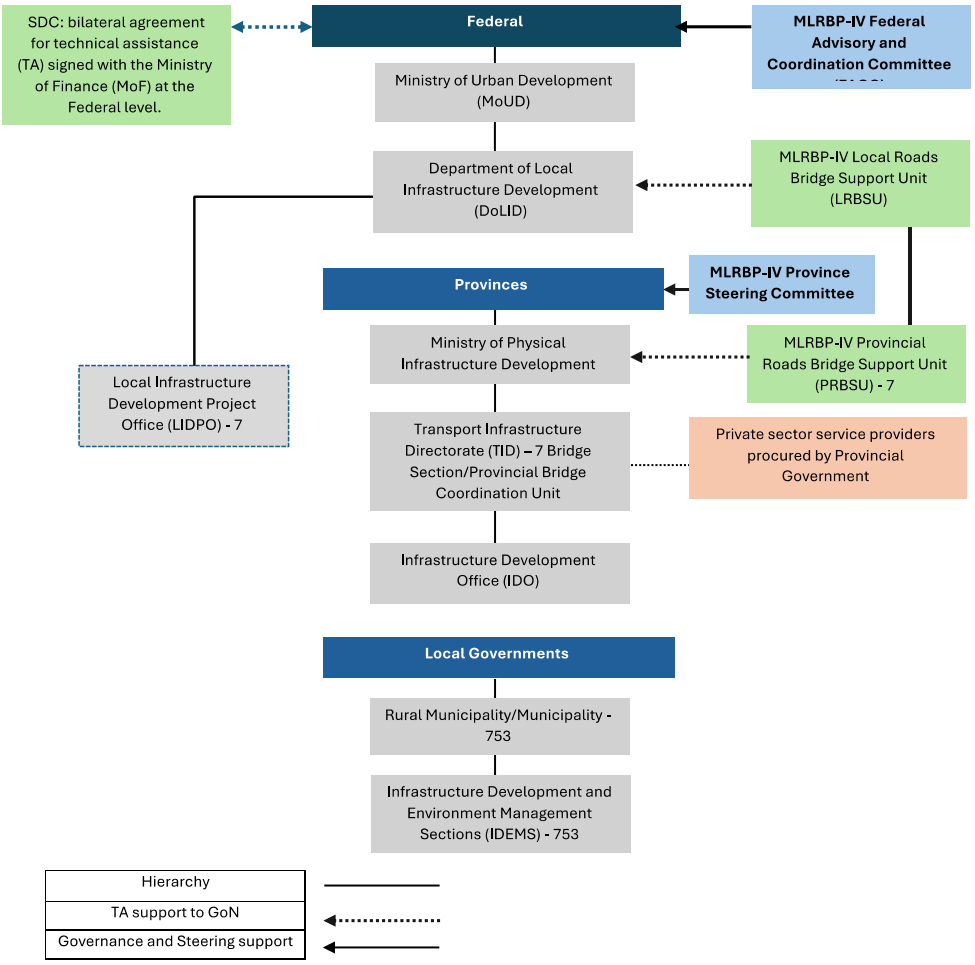
- **Outcome 1:** Government apply and enforces Constitution-friendly bridge strategy to expand all-weather road network at Provincial level and;
- **Outcome 2:** People have access to economic opportunities and basic services using the Provincial Road network.

Annex 1 presents the detailed MLRBP IV results framework, with indicators and targets, which was evaluated by the External Evaluation of MLRBP-IV.

1.2. Programme Structure

Figure 1 below provides a quick reference to the Programme structure and the embedding of the programme within the federal system.

Figure 1: Federalised MLRBP-IV Institutional Structure



At the Federal level, the Department of Local Infrastructure Development (DoLID) under the Ministry of Urban Development (MoUD) is mainly responsible for the formulation of infrastructure norms and standards; to provide advisory support to the provinces based on demand; and to coordinate with other relevant ministries, e.g. Ministry of Finance at the federal level for the provision of conditional grants for bridge building to the Provinces and for policy harmonization. The MLRBP-IV Local Roads Bridge Support Unit (LRBSU) at the federal level functions as the technical assistance (TA) team responsible for supporting the DoLID and the Provincial Governments (PGs) in the coordination and management of the programme activities throughout the entire duration of the programme.

At the Provincial levels, the Ministry of Physical Infrastructure Development (MoPID) is the implementing agency and responsible for budgeting, planning, legal and programme implementation. The Transport Infrastructure Directorate (TID) under MoPID is responsible for policy guidance, monitoring and regulation and the TID Infrastructure Development Offices (IDO) are responsible for bridge contract implementation, contract management and quality assurance. The Bridge Section of the TID works as the Provincial Bridge Coordination Unit (PBCU). MLRBP-IV has established at each Province a Provincial Road Bridge Support Unit (PRBSU), attached to the TID, to provide technical capacity development support to MoPID on bridge building, as well as support to organisational and institutional strengthening.

1.3. Terms of Reference (ToR) of the Evaluation

The External Evaluation of the MLRBP-IV is based on the core principles of the Organization of Economic Cooperation and Development – Development Assistance Committee (OECD DAC) guidelines on external evaluations of development programmes and focuses on the criteria of relevance, effectiveness, efficiency, impact, sustainability, and coordination. For reference the Evaluation ToR is provided in Annex 9. The specific **objectives of the evaluation** are:

- To review the institutionalization of motorable bridge building processes within the Provincial government systems, i.e. MoPID, TID, IDO, especially to see how LRBSU/PRBSUs have helped the PGs to implement their Constitutional mandates specific to bridge building and has contributed to Nepal's overall federal state building.
- To analyse progression of the PG institution capacities, i.e. MoPID, TID, IDO, and private sector stakeholders, e.g. consultants, contractors, and engineering institutes, involved in the bridge building process focusing on MLRBP-IV outcome 1.
- To review whether the motorable bridges built or being built are resulting in an equitable socio-economic benefit accrued against the costs invested, including the contribution from the Swiss Government and the Government of Nepal, focusing on MLRBP-IV outcome 2.
- To validate the results on outcomes reported in the outcome monitoring summaries produced by MLRBP-IV annually, focusing on both outcomes 1 and 2.
- To produce a consolidated report that will serve MLRBP-IV and the SDC with concrete conclusions and provide recommendations for the remaining period of the programme phase to prioritize.

The evaluation looked at various levels, i.e.

- **Federal:** Department of Local Infrastructure (DoLI) as advisors, policy harmonizers and responsible for coordination with the Provincial Governments
- **Provincial:** Ministry of Physical Infrastructure Development (MoPID) responsible for budgeting, planning, legal and steering guidance; Transport Infrastructure Directorate (TID) responsible for policy guidance, monitoring, and regulation; Infrastructure Development Office (IDO) responsible for implementing, contracts management and quality assurance

- **Private sector:** Consultants, contractors, and engineering institutes responsible for providing services to the federal and provincial governments.

1.4. Evaluation Approach and Methodology

The External Evaluation of MLRBP-IV includes three separate but interconnected studies, namely: (i) a socio-economic study; (ii) an economic and financial analysis; and (iii) an institutional review. Each of these studies has its own approaches, methods, and data collection instruments, which are briefly presented below and in further detail in the Annexes 4 (Institutional Review), 6 (Socio-Economic Study), 7(Economic and Financial Analysis).

1.4.1. Socio-Economic Study

As directed by the Terms of Reference (ToR) of the External Evaluation of MLRBP-IV, one of the four objectives of the external evaluation is to "validate the results on outcomes reported in the outcome monitoring summaries produced by the programme on annual basis – focusing on both the outcomes of the logical framework." The Evaluation Team (ET) implemented a socio-economic study, with a series of surveys, interviews, and discussions to: i) measure, assess and evaluate the socio-economic impacts of bridges, comparing pre-bridge and post-bridge scenarios; and ii) validate the annually reported outcomes.. The socio-economic study has helped determine:

- The extent to which the MLRBP IV outcomes and outputs have been achieved or are likely to be achieved.
- The number of people benefitted from MLRBP IV interventions.
- The changes in household income and expenditure and in terms of people accessing education, health services, markets, and livelihood opportunities.
- The changes in the local economy after bridge construction, in terms of increased productivity, flow of goods and services within the local and provincial markets, their prices including freight costs, the availability, volumes of import and exports etc.
- The effectiveness of the mainstreaming of gender equity and social inclusion (GESI) aspects in program institutions and implementation.

The sampling of the bridges for the evaluation employed a purposive sampling strategy, selecting 21 bridges with previous data available for the OMS as well as baseline data, to accurately derive conclusions regarding the economic influence observed "before" and "after" bridge construction. The bridges were selected to ensure equal provincial distribution, as well as intentional ecological zone representation for the Terai, Hilly, and Himalayan regions. The bridge sample is presented in Annex 6.

The socio-economic study employed a mixed-method approach for primary data collection. The ET utilized seven data collection methods, namely: i) household survey, ii) settlement key informant interviews (KIIs), iii) traffic survey, iv) roadside origin to destination survey, v) focus group discussion (FGD) vi) authority key informant interview (KII) and vii) participatory resource mapping (PRM) to collect information on the outcome and output indicators. The definition, objective, scope, and design of each of the seven methods is detailed in Annex 6.

1.4.2. Economic and Financial Analysis

The economic and financial analysis of this evaluation aims to understand the overall economic impact of the motorable bridges built during the fourth and final phase of the MLRBP. The economic evaluation primarily considered transport cost savings and the value of time savings to draw meaningful conclusions. While it is safe to assume that enhanced connectivity and strengthened institutionalization will stimulate significant economic activities in the zone of influence,

understanding the extent to which this influence affects economic indicators is essential for making effective and impactful recommendations. These recommendations may guide the Government of Nepal (GoN) in continuing the Swiss technical assistance efforts that have significantly catalysed Nepal's development for over a decade.

The economic and financial analysis utilized an appraisal methodology that encompasses the "before" and "after" bridge construction situations using three key indicators: the Benefit Cost Ratio (BCR), Net Present Value (NPV), and Internal Rate of Return (IRR). A detailed explanation of the significance and methodology for each is outlined below for reference. The Cost-Benefit Analysis is a critical indicator of the economic viability of an investment as it compared the costs of an investment with the benefits accrued. Details of the methodology used for the economic and financial analysis is presented in Annex 7.

1.4.3. Institutional Review

The institutional review began with a joint workshop in Kathmandu with the SDC, the Local Roads Bridge Support Unit (LRBSU), and the Provincial Roads Bridge Support Unit (PRBSU), hereinafter referred to as the "TA Team." The workshop's three primary objectives were to: i) refine and finalize the evaluation approach and methodology before officially rolling out the research in the six other Provinces, ii) better understand MLRBP-IV's design, implementation modality, achievements, and areas of improvements; iii) align expectations of the SDC,LRBSU and ET; and iv) get a clearer understanding of the assignment's terms of reference (ToR).

After the workshop, the SWN ET implemented a piloting of the institutional review in Bagmati Province. Learnings from this piloting were incorporated into a refined approach, methodology and instruments, which was implemented while carrying out consultations in the remaining five Provinces. The SWN ET completed a total of 72 key informant interviews (KII). The findings from these interviews have been presented and analysed in this report. Both the details of the institutional review methodology and the complete list of key informants consulted during this external evaluation is presented in Annex 4.

Figure 2: SWN Evaluation Team, Conducting a FGD in the settlements around the Mai Khola Bridge, Ilam, Koshi



2. Socio-Economic Data Analysis

2.1. Introduction to the Socio-Economic Research

Impact: In regard to the socio-economic impact, the MLRBP-IV aims to achieve "*People in all seven provinces economically and socially prosper through better connectivity provided by bridges*." This is measured through three proxy impact indicators: Proxy 1. 10% reduction in national poverty (or GDP growth); Proxy 2. 10% reduction in maternal and child mortality rates; and Proxy 3. 10% increase in literacy rates

Outcomes: Socio-economic benefit and deliverables of MLRBP-IV are also measured at Outcome level:

- Outcome 1: *Government apply and enforce Constitution friendly bridge strategy to expand all weather road network at provincial level* – with indicator 1.1 - 200 numbers of bridges built; indicator 1.2 – 3,000 km of all-weather provincial roads; and indicator 1.3 Additional 10% of settlements connected to all-weather provincial roads.
- Outcome 2: *People have access to economic opportunities and basic services using the provincial road network* – with indicator 2.1 - 20% reduction in transport costs (fares and freights); indicator 2.2 - 30% Increase in traffic and freight volumes; and indicator 2.3 - 30% travel time saved.

At the **Output level** there are also some direct socio-economic benefits anticipated of the MLRBP-IV.

Output 2.2: *People, especially DAGs including women in the Bridge Zone of Influence (ZoI) are encouraged to gain from the employment in bridge construction works.* This is measured through indicator 2.2.1 - 0.8-million-person days of employment generated (DAGs: 60%; Women:15%) workers; and indicator 2.2.2 NRs. 2 billion received as wages by workers.

As part of the Programme Evaluation the socio-economic impact and benefit at outcome and output levels (as reflected above) is assessed, through a socio-economic survey in all seven provinces, covering the total of 21 randomly selected bridges. In the next section, first the demographic characteristics of the individuals/households who were part of the research respondents is presented, as well as their perception on the impact of the bridge constructed near their community. Thereafter, the actual contribution of the programme to impact, outcome and output indicators is presented. In the last section of this Chapter some concluding remarks are presented in regard to the socio-economic contribution of MLRBP-IV as measured through the baseline, indicator targets and identified achievements.

2.2. Characteristics of Research Respondents

The characteristics of the respondent individuals/households in the Zone of Influence (ZOI) of the 21 bridges selected, is as follows.

Respondents' Characteristics: The survey included 364 males (54.33%) and 306 females (45.67%). The majority belonged to Hill/Mountain Janajati (19.40%), Hill Chhetri/Thakuri (18.81%), and Hill Brahmin (17.16%), collectively over 55% of respondents. Other significant groups were Terai/Madhesi Other Caste (12.69%) and Hill Dalit (11.94%), while smaller groups included Terai Janajati (7.91%), Terai/Madhesi Dalit and Muslims (3.88% each), and Newars (1.34%).

Livelihoods: Agriculture is the primary livelihood of the respondents (37.01%), followed by business (21.04%). Household work accounts for 10.75%, while students (6.57%), public sector jobs (6.27%), and informal labour (9.85%) indicate a mix of employment types. Private sector jobs (5.37%) is limited, and unemployment is noted as 2.99%.

2.3. Bridge Impact on Livelihoods

Output-based achievements in regard to socio-economic development in the ZOI of bridges, is presented in Annex 2. Below an analysis is provided of bridge impact on house income, household expenditure, migration, asset holding and gender and social inclusion.

Household Income

The analysis of household income sources before and after bridge construction reveals a significant 8.1% increase in overall average annual household income, rising from NPR 157,997.02 to NPR 170,769.76. This suggests that bridge access created, positively influenced economic opportunities. The biggest income gains is livestock-related earnings, which surged by 29.7%, while income from interest (26.0%) and rent (22.9%) also saw substantial growth. Vegetable and fruit farming (14.6%) and non-agricultural wage labour (12.8%) also recorded notable improvements, highlighting the benefits of better transportation and market access linkages.

Cash crop income declined by 11.9%, indicating potential shifts in agricultural focus or market demand. Similarly, while livestock earnings grew, the number of households relying on it slightly decreased by 3.7%, possibly due to structural changes in the local economy. More households engaged in salaried jobs (+14.4%), pension recipients increased (+9.7%), and remittance income grew (+9.0%), reflecting a broader shift towards diversified income sources. The number of businesses such as kiosks, retail stores and e-rickshaw vegetable shops increased by 5.3%, pointing to a better commercial environment facilitated by improved connectivity. These trends suggest that bridge construction has not only enhanced agricultural productivity and market access but also fostered job growth, business expansion, and economic diversification. The decline in cash crop earnings underscores the need to further investigate shifting agricultural dynamics, with the study identifying the lack of fair market prices as one possible contributing factor.

Household Expenditure

The analysis of household expenditure patterns before and after bridge construction reveals a significant 11.8% increase in overall annual spending, rising from NPR 49,557.22 to NPR 55,398.06. This suggests that improved infrastructure has not only boosted income but also created confidence in having sustainable income.. The most notable increase was in education expenditure, which surged by 40.9%, indicating that better connectivity has facilitated easier access to schools and encouraged higher investment in education. Similarly, investment in income-generating activities grew by 20.2%, reflecting greater economic opportunities and improved market access. Communication expenses also rose by 23.3%, likely due to increased mobile and internet usage. Other significant increases were observed in housing and utilities (17.9%), transport (17.1%), and food & non-alcoholic beverages (10.1%), all of which suggest improved access to essential goods and services. Additionally, spending on restaurants and hotels increased by 19.6%, indicating greater mobility and participation in social and leisure activities. The number of households investing in livestock increased by 26.7%, reinforcing the role of agriculture in household economies. This expenditure pattern is also resulting in lower savings, driven by an increase in interest income and the allocation of earnings toward various essential and non-essential goods and services.

At the same time, loan and interest payments declined by 7.4%, despite a 22.6% increase in the number of households making such payments, possibly indicating better financial stability and confidence to invest, or loan restructuring.

Furnishing and household equipment expenses fell by 6.5%, suggesting that households may have prioritized other expenditures. Spending on alcohol and tobacco also saw a slight decline of 3.3%. possibly reflecting changes in lifestyle or shifting spending priorities. Overall, the findings suggest that bridge construction has positively impacted household spending, leading to greater investments in education, business activities, and mobility. The increase in spending on transportation and food highlights improved access to markets and essential services. While some categories, like loan payments and furniture purchases, saw slight declines, the general trend points to economic growth, increased financial stability, and enhanced access to opportunities, reinforcing the critical role of infrastructure in driving rural development.

Perception on the Impact of Bridges and Variations Per Locations

The survey findings indicate that bridge construction has significantly enhanced local market accessibility, business growth, and land value, though its effects on employment and price reductions of goods remain mixed. A majority (70.4%) agreed that the variety of goods in local markets has increased, and 67.5% observed an increase in the number of shops, suggesting that improved connectivity has expanded economic activity and consumer choices. Additionally, 65.7% of respondents acknowledged better access to essential services such as health facilities and administrative centres, reinforcing the positive role of infrastructure in service delivery. Land prices also rose, with 55.8% agreeing and 27.6% strongly agreeing, indicating that improved transportation has driven property demand. However, while market access has improved, 49.7% of respondents disagreed that the price of goods has decreased, suggesting that higher demand or other economic factors may have offset potential cost reductions.

Similarly, employment opportunities showed mixed perceptions, with 49.9% agreeing that job opportunities have increased, but 21.5% disagreeing and 18.4% remaining neutral, implying that while some jobs have emerged, they may not be sufficient or evenly distributed, potentially influenced by the bridge construction and other socio-economic factors. The perception on the impact of bridge on local market, accessibility, and employment also varied by location. Chakla Khola Bridge reflected on the strongest benefits, with increased goods variety (61 agreements) and more shops (59), indicating economic growth. In contrast, Adheri Khola Bridge had mixed responses (13 agreements, 15 disagreements), suggesting uneven benefits. The mixed perceptions on market accessibility and employment may be influenced by the location of the bridge and the presence of existing infrastructure, highlighting the importance of clear criteria for bridge selection and prioritization by the province governments.

Price reductions were minimal—most respondents, especially in Adheri Khola Bridge (29 disagreements), saw no decrease, likely due to rising demand. While the increase in the number of shops suggests that competition could lead to lower prices, the absence of a decrease could also be attributed to shopkeepers' interest in maintaining profit margins, creating a price stickiness, and consequently increasing their income. Land prices, however, consistently increased, reinforcing the link between better connectivity and property demand. Access to essential services improved, with Chakla Khola Bridge leading in reduced travel times (59 agreements), though Adheri Khola Bridge saw mixed feedback (18 agreements, 9 disagreements). Employment effects were also inconsistent- Chakla Khola Bridge showed job growth (48 agreements), while Adheri Khola Bridge saw little change (5 agreements, 22 disagreements). In conclusion, bridge construction has led to significant improvements in market expansion, accessibility, and land value. However, price reductions were not widely observed, and employment benefits have been uneven.

Migration

The study shows that international migration decreased by 38.6%. Internal migration, however, saw only a slight decrease of 3.3%, indicating that while local conditions have improved, some internal movement continues. The primary drivers of migration—the most common reasons for migration, such as lack of business opportunities and income barriers—have decreased by 66.7% and 40.9%, respectively. Meanwhile, migration for employment reasons increased by 37.3%,

highlighting improved economic activity and employment opportunities in the Zone of Influence. Migration due to a lack of education opportunities decreased by 17.7%, but it remains relevant, as the lack of education opportunities is still a significant reason for migration. Social reasons for migration remained unchanged, implying that cultural and familial motivations were unaffected by the bridge construction.

Asset Holding

The study shows a shift in household assets after the bridge construction. Radio ownership decreased by 40.2%, likely due to the availability of alternative media sources. Minor decreases in the ownership of clocks (1.2%) and inverters (2.6%) suggest improved access to electricity. Meanwhile, refrigerator ownership increased by 13.5%, computers by 13.2%, and televisions by 4.7%, reflecting better economic conditions. This highlights the impact of bridge construction on improved access to assets, enhanced connectivity to electricity, and possibly the internet, as well as better transportation services.

Gender Equality and Social Inclusion

The Gender Equality and Social Inclusion (GESI) aspects of the bridge construction reveal both gaps and positive outcomes. While the bridge has enhanced mobility for women and girls, its planning and implementation seem to lack strategic intent for inclusivity, particularly in engaging Disadvantaged Groups (DAGs) and women. Findings from all Focus Group Discussions (FGDs) indicate that these groups were excluded from any stage of the bridge construction process, highlighting a missed opportunity for participatory development. Additionally, it was reported that no formal discussions were held with community members during the initial phases of construction, suggesting a top-down approach rather than a community-driven process.

Despite these shortcomings, the post-construction impact has been positive, particularly in terms of improving transportation access for women and marginalized groups. Previously, travel was predominantly undertaken by men, and during the monsoon season, the lack of passenger vehicles forced people to rely on freight vehicles, limiting mobility to urgent cases only. With the bridge in place, passenger vehicles now operate throughout the day, providing flexible and accessible transportation options such as buses, autorickshaws, and jeeps. This has significantly improved mobility for women and girls, allowing them greater access to education, health services, markets, and economic opportunities.

The study with school respondents reveals a strong correlation between household income levels and school enrolment choices. Families that experience an increase in income tend to shift their children to private schools, perceiving better educational quality, resources, and opportunities in the private sector. As a result, public schools primarily cater to students from economically disadvantaged backgrounds, reinforcing a socio-economic divide in education. Similarly, more girl's students are to be enrolled in public school in comparison to boys. Increase in girls' enrolment in public schools is a positive step, the divergence in schooling choices between genders could reinforce long-term educational inequalities.

2.4. Programme Contribution at Outcome Level

The construction of bridges and expansion of all-weather provincial roads have improved transportation infrastructure, accessibility, and socio-economic conditions in the bridge vicinity settlements. The programme has successfully exceeded most of the key targets, demonstrating substantial progress in connectivity, cost efficiency, traffic volume, and access to essential services. The below table provides a quick overview of the programme contribution towards the Outcomes, categorised along the Outcome indicators of the programme Results Framework. For each of these outcome indicators a detailed analysis of the programme contribution is provided in Annex 2.

Table 1: Changes in Key Socio-Economic Indicators from Baseline to Endline for MLRBP

Indicator No.	Socio-economic Target Indicator for two Outcomes and one Output	Unit	Before bridge construction	After bridge construction (OMS 2024)	Change Achievements
Outcome 1	**Government apply and enforce Constitution friendly bridge strategy to expand all weather road network at provincial level.**				
Indicator 1.1	200 numbers of bridges built	Number	NA	424	424
Indicator 1.2	3,000.0 km of all-weather Provincial roads	Km	0	5,313	5,313
Indicator 1.3	Additional 10.0% of settlements connected to all-weather roads.	Number	192	292	52.08%
Outcome 2	**People have access to economic opportunities and basic services using the provincial road network**				
Indicator 2.1 (a)	20.0% reduction in freight transport cost.	NPR/kg/km	0.586	0.026	95.50%
Indicator 2.1 (b)	20.0% reduction in transport cost-fares	NPR/km	9.060	8.139	10.16%
Indicator 2.2 (a)	30.0% increase in traffic volume.	Number	4,001	8415	110.32%
Indicator 2.2 (b)	30.0% increase in freight volume.	Kg			
	Export		389,902	2,952,494	657.2%
	Import		373,467	2,890,507	673.97%
	Overall		763,369	5,843,001	665.42%
Indicator 2.3.	30.0% travel time saved.	Minutes			
	Walking		115.70	111.36	3.75%
	Vehicle		31.57	27.69	12.27%
	Overall		73.63	69.53	5.57%
Output 2.1	**People are accessing basic services and economic opportunities**				
Indicator 2.1.1	20.0% increase in school attendance.	Number			
	Male		1,350	1,397	3.48%
	Female		1,625	1,706	4.98%
	Overall		2,975	3,103	4.30%
Indicator 2.1.2	25.0% increase in visits to health facilities	Number			
	Male		7,660	9,089	18.66%
	Female		9,921	12,849	29.51%
	Overall		17,581	21,938	24.78%

***green indicates complete achievement of the target indicator values. Red indicates partial achievement of the target indicator value*

Figure 3: Tractor Crosses the Totinala Bridge, Sudurpaschim, Jan 2025



3. Institutional Review

3.1. Introduction

MLRBP-IV is designed to strengthen provincial governments (PGs), particularly the MoPID, in implementing the new constitution by managing and constructing motorable bridges on the provincial road networks. During Phase I-III of the MLRBP the programme was supporting the then DoLIDAR with bridge designs and construction, while over phase III the federalisation of the programme towards Provincial level was initiated, well ahead of the curve in terms of federalisation efforts of GoN and programmes. This anticipation of a federalised programme structure and design served Phase IV well, as it could start promptly with its mandate and responsibility to build capacity at Province level for bridge design, procurement, construction supervision and asset management.

Phase IV also differs in the way that the programme no longer provides investment budgets for bridge construction, except for innovative designs. The program plays an advisory role, guiding provinces in planning, design, procurement construction quality assurance of bridges. The fact that bridge construction is conducted with own resources of Provinces, with technical support from MLRBP, is an achievement in terms of ownership and acceptance of MLRBPs competence. At the same time the influence of the TA over bridge planning and construction processes through its advisory practice is more challenging as it no longer has leverage of the utilisation of funds. This approach is in line with the Paris Agreements on strengthening national systems and in line with the federalised Governance system in Nepal.

SDC procured a TA provider to support the seven Provinces, notably by establishing a PRBSU in each MoPID with linking to their TIDs and IDOs. The TA provider established a central TA Unit, LRBSU which offers technical support to DoLID upon request. See also the programme structure as presented in Chapter 1. In relation to the Evaluation Objective (ToR Page 8) is stated that there is a need to review: (i) Institutionalisation of bridge building processes at Provinces; (ii) Progression of capacities of Provincial Governments and private stakeholders; (iii) Equitable socio-economic benefit of bridge investments; and (iv) to validate outcome monitoring summaries at outcome level and the logical framework, and provide conclusions and recommendations.

The evaluation ToR states (Page 6) that programme achievement is to be evaluated against the following four components of the Swiss TA Support:

- Consolidation of initiatives from phases I-III to scaling of bridge construction at Provinces
- Research and Development for technology transfer
- Strengthening government institutions, specifically provinces within the federal system
- Capacity development of government and private sector (especially design, procurement, construction quality control, and contract management)

This leads to an evaluation approach which follows the Capacity Development approach as presented below.

3.2. Political Context Challenges to Federalism and MLRBP-IV Implementation

Nepal's transition to federalism under the 2015 Constitution has been fraught with political and institutional challenges that have significantly impacted the implementation of the MLRBP-IV. Key political barriers identified are e.g.—provincial instability, limited federal support, short-term political priorities, absence of crucial legislation, and inter-governmental

coordination gaps—and their implications for MLRBP-IV's objectives of institutionalizing bridge-building processes and developing sustainable provincial capacities.

Key Political Challenges

1. **Provincial Political Instability and Frequent Government Changes:** Frequent changes in provincial leadership have disrupted MLRBP-IV's capacity development efforts. Since 2017, coalition governments and intra-party disputes have led to high turnover in several provinces. For instance, Koshi Province has seen six Chief Minister changes and 13 cabinet expansions in the past 18 months, with 26 individuals appointed 43 times to ministerial roles. This instability extends to bureaucratic staff, with key positions in the MoPID, such as TID directors, frequently reassigned or vacant. The Technical Assistance (TA) team struggles to maintain consistent partnerships, as new appointees require reorientation to MLRBP-IV's frameworks, like the PRA and PRNMP, delaying implementation in provinces like Gandaki and Karnali.

2. **Limited Federal-level Support for Federalism:** The federal government's slow progress in implementing federalism mandates and resources has significantly hindered MLRBP-IV's efforts to institutionalize bridge planning and management at the provincial level. Although the Constitution grants provinces clear responsibilities for infrastructure, the absence of key legislation—such as the Federal Civil Service Act—has left them understaffed and under-resourced. As a result, provincial ministries like MoPID rely heavily on support units such as PRBSU for technical tasks, while overlapping federal structures like LIDPOs continue to operate at the provincial level, undermining coordination and ownership.

3. **Focus on Short-Term Political Gains:** Political prioritization of short-term electoral gains over strategic infrastructure planning has distorted MLRBP-IV's objectives. Bridge selection often bypasses the PRNMP due to political influence, with leaders preferring projects for visibility rather than connectivity for DAGs. In Madhesh Province, ad-hoc bridge proposals with minimal funding (e.g., NPR 1 million per bridge) have led to stalled projects and unmet expectations.

4. **Absence of Crucial Federal Legislation:** The lack of a Federal Civil Service Act as of April 2025 has left provinces without clear human resource frameworks and inadequate Human Resources, exacerbating staffing shortages in MoPID, TID, and IDO. Bridge units are understaffed, with personnel overburdened by multiple roles. The absence of a federal asset management framework hinders the sustainability of the Provincial Bridge Information Management System (PBIMS), as provinces prioritize competing budgetary demands over maintenance, threatening MLRBP-IV's institutional legacy.

5. **Inter-Governmental Coordination Gaps:** Weak coordination among federal, provincial, and local governments has led to inefficiencies, such as duplicated bridge projects funded by DOLID, provinces, and local governments. In Lumbini Province, federally funded bridges overlapped with provincial efforts, diverting resources from priority areas. The absence of a national infrastructure coordination platform limits knowledge-sharing and synergy, constraining MLRBP-IV's ability to foster a cohesive federalized approach to bridge building. On average Province MoPIDs still have over 40% vacancies for technical functions, which was likely significantly higher before the Provincial Civil Service Law was promulgated in 2024. (See for details Annex 3, Output 1.2)

Implications for MLRBP-IV's Institutional Outcomes

1. **Delayed Institutionalization of Bridge Units:** High staff turnover and lack of federal staffing frameworks have slowed the establishment of functional bridge units within TID. While units exist in most provinces, they rely heavily on PRBSU for technical and managerial tasks, lacking formal integration into MoPID's structure.

2. **Limited Adoption of Strategic Frameworks:** Politicization of bridge selection and delays in adopting PRAs and PRNMPs reflect weak political commitment to long-term planning. This reduces MLRBP-IV's ability to align investments with equitable development goals, particularly for DAGs.

3. **Sustainability Challenges:** The absence of a federal asset management framework and limited provincial budget prioritization for PBIMS maintenance threaten the sustainability of MLRBP-IV's tools. Delays in the co-financing model for Provincial Bridge Management Support Consultants (PBMSC) in provinces like Koshi and Madhesh further undermine institutional outcomes.

4. **Missed Opportunities for DAG Inclusion:** Political focus on short-term gains has diverted investments from DAG-heavy areas, limiting socio-economic impact. The lack of a strategic DAG engagement strategy exacerbates this issue.

The political challenges to federalism—instability, limited federalisation, short-term priorities, legislative gaps, and coordination failures—have been a significant, albeit to a certain extent foreseeable, obstacle to MLRBP-IV's ability to institutionalize bridge-building processes and build sustainable provincial capacities. MLRBP-IV design and implementation was inadequately geared to adapt to opportunities and barriers in the fluid political context.

3.3. Programme Monitoring, Evaluation and Learning Systems

MLRBP-IV implements a robust monitoring and evaluation plan, incorporating periodic monitoring, self-reflections, and external evaluations throughout the programme cycle. Monitoring tracks the programme's progress in alignment with the intended flow of the logical framework. The MLRBP-IV programme document outlines the following plan:

Monitoring by IDO, together with the PRBSU, is done by preparing **Monthly Progress Reports** that emphasize tracking financial and physical progress. They submit these reports to the TID and the MoPID for approval. Every four months, the IDOs and TIDs, supported by the TA Team, prepare a detailed Trimester Progress Report. This report covers financial, physical, and social aspects of progress and is forwarded to the DoLID and the Ministry of Federal Affairs and General Administration. Afterward, a more comprehensive study in the form of Outcome Monitoring Surveys (OMS) is conducted.

The TA Team, in collaboration with external consultants, carry out the **Outcome Monitoring Surveys** (OMS) annually to assess the programme's outcomes, aligning with the OECD DAC criteria of relevance, efficiency, effectiveness, and sustainability. This process is to provide a holistic understanding of the programme's successes and failures and its alignment with the logical framework. The SDC/Ta team uses the OMS reports to adjust programme interventions where necessary and to identify the impact created.

The Provincial government, with the support from LRBSU prepares **quarterly reports** on selected outcome indicators. The PGs are supported by the LRBSU in data collection and data quality. The LRBSU then forwards the finalized quarterly reports to SDC for further use and review. These quarterly reports inform SDC whether the programme is on track in achieving the results and expenditure. Additionally, the quarterly reports are used to prepare the bi-annual operation reports in compliance with the programme mandate.

The Yearly Plan of Operation (YPO) and the **Annual Progress Report** (APR) are compiled annually. The APR focuses on outcomes, results, achievements, and lessons learned, along with the annual spending against the planned budget from the previous year. The YPO outlines the physical plan for the coming year. These reports are prepared by TID and MoPID,

supported by the TA Team. The reports are presented to the Provincial Steering Committees, and consolidated reports are then submitted to FACC for approval and conditional grants.

The **evaluation process** primarily involves reports that provide an overview of the project's status, and a comprehensive system has been planned according to the program document. The process begins with baseline and end-line surveys, establishing population sizes, zone-of-influence, and indicators. Baseline surveys are conducted before bridge construction, while end-line surveys are done afterward to compare the differences. The results will be included in the APR and YPO. The TA Team also conducts a **self-evaluation**, together with representatives of PGs, annually to assess the progress, processes, and approaches of the programme. This evaluation takes place along with the programme's annual report preparation.

The **learning process** seems to have been limited to technical learning within each team individually, with annual events for progress reporting and sharing some technical experiences and learning. The LRBSU and PRBSUs did not function well as a learning network and effort was mostly geared towards technical backstopping and progress monitoring within the frame of the Programme annual planning. Learning across teams and from different geographical areas, with varying technical challenges, was insufficiently developed. Bridge site assessments and designs in higher mountain regions, were inadequately shared with hill and terai regions, which resulted in a sub-optimal optimising of localising bridge design practices within different contexts. Moreover, joint strategising and cross-learning on institutional objectives of the programme, as the Provincial Road Acts and organisational capacity development of provincial MoPIDs was also limited. The programme missed therewith opportunities to develop a more dynamic and collaborative approach, which could have been more impactful then the 'technical project implementation' approach. Technical capacity strengthening was not adequately utilised as a vehicle of change to develop policy interventions (policy influencing research) and to support organisational strengthening objectives. In sections below this is referred to as the programme's 'strategic approach' or the lack thereof.

In addition, it seems the programme MEL system was solely perceived as an internal programme instrument and developing cross-MoPID monitoring and learning systems around bridge building, which could continue beyond the programme duration, were not actively pursued.

Figure 4: SWN Evaluation Team Member Conducting an FGD in West Rukum

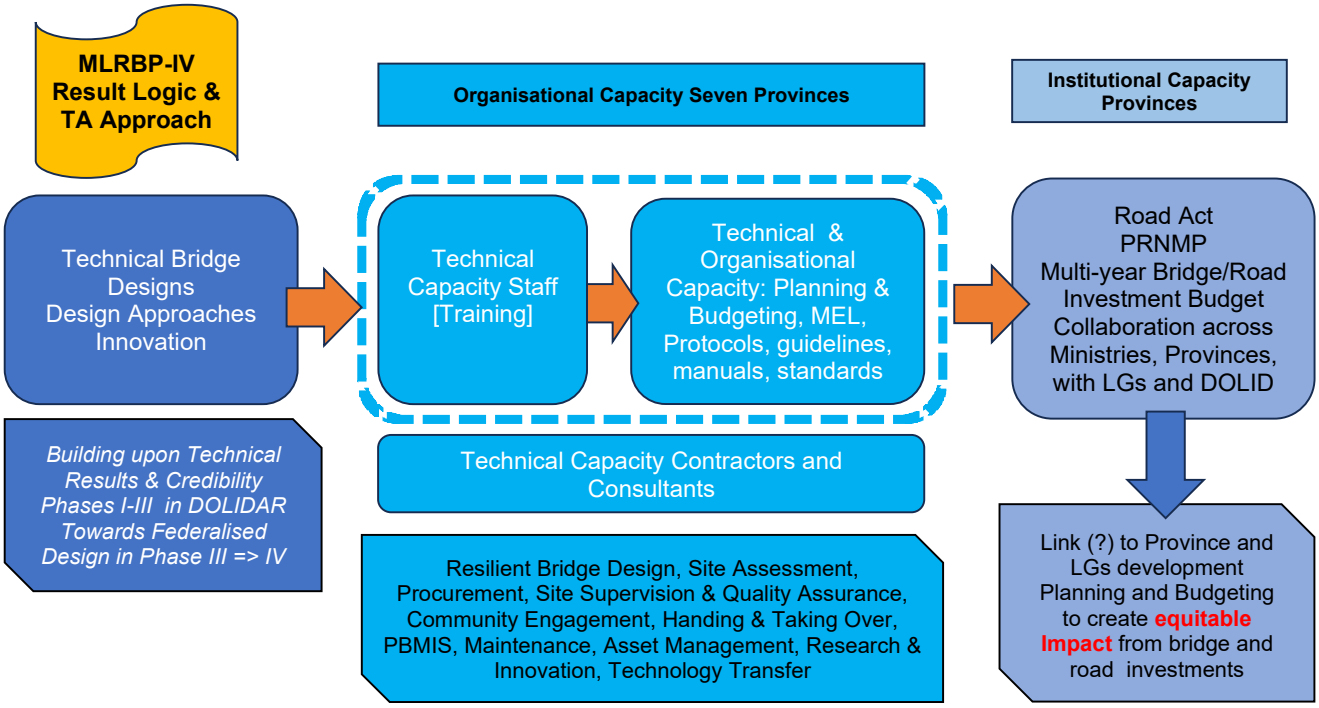


3.4. Programme Capacity Development Approach

The programme document and Results Framework make mention of a systems capacity development approach with different system levels of the Province, most notably MoPID and TID: technical staff capacity, organisational capacity, and institutional capacity. Evidently, all three levels are interconnected. This approach will also be followed for the evaluation of the achievements of the programme. The starting point of the institutional review has been an assessment of achievements as per the Output indicators (Annex 3), as this is a formal reference frame for the evaluation. Moving beyond individual output indicators, the CD achievements and deliverables are analysed.

For reference, the below figure, as developed by the ET, visualises the systems approach of capacity development. In the next section the programme achievements on each of the Outputs is reviewed, keeping in mind the interlinked nature of the outputs and outcomes as per the systems CD approach.

Figure 5: MLRBP-IV Intervention and Capacity Development Results Logic (figure developed by evaluation team)



3.5. Programme Achievements at Output Level

In the previous Chapter the socioeconomic achievements of MLRBP-IV have been presented, referencing the indicators of Outcome 1 and Outcome 2, as well as the achievements under Output 2. In this Section the institutional achievements of the Programme are presented under Outcome 1 "Government apply and enforce Constitution friendly bridge strategy to expand all weather road network at provincial level", with reference to the four Outputs (1.1 – 1.4) and their output levels indicators. The below provides a summary analysis of research findings per Output. The detailed findings and analysis per output indicators is presented in Anne3, as kind reference.

Output 1.1. MoFAGA/DoLID produces uniform standards, norms, and guidelines required for motorable local roads bridges.

Four standard designs for Reinforced Cement Concrete (RCC) T-Girder, Prestressed Concrete (PSC) T-Girder Single-Cell, Double-Cell, and Multi-Cell Box Girder bridges, and Steel Plate Girder bridges have been fully developed and reviewed by the Institute of Engineering (IOE). The standard norms for rate analysis and construction for these four bridge types have also been developed. The first two standard designs have been endorsed by DoLID for use in bridge projects across Nepal. The second two are planned to be endorsed by DoLID before end of the programme.

As part of the Research and Development (R&D) initiative, a new bridge construction technology using concrete-filled steel truss structures has also been introduced and tested by DOLID on several bridge locations. However, it is unclear to which extent Provinces will adopt this innovation, especially as bridge failures have occurred with these innovative bridge design constructions; see text box below.

Box 1 MLRBP Research and Development of Innovative Bridge Designs

Research and Design – Opportunities and Risks

The project introduced new, creative, suitable bridge designs and piloted construction under the Research and Development component of the project. This component is crucial for the sustainability of the knowledge, technology and approaches, which are dependent on their successful transfer. MLRBP programme has:

- Piloted innovative types of bridges to see the possibility of the replication of appropriate type of bridges on the provincial road network, promoting innovations in technology and approaches that are cost effective and scalable. These include: (i) Precast pre-stressed concrete modular bridge; (ii) Composite steel plate girder; (iii) Multi-cell continuous slab bridge; and (iv) Concrete filled steel deck type truss bridge.
- Introduced labour based approaches wherever appropriate to provide employment opportunities on bridge construction sites to DAGs within local communities of bridge Zone of Influence;

While the R&D component of the project has largely been successful and highly appreciated, there has been some set-backs too. Two bridges in Koshi province were designed to introduce an innovative design requiring a reduced quantity of the steel through the use of external post-tensioning and the deck concreting being done after the construction of this post-tensioned truss so that the time and cost of temporary works are reduced. One of the bridges (KAWA bridge) however developed structural defects and collapsed before it came into operation. While there were no damage noticed in the second bridge (HEWA bridge), it was immediately closed for traffic. The damage was found mainly due to complex secondary effects that could not be anticipated during design and also workmanship issues. These bridge types require a more rigorous quality assurance and work supervision, which was challenging due to remoteness of the bridge site. The bridge was later rectified with a simpler innovative design adopting concrete filled deck type truss.

The introduction of more technically advanced bridge designs, with a lower investment cost and higher economic feasibility was an important success of the programme. However, the two bridge failures as part of on-site testing should have been avoided by increased programme support and technical/material monitoring during construction with a continuous analysis of construction requirements, as it undermines acceptance and scaling of the new bridge designs.

Output 1.2. Provinces have functional bridge units.

MLRBP-IV has delivered impressive outcomes in numerical terms, till Mid of January 2025 the number of Bridges Completed is 424, which significantly exceeds the target of 200. The programme therewith connected 5,313 km of All-Weather Provincial Roads against a target of 3,000 km. This high delivery by the programme also poses concerns in terms of quality assurance and whether the high TA allocation to bridge design verification and construction supervision may have diverted resources to other programme results, notably MoPID organisational and institutional capacity strengthening.

Establishing a 'functional' bridge unit within TID, MoPID, is measured through 5 Output indicators. At the same time 'functional organisational capacity' is broader then the indicator areas alone. In all Provinces either **bridge units have been formally established** or decisions have been made to establish these. Not in all cases have bridge units been included formally in an updated Organization and Management (O&M) framework and bridge management responsibilities are still highly inconsistent. There is a reliance on existing directors and delegated personnel to manage bridge responsibilities, which suggests a lack of dedicated management and specialized expertise. This risks overextension of staff and could lead to compromised project quality and delayed implementation. Even in provinces where bridge units have been established, staffing levels appear minimal. This situation reflects the broader HR challenges of Provinces, e.g. high turnover of political appointees and of senior bureaucratic staff, and a lack of HR staffing plans and a Federal/Provincial Civil Service Act.

The Programme has had a high focus on building technical bridge design capacity within the available TID staff and of private consulting firms. Considering limited in-house MoPID capacity, the outsourcing of bridge design work is a logical option for MoPID and the majority of bridge design works are now procured through outsourcing modality. However, MoPID still has a heavy reliance on PRBSU for design verification, site assessments, bridge type selection, construction oversight, and for bridge failure evaluations and learning. For too long PRBSUs have functioned as an internal unit rather than an external advisory and CD project.

Although most MoPID ensure that capacity for procurement is adequate and no support is needed from PRBSU, the actual capacity or willingness for transparent and accountable procurement in line with GoN financial rules and regulations remains unclear. Budgeting and scheduling for bridge construction continues to face significant challenges, resulting in risks such as non-compliance with standards and design specifications, high tender prices and cost overruns, and project delays. Inefficient planning further exacerbates these issues, leading to overlaps between Provinces and Local Government, and federally funded projects implemented directly by DOLID/LIDPO. The fact that federal DOLID has offices at Province levels (LIDPO) is against the federal system and mandates. Subsequent coordination gaps and resource misallocation for bridges within the PRN is there with a substantial risk. Political influencing of bridge selection distorts the approval process for the PRNMP, prioritizing short-term political gain over long-term infrastructure needs and optimisation of development impact.

Output 1.3. Information system on Provincial Roads Network (PRN) is established and updated.

The PRNMP is a strategic document that outlines the long-term vision and development of the transportation network within a specific province, therewith substantially contributing to well targeted overall development impact. It is considered one of the milestones of the MLRBP but the results are mixed. In many cases some form of PRNMP is available, but not formally endorsed and in all cases not followed in terms of bridge and road investment prioritisation.

The programme document also highlights the importance of Provincial Road Acts (PRA). Five provinces (Gandaki and Karnali are remaining) have successfully endorsed their PRAs, but that achievement was largely realised during the end of MLRBP Phase III in preparing for Phase IV in the expectation of more federalized structure to be in place. In Phase IV the PRBSU has had more limited involvement in supporting PRA development, as this is a less technical and more political process. This raises questions about the programme's strategic approach to infrastructure development and governance.

Provincial Bridge Information Management System (PBIMS) introduced by MLRBP-IV is an integrated system designed to streamline the management of bridge-related data at all stages of a bridge's lifecycle, including budgeting, surveys, design, design verification, and construction phases. This is a very useful system and the data presentation is comprehensive.

Capacity to verify and input data by IDOs, to maintain and update the system and especially to utilise the data effectively for decision-making is still weak, however.

PBIMS data still needs to be linked with planning, budgeting, and decision-making. The Programme also made no effort to promote the larger need for an asset management strategy, planning and budgeting within the Provinces for bridges and infrastructure. The PBIMS captures design information on all bridges constructed under MLRBP, as well as most other Provincial bridges. For asset management purposes all bridges, as well as their actual condition and maintenance requirements, would need to be captured. The Provincial Bridge Management Support Consultants (PBMSC) shows good utility and ownership to continue support to Provinces on PBIMS and asset management. PBMSC is funded through a co-financing model, with the SDC contributing 50%, the Provincial Government (PG) 30%, and the DOLID 20%. Sustainability of PBIMS and promoting asset management should be further intensified through the PBMSC.

Output 1.4. Private sector engages and provides their services in bridge building in the provinces.

The private sector's engagement in bridge building has been substantial as outsourcing compensates for the need to have substantial in-house capacity of MoPID. Consulting firms for bridge designs are available and adequate for the prevailing bridge designs. At the same time, as highlighted before, the capacity of MoPID is still inadequate to supervise private sector services and to verify deliverables as per agreed standards. The research, learning and design adaptation capacity of both service providers and MoPID is also still low.

It is also noted that the fulfilment of the target of 2 firms was achieved early in the programme. This seemingly led to little effort to expand CD to further private sector entities and shows a limited the perspective on a more strategic facilitation of the engagement between MoPID and private sector, exploring different outsourcing arrangements or Public Private Partnership models, as well as the related capacity requirements.

The programme's efforts to collaborate with educational institutions has the goal of fostering bridge design skills among engineers in Nepal and enhancing the private sector, this initiative is moving forward. The collaboration between the TA Team and 17 engineering colleges across Nepal was formalized through a Memorandum of Understanding (MoU). This is a valuable component of the programme as it created sustainable technical resources for the future. Gandaki Province's successful collaboration between LRBSU Gandaki and the Institute of Engineering, Pokhara, serves as a good practice model for integrating bridge design education within Nepal's academic institutions. Replication of this model to other institutions has been less successful and sustainability of the effort is doubtful. This is largely due to a lack of a strategic organisational capacity approach to identify opportunities, challenges and ownership within education institutes.

Capacity development of contractors has been minimal and the demand was also very low. With often still poor planning, inadequate budget allocations and political dynamics around infrastructure investments, it is also difficult to identify the critical contributions of the programme related to CD of contractors, without broadening the approach to this component substantially. Even when bridge designs are completed, budgeting and scheduling remain inadequate. It was identified that budget allocations to bridges remain inadequate, which risks the design standard not being achieved or certain work items being omitted. Despite insufficient budget allocations, procurement of the construction work still commences. The key message is that limited capacity development for contractors, poor planning, and inadequate budgeting are major challenges in bridge construction. Without a more comprehensive approach, the Programme's impact on contractor capacity remains unclear. Additionally, inadequate budget allocations risk compromising design standards, yet procurement still proceeds despite funding gaps, leading to inefficiencies and potential quality concerns.

4. Programme Performance

The MLRBP-IV performance evaluation has followed the OECD-DAC Evaluation Criteria, notably: (i) Impact (ii) Relevance; (iii) Effectiveness; (iv) Efficiency; and (v) Sustainability.

4.1. Impact

The impact of the programme is substantial in leading the infrastructure capacity development of Province level, notably bridges, within the federal structure. The MLRBP was an early adopter of the federalised approach and has created substantial technical capacity within MoPID for good quality bridge design and construction. The 424 bridges constructed have created an additional 5,313 km of all-weather roads with and connected an additional 292 settlements to the all-weather road network. The bridges supported under the MLRBP are also of good quality, which ensures a longer lifetime and benefit generation from these investments. The MLRBP-IV TA investment of NPR 1.3 billion (CHF 8.8 million) by SDC has leveraged over the programme period the Provinces' own NPR 15 billion of public funding for bridges, ensuring good quality. This in turn has leveraged significant socio-economic impact.

MLRBP-IV therewith has provided substantial benefits to households in the Zone of Influence of bridges (see Chapter 2). Household income increased, income diversified and more people have salaried jobs and more people receiving remittances and pensions. The number of businesses also increased. Income from cash crops reduced, while investment in livestock increased. Household expenditure also increased, most notably for education and for income generating activities, reflecting greater economic opportunities and improved market access. Increased expenditure was also noted on essential goods and services and asset holdings of households increased significantly. Most households experienced an increase of land value, improved access to education, health services, administration centres and markets. But prices of goods remained more or less the same, despite a substantial reduction of transport and freight cost. Generally households are substantially better off after bridge construction.

The programme therewith achieved most of its socio-economic impact and outcome targets, which is commendable (see Table 1). At the same time the Programme missed opportunities to further strengthen development impact by not more strategically engaging on PRNMP and bridge investment prioritisation processes. At the level of bridge selection and road network outreach, a substantial further improvement of DAG benefits from bridge investments is possible. This could have been part and parcel of a DAG strategy, beyond the direct benefit for DAG within the Zone of Influence of bridges constructed.

4.2. Relevance

The MLRBP-IV aligns with Nepal's constitutional federal transition by strengthening provincial governments, particularly the MoPID, to manage and construct motorable bridges. This federalised design, already initiated under phase III, was very relevant and ensured timely and urgently required support to Provinces under phase IV. The programme's advisory and capacity development design allowed MLRBP to move away from actual bridge building, was highly relevant and appropriate as the new Provinces had still very limited technical, organisational, and institutional capacity to deliver good quality bridges. The programme therewith filled the gap between federal DOLIDAR moving away from bridge building on (now) Provincial roads and Provinces being able to actual build such bridges themselves.

The Programme went beyond the transfer of technical capacities and also engaged in strengthening organisational capacity of the Province MoPID. This is especially relevant as existing bridge-units under MoPID/TID were absent and building individual staff capacity would not be adequate, nor sustainable. The institutional capacity strengthening, through support in drafting legal frameworks, including the PRA and the PRNMP, also aligns with Nepal's federalization goals, and would ensure over time the proper allocation of investments in bridges and roads, with optimal benefit to people.

The focus of MLRBP-IV on bridge building remained also highly relevant, as expansion of the provincial road network into less developed areas with more disadvantaged and vulnerable people is impactful in achieving equitable development benefits. This is clearly outlined in the socio-economic impact analysis of the evaluation. The added emphasis on especially reaching DAGs, including women, is also still very relevant at the Province level as equitable development is still a substantial challenge. Furthermore, SDC has a clear credibility and core capacity in infrastructure development in Nepal, through decades of support. SDC is therewith well positioned to leverage its credibility and expertise, while at the same time regarding the MLRBP-IV as an exit phase and to hand-over bridge building ownership to Provinces.

In conclusion, the focus on bridges (and the Provincial Road Network) with its high potential development impact, as well as the federalised capacity strengthening approach, including technical, organisational and institutional capacities, makes the MLRBP-IV highly relevant.

Figure 6: Freight Vehicles Lined Up on the Signaha Khola Bridge, Bardiya, Lumbini



4.3. Effectiveness

The effectiveness of MLRBP Phase IV is measured by its ability to strengthen PGs in planning, designing, constructing and managing bridge infrastructure. Although the MLRBP-IV TA and CD approach is deemed most suitable (section 3.2), the effectiveness of the programme in achieving outputs and outcomes shows a mixed picture. The TA provider procured for phase IV is highly competent in regard to technical bridge design and technical organizational capacities required. MLRBP-IV has therewith been highly effective in achieving technical capacity of MoPID for standardized designs and norms of the

four bridge types. MLRBP-IV has also institutionalised technical protocols and guidelines for key technical works of MoPID, therewith achieving a good level technical organizational competence. Similarly, bridge design consulting firms and contractors have obtained adequate technical capacity to perform as per the new designs and specifications.

TIDs generally have a sense of ownership and motivation for improved service delivery. However, the implementation of public hearings and audits has been weak, with e.g. only 12 out of 76 projects in Gandaki conducting hearings. This is indicative of a limited capacity or willingness for transparency and challenges with external stakeholder engagement and replication of good practice across Provinces. Also, MoPID has remained too dependent on the TA for design verification and for more challenging technical works as bridge site assessments, climate resilience and continued learning and innovation. The functional organizational capacity of MoPID remains relatively weak.

In regard to the institutional interventions, these have been taken up in a rather ad-hoc way without coherent approach to deal with political economy and the generally still weakly developed Province institutions. The development and adoption of the PRA and PRNMP, as well as the bridge prioritization and budgeting process, has therewith lacked in comparison to the development of technical capacities. Additionally, DAG inclusion efforts remain largely ineffective, with no structured mechanisms for capacity-building or monitoring.

This is in part as the TA team composition is highly focused on technical competence while TA for a strategic coherent approach to organizational development of MoPID and achieving institutional results is under-resourced. The TA design is building too much on the expertise which was successful for phases I-III and has insufficiently adapted to the requirements for achieving organisational and institutional results, within a volatile context. A more comprehensive and collaborative approach towards institutional capacity development would have increased the likelihood of achieving more impact level development results, including targeting of DAGs. Koshi Province has for example benefited from the enabling environment created by the long term engagement of another SDC programme on strengthening federalism in the Province. But even here MLRBP-iv did not (pro-)actively engage or seek cooperation with the SDC Provincial Support Programme (PSP).

In conclusion, the programme has been highly effective in achieving its technical results, in terms of developing technical bridge design and related packages, as well as on developing technical capacity of MoPID staff and private sector. The programme has also been effective in building technical organizational capacity within MoPID but adaptive technical capacity for e.g. climate resilience and innovation remain weak and unsustainable. In regard to building sustainable functional capacity of MoPID and institutional capacities for continued good planning and budgeting for bridges and the Province road network, as well as for DAG targeting, MLRBP-IV has only been moderately effective.

4.4. Efficiency

The programme was efficiently federalised to Province level, with the PRBSU embedded within the MoPID. The delivery of technical services was highly efficient as it build on the vast bridge design standards and related documents developed in previous phases with DOLIDAR. The Programme leveraged these previous investments and its proven track record well and could concentrate on its capacity development mandate at MoPID. This facilitated efficient design and coordination of programme activities, relationship building and the facilitation of ownership development. It also allowed for proper identification of capacity strengthening needs of the Province, as well as delivery of targeted and on-the-job CD activities.

The recruitment of one TA provider to deliver the TA and implement the programme at Province (PRBSU) and Federal (LRBSU) level is also an efficient way of organisation. At the same time the composition of the TA teams was technical and

bridge construction oriented, with limited expertise on organisational and institutional development. The organisational capacity of MoPID was e.g. not holistically analysed and supported through understanding roles and responsibilities, as well as challenges, across MoPID-TID-IDO and with service providers and communities. This was not an efficient use of resources. At the same time there is also no evidence that all the 7 PRBSUs systematically networked or shared lessons and good practice, apart from an annual meet. A more dynamic collaborative approach across the teams would have been efficient, especially for more advance technical challenges in bridge design (climate resilience and challenging terrain conditions) and for strategic approaches to organisational and institutional development of Provinces. Similarly a pro-active networking across Province MoPID, and with DOLID would have been an efficient way to share challenges, opportunities, good practice for programme implementation, and would have possibly created a technical network between Provinces, which could have continued beyond the end of MLRBP-IV.

MLRBP-IV engaged efficiently with education institutes and consulting firms, building on its more advanced technical expertise. However, education institutes seems to have been approached in each Province separately, without a clear strategy on how to strengthen these institutes (organisationally) for a higher sustainable technical competence and on how to learn across Provinces.

In part this was also caused by perhaps too much focus on achieving targets, as e.g. 'capacitating 2 consulting firms' instead of a more comprehensive approach to building capacity of many consulting firms while also building MoPID capacity for service outsourcing and performance accountability of private sector. Further, the teams had a very internal 'project implementation focus' with e.g. limited engagement with other programmes and development partners which are also working on federalised infrastructure development. This has limited the efficiency (and effectiveness) of the programme in achieving results beyond its core strengths of technical bridge design and construction.

The LRBSU ensured more than double the number of bridge design verifications and constructions as targeted, which is admirable. However, the opportunity cost of this resource allocation was not adequate discussed. The gap-filling role of the TA continued for too long which created less urgency within MoPID to invest in its own capacity and it also resulted in less resources being available for organisational and institutional strengthening results. Making this friction in role of the TA a more deliberate part of decision-making would have facilitated a more efficient approach to achieving all programme results.

Benefits for DAGs are largely assumed through the investment in good quality bridges, DAG income generation through labour contribution and through extending the road network into more remote areas with higher poverty, vulnerability and DAGs. However, bridge locations do not seem to always extent the road network 'outward'. Politicised Bridge selection and not following the (draft) PRNMP undermines the social impact of the bridge investment. The programme did not highlight the opportunity to achieve equitable development benefit through well-targeted bridges and expansion of the PRN and such a theory of change on DAG impact was not well promoted and pushed at policy level.

The absence of a formal national platform for development partner coordination (e.g., Infrastructure Working Group under IDPG) also limited knowledge-sharing and synergy among stakeholders. Something perhaps SDC could have taken up as its support role. MLRBP-IV did also not invest in strengthening the link between Province and Local Government planning and budgeting, to streamline investments for maximum benefit, especially for DAG. Even if also here programme influence would have probably been limited, organising some events in collaboration with other stakeholders (as LG Associations) could have highlighted the policy gap and could have promoted a more collaborative approach.

In conclusion, the programme has been highly effective in achieving results within its core mandate and capacity of technical bridge engineering. As mentioned above, the SDC investment of NPR 1.3 billion has leveraged NPR 15 billion of public funding for bridges, ensuring good quality and significant impact. At the same time the limited collaborative and cross-learning approach of the TA for organisation and institutional results, as well as for strengthening development impact, has limited the programme efficiency (and effectiveness) in these result areas.

4.5. Sustainability

MLRBP-IV did not develop an exit strategy nor a sustainability strategy, analysing critical capacities (technical, organisational and institutional) which needed to be in place for sustainability, including e.g. future adaptation of the bridge design packages and ensuring optimal development benefits of bridge investments. The programme developed an exit-plan, which highlighted what still needed to be done, but this was not a comprehensive strategy guiding the TA team in all its efforts right from the start. At the same time adequate private sector services are now available to ensure Provinces have capacity to build bridges through outsourcing of design and construction. This will make Province bridge building in itself sustainable, even if the programme could have done more on capacity development for performance-based outsourcing arrangements.

As bridges are of high priority for Provinces and communities, the development impact of good bridges will continue to be achieved, including for DAGs, as Provinces will continue to drive bridge building. This is an important achievement as the technical capacity of Provinces to design and build good quality bridges seems adequate and will likely be sustainable. Technical dependency on the TA teams is still very high and even as Provinces have now shown willingness to invest in more bridge engineers, there is clearly going to be a capacity gap which will impact sustainability. The relationship between DoLID and MoPID is weak and DoLID is not acknowledged as a potential technical partner for continued CD and innovation. MLRBP-IV has seemingly not attempted to facilitate a stronger relationship to find common ground.

The MoPID organisational and institutional capacities developed under the programme will be to a certain extent sustainable, but there remains little transparency and accountability for decision-makers to e.g. actually apply the PRNMP and related selection criteria. Despite its aim to establish sustainable bridge management, the PBIMS faces significant implementation and sustainability challenges. There are also sincere concerns about the viability and overall sustainability of the Provincial Bridge Management Support Consultants (PBMSC) with commitments uncertain.

The collaboration with a few education institutes was very useful under the programme, but no solid structures have been put in place to continue collaborations beyond the MLRBP-IV. There is no link to MoPID learning, adaptation and innovation structures or capacities. It is highly likely that collaboration with education institutes will not continue unless some other projects or organisations take this up.

In conclusion, MLRBP-IV design as an Exit Phase was shaped around technical capacity transfer to Provinces ‘only’, with limited attention to sustainable organisational capacities and longer-term institutional processes. The exit and sustainability approach was only based on own resources (TA Service Provider) and not on forging networks and collaborations right from the start or on a strategic policy and PG influencing approach. The exit plans MLRBP-IV prepared are too limited in scope and do not fully address how sustainability is created. The last comprehensive exit plan was only developed in January 2025, few months before the end of the programme.

4.6. Political - Policy – Programme Approach

The Swiss Agency for Development and Cooperation (SDC) has adopted a strategic three-pronged approach, i.e. political, policy and programmatic engagements (3P), in implementing the MLRBP IV. The institutional review has also carried out an in-depth analysis of this strategic 3P approach. The 3 P model is described in some detail in Annex 4.

Political Engagement

Political engagement is vital for sustaining infrastructure reforms within Nepal's federal framework. The SDC in Nepal acknowledges that robust political commitment at the provincial level is essential to institutionalize governance mechanisms for motorable bridges. In its fourth phase, the MLRBP has strategically shifted from direct implementation to an advisory and capacity development role at Province level, aligning with Nepal's evolving federal structure. MLRBP-IV was, however, seen mostly as a programme providing technical services to MoPID, while a stronger political ownership and engagement from provincial governments was needed for the organisational strengthening of MoPID to phase out the gap-filling work of the TA teams, and for adoption of the PRA, the PRNMP and bridge prioritisation and funding decision-making. This has limited the scope of the programme to leverage its expertise for an increase in development impact, especially for DAGs, of bridge and road investments. Furthermore, strengthening political buy-in for asset management to increase the lifetime of investments and to sustain impacts, was also not taken up by the programme.

Policy Development

At the policy level, MLRBP Phase IV has significantly advanced the establishment of foundational legal and operational frameworks. Key contributions include drafting the PRA, PRNMP, various checklists, training manuals, directives on social accountability (e.g., public hearings), and insights derived from research and development. These resources provide provinces with a structured foundation to articulate bridge selection criteria, investment priorities, and maintenance obligations. The introduction of the Provincial Bridge Information Management System (PBIMS) has further enhanced transparency and enabled data-informed decision-making for bridge projects. Despite these advancements, policy harmonization across Ministries and Provinces remains uneven. While some provinces have promptly adopted road infrastructure policies, others face challenges stemming from limited capacity and competing priorities. The programme has highlighted to importance of strengthening the policy environment, especially considering the frequent changes in political appointees and high-level civil service transfers. However, it has not achieved a solid endorsed policy framework, which will allow the programme interventions to be sustainable, or even to propagate.

Programmatic Enhancement

MLRBP Phase IV has been instrumental in strengthening technical capacities for bridge construction and management, through technical assistance in bridge design standardisation, planning, procurement, and construction supervision. The program has empowered provincial governments to take greater ownership of infrastructure development and especially to build a substantial number of well designed and constructed bridges. This transition from MLRBP-led initiatives to province-led bridge construction services (PMBMSC) exemplifies a province commitment to long-term sustainability. However, disparities in technical expertise across provinces pose ongoing challenges to capacity-building efforts. For example, technical exchange networks and learning events across Provinces and with DOLID and educational institutes could have been developed to create agency within Provinces (MoPID) for continued technical knowledge management, learning and innovation. The programme was too much implemented as a project with a purely technical mandate.

4.7. Programme Technical Assistance and Capacity Development Approach

MLRBP Phases I-III focussed on technical capacity building in DoLIDAR for designing several bridge types, standards and specifications, as well as for innovation. These bridge designs and approaches were packaged and SDC capital resources were also allocated to actual bridge construction. In Phase IV these DoLIDAR bridge designs and approaches were rolled-

out to Provinces and technical capacity was developed of the Province MoPID organisation, notably TID and IDO, as well as technical staff and private sector. The MLRBP-IV TA team and programme resource allocations are mostly technical, and a rather 'linear' roll-out approach was applied, based on MLRBP solid technical achievements and credibility.

This is in itself a valid approach to start with, as it delivers the core capacity required to Provinces within a challenging federalisation context and is well received and accepted by engineers. However, for MoPID organisational and institutional strengthening a more flexible collaborative engagement would be required the TA Team does not have adequate drive and mandate within the political economy at Province level to achieve these higher level results. Especially as LRBSU at Federal level and PRBSUs at the provinces has no direct say over investment budgets which are owned by Province, which is in itself a good indicator of MoPID ownership.

The programme would have benefited from a comprehensive organisational CD strategy on how to 'build-up' the new federalised MoPID, TID and IDO, beyond rolling-out the technical bridge packages and supporting bridge planning and budgeting. There was also no strategy on how to achieve institutional objectives through policy influencing, partnerships and networking, based on an understanding of change management within the still volatile federal context.

The very unpredictable and dynamic Federalist context creates substantial challenges for the Programme, having a delivery over seven Provinces. This is a valid limitation for the programme team but the TA/CD approach should have been designed to anticipate this contextual challenge through a continuous monitoring and adaptation dynamic, collaborations and a transformation facilitation approach. This would have required a stronger monitoring, learning and adaptation system at organisational and institutional levels (system approach),with process indicators and benchmarks based on joint efforts jointly with other stakeholders. A multi-stakeholder approach, including e.g. LG Associations and DAG right holders, may have had more political influence on bridge selection targeting and streamlining strategic planning processes across federal levels for development impact. Similarly, developing knowledge and learning networks across Provinces, and supported by PRBSUs, would have improved cross learning within programme TA and could have created cross-province networks which could have continued beyond the programme period.

Embedding a more 'portfolio and process approach' within the MEL system of MLRBP-IV and linking this with a sustainability and exit strategy would have informed the TA team better on how to lock in progress and how to deliver upon sustainability requirements of especially capacity development results.

Figure 7: A Vehicle with Passengers Crosses the Gokulegad Bridge in Darchula, Sudurpaschim



5. Recommendations

Recommendations:

In this Chapter some recommendations are provided to SDC, building upon the valuable work done within MLRBP, towards furthering the MLRBP-IV objective to achieve more development impact through good quality bridge building and to create higher sustainability of programme interventions. The below overview is framed without consideration for if and how SDC will continue support to bridge building at Province level. Further below some recommendations are provided for SDC on ways to enable the below recommendations and to further leverage the MLRBP-IV achievements. Further support to:

1. Building Stronger Provincial Organisations and Networks

- Set up specialised bridge management units and technical teams within the MoPID and TID to increase local ownership and more focused organizational strengthening.
- Create long-term training programs for provincial staff to build skills in bridge planning, design, construction oversight, resilience and innovation and asset management.
- Systemise and distribute bridge building package developed by MLRBP into organisational guidelines and manuals, as well as CD packages for external trainings;
- Improve coordination between federal, provincial, and local governments to clarify roles and responsibilities for infrastructure programmes.
- Develop cross-Province technical networks on infrastructure development, including bridges.

2. **Strengthening Policies and Laws**

- Speed up the approval of PRAs in all provinces to provide a legal basis for managing bridges and the road network. Speed up the endorsement of PRNMP and budget allocation protocols.
- Link the PRNMP with the Provincial Periodic and Strategic Plan to guide smarter infrastructure investments towards meaningful impacts.
- Align the DoLID/LIDPO, and provincial governments to unified policies and technical standards, and strengthen DoLID's technical support and innovation role.
- Incentivise provincial governments to establish the PMBMSC through a co-funding model by offering financial grants for initial setup costs, technical support for capacity building, and performance-based funding tied to effective bridge maintenance and asset management practices. This approach fosters long-term financial sustainability and ensures provincial ownership of bridge management. Develop impact stories (DAG) around experiences with well-build and located bridges (evaluation findings), for policy influencing, stakeholder mobilisation and for future programme designs.
- Engage in networks and events to promote good practices and lessons from MLRBP.

3. **Boosting Financial and Administrative Stability**

- Develop standardized budgeting and procurement guidelines to ensure adequate funding per bridge design, including cost estimation frameworks, multi-year funding commitments, and inflation adjustments. Establish information-sharing mechanisms like an online budget portal or regular coordination meetings to align financial planning with technical needs.
- Create a shared funding approach where provincial governments allocate dedicated budgets not only for bridge construction but also for technical capacity development, including training, design verification, and maintenance planning. This reduces over-reliance on federal funding and external support, ensuring long-term sustainability.

- Set up clear and accountable budget and project selection processes to limit political influence on planning.
- Enhance PFM to ensure resources are used well, generate impact and expenditures stay on track.

4. Encouraging Innovation and Smart Decisions

- Roll out the PBIMS in all provinces for better data, project tracking, and maintenance planning.
- Develop case studies and 'stories' to enhance the utility and value perception of the PBIMS for Provinces;
- Support research and adoption of new bridge-building methods, like concrete-filled steel truss designs, to cut costs and improve strength.
- Build platforms for provincial governments and universities to share knowledge, spark innovation, and develop skills.

5. Building upon the above overview of recommendations, SDC could further engage with/on:

- Integrate lessons and good practice in SDC and other's federal support programmes. Highlight how infrastructure is an impactful investment and can be a vehicle of federal CD for Provinces and LG.
- Development Partners on adopting good practice and lessons learned into ongoing and emerging programmes on federalised infrastructure development, specifically bridge building. Notably WB and ADB, who are both looking a federalised infrastructure development.
- Share developed technical bridge building and CD packages with appropriate organisations, including education institutes, and within infrastructure related networks. Make these accessible on-line.

Figure 8: SWN Evaluation Team Member Interacting with a shopkeeper in Ramechhap, Bagmati



ANNEX 1: MLRBP-IV Results Framework Indicators

The evaluation has formally reviewed the programme achievements against agreed results, indicators and targets.

Table A 1: MLRBP IV Results Framework

Hierarchy of Objectives and Strategy of Intervention	Key Indicator	
	Number	Description
Impact		
Impact (overall goal): People in all seven Provinces economically and socially prosper through better connectivity provided by bridges	Proxy 1.	10% reduction in national poverty (or GDP growth)
	Proxy 2.	10% reduction in maternal and child mortality rates
	Proxy 3.	10% increase in literacy rates
Outcomes		
Outcome 1: Government apply and enforces Constitution-friendly bridge strategy to expand all-weather road network at Provincial level	1.1.	200 numbers of bridges built
	1.2.	3,000 kilometres (km) of all-weather Provincial roads
	1.3.	Additional 10% of settlements connected to all-weather Provincial roads
Outcome 2: People have access to economic opportunities and basic services using the Provincial road network	2.1.	20% reduction in transport costs (fares and freight)
	2.2.	30% increase in traffic and freight volumes
	2.3.	30% travel time saved
Output		
Outcome 1: Government apply and enforces Constitution-friendly bridge strategy to expand all-weather road network at Provincial-level		
Output 1.1.: MoFAGA/DoLI produces uniform standards, norms and guidelines required for motorable local roads bridges	1.1.1.	Standard type design for 4 different types of bridges are established
	1.1.2.	Standard norms based on 4 types of bridges are available
Output 1.2.: Provinces have functional bridge units	1.2.1.	80% of designated human resources in TIDs and IDOs are in place (gender disaggregated)
	1.2.2.	At least 60% bridge designs are outsourced to private consultants/firms by TIDs/IDOs
	1.2.3.	Provincial bridge standards and norms are endorsed
	1.2.4.	Adequate budgets are available for execution of bridges on Provincial road network
	1.2.5.	200 bridges are built
Output 1.3.: Information system on Provincial Road Network (PRN) is established and updated	1.3.1.	Endorsed Provincial Road Master Plans (PRMPs) are available in all the 7 Provinces
	1.3.2.	Bridge requirements in Provincial Road Network (PRN) are identified in all the 7 Provinces
	1.3.3.	Bridge status information on PRN is available
	1.3.4.	IDOs are updating bridge information
Output 1.4.: PGs develop capacities of technical human resources in the bridge sector	1.4.1.	At least 2 private sector consultants/firms are surveying, designing bridges for MoPIDs/TIDs/IDOs in each Province
	1.4.2.	Engineering institutes (EIs) in the Provinces include bridge engineering curriculum in their engineering courses (Bachelor of Science and Master of Science)

Hierarchy of Objectives and Strategy of Intervention	Key Indicator	
	Number	**Description**
	1.4.3.	20% of all material testing is conducted at private laboratories
	1.4.4.	40% of bridge works concluded on time and on budget by the contractors
Outcome 2: People have access to economic opportunities and basic services using the Provincial Road network		
Output 2.1.: People are accessing basic services and economic opportunities	2.1.1.	20% increase in school attendance (gender disaggregated)
	2.1.2.	20% increase in visits of people to health posts (gender disaggregated)
Output 2.2.: People, especially DAGs including women in the bridge zone of influence (ZoI) are encouraged for employment in bridge construction works	2.2.1.	0.8 million person-days of employment generated (DAGs:60% and Women: 15% workers)
	2.2.2.	NPR 2 billion received as wages received by workers

ANNEX 2: Programme Achievements at Outcome Indicator Level

Outcome 1: All weather Provincial Road Network

Indicator 1.1 - 200 number of bridges built.

The program has delivered impressive outcomes in numerical terms, till Mid of January 2025. **The number of Bridges Completed is 424 bridges, which is significantly exceeding the target of 200**. While the programme has achieved more than double the targeted 200 bridges by constructing 424, it is essential to consider the opportunity cost of exceeding the target by such a margin.

Indicator: 1.2 - 3000 km of all-weather Provincial roads

All-Weather Provincial Roads: 5,313 km of all-weather roads achieved against a target of 3,000 km. Among the newly connected all-weather provincial roads, Bagmati Province has seen the most significant expansion, with an additional 246 kilometres, primarily due to the Adheri Kholo Bridge, which alone accounts for 230 kilometres of new road access. In contrast, Juwa Khola Bridge in Karnali Province has contributed the least, with only 2 kilometres of additional all-weather roads connection. This example shows a questionable bridge selection process. Koshi Province has overall the lowest overall expansion, with just 13 kilometres of additional connection to all weather road.

The expanded connection of all-weather provincial roads has had transformative socio-economic impacts, enhancing mobility, access to essential services, and economic opportunities while also reducing transboundary dependency. A notable example is the Duduwa Nala Bridge, which has significantly altered trade dynamics in the region. Before its connection, local communities were heavily reliant on India for trade, often facing high transportation costs, long detours, border-related delays, and frequent disputes. Perishable goods, such as vegetables and dairy products, frequently spoiled before reaching markets, leading to substantial financial losses. With the construction of the bridge, trade has been localized within Nepal, making it more profitable and efficient. The proximity of markets has not only boosted economic activity but has also empowered women, enabling them to actively participate in business—particularly in buying and selling goods in nearby markets. Improved connectivity has laid the foundation for sustainable development, fostering local entrepreneurship and economic resilience.

Indicator: 1.3 - Additional 10% of settlements connected to all-weather roads

The bridges constructed and the subsequent expansion of provincial roads have led to an increase in the number of settlements connected.. **The total number of connected settlements has grown from 192 to 292, marking a 52.08% overall increase in number of settlements connected to all weather roads.** Among the provinces, Karnali Province witnessed the most substantial growth, with the number of connected settlements rising from 191 to 206—an increase of 7.85%. This expansion is largely attributed to the Nayagaun Bairagithati Motorable Bridge, which has played a crucial role in improving connectivity. Similarly, Bagmati Province saw an increase in connected settlements from 7 to 9, while Sudurpaschim Province experienced a modest rise from 22 to 23. In Lumbini Province, connectivity expanded from 21 to 23 settlements, primarily due to the construction of the Duduwa Nala Bridge and Signaha Khola Bridge. However, provinces such as Gandaki, Koshi, and Madhesh did not witness any changes in the number of settlements connected via bridges, which indicates that these bridges seem to have been selected predominantly to make the Provincial Road Network (PRN) denser rather than to expand it. In some provinces, particularly more remote ones, this approach may

lead to creating limited outreach to the most vulnerable populations which may not have road connection as yet. This is a policy and planning issue that should be noted. For further clarification of the definition of this indicator and its progress measurement, please refer to the textbox below.

Measurement of % Increased Settlements: Field research conducted on both sides of the planned/constructed bridge (location). Informants were asked about the number of settlements connected to the present (all-weather) road network, before and after the bridge's construction, using offline maps and printed satellite imagery for verification. Settlement counting:
- The bridge provides new all-weather road access to previously unreached or seasonally served areas on the opposite side of the bridge location (where no all-weather road access existed before).
- On the bridge side where a road network already existed before bridge construction, only settlements which previously did not have access to the road network are counted; and any increase in settlements has to be linked to the actual bridge construction (causality).

Zone of influence is defined as the area of impact of a particular bridge. The area is determined by estimating the population, number of settlements and total road length that are impacted by the bridge. For the purposes of this assignment, if other methods are not feasible, the zone of influence is the area that is within 4-kilometer radius of the bridge.
A **settlement** is defined as any town/village/community having their own health posts, markets, schools or residential areas. Settlement A and settlement B might share the same health posts or markets, but the centers of each settlement must be separated by a distance of at least 2 km to be considered two distinct settlements

At the individual bridge level, the Nayagaun Bairagithati Motorable Bridge recorded the highest increase in connectivity, with the number of linked settlements rising from 185 to 200, representing an 8.11% increase. This was followed by notable contributions from Duduwa Nala Bridge in Lumbini, Kayer Khola Bridge in Bagmati, Gokula Gad Bridge in Sudurpaschim, and Mahadev Khola Bridge in Bagmati Province.

The connection of settlements with roads has catalysed transformative socio-economic changes, impacting individuals and communities. A compelling example is Wakil Rayamajhi, a 31-year-old vegetable trader whose business has flourished due to improved connectivity. Wakil initially started his venture with a modest investment of Rs. 3,000–4,000, selling vegetables in the local market. However, the construction of the Kayer Khola Bridge marked a turning point in his entrepreneurial journey. His daily sales have now risen to Rs. 4,000–5,000, ensuring a stable income for his family of four. While his wife manages their vegetable shop, Wakil leverages the enhanced accessibility by delivering fresh produce door-to-door using his autorickshaw, significantly expanding his customer base.
Previously, the absence of a bridge restricted his business to one side of the river, limiting growth opportunities. Now, with this connectivity, he can reach a wider market beyond the ridge, driving increased sales and business expansion. His story exemplifies how improved infrastructure fosters economic growth and enhances livelihoods by unlocking new opportunities for small-scale entrepreneurs.

Outcome 2: Economic opportunities and Basic Services

Indicator: 2.1 (a) - 20% reduction in freight transport cost

Considering the average inflation from 2021 to 2024 of 17.95% (average inflation rate by ADB), **overall freight costs have seen a remarkable reduction of 95.5%**, decreasing from on average 0.586/kg/km to 0.026/kg/km. Among the assessed bridge location, the highest freight cost after bridge construction was recorded at Toti Nala Bridge, reaching 0.158/kg/km

with the lowest freight costs now observed at Duduwa Nala Bridge, Signaha Khola Bridge, and Tiyar Nadi Pool, each reporting a minimal rate of 0.001/kg/km.

With the construction of new bridges, larger fright vehicles can access the villages and transportation costs have therewith plummeted, leading to improved availability of goods, greater accessibility, and a reduction in transport as well as commodity prices. Community members have experienced the direct impact of reduced freight costs, significantly altering their daily expenses and access to goods and services. For instance, respondents reported that they previously had to pay an additional Rs. 100 to transport a sack of rice and Rs. 500 extra for an LPG cylinder.

However, this increased connectivity has also had unintended consequences. While consumers benefit from lower prices and better access to goods, small traders and shopkeepers in the village are facing challenges. With easier access to larger market centers, many residents now prefer to source produce and essential items directly from wholesalers, bypassing local vendors. As a result, local small-scale traders are struggling to compete, leading to reduced business, financial insecurity, and, in some cases, displacement. This shift underscores the dual nature of infrastructure development—while it fosters economic growth, it can also disrupt traditional local economies. Nevertheless, it ultimately benefits the broader local communities. To mitigate this issue, Local Governments (LGs) can implement better development planning and targeted interventions to ensure that no one is left behind or bypassed.

Indicator: 2.1 (b) - 20% reduction in transport cost-fares.

Considering the inflation rates from 2021 to 2024 of 17.95% (average inflation rate by ADB), **overall transportation cost has decreased by 10.16%** from NPR 9.060/km to NPR 8.139/km. Daduwa Nala Bridge reported still the highest transportation cost fares with NPR 63.84/Km. This has been followed by Kishedi Khola Bridge (19.52/km), followed by Wardi Khola Bridge (14.78/Km). The lowest transportation cost fare was reported by Mahadev Khola Bridge (3.08/Km).

Respondents attribute this decline in fares to the increased availability and competition among different types of passenger vehicles, including auto-rickshaws, microbuses, and buses. The presence of multiple transportation options in a competitive market has contributed to more affordable and standardized fare pricing, ultimately benefiting commuters by enhancing accessibility and affordability. There could have been more decline in transport cost fares, but the petroleum products price hike directly affected the programme's ability to achieve the target of a 20 percent reduction. Additionally, the investment in upgrading the connecting roads is missing in complementarity with the bridge investment, which causes vehicle operating costs to remain high and subsequently transport costs as well.

Indicator: 2.2 (a) - 30% increase in traffic volume.

Traffic volume, when totalled across all 21 bridges, has increased by 110%, from 4,001 vehicles crossing the river per day during the respective baseline of 21 bridge locations to now in total 8,415 vehicles per day crossing over the new bridges.

The busiest bridge is Mahadev Khola Bridge (Bagmati Province), which accommodates 1502 vehicles daily, indicating a critical transport corridor and a peri-urban dynamic by geography. Koili Khola Bridge (Lumbini Province) follows closely with 1,158 vehicles per day, highlighting significant regional movement. Chakla Khola Bridge (Sudurpaschim Province) records 750 vehicles per day, making it the most frequently used bridge among the data collected bridge in the Sudurpaschim Province.

Moderate traffic bridges include Ratu Nadi Bridge (533 vehicles/day), Signaha Khola Bridge (367 vehicles/day), and Sardu Khola Bridge (254 vehicles/day). Minimal traffic volume bridges include Fewa Khola Bridge (25 vehicles/day) and

Khidkijyula Bridge (10 vehicles/day), which indicate minimal usage, potentially due to alternate routes. This could mean the bridge prioritization is sub-optimal, as these traffic number may not justify the bridge investment unless the bridge is situated in an underserved area with a lower population density it may also reflect a slower uptake of economic opportunities in more remote areas and traffic counts may show a more gradual increase over time.

The significant increase in traffic volume around newly constructed bridges is indicative of a rise in economic activity and opportunity. This transformation is exemplified by the story of Junkiri BK (below text box), a resident of Melung Municipality, who transitioned from subsistence farming to entrepreneurship. More study and monitoring are needed by provinces to assess the benefits of bridges and establish a feedback loop to inform policy and prioritization criteria.

Previously reliant solely on agriculture for her livelihood, Junkiri's outlook changed with the construction of a new bridge. As she observed increasing foot traffic in her area, she recognized a business opportunity. With an initial investment of Rs. 40,000, she set up a small kiosk near her home. Her venture quickly gained momentum, and she now earns Rs. 8,000–10,000 per month, significantly improving her financial stability.

The bridge not only enhanced connectivity but also unlocked new economic prospects, enabling Junkiri to shift from traditional farming to a less labour intense and profitable enterprise.

Indicator: 2.2 (b) - 30% increase in freight volume

Overall, the **freight volume has increased by 665.42%,** with exports increased by 657.2% and imports increased by 673.97%. Among the 21 bridges, Ekadahi Khola Bridge (Madhesh Province) is the busiest freight route, handling over 57.5 million KG in imports and 55.3 million KG in exports. Nayagaun Bairagithati Motorable Bridge (Karnali Province) records 1.46 million KG of imports and 342,000 KG in exports. Juwa Khola Bridge (Karnali Province) processes 529,250 KG in imports and 646,250 in export. Koili Khola Bridge (Lumbini Province) processes 88,152 KG in imports and 36,590 KG in exports. Sardu Khola Bridge (Koshi Province) facilitates 142,550 KG in imports and 88,250 KG in exports. Ratu Nadi Bridge (Madhesh Province) handles 122,250 KG in imports and 5 million in exports.

Bridges such as Toti Nala Bridge (50,100 imports, 21,850 exports), Chakla Khola Bridge (27,110 imports, 23,325 exports), and Wardi Khola Bridge (18,595 imports, 17,933 exports) in Sudurpaschim indicate lower trade movement but serve as vital connections for localized commerce. Before the construction of the bridge, freight vehicles were a rare sight in these villages. Local traders would occasionally collectively bring supplies during the winter, and only then would a freight vehicle make its way to the area. With the bridge now in place, economic activity has surged, and freight transportation plays a vital role in supporting both import and export operations.

This change is exemplified by Krishna Maya Praja, a 28-year-old retail store owner who has experienced a significant business transformation. Previously, stocking goods was a major challenge, particularly during the monsoon season, when Krishna Maya had to stockpile essential supplies in advance to avoid shortages. With the bridge facilitating a steady flow of goods, she can now restock based on customer demand. This has enabled her to expand her inventory, adding staple items like rice and freshly prepared fast food such as noodles. The resulting increase in foot traffic has boosted her daily revenue to Rs. 3,000–4,000.

Krishna Maya's experience highlights how better infrastructure not only enhances business opportunities but also diversifies consumer choices.

A striking example is the transportation of locally produced oranges. Previously, villagers in Sudurpaschim mainly women—had to carry the harvest on their backs to reach markets. Now, with improved road connectivity, freight vehicles efficiently transport the produce, reducing physical labour increasing transport efficiency. A similar transformation has occurred in the poultry trade, where chickens and eggs are now transported to Kathmandu from Chitwan, expanding

market reach and profitability. Beyond trade, the bridge has also influenced local lifestyles and consumption patterns. Respondents noted a shift in eating habits, as improved accessibility has introduced a wider range of brands and products to their villages.

Indicator: 2.3 - 30% travel time saved.

Largely the due to the construction of bridge, vehicle and walking time has reduced. In **average the one-way walking time has reduced by 3.7% and the vehicle time has reduced by 12.3%**. In case of vehicle travel time, the largest positive impact was seen in Duduwa Nala Bridge where 69.36% time was saved. This has been followed by Toti Nala Bridge where the vehicle time is saved by 41.36%.

Survey data indicates that, in rare cases, vehicle and walking travel times have either remained unchanged or even increased. As an anomality, recorded travel time across Gokule Gad Bridge reportedly rose by 169%. Upon further investigation, it was found that the relocation of the local government office had increased the distance, inadvertently affecting the data. Similarly, other survey data have shown an increase in vehicle travel time, primarily due to changes in school locations.

For walking distances, most bridges reflect only minor changes in travel time. However, some cases show an increase, largely because people previously relied on informal shortcuts. With the introduction of formal roads and structured pathways, travel routes have become longer in some instances (but easier to walk). Additionally, respondents mentioned that fear of crossing rivers in the past often forced them to take longer, safer detours, whereas bridges now provide a direct and secure route.

Respondents overwhelmingly reported significant time savings due to the bridges, particularly benefiting women. As women often have the responsibility for escorting children to school, many women now spend less time on school commutes, freeing them to engage in economic activities and enhancing their overall participation in the workforce.

Increase in School Attendance

Since the bridge construction, recorded school attendance has increased by 4.30%, with girls showing a 4.98% increase and boys 3.48%, but this is not consistent with the trends of population increase in the settlements and improved access. Survey data reveals that education has become a top household expenditure, with spending rising by 29%, suggesting that improved access has led parents to prioritize education. In Kapilvastu, the FGD reported that 12–13 school buses now travel daily from nearby urban centres to pick up students, illustrating a shift in educational choices. For example, one respondent from a school in Dolakha noted a decline in enrolment at the public schools, as easier access to urban centres allows parents to choose higher regarded options, shifting school choice patterns from local public schools to private schools. The recorded school attendance increased by 4.30% is thus not an adequate reflection on the actual increase in school attendance.

This shift in educational opportunities is exemplified in the story of Santa GC, a resident of Badganga Municipality. Prior to the bridge, her husband, an autorickshaw driver, could only manage a few trips per day, especially during the monsoon, leading to unstable income. However, after the bridge was completed, reliable connectivity allowed him to consistently earn Rs. 30,000–35,000 per month, which has enabled the family to send their children to private schools. For Santa, the bridge represents not just infrastructure, but a lifeline that has provided stability, opportunity, and peace of mind for her family.

Indicator: 2.5 - 25% increase in visits to health facilities

Since the bridge's construction, overall **visits to health facilities have risen by 24.78%,** with female visits increasing by 29.51% and male visits by 18.66%. Notable improvements in access to healthcare services are reflected in both qualitative and quantitative data. The reduction of travel time as well as easy accessibility has made it easier and more efficient for individuals, especially those in rural and remote areas, to seek medical care. On average, walking time to reach the nearest health post has decreased by 3.82 percent. And the reduction is more significant for those travelling by vehicle, with travel time dropping by 28.30%. Similarly, access to district hospitals, where advance medical services are available has also improved. The survey data shows that the walking time to nearest district hospital is reduced by 0.52%, while vehicle travel time has reduced by 10.89%.

The data suggest a significant improvement in the availability and accessibility of medicines. The study conducted in Dailekh highlights that before the bridge was built, obtaining medicines from health posts was particularly challenging during the monsoon. As result, individuals with chronic illnesses such as asthma, hypertension, and diabetes often faced shortages of essential medication. In some cases, family members had to risk their lives crossing the rivers to obtain these medicines. After the construction of bridges, emergency medical response has also improved, allowing people to travel more easily to larger hospitals with better medical facilities. Furthermore, this linkage has enabled some health posts to acquire ambulances, further enhancing emergency medical support.

A respondent from a health post in Chitwan talked about the challenges faced by pregnant women before the construction of bridge. In cases of complications, women had to be carried on people's back to reach the nearest hospital, often delaying medical interventions. Now, with improved connectivity, women have greater agency in seeking safer, well equipped health care facilities for childbirth. A respondent in Dolakha further emphasised that while women continue to visit local health posts for antenatal (ANC) and postnatal (PNC) checkups, they now prefer better- equipped hospital for deliveries, ensuring safer maternal and neonatal care.

ANNEX 3: Programme Achievements at Output Indicator Level

Output 1.1. MoFAGA/DoLID produces uniform standards, norms, and guidelines required for motorable local roads bridges

Indicator: 1.1.1. Standard Type Designs for 4 different types of bridges are established.
Indicator: 1.1.2. Standard norms based on 4 types of bridges are available

This component is primarily focused on developing standardized designs for four different types of bridges, ensuring uniformity, safety, and efficiency in bridge construction across provincial road networks. By establishing these standard designs, the program aims to streamline the bridge planning and construction process, reducing design time, improving cost-effectiveness, and ensuring compliance with engineering best practices. The development of these standardized designs follows rigorous technical assessments and consultations with key stakeholders, including the DoLID, provincial governments, and engineering experts.

As of now, the standard designs for Reinforced Cement Concrete (RCC) T-Girder, Prestressed Concrete (PSC) T-Girder Single-Cell, Double-Cell, and Multi-Cell Box Girder bridges, and Steel Plate Girder bridges have been fully developed and reviewed. The first two standard designs were validated by the Institute of Engineering (IOE); however, the remaining two have not been validated by IOE. These first two designs have been shared with DoLID, which has officially endorsed and implemented them for use in bridge projects across Nepal. The endorsement ensures that these designs can be widely adopted, simplifying programme execution, and improving structural reliability. The standard norms for rate analysis and construction for these four bridge types have also been developed. The MLRBP stated that the remaining two designs are expected to be validated by IOE and officially endorsed by DoLID., however, due to time constraints, it is unlikely that this process will be completed before programme closure by end June 2025. Additional efforts, resources, and coordination among relevant authorities may be required to accelerate the completion process and ensure that all four bridge types are fully standardized before the program concludes.

As part of the Research and Development (R&D) initiative, a new bridge construction technology using concrete-filled steel truss structures has been introduced for selected projects across Nepal. The key feature of this R&D bridge type is the integration of steel truss structures with concrete-filled girders reinforced with rebar. While the design retains similarities with conventional steel truss bridges, the use of concrete-filled trusses introduces significant advantages in terms of material efficiency and structural performance.

This innovative approach has been proposed for the Kawa Khola Bridge in Bhojpur (45.0m), Badigad Khola Bridge in Gulmi (59.0m), and Kharte Khola Bridge in Okhaldhunga (40.0m). Among these, the Kawa Khola Bridge was successfully completed in July 2024 and officially handed over to the Koshi Province Government. Meanwhile, construction on the Badigad Khola Bridge is in its final stages, and the Kharte Khola Bridge remains under construction.

It remains unclear if Provinces will adopt this innovative design and if the relationship between DOLID and MoPIDs is strong enough to further introduce this bridge type. It is also doubtful if further innovation will be continued by DOLIDAR and to which extent Provinces have commitment to participate in further innovation and feel confident to adopt future innovations, without external support.

Output 1.2. Provinces have functional bridge units

The achievement of having a 'functional' bridge unit is measured through 5 Output indicators, which is discussed below. At the same time 'functional organisational capacity' is broader then the indicator areas only, and this has been reflected upon as well.

Indicator: 1.2.1. 80% of designated human resources in TIDs and IDOs are in place (gender disaggregated)

The TID needs to establish a dedicated bridge unit to enhance the management and oversight of bridge-related programmess, and also needs to determine and acquire the type and number of Human Resources (HR) for the bridge unit. This process is to be guided by updated Organization and Management (O&M) surveys to ensure an efficient and well-structured workforce for effective bridge planning, design, and implementation.

Province wise bridge unit status:

- ***In Koshi Province,*** the Organization and Management (O&M) framework includes a provision for a Road and Bridge Unit; however, all responsibilities are currently being handled by the TID Director.
- ***In Madesh Province***, while the O&M also includes a Road and Bridge Unit, its duties are managed by the Infrastructure Development Directorate (IDD) Director. For the time being, the IDD Director has delegated authority to a Senior Divisional Engineer (SDE) from the Building and Architecture Sub-Group, supported by an Engineer and a Sub-Engineer. Additionally, a Rural Road Division has been established at MoPID, overseeing road and bridge projects.
- ***In Bagmati Province***, decisions have been made, and a Bridge Unit has been established in MoPID under the Motorable and Trail Bridge Section (one position) and the Motorable Bridge Section (one HR). A similar decision has been implemented in TID, where the Road and Bridge Section includes one SDE and two Engineers.
- ***In Gandaki Province,*** a Road and Bridge Section has been established in MoPITM, though IDD lacks a separate bridge unit. Instead, a designated engineer is managing motorable bridge projects. While bridge units are included in the O&M structure of MoPITM and IDOs, they are absent from IDD's organogram.
- ***In Lumbini Province***, decisions have been made to establish Bridge Units in both MoPID and TID.
- ***In Sudurpashchim Province***, a Bridge Unit has been established in TID under the Road and Bridge Section, with one designated position.

Additionally, the reliance on existing directors and delegated personnel to manage bridge responsibilities suggests potential overextension and a lack of dedicated management and specialized expertise. This could lead to compromised project quality and delayed implementation. Even in provinces where bridge units have been established, staffing levels appear minimal (e.g., one or two positions), for example, only 34% of staff are managing workload in the entire Supa in the areas of road and bridge. This raises concerns about the capacity to handle the complex technical and administrative demands of bridge infrastructure projects. The delegation of authority to personnel from unrelated sub-groups shows a clear lack of available expertise.

The primary observation on challenges regarding human resource allocation and proper management of bridge projects is highlighted below.

1. Inconsistent Institutionalisation of Bridge Management:

- **Fragmented Responsibility:** The allocation of bridge management responsibilities is highly inconsistent across provinces. Some provinces rely on existing directorates (TIDIDD), while others have established dedicated units (MoPID). This lack of uniformity hinders standardized practices and efficient resource allocation.

- **Deviation from O&M Frameworks:** Despite the inclusion of Road and Bridge Units in O&M frameworks in Koshi and Madesh Provinces, the actual management is being handled by existing directors or delegated to personnel from unrelated sub-groups (Building and Architecture). This indicates a disconnect between planned organizational structures and actual implementation, questioning the effectiveness of the O&M frameworks.
- **Lack of Dedicated Units in Key Entities:** The absence of dedicated bridge units in crucial entities like TID in Gandaki Province raises concerns about the capacity to effectively manage and oversee bridge infrastructure projects. Relying on designated engineers without formal unit structures may lead to inefficiencies and a lack of specialized expertise.

In the Table below an overview is provided of the technical Human Resources status of the MoPIDs in all Provinces (as per May 2025).

Table A 2: Technical Human Resource status of Province MoPIDs as per May 2025

Sl	Province	Total Post	Vacant Posts (Technical)		Source of information
			Number	Percentage	
1	Koshi	85	37	43 %	Evaluation Team
2	Madesh	75 (Permanent 60+Temporary 15)	27	36%	Collected by MLRBP
3	Bagmati	140	24	17.14%	Collected by MLRBP
4	Gandaki	121	53	43.8 %	Collected by MLRBP
5	Lumbini	131	57	56.49%	Collected by MLRBP
6	Karnali	87	26	29.88.%	Collected by MLRBP
7	Sudurpaschim	118	78	66.1. %	Collected by MLRBP

Note: Human Resource Status overview as per May 2025. Over the MLRBP-IV programme period the number of vacant posts was likely substantially higher as Public Service Commissions were only able to fill positions last year after the promulgation of the Provincial Civil Service Law in most provinces.

A further breakdown on Human Resource Challenges shows:

High Turnover of Political Appointees: Frequent changes in political leadership have disrupted policy continuity and long-term infrastructure planning. During the programme period, Gandaki Province experienced five Chief Ministers and four Ministers, making it difficult to maintain consistent oversight and accountability. This high turnover results in delays, as each new leadership team reviews or alters programme priorities, causing setbacks in decision-making and execution.

High Turnover of Senior Bureaucratic Staff: Similarly, the frequent transfer of senior bureaucratic officials has weakened technical expertise and institutional memory. In Madhesh Province, there have been 14 Ministry of Physical Infrastructure and Development (MoPID) Secretaries in just seven and a half years. This instability hinders effective administration, disrupts programme continuity, and limits the ability of government agencies to provide technical guidance and leadership in infrastructure development. Without sustained leadership, strategic direction is lost, leading to inefficiencies and weakened institutional capacity.

Lack of HR Staffing Plans and the Federal/Provincial Civil Service Act

Staff Shortages in Provincial Governments is a major bottleneck. PGs operate with severe staff shortages, significantly affecting their ability to manage infrastructure projects and deliver essential services. In Sudurpashchim Province, for

example, only 34% of the required staff are in place, leaving 66% of positions unfilled. This shortage forces the limited workforce to handle all infrastructure-related responsibilities, placing immense strain on personnel and leading to delays, inefficiencies, and a backlog of projects.

Indicator: 1.2.2. At least 60% bridge designs are outsourced to private consultants/firms by TIDs/IDOs

As presented under the previous indicator, MoPIDs have still limited organisational capacity for bridge designs. At the same time the Programme has had a high focus on building technical bridge design capacity within the available staff and of private consulting firms where required, as this is core to the MLRBP capacity and mandate of previous phases. Considering limited own MoPID capacity, the outsourcing of bridge design work is a logical option for MoPID and the majority of bridge design works are now procured through outsourcing modality. This is a valid approach, however, MoPID requires adequate in-house capacity to develop site specific ToRs for each bridge and to verify and approve the designs produced by private consulting firms.

The evaluation found challenges with the outsourcing of bridge designs to private consultants/firms, notably: MoPIDs still have a heavy reliance on the TA Team for design supervision and construction oversight. For too long, the TA Team have functioned as an internal unit rather than an external advisory and CD project. This has resulted in MoPIDs having little incentive to invest in their own capacity, while LRBSU has been overwhelmed with technical gap-filling work. The Programme Steering Committees ultimately decided to break this dependency of bridge design verifications by LRBSU, but this has still hampered technical and organisational capacity development of MoPIDs and it has limited the capacity of the LRBSUs to address more structural organisational and institutional capacity deficiencies. The present situation still raises concerns about MoPIDs capacity and the technical soundness of future bridge designs and post project sustainability.

Furthermore, MoPIDs also still depend on the TA Team for site assessments, bridge type selection, bridge failure evaluations and learning, as well as project oversight. Although design standards and management packages are available, awareness and utilization of these resources remain low, as is accountability to perform as per agreed specifications and contract conditions. The technical capacity of MoPIDs for bridge construction supervision was assessed as adequate to achieve the quality as per specifications, although the real 'power' of technical staff to supervise bridge contractors remains in doubt within the politicised context.

Although most MoPIDs ensured that capacity for procurement is adequate and no support is needed from the TA Team, the actual capacity or willingness for transparent and accountable procurement in line with GoN financial rules and regulations remains unclear. However, as there was no demand in this area from MoPIDs, the TA Team has had limited engagement on procurement and has not sought collaborations with other programmes who have a focus on Public Financial Management.

Indicator 1.2.3. Provincial bridge standards and norms are endorsed

As reflected under Output 1, indicator 1.1.1, MLRBP-IV has successfully developed standardized designs for four different types of bridges, ensuring uniformity, safety, and efficiency in bridge construction across provincial road networks. Two designs have been officially endorsed DoLID and the remaining two designs are expected to be validated by an IOE and will be officially endorsed by DoLID within the programme period. These by DOLID issued designs are widely adopted by Provinces as the standard and MoPID will not deviate from the design specifications, even if in some Provinces they are not formally endorsed by administrative decision.

Indicator: 1.2.4. Adequate budgets are available for execution of bridges on provincial road network (PRN).

Even when bridge designs are completed, budgeting and scheduling remain inadequate. Challenges include:

- Funding gaps that cause projects to stall mid-construction.
- Unrealistic timelines that lead to cost overruns and poor implementation.
- Duplication of efforts between federal and provincial governments, leading to inefficient planning and fragmented project execution.

The ambitious goal of constructing many bridges with limited resources raises serious concerns about feasibility. Without improved planning, coordination, and financial management, Nepal risks further delays and inefficiencies in its infrastructure development efforts.

Addressing these challenges requires policy continuity, long-term leadership stability, structured staffing plans, and stronger coordination between government tiers. The approval of the Federal Civil Service Act, enforcement of transparent infrastructure planning, and elimination of political interference will be key to unlocking Nepal's full potential in infrastructure development under federalism.

As earlier mentioned, political influence often distorts the approval process for the PRNMP, prioritizing short-term political gains over long-term infrastructure needs. This results in Inefficient resource allocation, where politically motivated projects receive funding at the expense of more urgent infrastructure needs.

Ad-Hoc Bridge Proposals at Local and Provincial Levels: LGs and PGs frequently submit multiple bridge proposals without proper feasibility studies or design preparations. Many of these proposals receive only NRs 1 million per bridge, an amount far too low to support actual construction. As a result, numerous projects fail to progress beyond the planning stage, leaving expectations unmet and resources underutilized.

Indicator: 1.2.5. 200 bridges are built.

The program has delivered impressive outcomes in numerical terms, till Mid of January 2025 the number of **Bridges Completed is 424**, which significantly exceeds the target of 200.

The project connected **5,313 km of All-Weather Provincial Roads** through the bridges constructed, against a target of 3,000 km. While these accomplishments are commendable, questions have been raised about their sustainability and quality. Key concerns include:

- **Quality Assurance:** The rapid and almost double achievement against initial targets raises concerns about whether quality standards were compromised.
- **Technical Support Capacity:** Given the limited number of technical staff available, doubts arise about whether the targets were set without proper analysis or if quality control suffered due to resource constraints.
- **Prediction in Project Document (PD) Preparation:** The team responsible for preparing the Project Document (PD) was unable to accurately anticipate the high demand for provincial bridges.

Output 1.3. Information system on Provincial Roads Network (PRN) is established and updated.

Indicator: 1.3.1. Endorsed Provincial Road Network Master Plans (PRNMPs) are available in all the 7 Provinces.

The PRNMP is a strategic document that outlines the long-term vision and development of the transportation network within a specific province. It is considered one of the milestones of the MLRBP. Bagmati has approved the PRNMP, whereas

Koshi has approved the list of roads called the Provincial Road Network, which is the first part of the PRNMP. However, this still requires prioritization and an investment plan. Madesh province has prepared the complete PRNMP, but prioritization remains an issue there. The PRNMP for the remaining provinces is unlikely to be completed before the project phase-out.

DoLID prepared and circulated a model guideline for the Provincial Road Network Master Plan (PRNMP) in June 2023. This guideline follows the approach adopted in the earlier District Transport Master Plan (DTMP) and serves as a useful reference for Provincial Governments (PGs). However, the implementation of these guidelines has been inconsistent, with different PGs adopting various modalities instead of adhering to a standardized approach. This lack of uniformity has led to inefficiencies and discrepancies in planning and execution.

A further important institutional result of the Programme is the endorsement of in Provinces of a Provincial Roads Act (PRA). Even if this is not specially mentioned as an output indicator, it is referenced in the Programme document [check which page] as a vital framework for bridge-building standardization. The establishment of Provincial Roads Acts (PRAs) is a critical component for the sustainable development of provincial road networks in Nepal. These acts are designed to provide the necessary legal framework for provinces to effectively manage their infrastructure, define responsibilities, set standards, and establish clear procedures. Ideally, these acts would empower provinces to take ownership of their road development, leading to enhanced efficiency, effectiveness, and long-term sustainability.

While five provinces (Gandaki and Karnali remaining) have successfully endorsed their PRAs, a closer examination reveals that this achievement was largely realized during the previous phase of the project (MLRBP Phase III). In the current phase (Phase IV), the PRBSU has not actively provided technical assistance to provincial governments in preparing these crucial legal documents. This lack of engagement raises concerns about the project's ability to capitalize on its established momentum and ensure consistent support across all provinces (Karnali and Gandaki). A model act has been prepared by the PRBSU for Koshi and shared with the remaining provinces.

The situation in Gandaki Province highlights this concern. Despite nearing the finalization of its PRA through extensive stakeholder discussions and legislative committee reviews, the PRBSU's absence from this process is notable. This raises questions about the project’s strategic approach to providing timely and targeted support.
Despite the formal endorsement of the PRNMP, politicians have not actively followed or implemented it in practice. This lack of political will and commitment has hindered its effective execution. The case of Bagmati Province serves as a notable example, where the plan has been approved but not adequately prioritized or integrated into decision-making processes. This highlights the gap between policy endorsement and actual implementation at the provincial level.

Additionally, the DoLID plays a crucial role in enhancing governance, promoting sustainable infrastructure practices, and supporting regional development at the provincial level.

Table A 3: The Status of PRNMP and PRA

Provinces	PRNMP	PRA	Remarks
Koshi	List only, needs prioritization and investment plan development.	Approved by Provincial Assembly	PRN got approval from Minister Level
Madesh	Approved by cabinet, requires finalization and certification.	Approved by Provincial Assembly	PRNMP got approval from CM
Bagmati	Approved by Cabinet	Approved by Provincial Assembly	PRNMP got approval from CM
Gandaki	In progress	Under discussion in Legislative Parliement Committee	PRNMP Planned submission to MoPID for further processing.
Lumbini	In progress	Approved by Provincial Assembly	PRNMP Planned submission to Provincial Assembly for approval.
Karnali	In progress	Approved by Provincial Assembly	PRNMP Planned submission to MoPID for further processing.
Supa	In progress	Drafted	PRNMP Planned submission to MoPID for further processing.

As stated again in section 1.2.3, the DoLID prepared and circulated a model guideline for the PRNMP in June 2023. This guideline follows the approach adopted in the earlier District Transport Master Plan (DTMP) and serves as a useful reference for PGs. However, the implementation of these guidelines has been inconsistent, with different PGs adopting various modalities instead of adhering to a standardized approach. This lack of uniformity has led to inefficiencies and discrepancies in planning and execution. While efforts to endorse the PRNMP have been made, progress has been slow, and further coordination is needed to ensure consistent implementation across all provinces.

The process of approving the PRNMP varies across provincial governments. For instance, in Koshi Province, the PRN, as part of the PRNMP, received approval at the ministerial level. In contrast, in Madhesh and Bagmati Provinces, the approval was granted at the cabinet level. Notably, MoPID Lumbini is planning to seek approval from the provincial assembly, marking a unique approach to the process.

Indicator 1.3.2: Bridge requirements in Provincial Road Networks (PRN) are identified in all the 7 provinces.

MLRBP Phase IV is designed to strengthen provincial governments, particularly the Ministry of Physical Infrastructure Development (MoPID), in implementing the new constitution by managing and constructing motorable bridges on provincial road networks. Instead of directly overseeing projects, the program now plays an advisory role, guiding provinces in planning, design, and quality assurance. It provides technical support to draft key legal frameworks such as the Provincial Roads Act (PRA) and Provincial Road Network Master Plans (PRNMP). These frameworks help provinces establish their bridge selection criteria and investment plans. Additionally, the program has developed and handed over the Provincial Bridge Information Management System (PBIMS), enabling better monitoring, transparency, and accountability in bridge projects.

Indicator: 1.3.3. Bridge status information on PRN is available.

The PBIMS has been developed as part of MLRBP-IV to manage and share critical information about motorable local road bridges across various MLRBP phases. The PBIMS is an integrated system designed to streamline the management of bridge-related data at all stages of a bridge's lifecycle, including budgeting, surveys, design, design verification, and construction phases.

The system is intended to serve as a central platform for provincial authorities, design consultants, contractors, and the LRBSU, all of whom are responsible for using and updating the system with relevant information. The core objectives of PBIMS are to manage data on provincial bridges, both those under the provincial plan and those currently under construction. Additionally, the system aims to track bridge design verification, archive approved documents, and assist the Provincial Government in monitoring and managing provincial bridge projects more effectively. By providing real-time access to detailed information, the system is also expected to support decision-making processes related to provincial bridges and improve the overall efficiency of bridge management.

Importance of PBIMS: Provincial stakeholders, including MoPID, TID, and IDO, have expressed their appreciation for the support provided by MLRBP in developing and implementing PBIMS. The system is seen as a significant step toward improving transparency, accountability, and the overall management of provincial infrastructure projects. By enabling more efficient tracking, reporting, and decision-making, PBIMS has the potential to enhance the long-term sustainability of bridge infrastructure and contribute to the broader goals of infrastructure development in the provinces.

Sustainability: The PBMSC is designed as a sustainability mechanism to ensure the continuation of program outcomes beyond the project's phase-out. This platform aims to provide ongoing technical support to the MoPID and its relevant offices, thereby contributing to the long-term impact of the program. The PMBMSC is funded through a co-financing model, with the SDC contributing 50%, the Provincial Government (PG) 30%, and the DOLID 20%. Below is the current status.

- **Madhesh Province Co-funding Challenges:** Madesh Province has initiated the Expression of Interest (EoI) process for PBIMS implementation, with seven companies submitting EOIs. However, the Provincial Government has not yet allocated its co-funding share, pending final approval from SDC. This delay poses a risk to timely implementation.
- **Koshi Province Co-funding Delays:** Koshi Province has prepared a PBIMS implementation package based on the Terms of Reference (TOR). However, the package is currently under review by the Provincial Planning Commission. While the MoPID Minister and Secretary have expressed commitment to proceed, the Principal Secretary has reservations regarding budget allocation under the co-funding modality, creating a significant obstacle.
- **Limited Progress in Remaining Provinces:** Officials in the remaining provinces express general acceptance of the PBIMS concept. Nevertheless, there has been no tangible initiation of implementation activities. Consequently, it is highly unlikely that PBIMS will be established in these provinces before the project's phase-out.

The PBIMS has been finalized, with data input carried out in a centralized manner, at present by the PRBSU. To ensure effective implementation, the LRBSU conducted a formal introduction and orientation session on PBIMS for the dedicated human resources. However, it is still a question if the capacity at the federal level is present to further develop the system, to continue inputting of data to be collected from all Provinces, and to maintain and update the system over time.

Furthermore, the Programme has limited itself to developing the PBIMS as a useful instrument for Provinces to manage their bridge assets. However, little strategic effort has been identified to promote the larger need for asset management strategy, planning and budgeting within the Provinces. Without an understanding and acceptance of the importance of asset management, of all kinds of infrastructure assets including bridges, the utility of the PBIMS may remain low. This is an example where the project has focused on achieving an indicator, albeit a very useful one, without strategizing on strengthening Provinces' ownership of the PBIMS and embedding its importance and utility within organizational

decision-making processes around planning and budgeting. The focus has been on the development of the instrument and not on how the instrument can also be a vehicle for building organizational and institutional capacities.

Indicator: 1.3.4 IDOs are updating bridge information.

The PBIMS has been finalized, with data input carried out by the PRBSU. To ensure effective implementation, the TA Team conducted a formal introduction and orientation session on PBIMS for the dedicated Human Resources (HR) team at the TID and other PG members. The dedicated HR personnel within the Bridge Unit at TID are supposed to supervise and ensure the accuracy and completeness of data entry into PBIMS. However, continued support and training for local stakeholders will be necessary to ensure the system is fully integrated into everyday operations and used to its fullest potential.

There is a Positive Perception of PBIMS: Provincial stakeholders (MoPID, TID, and IDO) acknowledge the potential of the Provincial Bridge Information Management System (PBIMS) to enhance transparency and accountability within infrastructure projects. Furthermore, considering the weak ownership of Provinces to follow the developed PRNMP, as presented above, and the present lack of priority of Provinces for asset management, it is still in doubt whether Provinces will actually see a political and functional benefit of using the PBIMS beyond the Programme drive. This also risks low priority for investment in technical staff to maintain and update the system.

Output 1.4. Private sector engages and provides their services in bridge building in the provinces.

Indicator: 1.4.1. At least 2 private sector Consultants/firms are surveying, designing bridges for MoPIDs/TIDs/ IDOs in each province.

The private sector's engagement in bridge building has been substantial as outsourcing compensates for the need to have substantial in-house capacity of MoPIDs. At the same time, as highlighted before, the capacity of MoPID is still inadequate to supervise private sector assignments and to verify deliverables as per agreed standards. Consulting firms for bridge designs are available and adequate for the prevailing bridge designs. Provinces also often procure packages based on design and build, which resolved challenges with design mistakes and implementation. Capacity of service providers is still to be strengthened for more demanding bridge site investigations and more challenging bridge designs due to e.g. challenging locations and climate related high intensity weather events in upstream catchment areas. The research, learning and design adaptation capacity of both service providers and MoPIDs is also still low. In line with this, the review noted that Provinces still have high reliance on the TA Team for design supervision and construction oversight, which raises concerns about sustainability.

Provincial officials also rely significantly on the TA Team for site assessments, bridge failure evaluations, and project oversight. Although design standards and management packages are available, awareness and utilization of these resources remain low. It is also noted that for this indicator the fulfilment of the target of 2 firms was achieved early in the project. This seemingly led to little effort to expand CD to further private sector entities. Efforts to increase the number well-capacitated consulting firms could have facilitated more competition within procurement processes and lower prices.

Also, the focus on capacitating two individual private sector entities, limited the perspective on a more strategic facilitation of the engagement between MoPIDs and private sector, exploring different outsourcing arrangements or

Public Private Partnership models, as well as the related capacity requirements. This is important as MoPIDs capacity for outsourcing of construction as per tender documents is relatively well developed, while design and monitoring of performance-based service contracts is more challenging. This also shows a limiting focus on technical capacities and targets without a broader view on (future) organisational capacities required. More appropriate indicators in relation to MoPIDs organisational capacity for outsourcing and PPPs may have been appropriate.

Indicator: 1.4.2 Engineering institutes in the provinces include bridge engineering curriculum in their engineering courses (B.Sc. and M.Sc.)

The programme's efforts to collaborate with educational institutions has the goal of fostering bridge design skills among engineers in Nepal and enhancing the private sector, this initiative is moving forward. The collaboration between the TA Team and 17 engineering colleges across Nepal was formalized through a Memorandum of Understanding (MoU), with the objective of creating a structured framework for integrating bridge design into academic curricula at the undergraduate level. This initiative aims to enhance research opportunities and facilitate exposure visits, ultimately addressing the shortage of skilled bridge design and construction engineers in Nepal. The evaluation team visited three locations in Gandaki, Lumbini, and Koshi.

A successful collaboration between the TA Team and the Institute of Engineering, in Gandaki, Pokhara, serves as a model for integrating bridge design education within Nepal's academic institutions. Formalized through an MoU, this initiative incorporated bridge design into undergraduate curricula, enhanced research opportunities, and addressed the shortage of skilled bridge engineers. Key interventions included:

- Introducing elective bridge courses at Paschimanchal Campus (Tribhuvan University) and School of Engineering (Pokhara University)
- Funding final-year capstone projects
- Institutionalizing an annual four-day bridge design training
- Facilitating specialized workshops for Structural Engineering Master's students (increasing participation from 14 students in 2022 to 20 in 2024)
- Extending training to consulting firms on updated design codes
- Attempts to replicate Gandaki's success in Lumbini and Koshi Provinces have been less effective:
- Lumbini Engineering College's MoU (2021) initially benefited 30–32 students, but interest in bridge-related coursework declined sharply in subsequent years.
- Purbanchal Engineering College in Koshi Province enrolled seven students initially, but no further engagement occurred.

Best Practice: A successful collaboration between the TA Team and the Institute of Engineering, in Gandaki, Pokhara, serves as a model for integrating bridge design education within Nepal's academic institutions. Formalized through an MoU, this initiative incorporated bridge design into undergraduate curricula, enhanced research opportunities, and addressed the shortage of skilled bridge engineers. Key interventions included:

- Introducing elective bridge courses at Paschimanchal Campus (Tribhuvan University) and School of Engineering (Pokhara University)
- Funding final-year capstone projects
- Institutionalizing an annual four-day bridge design training
- Facilitating specialized workshops for Structural Engineering Master's students (increasing participation from 14 students in 2022 to 20 in 2024)
- Extending training to consulting firms on updated design codes

Challenges in Lumbini and Koshi Provinces Attempts to replicate Gandaki's success in Lumbini and Koshi Provinces have been less effective:

- Lumbini Engineering College's MoU (2021) initially benefited 30–32 students, but interest in bridge-related coursework declined sharply in subsequent years.
- Purbanchal Engineering College in Koshi Province enrolled seven students initially, but no further engagement occurred.

Analysis:

- Sustainability concerns: Gandaki's initiative lacks institutionalized faculty expertise, risking program continuity once external support phases out.
- Limited research integration: While the initiative introduced exposure visits and training, applied research in bridge engineering remains underdeveloped.
- Absence of formal curriculum review mechanisms: Universities lack structured processes to update bridge engineering curricula based on industry standards.
- Scalability challenges: The model remains confined to Gandaki Province, with unsuccessful attempts to expand to Lumbini and Koshi. Declining student interest and weak institutional commitment hinder broader impact.

Indicator: 1.4.3. 20% of all material testing is conducted at private laboratories.

The Programme envisions that material testing can best be done through private laboratories, in complementarity to the availability of having basic in-house capacity. However, in Koshi, government labs were used exclusively, while other Provinces show a much larger part of testing outsourced to private laboratories.

Indicator: 1.4.4. 40% of bridge works concluded on time and budget by the Contractors.

Even when bridge designs are completed, budgeting and scheduling remain inadequate. It was identified that budget allocations to bridges remain inadequate, which risks the design standard not being achieved or certain work items being omitted. Despite insufficient budget allocations, procurement of the construction work still commences. This leads to sub-standard work and can also cause:

- Projects to stall mid-construction and not being finished.
- In terms of planning, unrealistic timelines lead to cost overruns and poor implementation.
- Duplication of efforts between federal and provincial governments, leading to inefficient planning and fragmented project execution.

The ambitious goal of constructing many bridges with limited resources raises serious concerns about feasibility. Without improved planning, coordination, and financial management, Nepal risks further delays and inefficiencies in its infrastructure development efforts. Addressing these challenges requires policy continuity, long term leadership and stability.

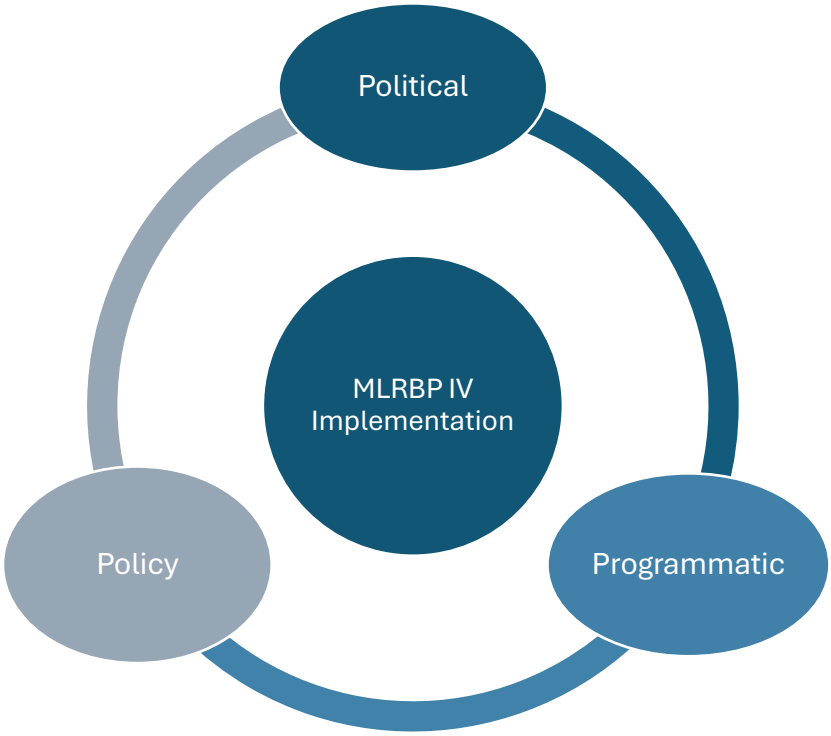
Political influence often distorts the bridge prioritization and budget approval process for the PRNMP, prioritizing short-term political gains over long-term infrastructure needs based on a network approach benefiting the most excluded and vulnerable. This results in inefficient resource allocation.

ANNEX 4: Institutional Review – 3P Model

The institutional review focuses on objective 1, i.e. institutionalization of motorable bridge building processes within the Provincial government systems, i.e. MoPID, TID, IDO, especially to see how the TA Team has helped the PGs to implement their Constitutional mandates specific to bridge building and has contributed to Nepal's overall federal state building and objective 2, i.e. the progression of the PG institution capacities, i.e. MoPID, TID, IDO, and the other private sector stakeholders, e.g. consultants, contractors and engineering institutes, involved in the bridge building process focusing on MLRBP IV outcome 1, of this evaluation.

The Swiss Agency for Development and Cooperation (SDC) has adopted a strategic three-pronged (3P) approach, i.e. political, policy and programmatic engagements, in implementing the MLRBP IV. To align with this approach, this institutional review has carried out a thorough and in-depth analysis of this strategic three-pronged approach as a part of the evaluation, carefully assessing the effectiveness of political, policy and programmatic engagements in addressing the complexities of federal state-building. Figure 4 diagrammatically presents the three-pronged approach:

Figure A 1: Strategic Focus for the Implementation of MLRBP IV



Political Engagement: The SWN Evaluation Team (ET) has evaluated the level of political commitment, resources availed, support received, along with the political motivation within institutions and among individuals at the Provincial level. Significant investment in meaningful political engagement is necessary for top-down reforms that can be advanced only through the enactment of legally binding Acts that addresses the rights within specific domain. Politicians and policy makers who are motivated and convinced of the benefits can accelerate positive policy impacts, thereby enhancing programme effectiveness.

Policy Engagement: The SWN ET has reviewed SDC's role in i) advising on the development of appropriate norms, standards and designs, guidelines; ii) promoting the enactment of Provincial Roads Act (PRA); and consequently iii) in establishing a strong legal and policy framework to support effective road network infrastructure development in Nepal. SDC acknowledges that federal state-building is fundamentally a political process that demands robust political will. At the policy level, advocacy is essential for reforms that align with the principles of federalism. This includes shaping policies related to road infrastructure, bridges, and inter-governmental relations.

Programmatic Strengthening: The SWN ET has consulted with all three levels of the government, i.e. federal, provincial, and local, to gain stronger insights into the inter-governmental collaboration in effective infrastructure service delivery by Provinces. In doing this, SWN ET has identified areas where the federal, provincial, and local governments may be overlapping responsibilities, leading to inefficiencies. These overlaps can contribute to challenges such as duplication of efforts, constrained financial resources and governance issues. Understanding the communication channel, challenges and identifying solutions can bridge the gap in federalisation processes, easing and enhancing federalization.

Lists of people and organisations interviewed…(KII)

Federal Level

	Federal		
1	Director General	Department of Local Infrastructure Development	
2	Deputy DG	Department of Local Infrastructure Development	
3	Joint Secretary	Ministry of Urban Development	
4	Team	Motorable Local Roads Bridge Program	
5	Transport Specialist	ADB	
6	Transport Professionals	The World Bank	
7	Team	FCDO	

Koshi

	Koshi		
1	Minister	Ministry of Physical Infrastructure Development (MoPID)	
2	Principle Secretary	Koshi Province	
3	Secretary	Ministry of Physical Infrastructure Development (MoPID)	
4	Section Chief - Transportation	Ministry of Physical Infrastructure Development (MoPID)	
5	Director	Transport Infrastructure Directorate	
6	Contractor	KM Engineering Buildings Pvt. Ltd.	
7	Chief	Infrastructure Development Office (IDO)	
8	Team Leader	Provincial Support Program	
9	Mayor	Biratnagar Metropolitan City	
10	Vice- Chair	Provincial Planning Commission	
11	Member	Provincial Planning Commission	

	Koshi		
12	Chief	Local Infrastructure Development Program Office (**LIDPO**)	
13	Team	Provincial Roads Bridge Support Unit (PRBSU), Lumbini	
14	Chief	Purbanchal Engineering College	

Madhesh

	Madhesh		
1	Minister	Ministry of Physical Infrastructure Development (MoPID)	
2	Secretary	Ministry of Physical Infrastructure Development (MoPID)	
3	Chief	Transport Infrastructure Directorate	
4	Chief	Infrastructure Development Office (IDO)	
5	Vice Chair	Provincial Planning Commission	
6	Team	Provincial Roads Bridge Support Unit (PRBSU), Madesh	
7	Chief	Local Infrastructure Development Program Office (**LIDPO**)	
8	Chair	Bathnaha Rural Municplaity	

Bagmati

	Bagmati		
1	Minister	Ministry of Physical Infrastructure Development (MoPID)	
2	Secretary	Ministry of Physical Infrastructure Development (MoPID)	
3	Director	Transport Infrastructure Directorate	
4	Senior Division Engineer	Transport Infrastructure Directorate	
5	Contractor	Contractor	
6	Chief	Infrastructure Development Office (IDO)	
7	Team	Provincial Roads Bridge Support Unit (PRBSU), Lumbini	
8	Chair	Bakaiya Rural Municipality	

Gandaki

	Gandaki		
1	Chief Minister	Gandaki Province	
2	Secretary	Ministry of Physical Infrastructure Development (MoPID)	
3	Director	Transport Infrastructure Directorate	
4	Senior Division Engineer	Transport Infrastructure Directorate	
5	Contractor	Contractor	
6	Chief	Infrastructure Development Office (IDO)	
7	Campus Chief	Western Regional College	
8	Head of Department	Western Regional College	
9	Team	Provincial Roads Bridge Support Unit (PRBSU), Lumbini	

	Gandaki		
10	Chief	Local Infrastructure Development Program Office (**LIDPO**)	
11	Chair	Legislative Committee - Physical Infrastructure Development	
12	Stakeholders	Ex-elelcted representative of Madi Rural Municipality	
13	Ward Chair	Madi Rural Municipality	

Lumbini

	Lumbini		
1	Minister	Ministry of Physical Infrastructure Development (MoPID)	
2	Secretary	Ministry of Physical Infrastructure Development (MoPID)	
3	Team	Transport Infrastructure Directorate	
4	Director	Transport Infrastructure Directorate	
5	Senior Division Engineer	Contractor	
6	Contractor	Infrastructure Development Office (IDO)	
7	Chief	Infrastructure Development Office (IDO)	
8	Engineer	College	
9	Team	Provincial Roads Bridge Support Unit (PRBSU), Lumbini	
10	Ex-Vice Chair	Provincial Planning Commission	
11	Chief and Team	Local Infrastructure Development Program Office (**LIDPO**)	
12	Chief and Team	Lumbini Engineering College	

Sudurpaschim

	Sudurpaschim		
1	Chief Minister	Sudurpachim Province	
2	Minister	Social Development Ministry	
3	Secretary	Transport Infrastructure Directorate	
4	Director	Transport Infrastructure Directorate	
5	Contractor	Contractor	
6	Chief	Infrastructure Development Office (IDO)	
7	Team	Provincial Roads Bridge Support Unit (PRBSU), Lumbini	
8	Chief and Team	Local Infrastructure Development Program Office (**LIDPO**)	
9	Mayor	Shuklaphanta Municipality	
10	Vice Chair	Provincial Planning Commission	

ANNEX 5: Data Collection Instruments (Socio-Economic Study)

Household Survey Questionnaire

Introduction and Consent:

Namaste! My name is __ and I am from S.W. Nepal Pvt. Ltd. (Scott Wilson Nepal/SWN), a research and development consulting firm in Kathmandu, Nepal. I am here to learn from you how the bridges have impacted your lives and livelihood, i.e. changes in income, employment, market prices of goods and travel time to basic services to name a few. Should you agree to take part in this Study, I will ask you a few questions. Although you will not be receiving direct monetary benefit by participating in this Study, your answers will be very helpful in understanding your reality and will help in designing future development projects in your community that are more tailored to your needs. Your answers will be kept confidential and you will be anonymous. I truly hope you will participate in this Study. But please know that you can refuse, decide not to answer any question and stop the interview at any point in time, without any explanation. The interview will take 45 minutes.

- Do you understand what I have just explained? Yes/ No
- Do you want to ask me any questions about the interview at this time? Yes/ No
- (Note: Answer any questions asked before proceeding interview)
- Do you agree to participate in this interview? Yes/ No

If yes, proceed with the interview. If No Terminate the interview and move to the next household.

A. General information:

Name of interviewer	
Date	
Bridge name	
Province	
District	
Municipality/Rural Municipality	
Ward	
Bridge bank	Left
	Right

B. Demographics:

No.	Question	Response
1	Respondent first name	
2	Respondent last name	
3	Relation to household head	
4	Gender	Male
		Female
		Other
5	Age	
6	Caste/ethnicity	Hill Brahmin
		Hill Chhettri

No.	Question	Response
		Terai/Madhesi Brahmin/Chhettri
		Terai/Madhesi Other Caste
		Hill Dalit
		Terai/Madhesi Dalit
		Newar
		Hill/Mountain Janajati
		Terai Janajati
		Muslim
		Other (please specify)
7	Marital status	Unmarried
		Married
		Divorced
		Separated
		Widow/widower
8	What is the highest educational qualification you have acquired?	Basic education (grades 1-8)
		Secondary education (9-12)
		Bachelor's degree
		Master's degree
		PhD or above
		Non-traditional education
		Vocational education
		Illiterate, cannot read or write
		Others (please specify)
9	Primary Employment	Agriculture, e.g. farming, forestry
		Private sector job (non-agriculture)
		Private sector job (agriculture)
		Casual/informal labor (agriculture)
		Casual/informal labor (non-agriculture)
		Public sector job/government job
		Business, e.g. retail shop, hardware shop etc.
		Household work
		Student
		Other (please specify)
10	What is your household's annual income?	
11	How many members currently live in this household?	
12	Do you or anyone in your household have any disability?	Yes
		No
		Do not know
13	If yes, what type of disability do they have?	Physical disability
		Hearing impairment – deaf or hard of hearing
		Visual impairment – blind or low vision
		Deaf blind

No.	Question	Response
		Speech impairment
		Mental disability – intellectual disability, mental illness, autism
		Multiple disabilities

C. Household Agricultural and Livestock Production

What is the annual production (in kilograms) of the following crops in this household this year?

No.	Particular	Annual Household Production (kilogram, kg)	
		Before bridge	After bridge (2024)
1	**Cereal crops** e.g. wheat, maize, paddy, barley, buckwheat, millet etc.		
2	**Cash crops**, e.g. oilseeds, potato, tobacco, sugarcane, jute, cotton etc.		
3	**Vegetable**, e.g. cauliflower, broccoli, cabbage, onion, cucumber, pumpkin etc.		
4	**Fruits**, e.g. apple, banana, watermelon, pineapple, orange, avocado etc.		

How many of the following animals does this household own?

No.	Livestock	Number	
		Before bridge	After bridge (2024)
1	Cattle		
2	Buffalo		
3	Horse, donkey or mule		
4	Pig/boar		
5	Goat		
6	Sheep		
7	Chicken or other poultry		
8	Duck		
9	Yaks		
10	Others (please specify)		

D. Household income and expenditure

Source and amount of household income before and after bridge construction

No.	Particular	Annual income (NPR)	
		Before bridge	After bridge (2024)
1	Cereal crops, e.g. wheat, maize, paddy, barley, buckwheat, millet		
2	Cash crops, e.g. oilseeds, potato, tobacco, sugarcane, jute, cotton		
3	Livestock, e.g. cattle, chicken, goat/sheep, duck, pig		
4	Vegetable and fruits		
5	Agriculture wage labor		
6	Service		
7	Pension		

No.	Particular	Annual income (NPR)	
		Before bridge	After bridge (2024)
8	Remittance		
9	Non-agriculture wage labor		
10	Interest		
11	Rent		
	Total household production and income		

Annual expenditures for households in NPR

No.	Particular	Annual expenditure (NPR)	
		Before bridge	After bridge (2024)
1	Food and non-alcoholic beverage		
2	Housing and utilities		
3	Education		
4	Clothing and footwear		
5	Transport		
6	Furnishing and household equipment		
7	Health		
8	Restaurant and hotels		
9	Communication		
10	Recreation and culture		
11	Alcoholic beverages and tobacco		
12	Loan and interest payment		
13	Investment in income-generating activity, e.g. micro-enterprise		
14	Livestock		
15	Ornaments		

E. Asset ownership

Land ownership.

No.	Question	Response	
1	Do you or anyone in this household own any land?	Yes	
		No *(if no, skip this section)*	
		Do not know (if do not know, skip this section)	
1.1	If yes to 1, how much of the following land (in hectares) does your household own?	Land area (in hectares)	
		Before bridge	After bridge (2024)
	Low land		
	Upland		
	Fruit orchard		
	Pasture		
	Own forest		
	Residential		

	Others (please specify)		

Other assets

No.	Particular	Number	
		Before bridge	After bridge (2024)
1	Electricity		
2	Radio		
3	Television		
4	Computer		
5	Refrigerator		
6	Table		
7	Chair		
8	Bed		
9	Sofa		
10	Cupboard		
11	Clock		
12	Fan		
13	Inverter		
14	Bicycle/rickshaw		
15	Motorcycle		
16	Car/truck/tractor		

F. Food Sufficiency

For how many months is your own agricultural production sufficient for your household?

No.	Particular	Agriculture Production Sufficient (in months)	
		Before bridge	After bridge (2024)
1	Less than 3 months		
2	Equal to 3 months and less than 6 months		
3	Equal to 6 months and less than 9 months		
4	Equal to 9 months and less than 12 months		
5	1 year or more		

G. Access to nearest utilities and services:

Outcome 2.3. (a) 30% travel time saved by walking

Outcome 2.3. (b) 30% travel time saved in vehicle

No.	Services/Facilities	Time taken (in minutes)				One-way cost (NPR)	
		Walking		Vehicle			
		Before bridge	After bridge (2024)	Before bridge	After bridge (2024)	Before bridge	After bridge (2024)
1	School/university						
2	Local market						
3	Regional market						

No.	Services/Facilities	Time taken (in minutes)				One-way cost (NPR)	
		Walking		Vehicle			
		Before bridge	After bridge (2024)	Before bridge	After bridge (2024)	Before bridge	After bridge (2024)
4	Health post						
5	District hospital						
6	Local Government (LG) office						
7	All-weather road						
8	Farmland						
9	Water source						

H. Perception on Benefit of Bridge Construction

No.	Question	Question				
		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	The variety of goods/products in the local market has increased after bridge construction					
2	The number of shops in the local market has increased after bridge construction					
3	The price of goods/products in the market has decreased after bridge construction					
4	Land cost has increased after bridge construction					
5	It is easier to access basic services, e.g. health facilities, local market, administrative centers, after bridge construction.					
6	There are more employment opportunities in the bridge vicinity after bridge construction.					

I. Migration

1.	Has anyone from this household migrated?	Before		After	
		Yes	No	Yes	No
2.	If yes, where have they migrated to?	Migration Location		Before	After
		Inside the country			
		Outside the country			
3.	What are the major push factors for Migration? Select all that apply	Push Factor		Before	After
		Lack of employment opportunity			
		Lack of income			
		Lack of business			

		opportunities		
		Lack of agricultural opportunity		
		Political instability (5)		
		Social reasons (6)		
		Lack of education opportunities (7)		
		Other specify (8)		

- C2. What were the main challenges you faced in traveling before the bridge was built, and how have these changed?
- C3. Have you noticed any changes in the local community or economy since the bridge was completed? If so, please describe them.

*******Thank the respondent and close the interview unless he/she has any question*******

Settlement Key Informant Interview (KII)

Interviewer …….…. Province …….. District…….. Settlement Name …… Bridge Name……..Urban /Rural ……..…….…… Interview Date……

Interviewer:

Namaste. My name is ……., and I am with SWN. We're conducting a study on motorable local road programme in Nepal and I am a part of the team conducting this study. I am here to understand few things such as commodity price, import and export of different commodities, time taken to reach places like school, health post, market and palika office, transportation cost, number of settlements connected to all-weather-road, length of all-weather roads before and after the construction of the bridge (name of the bridge).

This study is important because it will help us to understand what kind of impacts the bridges have brought if any for the communities. I want to assure you that your responses will be kept confidential, and your participation is entirely voluntary. The interview should take about 30 minutes.

Do you agree to talk with me and answer some questions today? **Yes/No**

Do you have any question before we start? **Yes/No**

A. General information:

Date:	
Time:	
Name of interviewer:	
Bridge name:	
Province:	
District:	
Municipality/Rural Municipality:	
Settlement name:	
River bank:	Left
	Right
Name of respondent:	
Ethnicity:	
Occupation of respondent:	Trader

	Wholesale shop owner
	Retail shop owner
	Transport operator
Age:	
Gender:	Male
	Female
	Other

B. Market price of goods and commodities:

1. How has price of different commodities and items changed in the settlement before and after the bridge construction in this settlement?

No.	Particular	Unit	Market Price (NPR)	
			Before bridge construction (NPR)	After bridge construction (NPR)
1	Rice			
2	Wheat			
3	Maize			
4	Millet			
5	Sugar	1 kilogram		
6	Edible oil	1 liter		
7	Pulses (beans/lentils)	1 kilogram		
8	Salt	1 kilogram		
9	Petrol	1 liter		
10	Diesel	1 liter		
11	Cement (in sack)	In sack		
12	Rod/Chhad	In quintal		
13	Fertilizer	In sack		
14	Tomato	1 kilogram		
15	Cauliflower	1 kilogram		
16	Potato	1 kilogram		
17	Onion	1 kilogram		

C. Transportation cost of goods from nearest market

Outcome indicator 2.1. 20% reduction in transport cost (fares and freight)

No.	Means of transportation	Before bridge construction			After bridge construction		
		Name of market (Municipality/Rural Municipality)	Distance (in km)	Transportation cost (NPR)	Name of market (Municipality/Rural Municipality)	Distance (in km)	Transportation cost (NPR)
1	Truck						
2	Tractor						
3	Big bus						
4	Micro bus						
5	Taxi						

6	Jeep						
7	Buffalo cart						

D. Quantity of goods from nearest market

Outcome indicator 2.2. (b): 30% increase in freight volume

No.	Item	Import Quantity (kilogram/month)		Export Quantity (kilogram/month)	
		Before bridge construction	After bridge construction	Before bridge construction	After bridge construction
1	Cereal crops, e.g. wheat, maize, paddy, barley, buckwheat, millet				
2	Cash crops, e.g. oilseeds, potato, tobacco, sugarcane, jute, cotton				
3	Livestock, e.g. cattle, goat, sheep, chicken, fish, pig, duck				
4	Vegetables and fruits, e.g. cauliflower, tomato, potato, apple, mango, banana				
5	Milk products, e.g. cheese, milk, yoghurt				
6	Fertilizer and pesticides				
7	Cement				
8	Rod/chhad				

E. List of public properties in the settlement

No.	Public utilities and services	Number	
		Before bridge construction	After bridge construction
1	Hospitals/health posts		
2	Pharmacies		
3	Schools (basic, secondary and higher secondary)		
4	University		
5	Retail shop		
6	Wholesale shop		
7	Tea shop		

F. Settlement

How many settlements and population do you think is connected to all-weather provincial road?

Outcome 1.3. Additional 10% of settlements connected to all-weather Provincial roads

Settlement Number		Population Size	
Before bridge construction	**After bridge construction**	**Before bridge construction**	**After bridge construction**

G. All-Weather Road

Can you tell us how much all-weather motorable road is there from the bridge?
Outcome 1.2. 3,000 kilometers of all-weather Provincial roads.

Length of all-weather provincial road (in kilometer)	
Before bridge construction	**After bridge construction**

I have almost come to the end of this interview, at the end I would like to know in what other ways that you have not already mentioned has the bridge impacted the lives and livelihood of people and communities?

*******Thank the respondent and terminate the interview ******

Origin to Destination Survey

External Evaluation of Motorable Local Roads Bridge Programme (MLRBP) Phase IV

Origin-Destination Survey

Passenger Vehicle

Province	
District	
Municipality/Rural Municipality	
Ward	
Bridge name	
Direction from - Direction to	• Left to Right • Right to Left
Vehicle Brand- Model (e.g. Toyota-Corolla)	
Vehicle Make Year	
Today's Date	
Enumerator name	

OMS 2024 (after bridge construction)

Vehicle type *(big bus, small bus, microbus, jeep, tax, three-wheeler)*	**Origin (District-Municipality-Ward)**	**Destination (District-Municipality-Ward)**	**Distance (in km)**	**Travel fare (NPR)**	**Travel time (in minutes)**	**Seating capacity**	**Number of passengers**

Baseline (before bridge construction): To achieve the same journey purpose how would you make this trip before bridge construction?

Vehicle type *(big bus, small bus, microbus, jeep, taxi, three-wheeler)*	**Origin (District-Municipality-Ward)**	**Destination (District-Municipality-Ward)**	**Distance (in km)**	**Travel fare (NPR)**	**Travel time (in minutes)**	**Seating capacity**

Passenger Vehicle - Vehicle Operating Cost (VOC)

Current - After Bridge Construction

Vehicle Price (current)	**Fuel Cost** (current) NPR per litre	**Cost of Tyre** (current) NPR per tyre	**Vehicle Maintenance Cost** (current) NPR per month	**How many hours of driving per day?** (current)

Before- Before Bridge Construction

Fuel Cost (before) NPR per litre	**Cost of Tyre** (before) NPR per tyre	**Vehicle Maintenance Cost** (before) NPR per month	**How many hours of driving per day?** (before)

Freight

Province	
District	
Municipality/Rural Municipality	
Ward	
Bridge name	
Direction from - Direction to	• Left to Right • Right to Left
Vehicle Brand- Model (e.g. Toyota-Corolla)	
Vehicle Make Year	
Today's Date	
Enumerator name	

OMS 2024 (after bridge construction)

Vehicle type *(heavy truck, small truck, tractor, three-wheeler)*	**Load type** *(agricultural produce, construction material, fertilizers/pesticides, other market goods)*	**Load (in kilogram)**	**Origin (District-Municipality-Ward)**	**Destination (District-Municipality-Ward)**	**Distance (in km)**	**Freight cost (NPR)**	**Travel time (in minutes)**

Baseline (before bridge construction): To achieve the same journey purpose how would you make this trip before bridge construction?

Vehicle type *(heavy truck, small truck, tractor, three-wheeler)*	**Load type** *(agricultural produce, construction material, fertilizers/pesticides, other market goods)*	**Load (in kilogram)**	**Origin (District-Municipality-Ward)**	**Destination (District-Municipality-Ward)**	**Distance (in km)**	**Freight cost (NPR)**	**Travel time (in minutes)**

Freight - Vehicle Operating Cost (VOC)

Current - After Bridge Construction

Vehicle Price (current)	**Fuel Cost** (current) NPR per litre	**Cost of Tyre** (current) NPR per tyre	**Vehicle Maintenance Cost** (current) NPR per month	**How many hours of driving per day?** (current)

Before- Before Bridge Construction

Fuel Cost (before) NPR per litre	**Cost of Tyre** (before) NPR per tyre	**Vehicle Maintenance Cost** (before) NPR per month	**How many hours of driving per day?** (before)

Traffic Count Survey

Traffic Count Survey Form

Names of Traffic Survey Enumerator	
Date and Day:	
Bridge name	
Road name (left)	
Road name (right)	
Province	
District	
Municipality/Rural Municipality	
Ward	

Time	Vehicle type									Pedestrian
	Heavy truck	Small truck	Large bus	Micro bus	Tractor	Jeep	Motorcycle	Cycle	Carts	
7 a.m. – 8 a.m.										
8 a.m. – 9. a.m.										
9 a.m. – 10 a.m.										
10 a.m. – 11 a.m.										
11 a.m. – 12 p.m.										
12 p.m. – 1 p.m.										
1 p.m. – 2 p.m.										
2 p.m. – 3 p.m.										
3 p.m. – 4 p.m.										
4 p.m. – 5 p.m.										
5 p.m. – 6 p.m.										
6 p.m. – 7 p.m.										
Total										
Total vehicles and pedestrians per day										

Focus Group Discussion Checklist and Guiding Questions

Facilitator	
Date	
Time	
Province	
District	
Municipality/Rural Municipality	
Ward	
Bridge name	
Left/Right Bank	

Thematic Checklist	Question
Employment and occupation	**1.** To what extent have employment opportunities/income generating opportunities changed after bridge construction? How and why? What about from the perspective of GESI, particularly women, DAG and the marginalized? **Provide at least two case study example.** 2. To what extent have women and DAG in the bridge vicinity benefitted from short-term employment as a result of bridge construction? How and why? **Provide at least one case study example.** 3. Are women and DAG consulted for bridge construction during planning? If yes, how? If no, why? What role do women and DAG have during planning?
Market	4. What has been the impact of bridge construction on the market (e.g. price of goods, availability of goods, and increases/decrease in number of markets? **Please at least one case study example.** 5. To what extent has accessibility to market improved as a result of bridge construction? How and why? **Provide at least one case study examples.**
Income	6. What changes have people experienced in annual income and expenditure as a result of bridge construction? Have the impact been different for women and DAG? If yes, how and why? **Provide case study examples.**
No bridge	7. What challenges would you face if there were no bridge in your village? Why? Would you be able to overcome these challenges if there were no bridge? How would a bridge-less situation impact women and DAGs? Would the impact be different? How?
Traffic and freight volume	8. To what extent have traffic patterns (e.g. types of vehicles, purpose of people travelling, men and women traveling) changed as a result of bridge construction? Why and how has this happened? 9. What are the changes to freight volume after bridge construction? What are the reasons for these changes?
Agriculture	10. How has agriculture patterns (e.g. types of crops planted and harvested, cropping cycle, availability of labor) changed as a result of bridge construction? To what extent is the impact different near the bridge vs. far from bridge and how is the impact different for women and DAGs? **Provide at least one case study example.**

Key Informant Interview (KII) Checklist and Guiding Questions

Facilitator	
Respondent name:	
Respondent designation:	
School or health post name:	
Province	
District	
Municipality/Rural Municipality	
Ward	
Date:	
Time:	

School:

Question	Response
Student attendance before bridge construction	Boys:
	Girls:
Student attendance after bridge construction	Boys:
	Girls:

No.	Question
1	What have been the impact of bridge construction on student attendance, disaggregated by boys and girls? What are the reasons for this impact? Are the impact different for boys and girls and why? Are the impact different during different seasons or months and why?
2	Where do students come from to this school (please provide response in percentage, for example: 30% from village A and 70% from village B)? Where did students used to come from before bridge construction? Has the area that the school caters to increased or decreased after bridge construction?
3	To what extent has bridge construction impacted quality of education?
4	What else can be done to further improve student attendance and quality of education in the schools of your village?

Health:

Question	Response
Health treatments before bridge construction	Men
	Women
	Boys:
	Girls
Health treatments after bridge construction	Men
	Women
	Boys
	Girls

No.	Question
1	What have been the impact of bridge construction on health post treatments, disaggregated by men, women, boys and girls? What are the reasons for this impact? Are the impact different for men, women, boys and girls? Are the impact different during different seasons or months?
2	Where do patients come from to this health post (please provide response in percentage, for example: 30% from village A and 70% from village B)? Where did patients used to come from before bridge construction? Has the area the health post caters to increased or decreased after bridge construction?
3	To what extent has bridge construction impacted quality health treatments?
4	What else can be done to further improve health post visits and healthcare quality in the health posts of your village?

ANNEX 6: Socio-Economic Study Methodology and Sampled Bridges

As guided by the Terms of Reference (ToR) for the External Evaluation of MLRBP IV, the ET sampled 21 bridges across seven Provinces for the socio-economic study, i.e. three bridges from each Province and the bridges were distributed across three ecological regions. The aforementioned distribution ensured equal representation from the provinces and ecological regions.

One of the primary objectives of this Evaluation is to "validate the results on outcomes reported in the outcome monitoring summaries produced by the programme on annual basis." Therefore, the ET selected only the bridges on which MLRBP IV had completed outcome monitoring surveys (OMS). The OMS had been carried out in fiscal year (FY) 2020/2021, 2021/2022, 2022/2023 and 2023/2024. Table 4 presents the sampled bridges for the socio-economic study of the External Evaluation of MLRBP IV.

Table A 4: Sampled Bridges for External Evaluation of MLRBP IV

Province	No.	Bridge name	District	Ecological region	OMS Year	Selection Criteria
Koshi	1	Mai Khola Bridge	Ilam	Hill	2024	The sampled bridges represent all three ecological regions of Koshi. Ilam is one of the most economically developed whereas Taplejung is one of the least economically developed districts of the Province. OMS years: FY 2021/2022, 2022/2023 and 2023/2024
	2	Fawa Khola Bridge	Taplejung	Mountain	2023	
	3	Sardu Khola Bridge	Sunsari	Terai	2022	
Madhesh	4	Tiyar Nadi Pool Bara Itahar Belhi Karaiyamai (Sadak Pool)	Bara	Terai	2024	The sampled bridges represent the eastern, central and western districts of Madhesh, providing holistic representation on bridges' socio-economic impacts on people's lives and livelihood. OMS years: FY 2021/2022, 2022/2023 and 2023/2024.
	5	Ratu Nadi Bridge	Mahottari	Terai	2023	
	6	Ekadashi Khola Bridge	Sarlahi	Terai	2022	
Bagmati	7	Mahadev Khola Bridge	Kathmandu	Hill	2024	The sampled bridges represent all three ecological regions of Bagmati, and includes the major market and administrative center of Kathmandu. OMS years: FY 2021/2022, 2022/2023 and 2023/2024.
	8	Kayer Khola Bridge	Chitwan	Terai	2023	
	9	Adheri Khola Bridge	Dolakha	Mountain	2022	
Gandaki	10	Kathe Khola (Lamabagar Ghat) Bridge	Baglung	Hill	2024	The sampled bridges represent Hill and Mountain regions of Gandaki and provides opportunity for analyzing traffic partners on highways/roads connecting far western Nepal with eastern Nepal. OMS years: FY 2021/2022, 2022/2023 and 2023/2024.
	11	Wardi Khola Bridge	Kaski	Hill	2023	
	12	Kishedi Khola Bridge	Lamjung	Mountain	2022	
Lumbini	13	Koili Khola Bridge	Kapilvastu	Terai	2024	The sampled bridge represent Terai regions of Lumbini, and provides holistic information on the western most and eastern most parts of the Province. All District are bordering
	14	Signaha Khola Bridge	Bardiya	Terai	2023	

Province	No.	Bridge name	District	Ecological region	OMS Year	Selection Criteria
	15	Duduwa Nala Bridge	Banke	Terai	2022	India and provides an opportunity to analyze the socio-economic impact of the bridge on lives and livelihood. OMS years: FY 2021/2022, 2022/2023 and 2023/2024.
Karnali	16	Nayagaun Bairagithati Motorable Bridge	Rukum West	Hill	2024	The sampled bridges represent the Hill and Mountain regions of Karnali and OMS years: FY 2021/2022, 2022/2023 and 2023/2024.
	17	Khidkijyula Bridge	Dailekh	Hill	2023	
	18	Juwa Khola Bridge	Jumla	Mountain	2022	
Sudurpaschim	19	Toti Nala Bridge	Kanchanpur	Terai	2024	The sampled bridge represent the Terai and Mountain regions of Karnali and OMS years: FY 2021/2022, 2022/2023 and 2023/2024.
	20	Chakla Khola Bridge	Kailali	Terai	2023	
	21	Gokule Gad Bridge	Darchula	Mountain	2022	

Methods of Data Collection

A. Household Survey

Description: The ET completed structured interviews with randomly sampled households in the bridge sites/service area to measure and assess how the bridge has impacted people's socio-economic lives and livelihood, comparing it with situations before bridge construction. The hypothesis was that the construction of motorable bridges has improved transportation access to basic services, and positively impacted people's lives and livelihood.

Objective: The primary objectives of the household survey were

1. To collect information on key socio-economic indicators of demographics, livelihood assets (e.g. human, financial, social, physical and natural), wealth (e.g. income sources and level, expenditure), access to services (e.g. health, education, market, agricultural land and administrative centers), food sufficiency (e.g. agricultural production) and migration, comparing the pre-bridge and post-bridge situations;
2. To collect information on Outcome 2.3. 30% travel time saved of the MLRBP IV logical framework. This outcome indicator will be divided into 2.3. (a): 30% travel time saved by walking and 2.3. (b): 30% travel time saved in vehicle.

Sampling: The household survey sample size is 664 households, which is calculated using Cochran's formula having the following parameters:

$$n = \frac{Nx}{((N-1)E^2 + x)}, x = Z(\frac{c}{100})^2 r(100-r), E = \sqrt{\frac{(N-n)x}{n(N-1)}}$$

Sample size, n	664
Response distribution, r	50%
Population size, N	20,000
Confidence level, c	99%
Margin of error, E	5%

The sample size was distributed across the 21 bridge sites using the Probability Proportional to Size (PPS) technique, where the bridge site having the highest population in its vicinity had the largest number of samples and vice versa.
Upon reaching the bridge sites, the Field Researchers (FR) selected households using a systematic sampling technique where households were selected using an interval of 2. The following series of steps highlights this technique:

- Step 1: stand on the left/right river bank
- Step 2: survey the first household on the right
- Step 3: move in an anti-clockwise direction surveying households in an interval of 2, i.e. interview one household, skip the next two and interview the fourth.
- Step 4: if any household is unavailable for an interview, approach the immediate next household and consider that household to be the beginning of the interval.

After selecting the household, the FR selected a respondent using the KISH grid method. The KISH grid method is a technique of randomizing who to interview within a household, eliminating any unintended selection bias.

B. **Settlement Key Informant Interview (KII)**

Description: The ET completed settlement KIIs in the "largest" (defined in terms of total population) settlement within each bridge vicinity by interviewing at least two traders, business owners, retail shop owners or transport operators. The KII approach allowed the ET to get detailed insights on key topics.

Objective: The primary objectives of the settlement KIIs were

1. To collect basic socio-economic information on market price of goods and commodities, transportation cost to and from markets in different vehicles, quantity of goods imported and exported, list of public properties in the bridge vicinity and daily wage rate in construction work and
2. To collect data on Outcome 2.1. (a): 20% reduction in transport cost and Outcome 2.2. (b): 30% increase in freight volume.

Selecting Informants: Upon reaching the bridge sites, the Field Researchers (FR) coordinated with the local ward chairperson and businesses to identify a list of traders, business owners, and retail shop owners and/or transport operatives. After developing the list, the Field Researcher (FR) purposively selected two informants, ideally one male and one female. The ET complete a total of 42 KIIs across 21 bridges.

C. Traffic Survey

C.1. **Traffic Volume Survey**

Description: The traffic volume survey is defined as a systematic examination of traffic volume, type and patterns passing through a particular point at specified units of time. The scope of the traffic survey included the following:

- **Traffic volume**: The number of vehicles and pedestrians observed to have passed a particular point at specified units of time. It is measured in vehicles per hour or vehicles per day.
- **Traffic type:** The types of vehicles observed to have passed a particular point at specified units of time.
- **Traffic flow and patterns:** Analyzing peak hours of traffic and travel patterns. Travel patterns refer to the flow and type of vehicles plying on the road on weekdays vs. weekends and again comparing the current situation with the baseline and previous OMS.

Objective: The primary objectives of the traffic volume survey were:

1. To assess the volume, type, flow and patterns of traffic passing through the bridge at specified units of time.

2. To assess the efficiency of the provincial road network by comparing current traffic volume with baseline and OMS values and;
3. To collect data on Outcome 2.2. (a): 30% increase in traffic volume of the MLRBP IV logical framework.

Approach: Some of the main features of the traffic survey were:

- The traffic volume survey was carried out manually for seven consecutive days, starting from Monday and ending on Sunday from 7:00 a.m. to 7:00 p.m., in all 21 bridge sites.
- Two Traffic Survey Enumerators was assigned to each bridge site. The first enumerator was stationed from 7:00 a.m. to 1:00 p.m. and the second enumerator was stationed from 1:00 p.m. to 7:00 p.m.
- The traffic survey was carried out manually using a paper form.
- At the end of each day, the enumerator shared the completed form to the Evaluation Team, and the Evaluation Team entered the data into a spreadsheet.

C.2. **Roadside Origin-to-Destination (OD) Survey**

Description: The ET completed roadside OD survey at each of the 21 bridge sides. This survey helped the ET understand the travel patterns and associated demand on the provincial road network of the immediate bridge vicinity.

Objective: The primary objectives of the roadside OD survey were:

1. To determine the amount of by-passable traffic that enters the bridge vicinity.
2. To determine the purpose of trips and
3. To collect data on Outcome 2.1. (a): 20% reduction in transport cost (fare) and Outcome 2.1. (b): 20% reduction in transport cost (freight).

Approach: Some of the main features of the roadside OD survey were:

- The roadside OD survey was completed at each of the 21 bridge sites.
- An average of six vehicles (three passenger vehicles and three freight vehicles) were stopped for an interview each day at each bridge for seven consecutive days. Therefore, around 42 vehicles were interviewed at each bridge site.
- Two Traffic Survey Enumerators were assigned to each bridge site. Each day, the first enumerator interviewed four vehicles from 7:00 a.m. to 1:00 p.m. and the second enumerator interviewed four vehicles from 1:00 p.m. to 7:00 p.m.
- The roadside OD survey was completed manually using a paper form.
- At the end of each day, the enumerator shared the form to the Evaluation Team, and the Evaluation Team entered the data into a spreadsheet.

D. Focus group discussion (FGD)

Description: The ET completed focus group discussions (FGDs) in bridge sites to understand how bridge construction has impacted the lives and livelihood of people, particularly women and DAGs; to triangulate findings from household surveys and settlement KIIs; to collect nuanced and in-depth information on the socio-economic lives and livelihood of people residing in the bridge vicinity; and to understand the effectiveness of the mainstreaming of gender equity and social inclusion (GESI) aspects in program implementation. The FGDs allowed the ET to collect people's individual as well as shared perceptions, opinions, views and beliefs on the topics of interest.

Objective: The primary objectives of the FGDs were:

1. To triangulate the household and settlement survey findings.

2. To collect nuanced and in-depth information on the socio-economic lives and livelihood of people living in the bridge vicinity, answering the "why" and "how" questions.
3. To understand the effectiveness of the mainstreaming of gender equity and social inclusion (GESI) aspects in program implementation and availability of opportunity.
4. To provide a narrative and justification of the quantitative findings.
5. Document anecdotal stories on experiences, effects and impact.

Approach: Some of the main features of the focus group discussion were:

- The ET completed two focus group discussions at each bridge site, one on the left bank and the other on the right bank of the bridge. The ET completed a total of 42 FGDs across 21 bridge sites.
- Each FGD had 8 to 12 participants and was of an hour duration.
- The FGD participants were a heterogeneous group of local people (men, women and DAGs), farmers, traders and shop owners from within the bridge vicinity. The ET strived to maintain a gender-inclusive participation.

E. Key informant interview (KII) with School and Health Officials

Description: The ET completed key informant interviews (KIIs) with school and health officials to collect information on the changes in school attendance by pupils (disaggregated by girls and boys) and changes in hospital visits by patient (disaggregated by men, women, boys and girls), comparing pre-bridge and post bridge situations. This method of data collection allowed the ET to directly communicate with the officials who have the most in-depth understanding of the actual situation.

Objective: The primary objectives of key informant interviews were:

1. To collect information on output indicator 2.1.1. 20% increase in school attendance (gender disaggregated)
2. To collection information on output indicator 2.1.2. 20% increase in visits of people to health posts (gender disaggregated) and iii) to assess the reason for the changes in school enrolment and health post visits.

Approach: Some of the main features of the KII were:

- The ET completed two KIIs in each bridge site – one with a school official and one with a health post official. Therefore, the ET completed a total of 42 KIIs across 21 bridges.
- The ET reviewed the school attendance records and health patient records.
- The KIIs collected information on the "why" and "how" of the changes in school attendance and hospital patient treatments.
- Each KII was for at least an hour.

F. Participatory Resource Mapping (PRM)

Description: The ET completed one participatory resource mapping (PRM) event at each bridge site to map the changes in settlements and roads before and after bridge construction. The PRM allowed community members to contribute their individual ideas about the impact of bridge construction on settlements and roads and an opportunity for the community members to understand each other's perspectives and come to an agreement. The PRM has generated evidence for mapping through community dialogue and agreement.

Objective: The objectives of the PRM were:

1. To map changes in settlements and roads before and after bridge construction.
2. To identify potential future areas for bridge construction as per community needs.

Approach: Some of the main features of the PRM were:

- The ET designed a paper-based map of the bridge vicinity and brought it to the field for the PRM event.
- The Field Researchers (FR) gathered eight to twelve individuals (over the age of 18 years) and facilitated the PRM event. The FR asked participants to map settlements and roads before and after bridge construction in the paper-based map.
- The FR incorporated changes in the map and share it with the Evaluation Team.
- The Evaluation Team digitized the map.

ANNEX 7: Economic and Financial Analysis Methodology

Costs

The costs considered for this project includes construction and maintenance expenses, while the benefits include savings for users. These "savings" can be further understood by comparing previous Vehicle Operating Costs (VOC) and value of time savings with the current data.

Costs and benefits were estimated using economic prices, which account for production costs and include time, equipment as well as opportunity costs. These can be calculated using the financial cost (the actual expenditures and direct financial costs) and a Standard Conversion Factor (SCF). The SCF ensures that economic costs are derived from financial costs, and it excludes taxes, subsidies, duties, providing with a more accurate, economic value for effective calculations. Financial costs account only for out-of-pocket expenses, while economic costs are comprehensive.

Upon determining the SCF, utilize this formula to evaluate the economic cost:

$$Economic\ Cost = Financial\ Cost * SCF$$[1]

An appraisal period of 15 years was used to accurately analyze the economic progress over time, considering that the total timeframe of the MLRBP is around 13 years. For this purpose, a social discount rate consistent with the bank rate of 7.5%, as specified by the Nepal Rastra Bank's Monetary Policy for FY 2023/2024[2], was utilized.

Construction Cost

Elaborating on the costs, the ET began with the construction costs. The construction cost typically included expenses for materials, labor, equipment, and other costs necessary to complete the construction process. During an ongoing project, a negative cost is often included to account for unused resources for the remaining period of the project. However, since this evaluation is being conducted at the end of the MLRBP, or its exit phase, the ET excluded the negative cost from calculations. For accuracy, considering the overall construction cost will be more suitable as it accounts for the overall expenditure.

Maintenance Cost

The level of expenditure on maintenance is known as the "holding maintenance"[3] cost. The External Review of the Local Roads Motorable Bridge Programme's evaluation assumed a per-kilometer holding maintenance cost of NPR 30,000 for an International Roughness Index (IRI) of 6[4]. Nepal's average inflation rate of 6.5% has been applied, as specified by the Nepal Rastra Bank's Monetary Policy[5].

$$Future\ Cost = Present\ Cost * (1 + Inflation\ Rate)^{Number\ of\ Years}$$[6]

Using this formula, $Holding\ Maintenance\ of\ 2024 = 30{,}000 * (1 + 0.065)^{9}$

$$= 52{,}424$$

Therefore, the holding maintenance cost for 2024 per kilometer to maintain an IRI of 6 would be NPR 52,424.

[1] Asian Development Bank. (2012). *Financial and economic analysis: Shadow pricing* [PDF]. https://www.adb.org/sites/default/files/page/149401/financial-economic-analysis-shadow-pricing-mar2012.pdf

[2] Nepal Rastra Bank. (2023). *Monetary policy 2023/24* [PDF]. https://www.nrb.org.np/contents/uploads/2023/08/Monetary-policy-in-English-2023_24-Full-text.pdf

[3] Stickland, R. (2015). *External Review Report: Motorable Local Road Bridge Programme (LRBP) – Phase 1*. Swiss Agency for Development and Cooperation (SDC).

[4] Stickland, R. (2015)

[5] Nepal Rastra Bank. (2023)

[6] Chen, J. (2024, July 19). *Future value*. Investopedia. https://www.investopedia.com/terms/f/futurevalue.asp

Similarly, in 2015, NPR 500 per meter is estimated for maintenance of all selected bridges per meter. It is important to note that this calculation excludes deterioration of bridges, that could ideally be included as part of economic pricing for the purposes of accuracy.

Using the same formula,

$$Holding\ Maintenance\ = 500 * (1 + 0.065)^9$$
$$= 874$$

Therefore, NPR 874 can be calculated as the maintenance cost per meter for bridges.

Another crucial calculation for the Economic Analysis is the Vehicle Operating Cost (VOC). The necessary information can be input into the RED model for an accurate determination of VOC. The RED model requires data on tire prices, fuel costs, and labor costs (which can be obtained from dealers and the Nepal Oil Corporation using economic pricing). Additional information can be gathered by interviewing drivers and workshop workers. Moreover, data can be collected through an Origin to Destination (O-D) survey, which asks for the type of vehicle, distance traveled, fare, and other essential details to determine the cost per kilometer (NPR/ Km) for each type of vehicle.

Benefits

Value of Time Saved

The evaluation calculated the benefits starting with the calculation of the value of time saved (VOT). It is an indicator of improved connectivity resulting from the bridge building. This information was also collected through the O-D survey, which specifically asked for travel distance, travel time, and traffic fare.

Annual Average Daily Traffic

Annual Average Daily Traffic (AADT), which can be determined from the traffic count survey is critical for the evaluation process. By utilizing the data to reflect the AADT for 2024 and the beginning of Phase IV may help determine the effectiveness of improved connectivity through bridge building. Improved connectivity and accessibility are expected to increase the overall AADT over the years.

The AADT becomes an important tool for the economic analysis as it helps calculate the total benefits and costs. For Annual VOC:

$$\boldsymbol{Total\,VOC\ =\ VOC(NRs)\ *\ AADT\ *\ 365}$$

Since the ET have Baseline 2021, OMS 2022, and OMS 2023 data for all selected bridges, the above formula has been utilised using AADT for every year starting 2021.

Adding the Annual VOCs for every year starting 2021 will get the costs of VOC for all of MLRBP Phase IV.

For Annual Value of Time Saved:

$$\boldsymbol{VOT\ =\ Time\ Saved\ (Hr)\ *\ Amount/Hr\ (NRs/hr)\ *\ AADT\ *\ 365}$$

Applying a similar concept for VOT, we get the Benefits for the MLRBP Phase IV.

Now, to calculate total cost we use this formula:

$$\boldsymbol{Total\ Cost\ of\ MLRBP\ Phase\ IV}$$
$$= (\boldsymbol{2021 + 2022 + 2023 + 2024})\,\boldsymbol{VOC\ +\ Maintenance\ Cost}$$
$$+\ \boldsymbol{Construction\ Cost\ \ (all\ economic\ costs)}$$

The total benefits also account for the VOC as it is essential to calculate the VOC saved for every year for the project would be calculated using:

$$VOC\ Saved\ =\ (VOC\ OMS\ 2022 -\ VOC\ Baseline\ 2021)\ +\ (VOC\ OMS\ 2023 -\ VOC\ OMS\ 2022)$$
$$+\ (VOC\ External\ Evaluation\ 2022 -\ VOC\ OMS\ 2023)$$

Another factor essential for benefits would be the Value of Time Saved Annually from 2021 to 2024.

$$\boldsymbol{Total\ Benefits\ of\ MLRBP\ Phase\ IV\ =\ (2021+2022+2023+2024)\ VOT\ +\ VOC\ Saved}$$

Economic Analysis

The economic consists of three different calculations; that comprise of Net Present Value (NPV), Internal Rate of Return (IRR), and Benefits Cost Ratio (BCR). Now, it is important to note that every bridge will have its own calculations.

For the BCR:

$$\boldsymbol{BCR\ =\ Total\ Benefits/\ Total\ Costs}$$

For NPV:

$$Annual\ Benefits\ =\ (VOC\ after-VOC\ before)\ +\ VOT\ after$$

$$Present\ Value\ (PV)\ =\ Annual\ Benefits\ /\ (1\ +discount\ rate)^{time\ in\ years\ since\ baseline}\ ^{7}$$

$$\boldsymbol{NPV\ =\ 2022\ PV\ +\ 2023\ PV\ +\ 2024\ PV-\ Initial\ Investment\ (2021)}$$

The discount rate here is the same as mentioned above at 7.5% while the number of years would be from 2021 to 2024, or 3 years.

For IRR:

$$\boldsymbol{NPV=0\ =\ 2022\ PV\ +\ 2023\ PV\ +\ 2024\ PV-\ Initial\ Investment\ (2021)}\ ^{8}$$

$$\boldsymbol{0\ =\ (2022\ Benefits)/(1\ +IRR)\text{^}(1\ )\ +\ (2023\ Benefits)/(1\ +IRR)\text{^}(2\ )\ +(2024\ Benefits)/(1\ +IRR)\text{^}(3\ )\ -\ Initial\ Investment}$$

[7] Fernando, J. (2024, August 14). Net present value (NPV): What it means and steps to calculate it. Investopedia. https://www.investopedia.com/terms/n/npv.asp

[8] Soleadea. (n.d.). *NPV and IRR: How to calculate net present value and internal rate of return*. Soleadea. https://soleadea.org/cfa-level-1/npv-irr

ANNEX 8: Economic and Financial Analysis

Economic Analysis of Motorable Bridges

Rationale

This section outlines the economic analysis of motorable bridges (MBs) that were constructed as a part of SDC's MLRBP Phase IV initiative with an objective to upscale the construction of motorable bridges at sections deemed important to extend the provincial road network. The tools used are the Net present value, the Benefit cost ratio, and the internal rate of return. The net present value (NPV) is an absolute value criterion guiding the decision whether an investment should be made. The benefit cost ratio (BCR) yields the return on each rupee spent on the project. The internal rate of return (IRR) yields the average earning power of the money used in the project over the life of the project. Given these, this exercise is an ex-post economic analysis intended to ensure that the investments are both financially and economically viable.

Methodology

Valuation of benefits:

The construction of MBs is intended to extend the nationwide motorable road network by constructing bridges across provinces. This will help passengers to conveniently reach their destinations at a reduced time, thus saving time. Since time has an opportunity cost, this time saving is expected to be utilized in productive uses to earn additional income. Likewise, the vehicle operators, whether passenger or freight, will be able to economize on the operating cost by saving on fuel consumption, the cost of maintenance, and the usage of tires. The methodology outlined below, thus considers two important benefits that accrue to the society from the construction of motorable bridges: the value of time saved by passengers and the saving in terms of the vehicle operating cost by the vehicle operators. Other benefits such as those relating to the environment and avoided health costs due to fewer accidents and accident-related deaths are not considered.

Value of Time Saved

Following the methodology proposed by HDM 4 (Highway Development and Management), traveling benefit will be calculated primarily taking into account the value of travel time saved as a difference in the value of travel time in *with* and *without* the project situation. The time saving of the passenger (bus, car, jeep, motorcycle, three-wheeler, and bicycles) and freight (trucks, three wheelers, and tractors) vehicles are considered separately in the analysis. While time savings of all the passengers (including driver and co-driver) are considered for passenger vehicles, time savings for driver and co-drivers are only considered for freight vehicles. Using the average annual average daily traffic (AADT) count and the market wage rate for unskilled workers,[9] daily travel time savings of a vehicle is converted into the value of annual travel time saved as shown in the formula below:

$$VOT = Daily\ Time\ Saving\ (in\ hours) of\ a\ vehicle * Number\ of\ passengers\ in\ the\ vehicle * Wage\ Rate\ per\ hour * AADT * 365$$

Value of operating cost saved

[9] In developing country context, usually the unskilled wage rate is recommended since a higher proportion of passengers are unskilled in non-urban settings.
(www://efaidnbmnnnibpcajpcglclefindmkaj/https://documents1.worldbank.org/curated/en/099032124211022462/pdf/P1775471cf971e0ee1becd1a1faab55d1d7.pdf)

Three important operating costs are considered for the valuation of benefits from the VOC saved: fuel cost consumption, maintenance cost[10], and the cost of usage of tires. It is expected that the operational cost will decrease with the reduction in the traveling time attributed to the motorable bridges. The VoC savings per kilometer will be calculated in the *with* and *without* project situation.

Fuel cost saving per kilometer is calculated using the following formula:

$$fuel\ cost\ per\ km = \frac{fuel\ cost\ per\ litre}{fuel\ efficiency\ (mileage)}$$

The fuel efficiency is used depending upon the type of vehicle and assuming an international roughness index (IRI) of 6. [11]

Maintenance cost per kilometer is calculated using the following formula

$$Maintenance\ cost\ per\ km = \frac{Maintenance\ cost\ per\ month\ of\ a\ vehicle}{distance\ travelled\ in\ a\ month\ by\ the\ vehicle}$$

Cost of usage of the tire per kilometer is calculated using the following formula:

$$Tire\ usage\ cost\ per\ km = \frac{Cost\ of\ New\ Tire * Number\ of\ Tires\ in\ a\ vehicle}{Total\ tire\ lifespan\ in\ kilometers}$$

The total lifespan of the tire is used depending on the type of vehicle and assuming IRI of 6.

The VoC per kilometre has been calculated by summing up the above three costs. This number has been multiplied by the saving in distance[12] due to reduction in time to derive the daily savings in VoC. Then the annual VoC saved was calculated using the following formula:

$$Annual\ VoC\ saved = Daily\ savings\ in\ VoC * AADT * 365$$

After calculating the annual VoT and VoC saved, the total benefit will be calculated by summing up these two benefits. The benefit estimates has been presented by provinces and ecological regions.

It is also important to consider the traffic growth rates to adjust the AADT values over time. This will proportionately increase the value of incremental benefits for the assumed length of the life of the project, thus affecting the results of economic analysis. Previous study in a similar context assumed that the annual traffic growth is 6.8 percent for passenger vehicles and 5.4 percent for freight vehicles. This estimate is based on the earlier report on the "External Review Report: Motorable Local Road Bridge Programme (LRBP) – Phase 1". [13] This study presents the results without considering traffic growth since the baseline estimates (as shown in Tables 9 and 10) already reveal the high economic feasibility of the sampled MBs.

Costs

On the cost side, the study considers the cost of construction and annual operation and maintenance (O&M, also called the 'holding maintenance cost') cost of motorable bridges. For economic analysis, these costs measured at market prices (called financial prices) have been converted into economic prices. For the use of physical inputs into the construction

[10] It is assumed that the drivers and co-drivers' salary are also included in the maintenance cost.

[11] Stickland, R. (2015). *External Review Report: Motorable Local Road Bridge Programme (LRBP) – Phase 1*. Swiss Agency for Development and Cooperation (SDC).

[12] This is equivalent to the difference in VoC with and without the project situation. Since the VoC saved is attributed to the savings in time, the difference in distance covered due to reduction in time is calculated. The latter is, therefore, referred to as the savings in distance.

[13] Stickland, R. (2015).

process and/or maintenance, their financial prices is multiplied by the standard conversion factor (SCF) of 0.85. The standard conversion factor converts non-traded goods prices into border (world) prices.[14] Since there is no O & M cost information in the recent survey, this study has used past reference from a similar study conducted in 2015[15] to derive the current O & M costs. The earlier report considers the O&M cost per kilometre of MBs of NPR 500 per meter for an IRI of 6. Hence, adjusting for the annual inflation rate of 6.5%, the current study considers the O & M cost per meter of Nepalese Rupees 824. It is assumed that most of the O & M costs are incurred on the cost of labour. Hence, the shadow wage rate of labour is calculated using the SCF of 0.80. The matrix of the methods adopted for the valuation of benefit and cost is provided in Table AA 1.

Discount rate.

For discounting future benefits and costs for the economic analysis, following ADB guidelines for the economic analysis of projects, the rate of 9 percent is used.[16,17]

Life of the project

The project life of 50 years has been used.[18]

Results

Benefits

First, the benefits from travelling time saved are presented in Tables A2 and A3, by provinces and ecological zones respectively.

Table A 2: Time Saved and Value of Time Saved by Provinces

	Annual Time saved (in million hours)			Annual Value of Time saved (in million Nepalese Rupees)		
	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total
Koshi*	0.191	0.001	0.192	18.101	0.111	18.212
Madhesh	0.675	0.008	0.683	66.095	0.777	66.872
Bagmati	5.490	0.009	5.499	481.570	5.77	487.340
Gandaki	0.511	0.205	0.716	41.546	18.709	60.255
Lumbini	5.253	0.053	5.306	426.820	4.335	431.155
Karnali**	0.690	0.046	0.736	60.402	4.002	64.404
Sudurpaschim	1.888	0.016	1.904	165.303	1.386	166.689
Total	14.70	0.338	15.038	1259.836	30.146	1289.982

*Excluding Ilam due to data limitations. ** Excluding Jumla and dailekh due to data limitations

Table 1 shows that the total annual time savings is 15.04 million hours, and the value of this time saving is equivalent to Nepalese Rupees 1289.98 million. The highest time savings in passenger vehicles accrue to the Bagmati followed by Lumbini, given that these provinces have the highest daily traffic coupled with wider road networks. The lowest time saving is in Koshi, where the traffic flow is the lowest of all. In terms of freight vehicles, Gandaki province has the highest time savings while Koshi has the lowest. Bagmati province ranks first, and Lumbini province ranks second in terms of the value of time savings. In addition to high traffic volumes, the high opportunity cost of time has resulted in the highest value of time savings in these provinces. This is because of the high opportunity cost of time in the province.

[14] It is assumed that the materials used in construction and maintenance are non-traded i.e., they are available locally or within the domestic boundary of the nation.

[15] Stickland, R. (2015).

[16] https://www.adb.org/sites/default/files/linked-documents/48218-003-efa.pdf.

[17] https://www.adb.org/sites/default/files/linked-documents/52097-001-efa.pdf

[18] In Nepal, the assumed life span of a motorable bridge for conducting a cost-benefit analysis (CBA) typically follows the guidelines set by government agencies such as the Department of Roads (DoR) and donor organizations like the World Bank and Asian Development Bank (ADB). For permanent concrete bridges, 50 to 75 years is used.

Table A 3: Time Saved and value of Time saved by Ecological Zones

	Annual Time saved (in hours)			Annual Value of Time saved (in million Nepalese Rupees)		
	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total
Mountain**	1.802	0.028	1.83	156.089	2.294	158.383
Hill*	6.196	0.230	6.426	540.874	21.074	561.948
Terai	6.702	0.008	6.71	562.873	6.778	569.651
Total	14.70	0.338	15.038	1259.836	30.146	1289.982

*Excluding Ilam due to data limitations. ** Excluding Jumla and Dailekh due to data limitations

Table 2 shows the highest time savings is in the Terai, followed by the Hills, and the Mountains. This is because Terai and Hills have a higher mobility in terms of road access and traffic. Following the trend, the value of time saved is also the highest in the Terai and the Hills. This time saving is expected to grow due to increased traffic flow, since rising income levels will increase the demand for passenger vehicles.

Next, benefits from VoC saved are presented in Tables 4 and 5 by provinces and ecological zones respectively.

Table A 4: Value of Operating Cost Savings by Provinces

	Annual Fuel cost savings (in million NRs)			Annual Maintenance cost savings (in million NRs)			Annual Tire cost usage savings (in million NRs)			Annual VoC savings (in million NRs)		
	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total
Koshi	1.4	0.0	1.5	1.4	0.0	1.5	0.7	0.0	0.7	3.5	0.2	3.7
Madhesh	8.0	0.0	8.0	8.0	0.6	8.6	4.6	0.0	4.7	20.7	0.6	21.3
Bagmati	65.0	0.4	65.4	65.0	0.7	65.7	56.3	0.9	57.2	186.3	2.0	188.3
Gandaki	5.3	1.9	7.1	5.3	2.6	7.9	6.8	3.2	10.1	17.4	7.7	25.1
Lumbini	59.1	4.4	63.5	59.1	5.7	64.8	132.6	15.7	148.3	250.7	25.8	276.5
Karnali	4.8	4.2	9.0	4.8	2.4	7.2	4.0	6.4	10.4	13.6	13.1	26.7
Sudurpaschim	16.5	0.5	17.0	16.5	1.1	17.5	22.4	1.5	24.0	55.4	3.1	58.5
Total	160.1	11.4	171.5	160.1	13.1	173.2	227.5	27.7	255.3	547.7	52.3	600

Table A 5: Value of Operating Costs Savings by Ecological Zones

	Annual Fuel cost savings (in million NRs)			Annual Maintenance cost savings (in million NRs)			Annual Tire cost usage savings (in million NRs)			Annual VoC savings (in million NRs)		
	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total
Mountain	5.59	1.09	6.68	5.56	1.64	7.2	9.12	1.82	10.94	20.27	4.65	24.92
Hill	67.49	5.26	72.75	67.52	3.99	71.51	61.34	8.42	69.76	196.35	17.67	214.02

	Annual Fuel cost savings (in million NRs)			Annual Maintenance cost savings (in million NRs)			Annual Tire cost usage savings (in million NRs)			Annual VoC savings (in million NRs)		
	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total
Terai	87.02	5.05	92.07	87.02	7.47	94.49	157.04	17.46	174.6	331.08	29.98	361.06
Total	160.1	11.4	171.5	160.1	13.1	173.2	227.5	27.7	255.3	547.7	52.2	600

Table 3 breaks down the yearly cost savings for passenger and freight vehicles across Nepal's seven provinces, focusing on fuel, maintenance, and tire expenses. Passenger vehicles see the biggest savings, especially in Bagmati and Lumbini provinces, which lead in every category. Freight vehicles contribute less overall but still make a noticeable impact in provinces like Gandaki, Lumbini, and Karnali. In contrast, savings in Koshi and Madhesh provinces are much lower. This suggests that building new MBs in Bagmati and Lumbini (for passenger vehicles) and in Gandaki, Lumbini, and Karnali (for freight vehicles) has been beneficial.

Table 4 looks at yearly savings from fuel, maintenance, tire usage, and overall vehicle operating costs (VoC) for passenger and freight vehicles in Nepal's Mountain, Hill, and Terai regions. The differences across these regions are clear, with the Terai region seeing the highest savings—NRs 361.06 million across all categories—likely due to the smoother terrain making operations more efficient. In sum, these savings add up to NRs 600 million in VoC, highlighting the major economic benefits that could help shape future policies or investments in vehicle efficiency.

Now, Tables 6 and 7 show the total benefits of the MBs derived by summing up the annual VoT and VoC saved.

Table A 6: Total Annual Benefit from Motorable Bridge by Provinces

	Annual Value of Time saved (in million Nepalese Rupees)			Annual VoC savings (in million NRs)			Total annual benefit (in million NRs)		
	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total
Koshi	18.101	0.111	18.212	3.5	0.2	3.7	21.601	0.311	21.912
Madhesh	66.095	0.777	66.872	20.7	0.6	21.3	86.795	1.377	88.172
Bagmati	481.570	5.77	487.340	186.3	2.0	188.3	667.87	7.77	675.64
Gandaki	41.546	18.709	60.255	17.4	7.7	25.1	58.946	26.409	85.355
Lumbini	426.820	4.335	431.155	250.7	25.8	276.5	677.52	30.135	707.655
Karnali	60.402	4.002	64.404	13.6	13.1	26.7	74.002	17.102	91.104
Sudurpaschim	165.303	1.386	166.689	55.4	3.1	58.5	220.703	4.486	225.189
Total	1259.836	30.146	1289.982	547.7	52.3	600	1807.54	82.446	1889.98

Table 5 provides an overview of the economic benefits from transportation improvements across various provinces in Nepal. The benefit stream is categorized both in terms of the annual value of time saved and vehicle operating cost savings for both passenger and freight vehicles. The data reveals that the total annual benefits amount to approximately NRs. 1890 billion. Notably, provinces like Bagmati and Lumbini contribute significantly to these benefits, largely due to substantial time savings and VoC reductions after the construction of motorable bridges. These improvements not only enhance efficiency but also contribute to the overall economic well-being of the regions.

Table A 7: Total Annual Benefit from Motorable Bridge by Ecological Zones

Ecological zones	Annual Value of Time saved (in million Nepalese Rupees)			Annual VoC savings (in million NRs)			Total annual benefit (in million NRs)		
	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total	Passenger vehicles	Freight Vehicles	Total
Mountain	156.089	2.294	158.383	20.27	4.65	24.92	176.359	6.944	183.303
Hill	540.874	21.074	561.948	196.35	17.67	214.02	737.224	38.744	775.968
Terai	562.873	6.778	569.651	331.08	29.98	361.06	893.953	36.758	930.711
Total	1259.836	30.146	1289.982	547.7	52.2	600	1807.54	82.346	1889.98

Table 7 shows the yearly economic benefits from saving time and reducing vehicle operating costs for both passenger and freight vehicles in three regions of Nepal. Among the three regions. Terai region stands to secure the highest economic benefits from the bridge construction with NRs. 930.71 million in annual benefits. Cumulatively, the total annual benefits across all three zones reach NRs. 1890 million, predominantly driven by time savings in the Hill and Terai regions, underscoring the potential for significant economic gains by improving transportation efficiency in these areas.

Costs

Tables 8 and 9 show the cost of construction and maintenance of 21 sampled bridges by provinces and ecological zones respectively.

Table A 8: Cost of Construction and Operating Expenses by Provinces

Provinces	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim	Total
Number of Bridges	3	3	3	3	3	3	3	21
Total cost of construction (in million NRs)	172.27	265.06	77.13	102.43	131.14	84.85	74.21	907.09
Average cost of construction (in millions)	57.42	88.35	25.71	34.14	43.71	28.28	24.74	302.36
Annual O & M expenses (in Million NRs)	1.43	2.18	1.13	0.90	1.11	0.81	0.87	8.42

Table 8 shows the highest total and average cost of construction in Madhesh followed by Koshi, and other provinces. The average cost of construction of the sampled 21 MBs is NRs. 302.36 million. Table 9 shows that the MBs in Terai have the highest average cost of construction, while it is the lowest in the mountain region. This is due to the shorter bridge spans in the Mountains, which would require a lower cost of investment.

Table A 9: Cost of Construction and Operating Expenses by Ecological Zones

Ecological zone	Mountain	Hill	Terai	Total
Number of Bridges	5	6	10	21
Total cost of construction (in million NRs)	141.45	216.53	549.11	907.09
Average cost of construction (in millions)	28.29	36.09	54.91	43.19
Annual O & M expenses (in Million NRs)	1.49	2.10	4.83	8.42

Economic Analysis

Table 10 depicts high economic viability of the sampled bridges. The combined NPV of all bridges is NRs. 19781.18 million. The province-wise disaggregation of the same shows that the MBs in Lumbini province have the highest NPV followed by Bagmati. Each of them yields net economic benefits of more than NRs 7000 million. The NPVs in the case of other provinces are positive, but the net economic benefits are less than NRs. 1000 million. Koshi province has the lowest NPV. Other indicators, such as BCR and IRR, also show high economic feasibility of the sample bridges. While the MBs in Bagmati have the highest BCR of 95.19, Koshi province has the lowest BCR of 2.06. IRR in all the provinces is higher than the social discount rate of 9 percent, indicating a higher rate of returns on these projects.

Table A 10: Economic Analysis by Province

@9% social discount rate	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim	Total
NPV (in Million NRs.)	116.61	681.90	7,264.88	825.21	7,616.20	906.40	2,386.53	19,781.18
BCR	2.06	3.57	95.19	9.06	59.07	11.68	33.16	24.41
IRR	19%	33%	868%	83%	539%	107%	303%	223%

Table 11 shows high economic viability of the MBs in the Hills and Terai, given several existing and emerging growth centres in these regions.

Table A 11: Economic Analysis by Ecological Zones

@9% social discount rate	Mountain	Hill	Terai	Total
NPV (in Million NRs.)	1,853.29	8,332.98	9,594.92	19,781.18
BCR	14.10	54.98	18.47	24.41
IRR	129%	502%	169%	223%

Conclusion

The economic analysis shows that MBs are highly viable because they improve vehicle efficiency. This leads to less travel time for passengers and lowers operating costs like fuel, maintenance, and tires. Provinces like Bagmati and Lumbini have strong growth potential, so they are expected to benefit the most from MBs. As these areas grow, urbanization will increase traffic and transportation demand. Provinces like Karnali and Sudurpaschim, which have road networks but lack good MB connections, are also expected to gain significantly. On the other hand, Koshi and Madhesh show lower economic viability, likely because they already have well-developed road networks with motorable bridges. In such areas, adding more MBs may not bring major economic benefits. Overall, these cost savings highlight the potential for reducing transportation expenses. Investing in transport infrastructure and services can improve economic productivity by cutting travel time, ultimately benefiting society as a whole.

Table AA 1: Benefits and Costs of Trail Bridge

Benefits	Method of valuation	Calculation	Source
Value of time Saved	Value of time saved by way of reduced time spent by passengers traveling in the vehicle from the place of origin to the place of destination.	Difference in time saved (in hours) of passengers by a vehicle in the with and without the project situation multiplied by the local wage rate per hour of an unskilled worker, multiplied by the AADT and the number of days in a year i.e., 365	The origin-destination survey (Time savings) The Traffic Count Survey (AADT) KII (local wage rate)
Value of operating cost saved	Value of operating cost saved from the following items: -Fuel cost savings -Maintenance cost savings -Tire cost usage savings	Daily VoC saved multiplied by AADT, and the number of days in a year, i.e., 365	The origin-destination survey (Fuel, maintenance, and tire cost) The Traffic Count Survey (AADT) [Assumption of IRI of 6 is made to estimate the fuel efficiency, life of tire and maintenance cost*]
*Life of Tire Life of bus tire = 50000 Kms Life of truck tire=70000 Kms Life of a jeep tire = 50000 Kms Life of a car tire = 55000 Kms Fuel efficiency Passenger bus and trucks: 3.03 km per liter Light passenger vehicles (car and jeeps): 17 km per liter Light freight vehicles (small trucks): 9.09 km per liter Motorcycles: 50 km per liter			

Costs	Method of valuation	Calculation	Source
A. Cost of construction	Fixed cost valued at border prices using Standard conversion factors (SCF=0.85)	Fixed cost (market price) multiplied by SCF	Project Records and KII
B. Operation and Maintenance (O & M) costs [also called holding maintenance cost]	O & M cost such as the price of labor valued at the shadow wage rate of 0.80, assuming unskilled labor/porter	O & M cost multiplied by shadow price	Project Records and KII

Table AA 2: Time Savings per passenger and Daily Time Savings by Provinces

Provinces	Per passenger time savings (in Minutes)	All passengers' daily time savings (in minutes)
Koshi	6.60	144.65
Madhesh	3.11	53.33
Bagmati	7.30	224.95
Gandaki	9.87	224.52
Lumbini	15.14	327.57
Karnali*	24.94	NA
Sudurpaschim	8.55	294.67

Table AA 3: Time Savings per passenger and Daily Time Savings by Ecological Zones

Provinces	Per passenger time savings (in Minutes)	All passengers' daily time savings (in minutes)
Mountain	6.56	180.54
Hill	15.85	496.54
Terai	8.00	187.87

Table AA 4: Financial Analysis (by province)

@12 % market discount rate	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim	Total
NPV (in Million NRs.)	59.28	448.74	4,960.63	1,154.48	5,736.35	664.77	1,788.59	$14,767.29
BCR	1.54	2.69	65.32	12.27	44.74	8.83	25.10	18.48
IRR	19%	32%	299%	604%	539%	106%	302%	223%

ANNEX 9: Terms of Reference for MLBRP-IV Evaluation

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Department of Foreign Affairs (FDFA)
Embassy of Switzerland in Nepal/Swiss Agency for Development and Cooperation in Nepal

Terms of reference – Invitation procedure

Mandate 'External Evaluation of Motorable Local Roads Bridges Programme- Exit Phase' for the period 15.05.2024 to 30.09.2024 in Nepal/Seven Provinces

This procedure is based on the Federal Act of 21 June 2019 on Public Procurement (PPA, SR 172.056.1) and the Ordinance of 12 February 2020 on Public Procurement (PPO, SR 172.056.11).

19.03.2024

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1 Abbreviations

AC	Award criteria
EC	Eligibility criteria
FG	Federal Government
GTC	General Terms and Conditions of Business
LG	Local Government
LRN	Local road network
MLRBP	Motorable Local Roads Bridge Programme
MOPID	Ministry of Physical Infrastructure Development
NH	National Highways
PG	Provincial Government
PPA	Federal Act on Public Procurement
PPO	Federal Ordinance on Public Procurement
PRN	Provincial roads network
SRN	Strategic roads network
VAT	Value added tax

2 Purpose of this document

These specifications describe the objectives that are to be pursued and achieved with this object of procurement. It regulates the procedure and form of the submission of tenders and, together with the General Terms and Conditions of the FDFA, the Federal Act of 21 June 2019 on Public Procurement (PPA, SR 172.056.1) and the Ordinance of 12 February 2020 on Public Procurement (PPO, SR 172.056.11) serves as the basis for the present procedure.

In the case of an invitation procedure, at least three bids shall be collected, if possible, and the Terms of Reference must also be placed on the FDFA mandates platform. The contract is awarded to the most advantageous tender.

3 Goal and content of the mandate

3.1 Background

Importance of access

There is a strong correlation between poverty incidence and lack of motorable access. Improving access is one of the most effective ways to improve the livelihood of poor people in remote areas, which was the basic impact hypothesis behind the design of this Programme. Improvement of roads with the provision of bridges on them would provide all-weather motorable access to people. With an aim to improve the living conditions of the local people by facilitating all-weather motorable access thereby improving their mobility, SDC initiated Motorable (Local) Roads Bridge Programme (MLRBP) from 2011. The main objectives of the programme were to facilitate improved access to services and opportunities to the people in the programme areas, and to assist national and local governments in adopting appropriate local roads bridge strategy.

New political context

The context has evolved since then with huge structural changes in the government. Before the end of MLRBP Phase III, in September 2015, the new Constitution of Nepal was promulgated, which, ended among others, a centralized unitary system of governance into a federal democratic one. The constitution defines the relationship between the Federal Government (FG) and 753 Local Governments (LGs) and 7 provincial Governments (PGs). The Constitution of Nepal provides exclusive and concurrent rights to each of the governments (FG, PGs, and LGs).

New Government institutions and respective constitutional mandates

Accordingly, National Highways (NH) fell under FG's jurisdiction, provincial road network under PG's and local roads under LGs'. Since then, the GoN approved the criteria for defining national highways. Most of the previous Strategic Road network (SRN) - all NH and main Feeder Roads (FR) are now re-classified as Federal Highways. The Department of Roads (DoR) under the Ministry of Physical Infrastructure and Transport (MoPIT) administers them.

Most of the other (previous) local road network (LRN) were reclassified as Provincial Roads Network (PRN). The PGs and LGs are still discussing on the demarcation between the provincial and local road network. By the end of MLRBP Phase III, the provincial governments with the assistance of Local Roads Bridge Support Unit (LRBSU), in the preparation of Provincial Roads Network Master Plan (PRNMPs), showed that most of the then 25,728 kilometers (km) of District Road Core Network (DRCN) fell under the provincial roads. The Provincial Ministries of Physical Infrastructure and Development (MoPIDs) are now responsible to manage provincial road networks and bridges on them as per the constitutional provision and as defined by the Report on Unbundling of State Functions, 2018.

New arrangements with the Swiss technical assistance (TA) from political, policy and programme perspectives

After the end of MLRBP Phase III, the Phase IV of MLRBP was launched from January 2021 to support all the seven Provincial MoPIDs to support both the Federal and Provincial GoN with **the political objective** to implement the new constitution through the means of planning and executing motorable bridges on Provincial Road Network (PRN). The TA in Phase IV emphasized in assisting the provincial governments on developing - required Act (Provincial Roads Act), which is the key political and legal framework that guides provinces to develop their provincial long and medium term plans (provincial roads transport master plan and priority investment plans) for roads and bridges. Based on which, each province prepares their specific criteria for selection and prioritization of bridges on provincial roads. The Provincial Roads Acts and PNRMPs are the pre-requisites for the programme implementation of Phase IV. The politically endorsed PNRMP becomes an important tool for provincial planning, budgeting and construction of bridges annually.

On policies, the TA stresses on assisting the provinces on developing their bridge standards and norms that reflect and suit their own the socio-economic contexts of each province. In addition, the programme also advises the Federal Government in providing guidelines and formats for standardizing the designs and policies.

Programmatically, the TA in this phase, has shifted its focus to take a backseat by assisting the provinces to take the lead in planning, designing, implementation, in design verifications and monitoring and supervision of construction works for quality assurance. The TA customized the web-based provincial bridge information management system (PBIMS) to be taken over by the province governments, which is expected to strengthen the monitoring, supervision and contracts management of bridges with real time data. Each provincial government is expected to enter, update and manage the information in the PBIMS. This will likely to improve the performance of provincial government in quality control of bridges both in design and execution resulting also to increase the accountability of provincial governments towards its citizens.

The TA in Phase IV provides all the Technical Assistance (TA) supports to the Infrastructure Development Offices (IDOs) at the provinces through Province Roads Bridge Support Units (PRBSUs), the extended arms of Local Roads Bridges Support Unit (LRBSU). The Transport Infrastructure Directorate (TIDs) within the MoPIDs of each province, monitors and regulates the execution of roads bridges executed by IDOs. The respective provinces anchored PRBSUs at their TIDs.

All PRBSUs provide technical support by accompanying the IDOs, TIDs and MoPIDs in bridge planning, designing, design reviewing, procurements, construction supervision and contracts management in all seven Provinces. The Swiss TA support are provided in four different components:

1. Consolidation of initiatives from the last phases to scaling up bridge construction at provincial levels,
2. Research and development for technology transfer
3. Strengthening government institutions, primarily provincial governments from the viewpoint of implementing constitutional mandates of provincial road network and bridges on them
4. Capacity building of government and the private sector (particularly in the areas of design and construction quality control, procurements and contracts management)

Achievements and challenges of the Phase IV

As of July 2023, with the TA from MLRBP phase I to IV, GoN (PGs) constructed **680** motorable bridges in the country. Construction of these bridges made an additional **9,500** km (approximately) of provincial roads all-weather. The numbers of bridges went up tremendously after the provincial governments took the lead as the provincial roads and bridges became their first development priority in the provinces in order to provide regional connectivity to the people of the provinces, which, boosted their economic activities and productivity.

About **5.5 million people** including DAGs living within zone of influence of these bridges now have better access to resources and opportunities using all-weather motorable access provided by bridges. Both public and private vehicles are easily plying along the roads connected by these 680 bridges. These have significantly reduced the freight, and provided timely transportation services to the people conveniently saving time. The freight costs have reduced by about 14.5%, while freight volumes were increased by 30% in the areas served by the operating roads (source: Outcome Monitoring Survey, 2023). This has eased access to markets for the locals to sell their products leading to expand more economic activities in the area. New business emerged in the areas served by the roads. It has also resulted into greater availability and diversity of goods brought into the villages by motorized transports while increasing exports of local products to the regional markets. In addition to this, school buses and ambulances are plying regularly along the roads. With ambulance services operating along the roads, people have timely access to emergency health services. Health post visits by male and female patients have seen respective increases of 31.4% and 18.8% (source: Outcome Monitoring Survey 2023). The construction of these bridges have generated over **1.5 million person days** of employment giving local people CHF 9.5 million as wages, of which, **women benefited** from **11%** of total wages.

Along with these achievements on high number of outputs and outcomes resulting to better access and economic benefits, the SDC has also realized that the implementation of constitution is not as easy as it sounds. There were hurdles in the programme implementation, especially, from the perspectives of the behaviours of the GoN both at political and bureaucratic fronts. There is no political and bureaucratic will in any of the provinces to endorse the PNRMPs, which sets the basis for the provinces to identify, define and demarcate the provincial road network, prioritize, select and implement bridges on them. With the absence of clear demarcation of provincial road networks and endorsed PNRMPs in the provinces, the

annual planning and budgeting for motorable bridges are jeopardized. With ever changing political dynamics from federal governments to provinces and the frequent changes of the Secretaries of the MoPIDs, every year new bridges are selected, 40% of which are political and not verified on which roads (provincial or local) they are supposed to be built. Enormous numbers of bridges are planned every year, with resources distributed to many bridges. As a result, there are huge backlogs of bridges that remained to be completed. There are over 800 bridges contracted out for construction, some are active and most are non-active in the seven provinces. The plan and ambition of provinces completely mismatch with their available human and financial resources.

Both the provincial and federal bureaucracies are least interested to streamline the provincial planning system. The Federal Government - DoLI with its central mind-set, still plans, selects, allocates budgets and executes bridges on provincial and local roads through their provincial offices – Local Infrastructure Development Project Office (LIDPO), although it is not their constitutional mandate to do so. This has resulted into duplication of bridges, draining on the limited resources (financial and human) available.

At the provinces, although the Swiss TA emphasizes on institution building of the provincial institutions - IDOs, TIDs, MoPIDs, lack of political willingness of the provincial Ministries to strengthen their institutions is affecting the programme implementation on this front. On one hand, the TIDs and IDOs lack bridge units, with dedicated human resources to plan, implement and monitor the bridge projects. They rely mostly on outsourced consultants for designs and heavily rely on LRBSU and PRBSU human resources for checking and verifying the consultants' designs, and also for supervision of construction works. On the other hand, selecting, contracting out new bridges becomes their priority than to complete the on-going bridges under construction at various stages in the provinces. The contract management is weak at the provinces, there are virtually no sanctions taken against the poor performing contractors, making bridge construction time too lengthy.

Therefore, much of these issues are clearly not associated with the capacities as such, but are more to do with the political economy, short term gains, intentions, where the SDC and LRBSU/PRBSUs have lesser influence to change.

3.2 The external review

This is the last phase of the programme and in this context, the SDC plans an external review of MLRBP taking into consideration of the smooth exit of TA. The external review will look into the efforts and major achievements of the programme, particularly, on the changes that have been made so far '**politically**' and '**institutionally**' on bridge planning and management on provincial roads by the provincial governments in the federalized context. Apart from this, it will also look into the **tangible economic and financial** benefits brought about by the programme on improving motorable access to different services and opportunities by the people. This review will validate the results of **Outcome Monitoring Summaries** that are produced by the programme annually. It is also to draw up lessons from all of these years of operation in order to document the learning for the Swiss and Nepal governments' other similar projects.

The proposed external review will, therefore, focus on two aspects:

How the institutional systems and capacities that were put in place at various levels of the federal (Department of Local Infrastructure as advisors/policy harmonizer/coordination with the provincial governments) and provincial governments institutions – Ministries (budgeting/planning/legal and steering guidance), Transport Infrastructure Directorates (policy guidance, monitoring and regulation) and Infrastructure Development Offices (implementers/contracts managers/quality assurers), specifically from the viewpoint of federal state building and implementation of constitution respecting the constitutional mandates; and at the private sector (consultants, contractors and engineering institutes as service providers to the federal and provincial governments); that have worked well for delivering quality

motorable bridges. And given the evolving context, it will also identify the key areas that the programme needs to focus in the remaining period of timeframe.

How the built bridges have contributed to overall economic development of the country by assessing its wider socio-economic impacts; particularly looking at how benefited people accessed resources and opportunities and increased productivity using the motorable bridges.

This review shall follow the **core principles of Organization of Economic Cooperation and Development - Development Assistance Committee (OECD-DAC) guidelines on external evaluations of the development programmes**. Accordingly, the review will focus on the **criteria of relevance, effectiveness, efficiency, impact, sustainability and coordination**. The sample bridges for review and methodology will be discussed and agreed upon during the inception stage of this external review once the consultant team is selected and put in place.

3.3 Objectives

The overall purpose of the review is to assess: i) institutionalization of bridge building processes within the provincial government systems from the perspective of programme contribution to Federal State Building; and ii) strengthened capacities of all the stakeholders (Provincial government institutions, private sector and engineering institutes) involved in these processes; and iii) the socio-economic and financial impacts of bridges built on provincial roads with the technical supports from MLRBP, especially with respect to the improved productivity due to improved access to different socio-economic services and opportunities. This review should provide valuable insights to plan for the smoother exit of Swiss TA from the programme.

The specific objectives are:

- To review the institutionalization of motorable bridge building processes within the provincial government systems (Ministry of Physical Infrastructure Development (MOPID) Transport Infrastructure Directorate (TID) and Infrastructure Development Offices (IDOs), especially to see how LRBSU/PRBSUs have helped the provincial governments to implement their constitutional mandates specific to bridge building contributing to the overall federal state building.
- To analyse progression of the capacities of all provincial government institutions (MoPIDS, TIDs and IDOs) and the other private sector stakeholders (Consultants, Contractors and educational institutes) involved in the bridge building process focusing on outcome 1 of the programme.
- To review whether the motorable bridges built or being built are resulting in an equitable socio-economic benefit accrued against the costs invested (including the contribution from the Swiss Government and the Government of Nepal (GoN) – focusing on outcome 2 of the programme.
- To validate the results on outcomes reported in the outcome monitoring summaries produced by the programme on annual basis – focusing on both the outcomes of the log-frame.
- To produce a consolidated report that will serve the programme and the SDC with concrete conclusions and provide recommendations for the remaining period of the programme phase to prioritize and focus on.

3.4 Relevant review questions along the following criteria (but not limited to):

A. Relevance:

- How has the context evolved in relation to the changed political and institutional scenario of the country? How has the project adapted in a changed federal context? What level of flexibility has LRBP maintained in-terms of adapting with the change process? To what extent have these been communicated to the stakeholders involved at all the levels, particularly, Federal and Provincial governments?
- Has the project analysed the mandates and functions of different spheres of government in federalization of the sector as defined by the Constitution and the report on unbundling of rights and functions? Is federalization of motorable bridges moving in the right direction?
- How has programme influenced the different spheres of the government as well as development partners to federalize motorable bridge sector and what is SDC's contribution in doing so?
- Has the (centralistic) mind-set of federal government changed in this context? Do provincial governments understand this and do they have convening power to change the dynamics and influence the decisions that the federal government impose on them?
- Is the functioning of GoN institutions[1] (both at Federal and Provinces) efficient? Were the roles of GoN institutions clear and distinct for each spheres of the GoN for this sub-sector? Are there duplications of roles/responsibilities and mandates?
- The implementation of constitution in rolling out the constitutional mandates by respective government institutions seem to have been delayed with the pending endorsement of the Federal Civil Services Act, which is expected to be instrumental in establishing and strengthening the capacities at the provincial level. In this context, whether the Swiss TA intended at strengthening the provincial capacities is relevant?
- And in the absence of the Civil Services Act and subsequently limited human resources in the provincial governments and frequent changes in the officials of the provincial ministries, directorates and offices, has the programme strengthened the capacities of the provinces adequately? Is the theory of change of the programme still relevant?
- Are the activities, outputs and the four components of the program consistent with the intended results and the effects (on beneficiaries)?

B. Effectiveness:

- To what extent have the outcomes and outputs of the programme achieved or are likely to be achieved by the end of the phase? How many people benefitted from MLRBP interventions? What are the changes in terms of people accessing education, health services, markets and livelihood opportunities? These changes must be measured against the number of people accessing services, frequency of services attained in a year, time saved accessing such services, productive utilization of that saved time, cost saved in transportation (goods and passengers). How has the local economy changed roads after bridges in operation, in terms of increased productivity, flow of goods and services within the local and provincial markets, their prices including freight costs, the availability, volumes of import and exports etc. All of these benefits accrued to the people should possibly be converted into monetary values to derive a cost benefit analysis.

[1] To better understand these from the stakeholder's viewpoint, meet shall be required with MoFAGA, DoLI, National Planning Commission, Department of Roads (DoR), Ministry of Physical Infrastructure and Transport (MoPIT), Ministry of Law and Justice (MoLJ), Office of the Prime Minister and the Cabinet of Ministries (OPMCM), Office of the Chief Minister and Cabinet of Ministries (OCMCM), Provincial MoPIDs at the political levels, TIDs, IDOs.

- What were the major factors influencing the achievement/non-achievement of the outcomes and outputs?
- How effective is the Swiss TA in programme implementation and management in reference to the set-up of Local Roads Bridge Support Unit (LRBSU) at the Federal and at the Provincial levels (PRBSUs) – the approaches, systems, processes, right human resources and their deliveries etc.?
- How effective are the mainstreaming of gender equity and social inclusion aspects in programme institutions and implementation?
- How effectively are environmental considerations been taken up in bridge construction?
- How effectively and to what extent have the results been communicated to the key stakeholders involved at all the levels, particularly, at the Federal and Provincial governments?
- To what extent the programme team has developed a critical self-reflection on what they do and how they implement their activities, particularly focusing on outcome and results that they have to achieve. How effectively do the programme team shows its "adaptive and innovative capacities"?
- How effective were the Programme Steering Committee (PSC) in steering, coordinating and supporting the programme implementation at the provincial levels? How effective was the Advisory and Coordination Committee at the Federal level and is it still relevant in the changed context of DoLI's existence under the Ministry of Urban Development and not under Ministry of Federal affairs and General Administration (MoFAGA)?
- How effective were the implementation of four components of the programme including that of **research and development (R&D)**?

C. Efficiency:

- To what extent were the activities carried out by LRBSU/PRBSUs cost-efficient? What is the overall cost of interventions (technical assistance by SDC Vs. the physical construction costs of the bridges leveraged through the GoN, including the re-current cost of the GoN)? What are costs and benefits of having these bridges constructed? What will happen if the Swiss TA will exit?
- Are the activities and outputs of the program achieved on time and with quality?
- How efficient is the collaboration of LRBSU and the Government of Nepal (GoN) at Federal and PRBSUs at the provincial levels, and also with the private sector actors (consultants and contractors and Engineering Institutes)?
- What are the major short comings and barriers of the TA implementation? In particular, the behaviour of the GoN, the private sector (the bridge construction contractors and bridge design and supervision consultants) in fulfilling their functions, tasks and commitments as per their contracts?

D. Impact and Sustainability:

- What changes has MLRBP already brought in the roads bridge sub-sector in the provincial road network? Have provincial road network been defined and identified in the provinces? Do provinces have their politically approved **Provincial Road Network Master plans and bridge selection and prioritization criteria?** How are bridges selected for annual planning, budgeting and construction? Do they fall under the provincial road network? What percentage of them fall under that?

- Are there **standards of bridge designs and codes** applied by the provincial Government entities? Are they sufficient and adequate also from the perspective of frequently recurring climate induced disaster resiliency?
- Are **new and innovative technologies in bridge** design and construction **successfully transferred** under the component of **research and development (R&D)** from the Switzerland and abroad to Nepal? Can Nepal afford to replicate and scale up such technologies on its own in the future?
- What changes has MLRBP made in terms of influencing the GoN (both at Federal and Provincial Levels) to adhere to the GoN's environmental and social safeguards measures including bridge workers occupational health and safety, and also making motorable bridges more resilient to potential disasters in the future due to climate change?
- What are the factors that make the programme approaches sustainable or otherwise. What additional efforts need to be made or are there any areas the project should focus primarily in the remaining period of the project?

E. Coordination and Others:

- To what extent MLRBP has harmonized the approaches and principles of bridge building to avoid duplication in the execution of provincial roads bridges on provincial road network?
- What is the value addition of Swiss TA in assisting other bridge sectoral programmes of the Development Partners (DPs) and the Department of Roads in Nepal for example – third party monitoring for the GoN and World Bank in implementing the performance for results instrument in Bridge Improvement and Maintenance programme of the WB/GoN?
- How is the coordination between FG and PGs in terms of road bridge selection, implementation and financing (conditional grant)? What role MLRBP has played so far for this?

F. Recommendations for handing over to the Government

- What are the findings and conclusion from the phase?
- What are the recommendations for the GoN in scaling up through established Act, PNRMPs, policies, standards, guidelines, procedures for sustainability and Swiss TA exit?
- Key stakeholders assessment (Government and the private sector), their roles in line with their respective constitutional mandates in the sub-sector, their capacities to fulfil their roles and the areas of improvement and capacity needs/gaps.
- What are the main recommendations for the Government at Federal level and at Provincial Levels to take over and implement the programme after the Swiss TA exits?
- What are the main recommendations for the GoN and the private sector for sustainability of MLRBP approaches and systems after the Swiss TA exits?
- What are the main recommendations for the GoN, the private sector and the DPs in the implementation of constitutional mandates in this sub-sector after the exit of Swiss TA?

3.5 Expected outputs

This external evaluation is expected to produce an independent report (preferably not more than 25 pages, excluding Annexes and an executive summary) with quantitative data and qualitative analysis of the findings. Among others, the report should specifically state whether and how the programme: has helped increase the socio-economic activities due to improved access and connectivity to justify the investments made; has effectively contributed to federal state building through effective institutionalization of bridge building processes on provincial road networks within the provincial government systems including critical assessment of capacities of all the institutions involved including both the government (federal and provincial) and the private sector (consultants and the contractors).

Brief recommendations for the GoN (preferably not more than 4 pages) to continue with the programme by the GoN after the end of Phase IV with the Swiss TA exit.

3.6 Methodology and scope of work

This review will first of all validate the results on the outcomes which are reported on annual basis by MLRBP from the lens of Federal State Building. Institutional capacities of Department of Local Infrastructure (DoLI) at the Federal Level, the Provincial Government entities (MOPIDs, TIDs, IDOs) and the private sector (consultants, contractors and educational institutions) will be assessed through a very highly consultative process – with in-depth interviews and consultative meetings with the key people in the Ministries (Political) and executives/bureaucracy (Secretaries, Directors, Commissioners, Chief of offices etc.).

For the socio-economic impacts, it will adopt an evaluation method that will compare 'with' and 'without' bridge situations of the people living in the bridge zone of influence. The assessments of these situations will be done, particularly in those selected bridges where the programme has established a baseline data as well as monitored outcomes on annual basis. The changes in the situations will be compared with the national average available from the recent census.

The review consultant team will include a team leader (international) having a background of rural development, transportation planning, economics backed by a good understanding of Nepal's development context, political economy of transport infrastructure sector development (roads and bridges) in Nepal. S/he will be backed up by a Federal State Building expert to support in the analyses of federalization of the sub-sector and the institutional strengthening of federal and provincial government institutions in institutionalization of bridge building processes in the provinces; and an economist to support on economic analysis of socio-economic benefits of the bridges using an Economic and financial Analysis (EFA) or Cost benefit Analysis (CBA) tool. The national team will visit the programme areas in order to collect necessary primary information for the review. As required, enumerators, statisticians, geographic Information System (GIS) expert (for mapping the level of accessibility and time saving for the beneficiaries while using motorable bridges) etc., shall be hired for the survey and collecting data.

The Team Leader shall submit an inception report for the review along with the elaboration of the review methodology within one week of undertaking the assignment. The programme shall include the preparations required including methodologies - to conduct provincial governments' institutional assessment, and to conduct impact study – selection of sample bridges and beneficiaries, the proposed field visits schedule with the transport and logistic requirements, the data collection methods and analysis; and reporting time required and the date for submitting the report.

The team shall first make a desk study of the available programme documents and reports and meeting with SDC and the LRBSU team to plan and detail out the methodology which should include detail checklist for collecting the required information (how many bridges, how many respondents in each bridge site, how to select respondents, where and how to verify/triangulate

information, when and how to collect data keeping in mind seasonal variations so that information received are not influenced or biased or skewed).

SDC shall review, comment and then approve the consultant's proposals for the review methodology, within a week of its submission. When these are approved, the team shall commence the review, conduct necessary field works, analyze the received data and information critically from the viewpoints of the principles of relevance, effectiveness, efficiency, impact and sustainability, and coordination. Then a draft report shall be submitted as agreed in the timeline and approved by SDC, after which the report shall be finalized to incorporate any comments, and a final version shall be produced.

In the course of finalization of the report, presentations to respective Governments (federal and province governments), other SDC programme team, Team leaders of other programmes will be needed.

3.7 Time Frame

The review shall take place between **May 2024 to September 2024**. The desk reviews can be done during May 2024, the field data collection for economic/financial evaluations can be done in May/June to come up with the economic analysis by **July 2024,** while the key informants' interviews and consultations can be done during **July 2024**. The expected analysis is to be done by the end of **August 2024**. The draft report shall be submitted, shared and finalized by end of **September 2024**.

3.8 Reporting and deliverables

An inception report within 1 week after the start of the assignment with detail elaboration of methodology for review.

The consultant shall submit a draft report (not more than 25 pages without annexes) to the Embassy/SDC within **September 2024**. This will contain the results of the field work in Annexes, plus the findings of the consultant in the main report.

The consultant shall finalise the report incorporating the comments after a debriefing of the findings to SDC and Government of Nepal. The final report should be ready by **end of September 2024** with the key recommendations for the GoN to take over and continue with the programme.

3.9 References/List of documents to be consulted

Among others, the following documents must be referred to by the Review Team:

i) External review report of Phase III
ii) Programme Document with Log-frame – Phase IV
iii) Decisions of Programme Steering Committee meetings
iv) Annual Programme Reports and Outcome Monitoring Summaries (2020-21, 2021-22, 2022-23)
v) Key documents, manuals (Different Parts) including sample Provincial roads Act, PRNMPs etc.
vi) Any other relevant programme reports and documents
vii) Reports from the self-evaluation of the programme

3.10 Prior involvement

No potential tenderers were involved in preparing the invitation procedure or drafting the Terms of Reference. All tenderers that meet the criteria set are invited to submit a bid.

Independency from SDC
Neither the tenderer/the consortium nor a member of the proposed team/member of the consortia is involved in the implementation or in an operational responsibility/collaboration of an Motorable Local Roads Bridge Programme, phase IV (MLRBP IV).

3.11 Content of the mandate

The tender must have prior experience of conducting the independent evaluations of complex development projects in the areas of infrastructure managed by the recipient governments in Asia. The tenderer must be a firm with a team of following experts, who are competent to carry out the evaluation. Consortia are permitted.

i. Team Leader - International (Rural Transport Infrastructure Expert or Transport Planner with experience in Monitoring & Evaluation)

The international Team Leader (TL) is expected to be an evaluations expert, preferably with a background on Transport Planning or Rural Transport Infrastructure expertese. S/he shall have worked with SDC or bilateral development partners, government counterparts in the fragile and federalized context; have excellent coordination, analytical and reporting writing skills in English. S/He should have strong understanding of cross cutting issues such as gender, social inclusion, climate, environment and disaster resilience in transport infrastructure planning and implementation. The International TL shall be responsible for the following tasks:

- Devise methodology of the evaluation and agree with individual team members and agree with SDC prior to conduction of evaluation covering all the criteria – relevance, effectiveness, efficiency, impact and sustainability and coordination
- Lead and manage overall evaluation process by guiding, facilitating and supporting on all the technical aspects related to programme evaluation to the individual consultants, ensuring the timely deliveries of their individual outputs (report on economic survey and analysis, accessibility mapping, institutional analysis report based on the stakeholder consultations)
- Ensure the overall quality of processes and results from the evaluation including the data, information, their analysis and consolidation and preparation of final report, holding ultimate responsibility and accountability for the agreed deliverables on behalf of the tenderer
- Shall act as a Single Point of Contact (SPOC) for this manadate on behalf of the tenderer, shall be responsible for all the communications with the SDC/contractor and with the Local Roads Bridge Support Unit.

ii. National Expert - Federal State Building

The National Expert, an Institutional/Federal State Building Expert, shall have an experience and understanding of Nepali Federal State building context, its political economy, have with experiences on analysis of legal frameworks, constitutional mandates of the different spheres of the Government of Nepal; have experience in political consultations at high levels. The National expert shall be responsible for the following:

- Supporting the International Team Leader on overall evaluation processes

- Supporting the International Team Leader on national stakeholders' consultation processes/meeting at federal, provincial government levels, with private sector, arrange for national/local travel logistics, organization of meeting with stakeholders, translate and narrate the data and findings from the consultative meetings for institutional analysis
- Support the International Team Leader in delivery of agreed deliverables including report writing

iii. National Expert – Transport Economist

The Transport Economist shall have prior experience in conducting extensive socio-economic surveys, analysis of extensive quantitative data, and prepared report on cost-benefit analysis of transport sectoral programmes in Nepal using standard HDM-4 software. The Transport Economist shall be responsible for the following:

- Developing the methodology for quantitative surveys (traffic, household, settlement, origin-destination, market), survey tools and instruments in consultation with the International Team Leader
- Manage, orient and train the enumerators as required and administer the surveys of bridges in all seven provinces, data entry, processing by ensuring the quality, and analysis of data using the standard HDM4 software and prepare the EFA/CBA report
- Supporting the International Team Leader on evaluation of the project with respect to reflecting overall impacts of bridges in the consolidated report

iv. National Expert – GIS and Mapping

The GIS and Mapping expert shall: have prior experience in understanding the transport sectoral master plans and have prepared accessibility mapping for the transport sectoral programmes using various accessibility indices in Arc GIS. The expert shall be responsible for the following:

- Support the International Team Leader in devising methodology for evaluation with respect to preparation of accessibility maps using the accessibility indices,
- Support the International TL in reviewing and studying the PRNMPs, analysis of the maps, prepare the necessary maps showing how bridges have impacted the overall accessibility and connectivity of local areas to revalidate and compliment the EFA/CBA reports.

v. Other Experts

The tenderer shall be provided with competent and adequate enumerators and surveyors from the project. While they will conduct the field quantitive surveys required for socio-economic impacts assessments - Economic and financial Analysis (EFA)/Cost benefit Analysis (CBA), the tenderer shall lead and guide the team of enumerators and surveryors from the project.

This review will validate the results on the outcomes which are reported on annual basis by MLRBP from the lens of Federal State Building. Institutional capacities of Department of Local Infrastructure (DoLI) at the Federal Level, the Provincial Government entities (MOPIDs, TIDs, IDOs) and the private sector (consultants, contractors and educational institutions) will be assessed through a very highly consultative process – with in-depth interviews and consultative meetings with the key people in the Ministries (Political) and executives/bureaucracy (Secretaries, Directors, Commissioners, Chief of offices etc.).

For the socio-economic impacts, it will adopt an evaluation method that will compare 'with' and 'without' bridge situations of the people living in the bridge zone of influence. The assessments of these situations will be done, particularly in those selected bridges where the programme has established a baseline data as well as monitored outcomes on annual basis. The changes in the situations will be compared with the national average available from the recent census.

The team of the tenderer shall first make a desk study of the available programme documents and reports and meeting with SDC and the LRBSU team to plan and detail out the methodology which should include detail checklist for collecting the required information (how many bridges, how many respondents in each bridge site, how to select respondents, where and how to verify/triangulate information, when and how to collect data keeping in mind seasonal variations so that information received are not influenced or biased or skewed).

The tenderer shall then submit an inception report for the review along with the elaboration of the review methodology within one week of undertaking the assignment. The inception report shall include the preparations required including methodologies - to conduct provincial governments' institutional assessment, and to conduct impact study – selection of sample bridges and beneficiaries, the proposed field visits schedule with the transport and logistic requirements, the data collection methods and analysis; and reporting time required and the date for submitting the report.

SDC shall review the inception report, comment and then approve the tenderer's proposals for the review methodology, within a week of its submission. When these are approved, the team shall commence the review, conduct necessary field works, analyze the received data and information critically from the viewpoints of the principles of relevance, effectiveness, efficiency, impact and sustainability, and coordination. Then a draft report shall be submitted as agreed in the timeline and approved by SDC, after which the report shall be finalized to incorporate any comments, and a final version shall be produced.

In the course of finalization of the report, presentations to respective Governments (federal and province governments), other SDC programme team, Team leaders of other programmes will be needed.

3.12 Estimated amount

All the price details must be indicated in CHF excl. VAT. The price excl. VAT includes in particular remuneration, travel, insurance, allowances, social costs, transport, customs etc.

Financial offers shall be submitted in CHF together with the budget form according to the legal status of the bidders:

a) as per Annex 4a for type B mandate (for international organisations) or

b) as per Annex 4b for local mandates/national organisations (in case of local bidders: local bidders can submit in Nepali Rupees (NPR), exchange rate 1 CHF = 150 NPR)

Table 1: Estimated maximum number of working days and other tentative cost

Description	Person days	Remarks
Team Leader - International (Rural Transport infrastructure, transport planner, Livelihood Expert) and/or M&E Expert	30	
National Expert (Federal State Building Expert with prior experiences on analysis of legal frameworks, constitution, political consultations at high levels and/or Rural transport expert)	40	
Transport Economist (for Cost Benefit Analysis)	30	
GIS expert - accessibility mapping	10	

Enumerators for EFA in ZoIs of at least 21 bridges in 7 provinces (proportionate bridges in each province representing all 3 ecological zones with 2 persons for 5 days in each bridge)	NA	Will be managed with the help of MLRBP (project office)
Traffic Surveys in 5 bridges in 7 provinces (represent all 3 ecological zones) (1 person for 7 days for each bridge)	NA	Will be managed with the help of MLRBP (project office)

The tenderer will not be reimbursed for any costs arising from the preparation or submission of bid.

3.13 Timetable of the invitation procedure

Date / Deadline	Activity
19.03.2024	Invitation for tender and publication of the mandate on the FDFA mandates platform
22.03.2024	Expression of interest in submitting a tender by email: kathmandu@eda.admin.ch
02.04.2024	Deadline for submitting questions by email: kathmandu@eda.admin.ch
08.04.2024	Sharing of the questions and answers with all the interested tenderers
15.04.2024	Deadline for submission of tenders
April 2024	Evaluation of submitted bids
Mid May.2024	Information of the tenderers by means of individual dispositions: Awarding of the contract and notification of the not considered tenderers
15.05.2024	Signing of contract
16.05.2024	Contract start date

4 Eligibility criteria

The tenderer must duly fulfil without limitation or modification the eligibility criteria listed in annex EC. The tenderer must also provide, where indicated, the necessary evidence with the submission of the bid. **Confirmation of the fulfilment of the eligibility criteria must be given in 'Annex EC: Confirmation of Eligibility Criteria and documents to be submitted'.**

Only those tenderers that fulfil all formal requirements and eligibility criteria will be evaluated on the basis of the award criteria. The other tenderers will be excluded from the further procedure.

5 Award criteria

The following table shows the award criteria (AC) and the corresponding weightings, on the basis of which the bids will be evaluated.

AC	Award Criteria	Weighting
AC 1	**Qualifications of the personnel to be deployed in this mandate (CVs)**	**60%**
AC 1.1	International Team Leader (Rural Transport Infrastructure, Transport Planner, M & E Expert)	60%
AC 1.2	National Expert (Federal State Building Expert)	15%
AC 1.3	National Expert (Transport Economist)	15%
AC 1.4	National Expert (GIS expert)	10%
AC 2	**Experience of the tenderer in monitoring and evaluation of projects** (Numbers of project evaluated, financial volume of evaluation of projects, types of clients served)	**10 %**
AC 3	**Understanding of the mandate and general approach**, (including approach and methodology proposed for the evaluation process with innovative ideas other than what was described in the annex 2 of the ToR)	**10%**
AC 4	**Financial offer – overall price** The overall price is to be submitted in CHF (excl. VAT) only together with the budget form as per Annex 4 (type B or local mandate budget) of the tender document and to include the following: • Remuneration of experts • Outward and return journey • Incidentals • Expenses The following services (from the scope of works shall also be listed: • Devise the evaluation methodology, surveys, field works • Consulations with stakeholders and consolidation of feedbacks • Reporting and presentations **Evaluation of the price:** The overall amount (excl. VAT) for the awarding of points is evaluated for each offer. This is calculated as follows: $\text{Score} = M \times \left(\frac{P_{min}}{P}\right)^2$ P = Price of the bid being assessed P min = Price of the cheapest bid M = Max. points (= score 5) Exponent = Exponent in formula (=2)	**20%**
	Total	**100%**

Each further award criterion will be evaluated according to the following score table:

Score	Fulfilment and quality of the criteria	
0	Cannot be established	• Not possible to assess • No information
1	Very poor fulfilment	• Very limited achievement of the criteria • Insufficient, incomplete information
2	Poor fulfilment	• Limited achievement of the criteria • Information without sufficient relevance
3	Average fulfilment	• Normal achievement • Average quality, minimum requirement fulfilled
4	Good fulfilment	• Good achievement • Very good quality
5	Very good fulfilment	• Very good achievement • Outstanding quality

6 Structure and content of the bid

The tenderer must adhere to the following structure in the interests of fairness and in order to expedite the evaluation process.

Nr.	Contents	Max.* No. Pages	EC/AC
00	Cover letter with signature(s) and documents evidencing organisational capability		EC 1
01	'Annex EC: Confirmation of Eligibility criteria and documents to be submitted' And submission of all annexes mentioned in the catalogue		EC1 - EC 8
07	Qualifications (CVs) of the four key personnel to be deployed for this mandate	Max. 4 for each CV	AC 1
08	Experience of the tenderer in monitoring and evaluation of projects	6	AC 2
9	Understanding of the mandate and general approach, (including approach and methodology proposed for the evaluation process with innovative ideas other than what was described in the annex 2 of the ToR	2	AC 3
10	Financial offer (see point 3.5 in CHF (excl. VAT) (local bidders can submit in Nepali Rupees (NPR), exchange rate 1 CHF = 150 NPR), according to the legal status of the bidders: a. as per Annex 4a for type B mandate (for international companies/experts) or b. as per Annex 4b for local mandates/national experts/companies)		AC 4

*) the maximum pages mentioned must be strictly respected. We consider only those pages for evaluation.

7 Administrative Aspects

7.1 Official name and address of the contracting authority

Embassy of Switzerland in Nepal is in charge of the awarding procedure and also acts as direct contracting authority towards the tenderer.

7.2 Deadline and address for submitting bids

The completed bids (format pdf) must be electronically submitted to kathmandu@eda.admin.ch by 15.04.2024, 23:00 (Nepal Standard time) at the latest. Bids received late cannot be taken into consideration. They will be returned to the tenderer.

The email must mention '**Bid for External Evaluation of Motorable Local Roads Bridges Programme- Exit Phase**' in the reference line. Tenderers must confirm in the email the binding force of the bid. The receipt of the bids submitted via email will be acknowledged via email at the latest until 16.04.2024. The bids must be submitted in the English language.

In all cases, the tenderer must retain proof of the timely submission of the bid.

7.3 Expression of interest in submitting an offer and receiving documents

Interested tenderers are kindy invited to express their interest by email to kathmandu@eda.admin.ch until 22.03.2024.

7.4 Answering questions

No individual information is given to the tenderers. Any questions must be submitted by 02.04.2024 to kathmandu@eda.admin.ch. Questions submitted late cannot be answered. The document with all questions received and their answers will be sent to all tenderers by 08.04.2024.

7.5 Type of procedure

Procurement is carried out in accordance with the Federal Act on Public Procurement of 21 June 2019, PPA, SR 172.056.1.

It is **not** possible to appeal the award.

7.6 In accordance with GATT / WTO agreement or treaty (as applicable)

This is a public contract under Annex 5 no. 1 let. d PPA. There is no right of appeal.

7.7 Evaluation and adjustment of bids

Tenders are evaluated in accordance with Art. 38 PPA. Tenders may only be adjusted at the contracting authority's specific request. Adjustments must be undertaken in accordance with Art. 39 PPA and subject to the conditions set out therein.

7.8 Bidding consortia

Bidding consortia are permitted. If the SDC concludes the contract with several contractors (consortium), all parties must sign, having first designated a person to represent the

consortium vis-à-vis the SDC. The representative is expressly authorised to act for and on behalf of the consortium members. The consortium members shall be jointly and severally liable. The tenderer lists all members and their roles.

7.9 Subcontractors

Subcontractors are permitted, subject to the prior approval of the awarding entity. If the tenderer engages subcontractors in order to carry out the work, the tenderer will assume overall responsibility. It must list all the subcontractors involved, together with the roles allocated to them.

Any contractual delegation by the contractor of performance of all or part of the present contract to subcontractors shall be subject to the prior written consent of the contracting authority. Subcontractors and their personnel must satisfy all conditions stipulated in the present contract and the appendices thereto. The contracting authority shall be liable solely to the contractor. In the event that the contractor delegates performance of all or part of the contract, the contractor shall bear sole liability for the acts of any subcontractors. As a general rule the tenderer is required to make the characteristic supply.

7.10 Multiple tenders by single tenderers, consortia and subcontractors not permitted

Single tenderer, consortia and subcontractors are allowed to participate exclusively in one bid.

7.11 Validity of bids

180 days after the deadline for receipt of bids.

7.12 Language of the procedure

The present procurement procedure is conducted in English language. This means that all statements on the part of the awarding authority are made in English language.

7.13 General Terms and Conditions of Business (GTC)

The General Conditions of Business (GTC) of the FDFA for mandates (type A and type B) – version May 2021 and/or General Conditions of the FDFA for local mandates – version May 2021 shall be deemed to have been accepted by the contractor on submission of the bid.

7.14 Conclusion of contract

The contract is concluded subject to the prior approval of credits by the FDFA.

8 Further information

8.1 Confidentiality

The parties shall keep confidential any facts and information that are not generally known or in the public domain. In case of doubt, all facts and information shall be treated as strictly confidential. The parties shall take all measures, to the extent that they are commercially reasonable and practicable in technical and organisational terms, to ensure that confidential facts and information are properly protected against access by, or disclosure to, unauthorised third parties.

Any transfer of confidential information by the contracting authority within its own organisation (or within the Federal Administration), or to any third parties appointed, is not deemed to constitute a breach of the obligation of confidentiality. The foregoing also applies to tenderers to the extent that the disclosure of confidential information is required for the performance of the contract, or provisions of the contract are disclosed within the organisation.

The tenderer may not, without the contracting authority's written consent, publicise the fact that a cooperation arrangement with the contracting authority is or was in effect or cite the contracting authority as a reference.

The parties shall ensure that their employees, subcontractors, suppliers and any other third parties appointed comply with the foregoing obligations of confidentiality.

8.2 Integrity clause

Tenderers undertake to take all necessary measures to avoid corruption and, in particular, agree not to offer or accept payments or other advantages.

Tenderers who breach this integrity clause are required to pay a contractual penalty to the contracting authority amounting to 10% of the value of the contract or at least CHF 3,000 for each instance of breach.

The tenderer notes that any breach of the integrity clause will generally result in cancellation of the award or early termination of the contract for good cause by the contracting authority.

The parties shall inform each other of any well-founded suspicions of corruption.

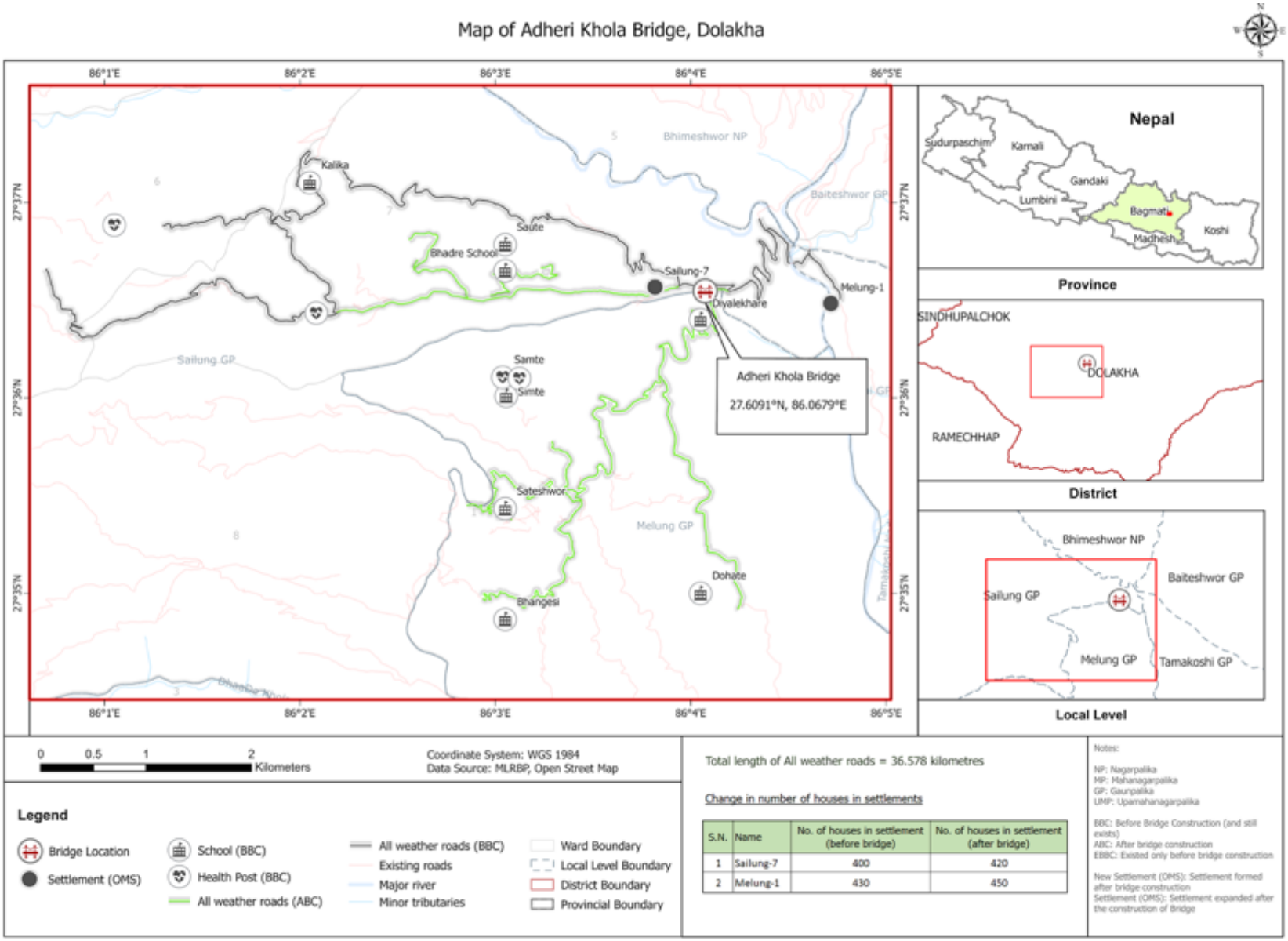
8.3 Property rights

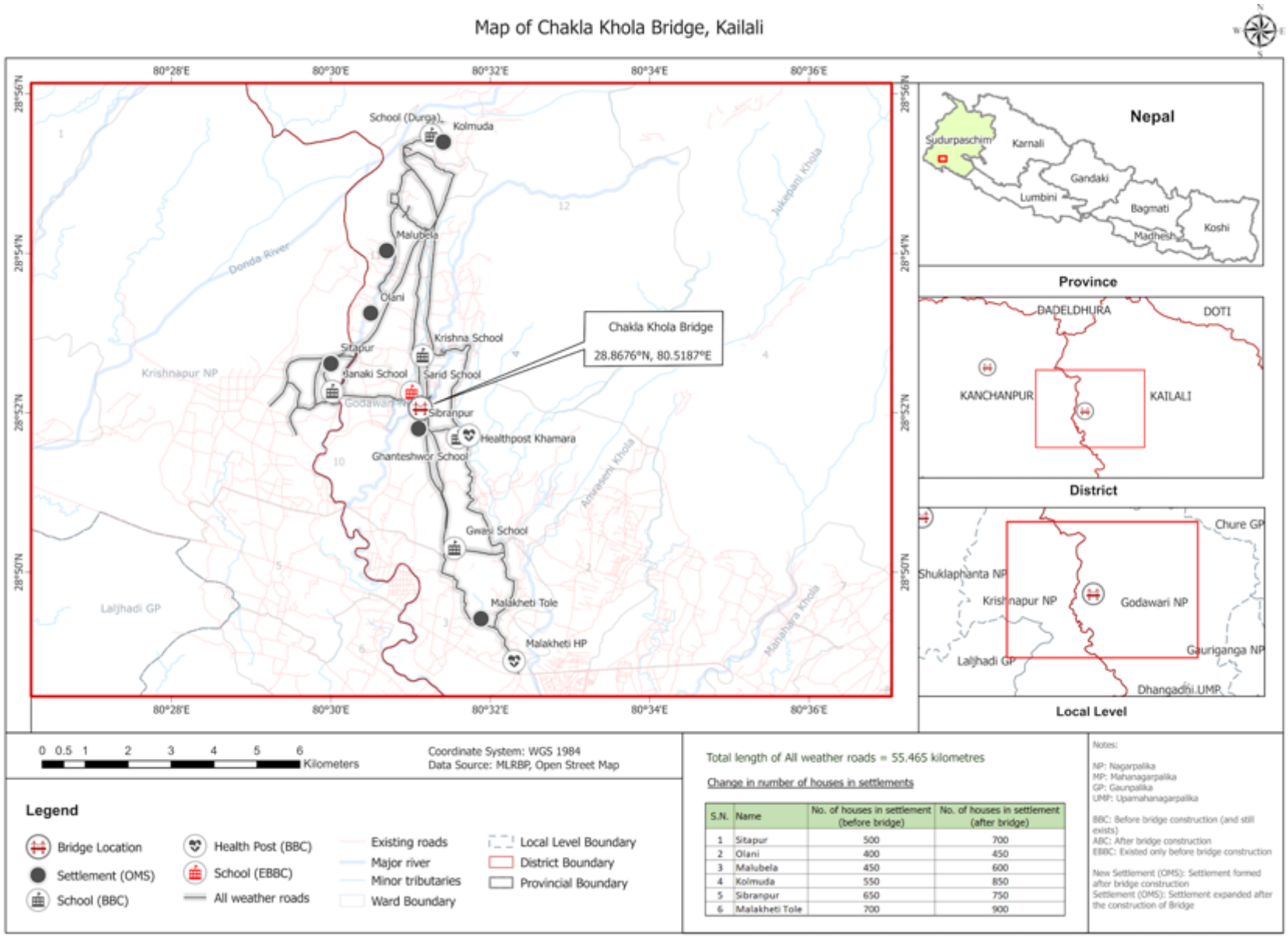
All industrial property rights which arise in the course of the performance of the mandate shall pass to the contracting authority.

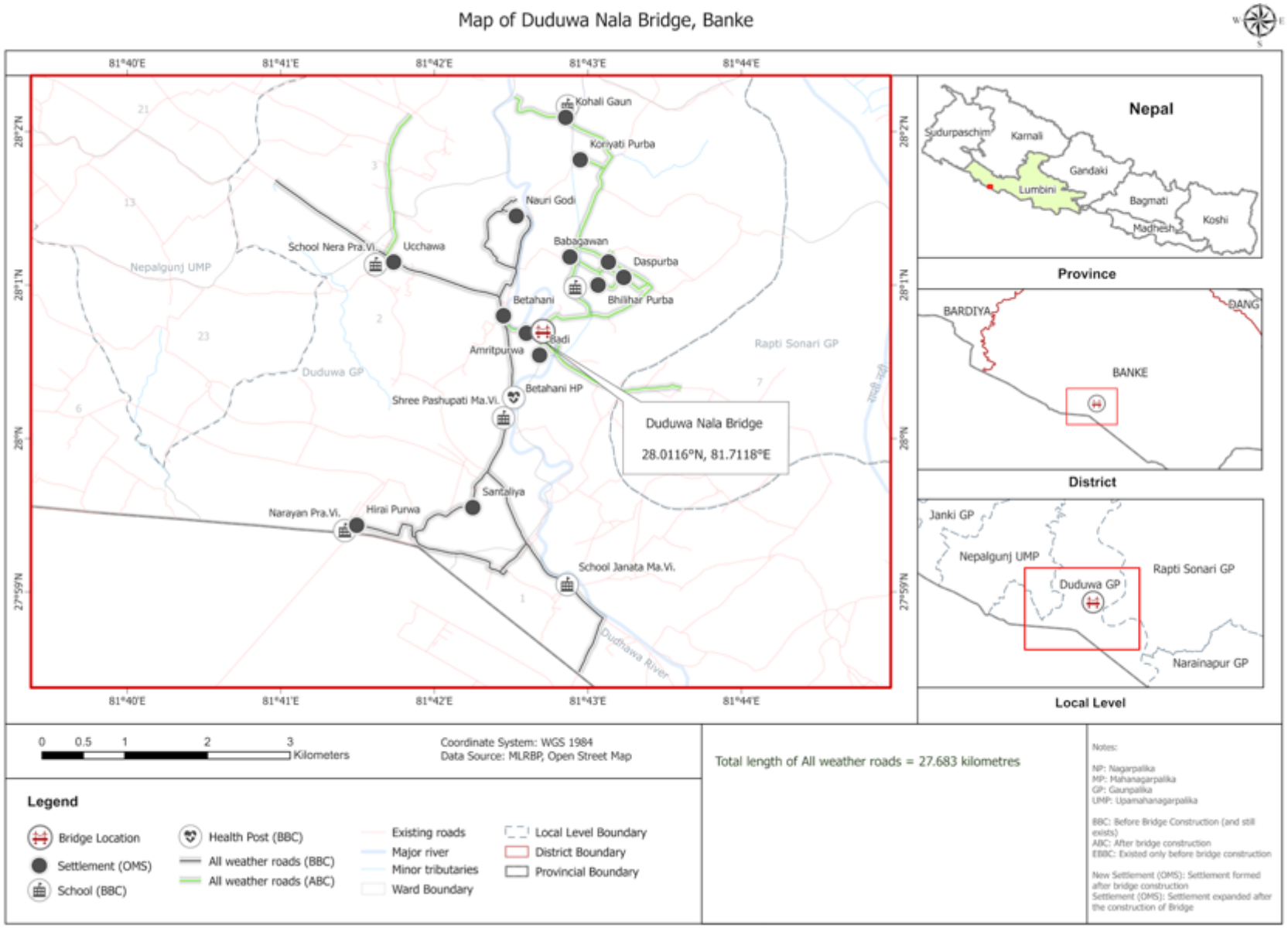
9 Annexes

No.	Annex
Annex EC	Annex EC: Confirmation of Eligibility criteria
1a	Self-declaration form 'Proof of Compliance with the conditions of participation' of the Federal Procurement Conference FPC
1b	Self-declaration form 'pursuant to Article 29c of the Ordinance on measures in connection with the situation in Ukraine' of the State Secretariat for Economic Affairs (SECO)
2	'Tenderer Information' form
3a	General Terms and Conditions (GTC) of the Federal Department of Foreign Affairs (FDFA) for mandates (type A and B) – version May 2021 (applicable for northern tenderers) AND/OR General Terms and Conditions of the FDFA for local mandates (applicable for local tenders) – version May 2021
3b	Code of conduct for contractual partners of the FDFA
4a	Budget format type B for legal entities, organisations and self-employed persons
4b	Budget format for local manadate

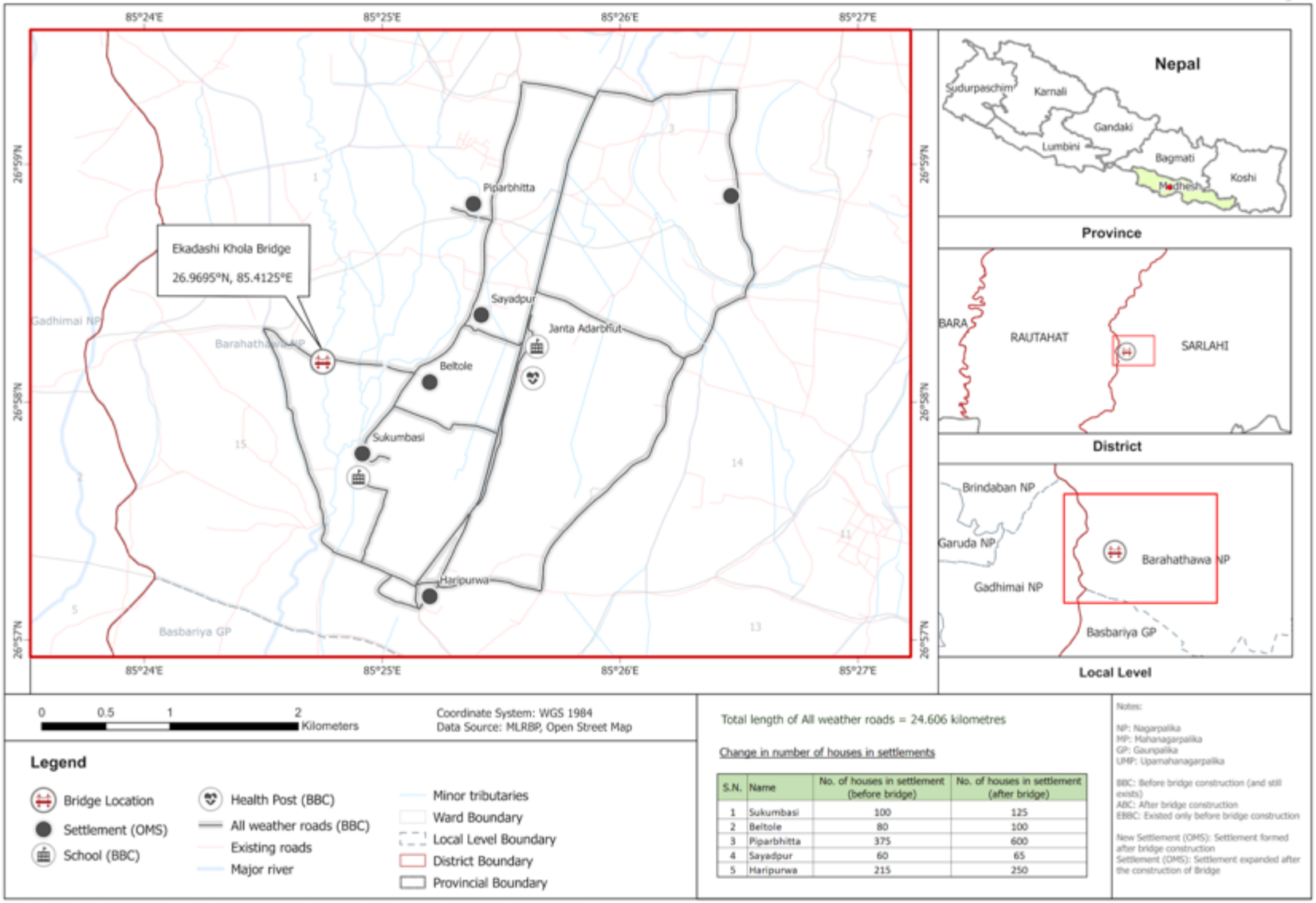
ANNEX 10: Participatory Resource Mapping (Maps)




Map of Chakla Khola Bridge, Kailali
80°28'E
80°30'E
80°32'E
80°34'E
80°36'E
28°56'N
28°54'N
28°52'N
28°50'N
School (Durga)
Kolmuda
Malubela
Olani
Sitapur
Krishna School
Janaki School
Sarid School
Sibranpur
Healthpost Khamara
Ghanteshwor School
Gwari School
Malakheti Tole
Malakheti HP
Chakla Khola Bridge
28.8676°N, 80.5187°E
Donda River
Jukepani Khola
Amaseni Khola
Mahahara Khola
Krishnapur NP
Godawari NP
Laljhadi GP
Nepal
Sudurpaschim
Karnali
Gandaki
Lumbini
Bagmati
Madhesh
Koshi
Province
BADELDHURA
DOTI
KANCHANPUR
KAILALI
District
Chure GP
Shuklaphanta NP
Krishnapur NP
Godawari NP
Gauriganga NP
Laljhadi GP
Dhangadhi.UMP
Local Level
0 0.5 1 2 3 4 5 6 Kilometers
Coordinate System: WGS 1984
Data Source: MLRBP, Open Street Map
Legend
Bridge Location
Settlement (OMS)
School (BBC)
Health Post (BBC)
School (EBBC)
All weather roads
Existing roads
Major river
Minor tributaries
Ward Boundary
Local Level Boundary
District Boundary
Provincial Boundary
Total length of All weather roads = 55.465 kilometres
Change in number of houses in settlements
S.N. | Name | No. of houses in settlement (before bridge) | No. of houses in settlement (after bridge)
1 | Sitapur | 500 | 700
2 | Olani | 400 | 450
3 | Malubela | 450 | 600
4 | Kolmuda | 550 | 850
5 | Sibranpur | 650 | 750
6 | Malakheti Tole | 700 | 900
Notes:
NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika
BBC: Before bridge construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction
New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge


Map of Duduwa Nala Bridge, Banke
81°40'E
81°41'E
81°42'E
81°43'E
81°44'E
28°2'N
28°1'N
28°N
27°59'N
Kohali Gaun
Koriyati Purba
Nauri Godi
Babagawan
Daspurba
Bhilihar Purba
School Nera Pra.Vi.
Ucchawa
Nepalgunj UMP
Betahani
Badi
Amritpurwa
Duduwa GP
Rapti Sonari GP
Betahani HP
Shree Pashupati Ma.Vi.
Duduwa Nala Bridge
28.0116°N, 81.7118°E
Santaliya
Narayan Pra.Vi.
Hirai Purwa
School Janata Ma.Vi.
Dudhawa River
Nepal
Sudurpaschim
Karnali
Gandaki
Lumbini
Bagmati
Madhesh
Koshi
Province
BARDIYA
DANG
BANKE
District
Janki GP
Nepalgunj UMP
Duduwa GP
Rapti Sonari GP
Narainapur GP
Local Level
0 0.5 1 2 3 Kilometers
Coordinate System: WGS 1984
Data Source: MLRBP, Open Street Map
Total length of All weather roads = 27.683 kilometres
Legend
Bridge Location
Settlement (OMS)
School (BBC)
Health Post (BBC)
All weather roads (BBC)
All weather roads (ABC)
Existing roads
Major river
Minor tributaries
Ward Boundary
Local Level Boundary
District Boundary
Provincial Boundary
Notes:
NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika
BBC: Before Bridge Construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction
New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge

Map of Ekadashi Khola Bridge, Sarlahi



Total length of All weather roads = 24.606 kilometres

Change in number of houses in settlements

S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Sukumbasi	100	125
2	Beltole	80	100
3	Piparbhitta	375	600
4	Sayadpur	60	65
5	Haripurwa	215	250

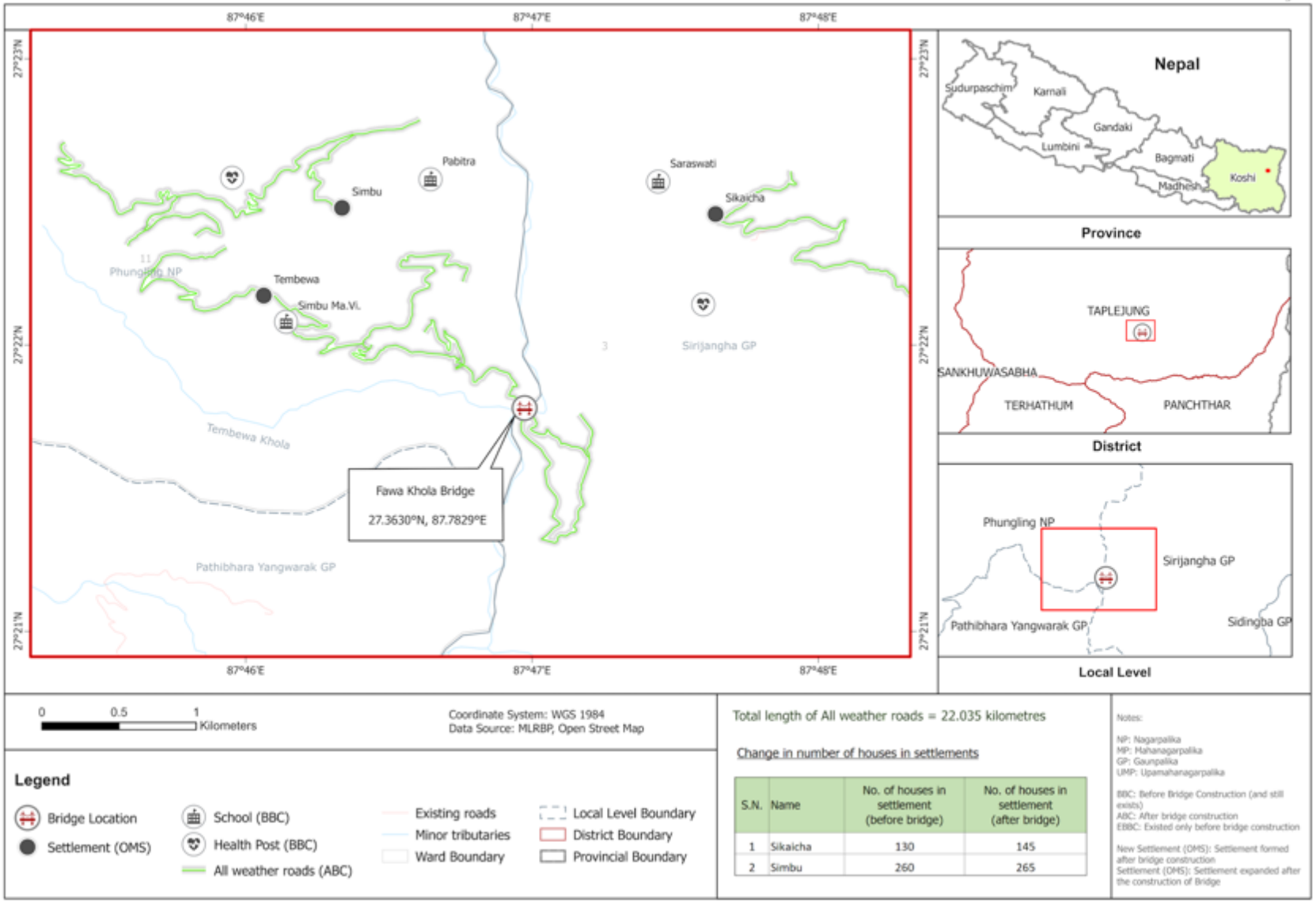
Notes:

NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika

BBC: Before bridge construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction

New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge

Map of Fawa Khola Bridge, Taplejung



0 0.5 1 Kilometers

Coordinate System: WGS 1984
Data Source: MLRBP, Open Street Map

Legend

- Bridge Location
- Settlement (OMS)
- School (BBC)
- Health Post (BBC)
- All weather roads (ABC)
- Existing roads
- Minor tributaries
- Ward Boundary
- Local Level Boundary
- District Boundary
- Provincial Boundary

Total length of All weather roads = 22.035 kilometres

Change in number of houses in settlements

S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Sikaicha	130	145
2	Simbu	260	265

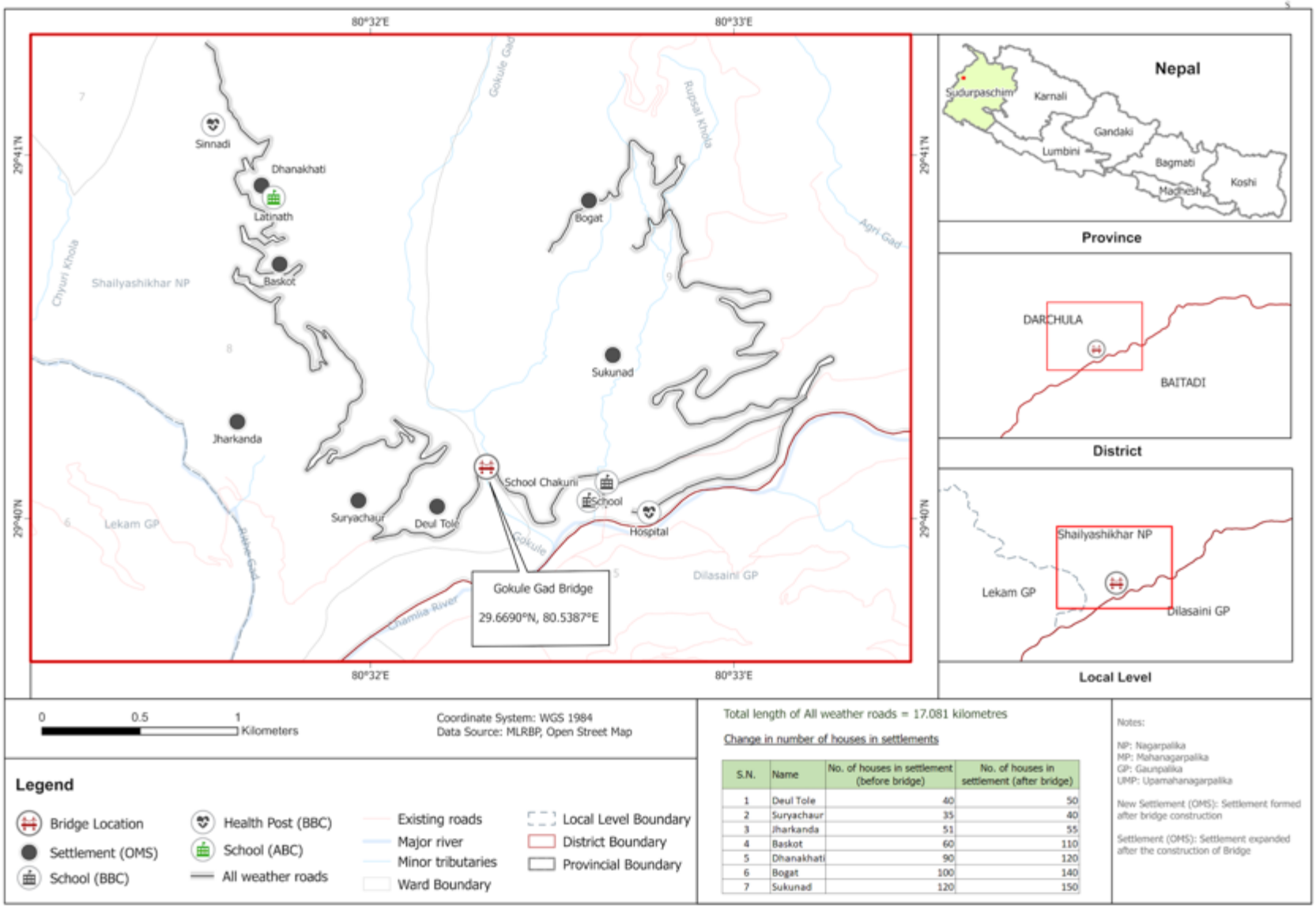
Notes:

NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika

BBC: Before Bridge Construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction

New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge

Map of Gokule Gad Bridge, Darchula



Total length of All weather roads = 17.081 kilometres

Change in number of houses in settlements

S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Deul Tole	40	50
2	Suryachaur	35	40
3	Jharkanda	51	55
4	Baskot	60	110
5	Dhanakhati	90	120
6	Bogat	100	140
7	Sukunad	120	150

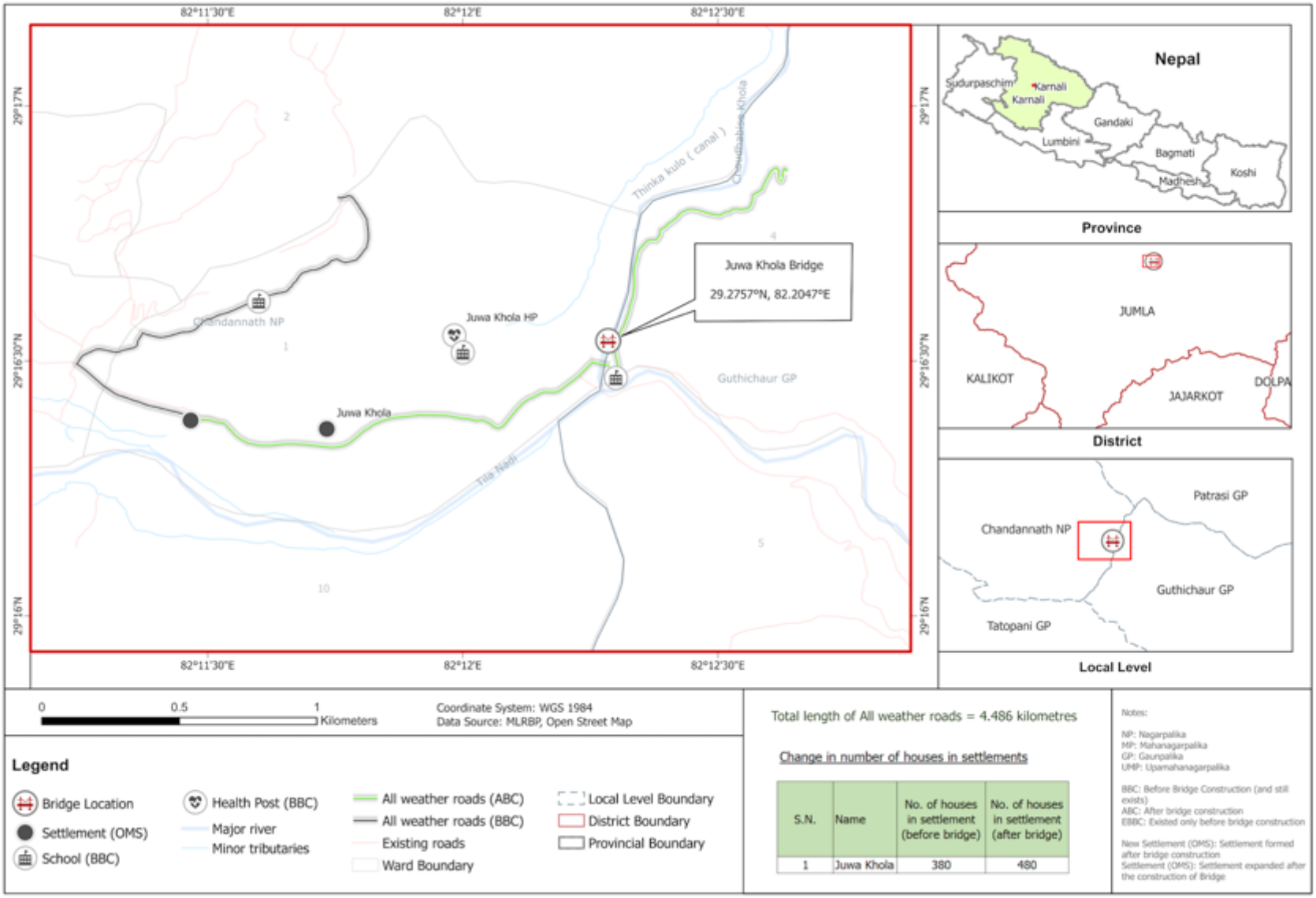
Notes:

NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika

New Settlement (OMS): Settlement formed after bridge construction

Settlement (OMS): Settlement expanded after the construction of Bridge

Map of Juwa Khola Bridge, Jumla



Total length of All weather roads = 4.486 kilometres

Change in number of houses in settlements

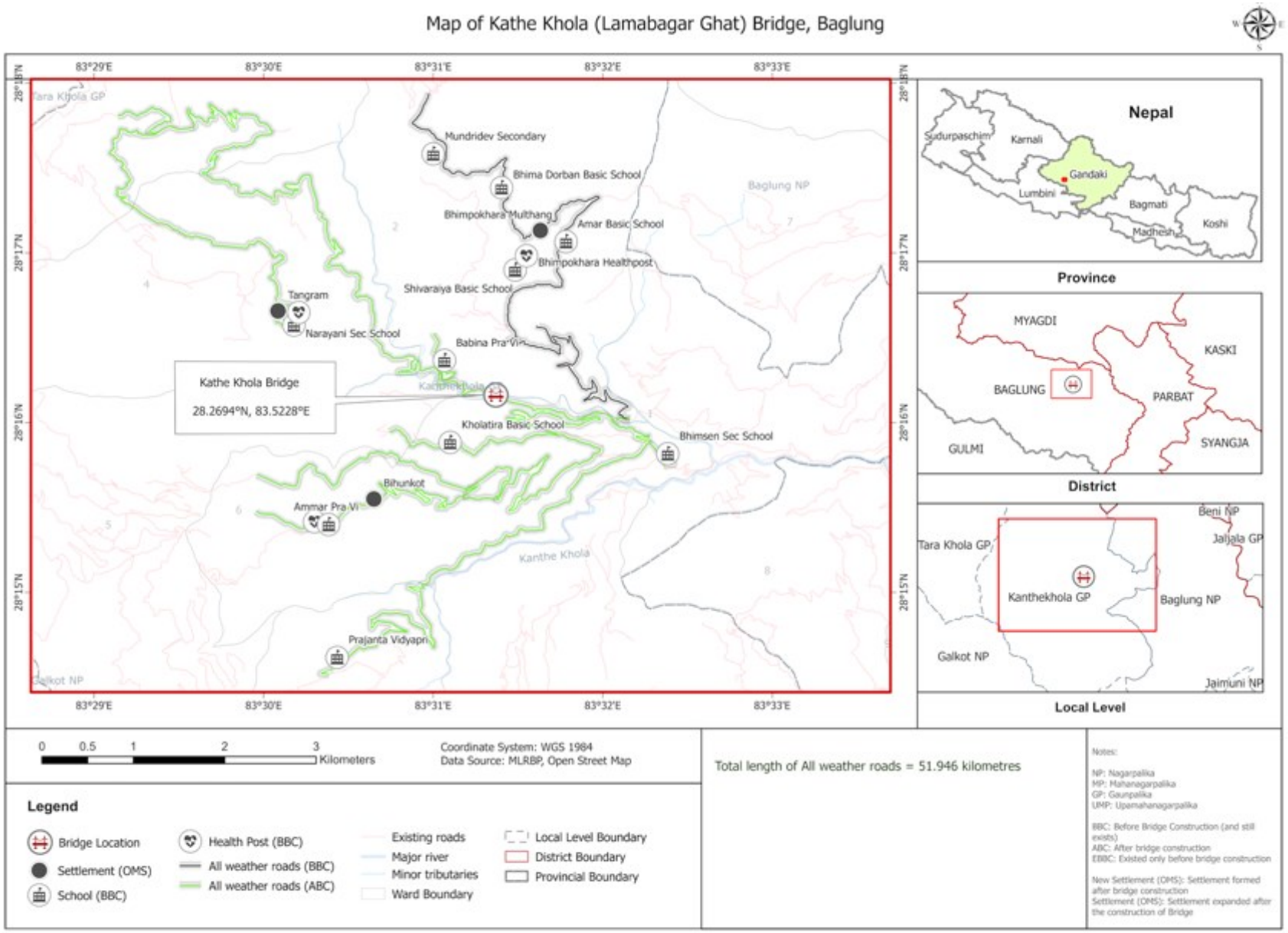
S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Juwa Khola	380	480

Notes:

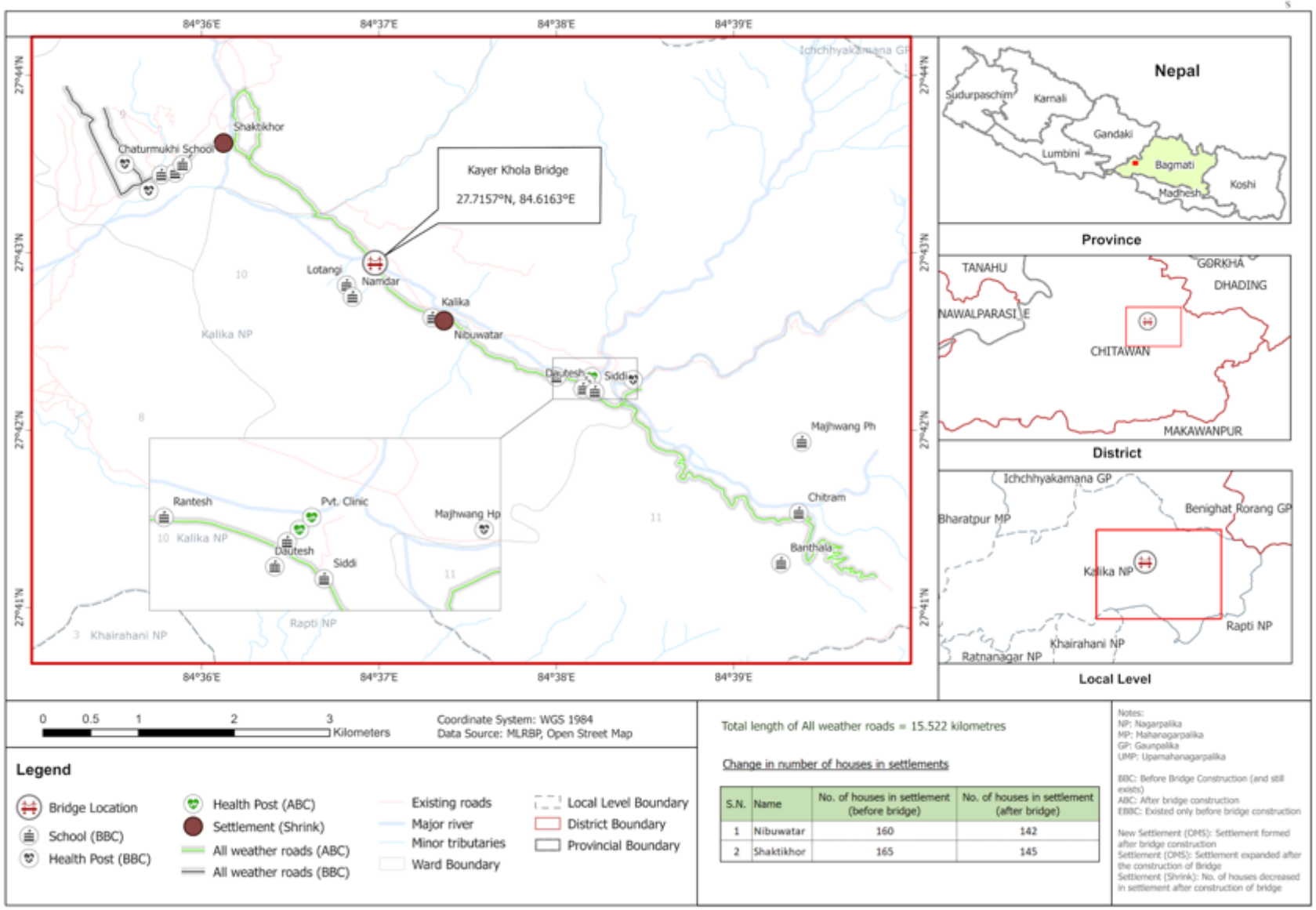
NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika

BBC: Before Bridge Construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction

New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge


Map of Kathe Khola (Lamabagar Ghat) Bridge, Baglung
83°29'E
83°30'E
83°31'E
83°32'E
83°33'E
28°18'N
28°17'N
28°16'N
28°15'N
Tara Khola GP
Mundridev Secondary
Bhima Dorban Basic School
Bhimpokhara Multhang
Amar Basic School
Bhimpokhara Healthpost
Shivaraiya Basic School
Tangram
Narayani Sec School
Babina Pra Vi
Kathe Khola Bridge
28.2694°N, 83.5228°E
Kholatira Basic School
Bhimsen Sec School
Bihunkot
Ammar Pra Vi
Kanthe Khola
Prajanta Vidyapri
Galkot NP
Baglung NP
Nepal
Sudurpaschim
Karnali
Gandaki
Lumbini
Bagmati
Madhesh
Koshi
Province
MYAGDI
KASKI
BAGLUNG
PARBAT
GULMI
SYANGJA
District
Beni NP
Jaljala GP
Tara Khola GP
Kanthekhola GP
Baglung NP
Galkot NP
Jaimuni NP
Local Level
0 0.5 1 2 3 Kilometers
Coordinate System: WGS 1984
Data Source: MLRBP, Open Street Map
Total length of All weather roads = 51.946 kilometres
Legend
Bridge Location
Settlement (OMS)
School (BBC)
Health Post (BBC)
All weather roads (BBC)
All weather roads (ABC)
Existing roads
Major river
Minor tributaries
Ward Boundary
Local Level Boundary
District Boundary
Provincial Boundary
Notes:
NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika
BBC: Before Bridge Construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction
New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge

Map of Kayer Khola Bridge, Chitwan



Total length of All weather roads = 15.522 kilometres

Change in number of houses in settlements

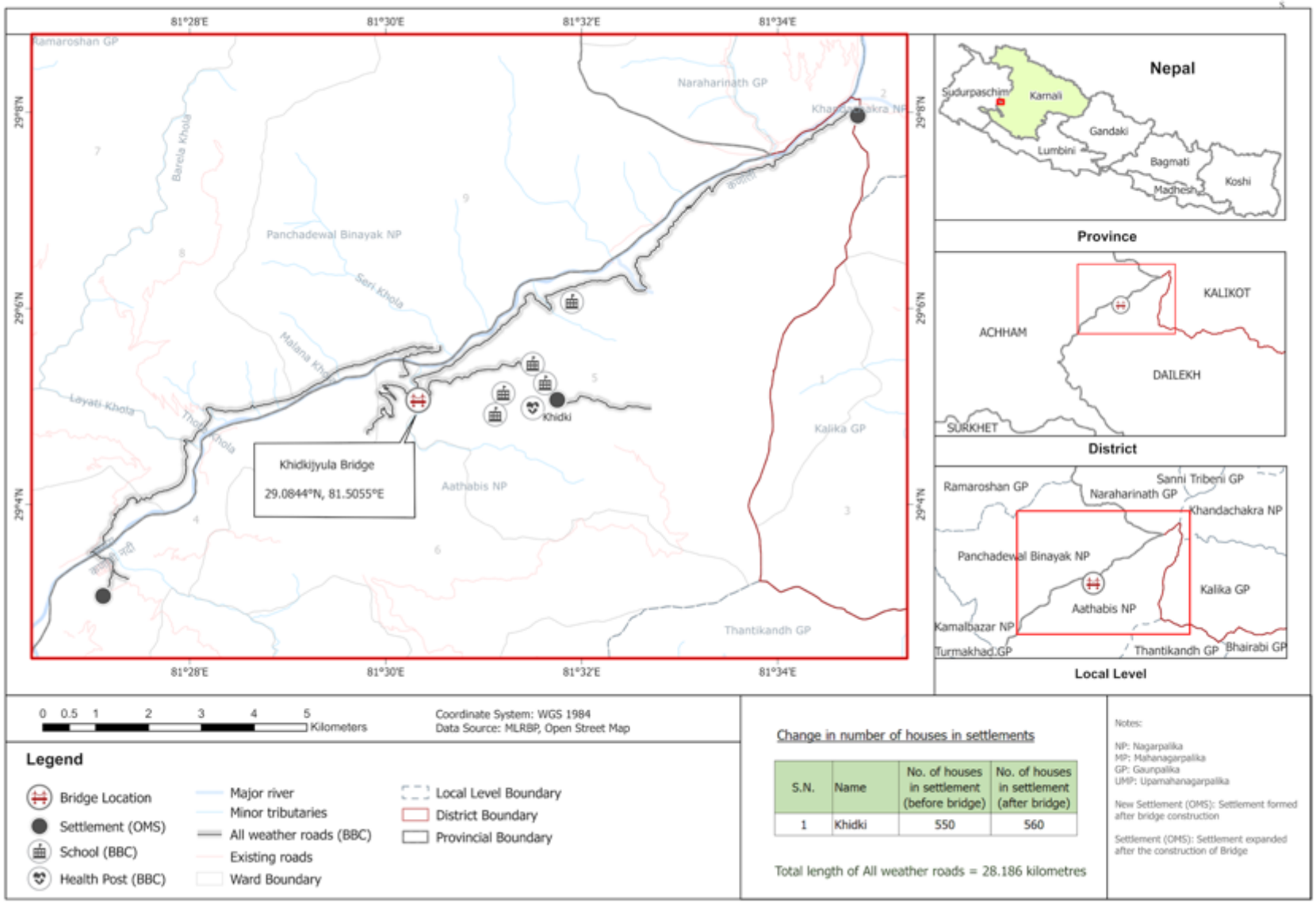
S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Nibuwatar	160	142
2	Shaktikhor	165	145

Notes:
NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika

BBC: Before Bridge Construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction

New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge
Settlement (Shrink): No. of houses decreased in settlement after construction of bridge

Map of Khidkijyula Bridge, Dailekh



Change in number of houses in settlements

S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Khidki	550	560

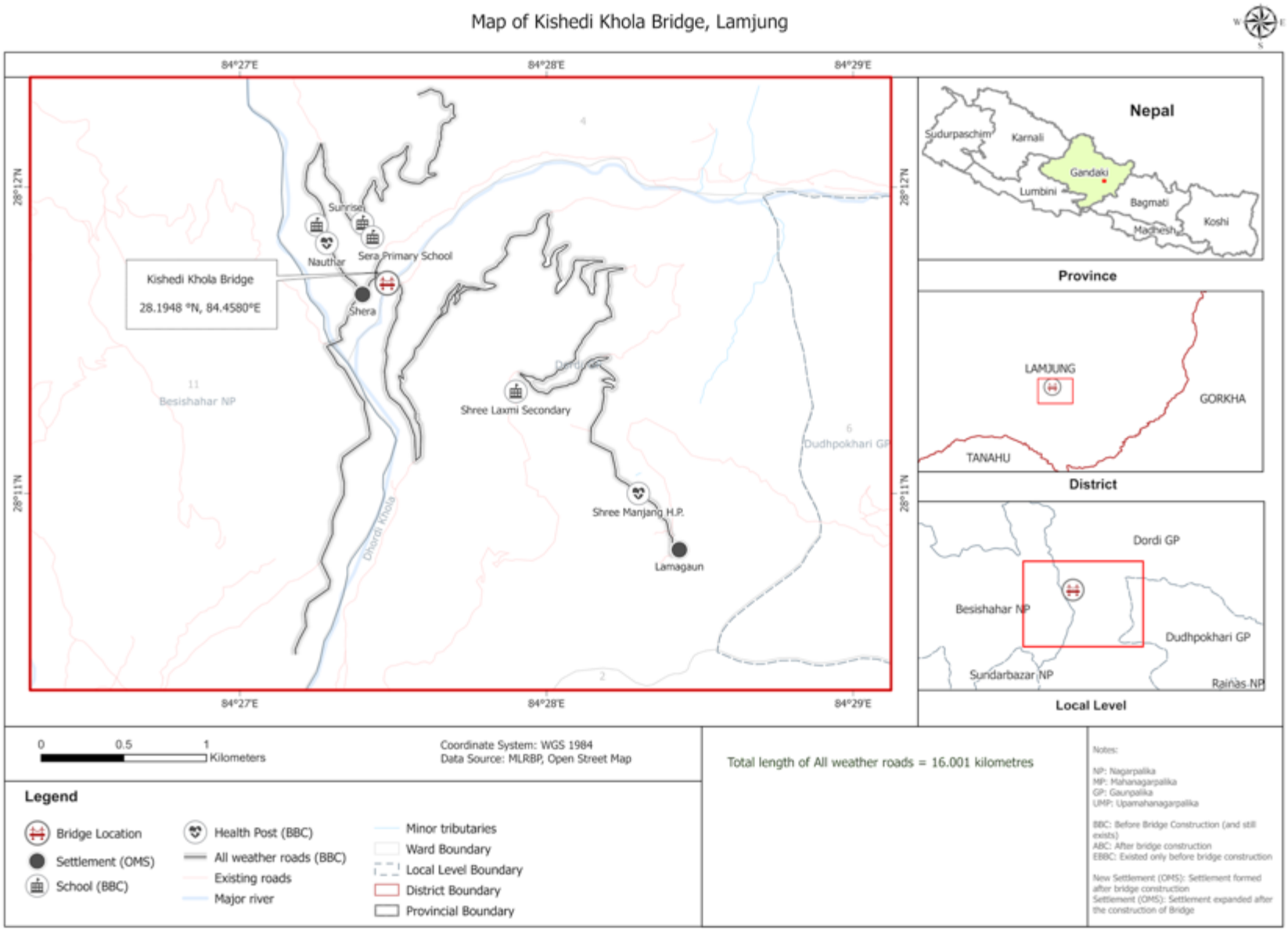
Total length of All weather roads = 28.186 kilometres

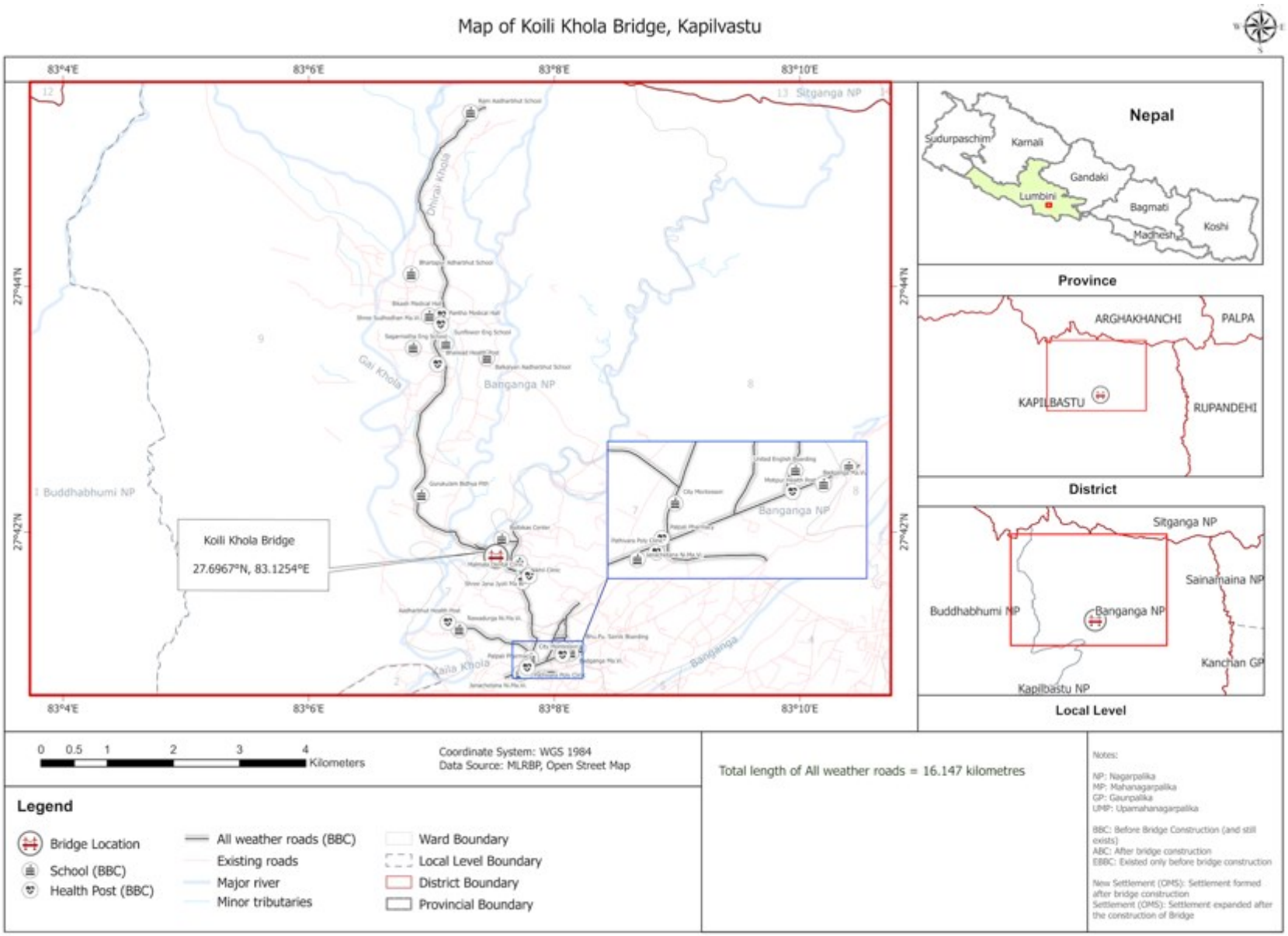
Notes:

NP: Nagarpalika
MP: Mahanagarpalika
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UMP: Upamahanagarpalika

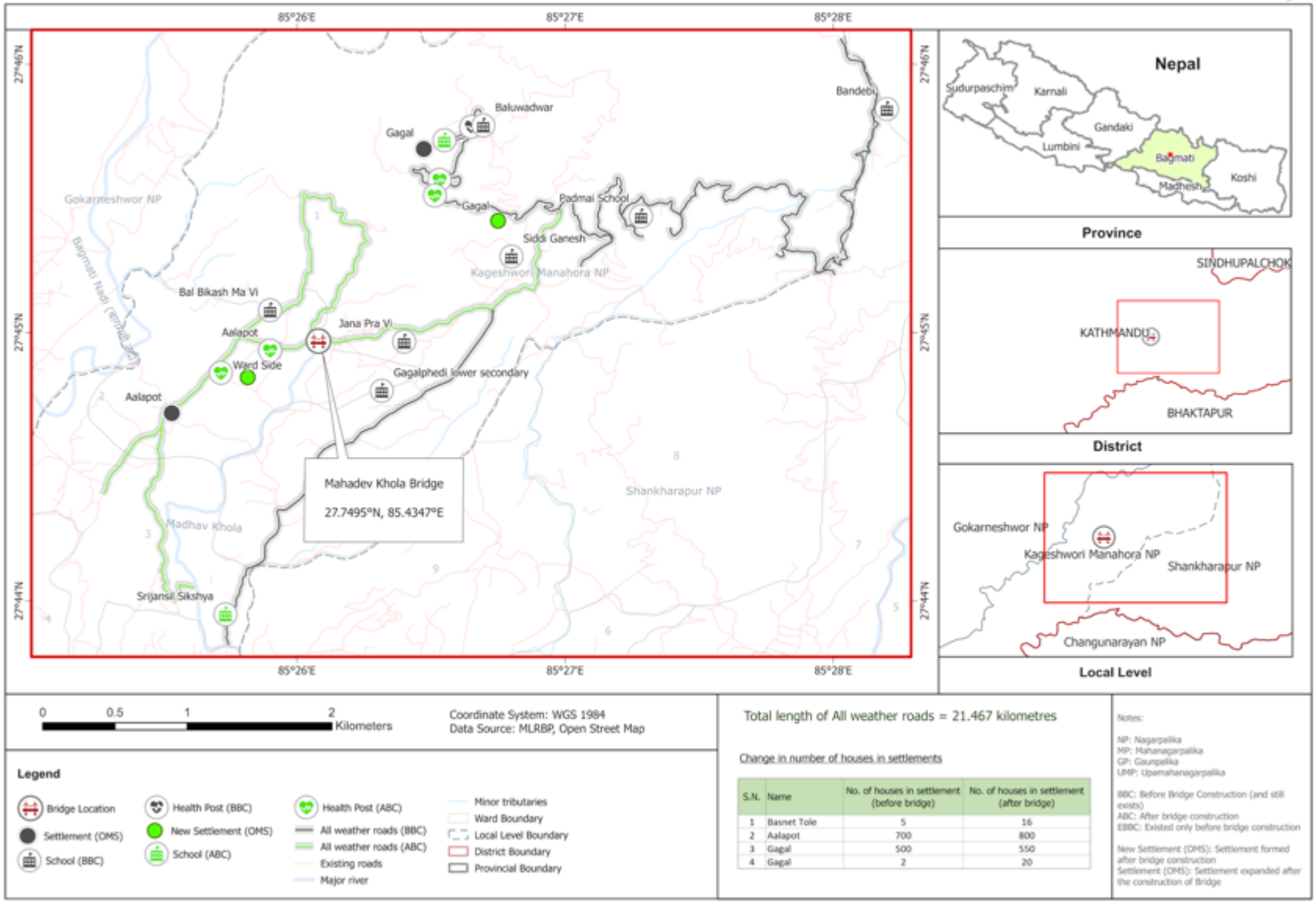
New Settlement (OMS): Settlement formed after bridge construction

Settlement (OMS): Settlement expanded after the construction of Bridge


Map of Kishedi Khola Bridge, Lamjung
84°27'E
84°28'E
84°29'E
28°12'N
28°11'N
Kishedi Khola Bridge
28.1948 °N, 84.4580°E
Sunrise
Nauthar
Sera Primary School
Shera
Shree Laxmi Secondary
Shree Manjang H.P.
Lamagaun
Besishahar NP
Dudhpokhari GP
Dhordi Khola
Nepal
Sudurpaschim
Karnali
Gandaki
Lumbini
Bagmati
Madhesh
Koshi
Province
LAMJUNG
GORKHA
TANAHU
District
Dordi GP
Besishahar NP
Dudhpokhari GP
Sundarbazar NP
Rainas NP
Local Level
0
0.5
1
Kilometers
Coordinate System: WGS 1984
Data Source: MLRBP, Open Street Map
Total length of All weather roads = 16.001 kilometres
Legend
Bridge Location
Settlement (OMS)
School (BBC)
Health Post (BBC)
All weather roads (BBC)
Existing roads
Major river
Minor tributaries
Ward Boundary
Local Level Boundary
District Boundary
Provincial Boundary
Notes:
NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika
BBC: Before Bridge Construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction
New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge


Map of Koili Khola Bridge, Kapilvastu
83°4'E
83°6'E
83°8'E
83°10'E
27°44'N
27°42'N
Sitganga NP
Banganga NP
Buddhabhumi NP
Dhirai Khola
Gai Khola
Kaila Khola
Banganga
Koili Khola Bridge
27.6967°N, 83.1254°E
Nepal
Sudurpaschim
Karnali
Gandaki
Lumbini
Bagmati
Koshi
Madhesh
Province
ARGHAKHANCHI
PALPA
KAPILBASTU
RUPANDEHI
District
Sainamaina NP
Kanchan GP
Kapilbastu NP
Local Level
0 0.5 1 2 3 4 Kilometers
Coordinate System: WGS 1984
Data Source: MLRBP, Open Street Map
Total length of All weather roads = 16.147 kilometres
Notes:
NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika
BBC: Before Bridge Construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction
New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge
Legend
Bridge Location
School (BBC)
Health Post (BBC)
All weather roads (BBC)
Existing roads
Major river
Minor tributaries
Ward Boundary
Local Level Boundary
District Boundary
Provincial Boundary

Map of Mahadev Khola Bridge, Kathmandu



Total length of All weather roads = 21.467 kilometres

Change in number of houses in settlements

S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Basnet Tole	5	16
2	Aalapot	700	800
3	Gagal	500	550
4	Gagal	2	20

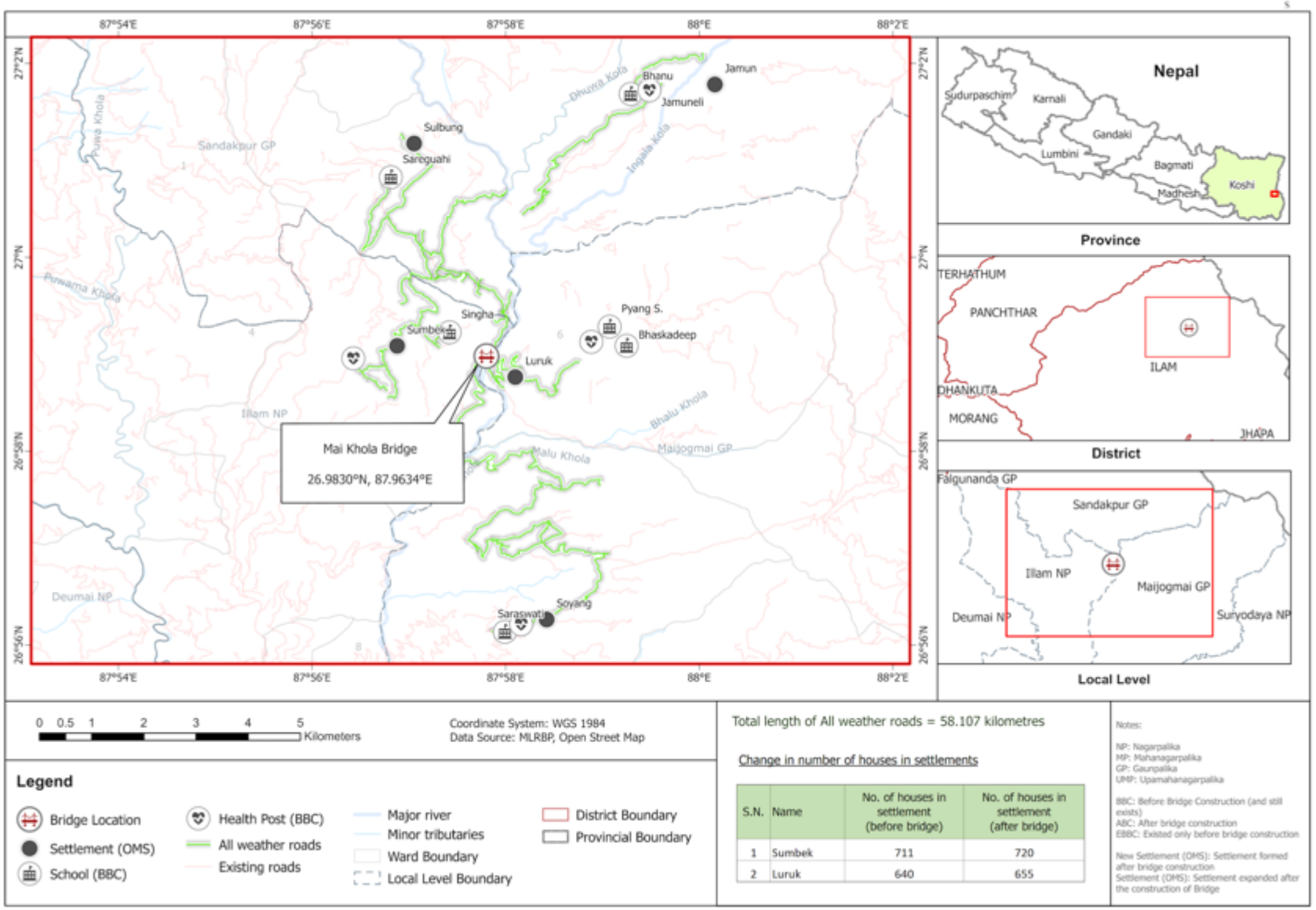
Notes:

NP: Nagarpalika
MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika

BBC: Before Bridge Construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction

New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge

Map of Mai Khola Bridge, Illam



Total length of All weather roads = 58.107 kilometres

Change in number of houses in settlements

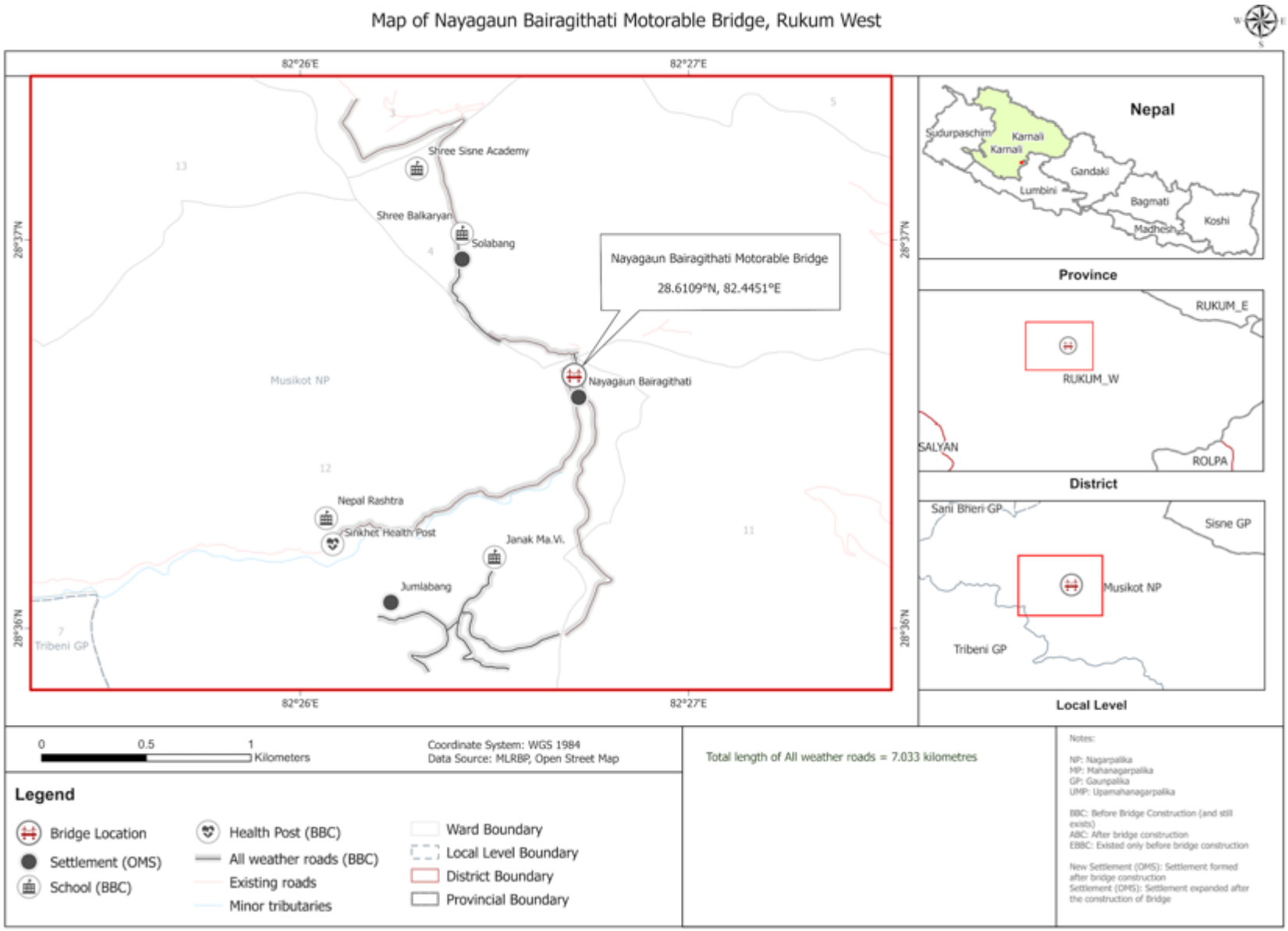
S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Sumbek	711	720
2	Luruk	640	655

Notes:

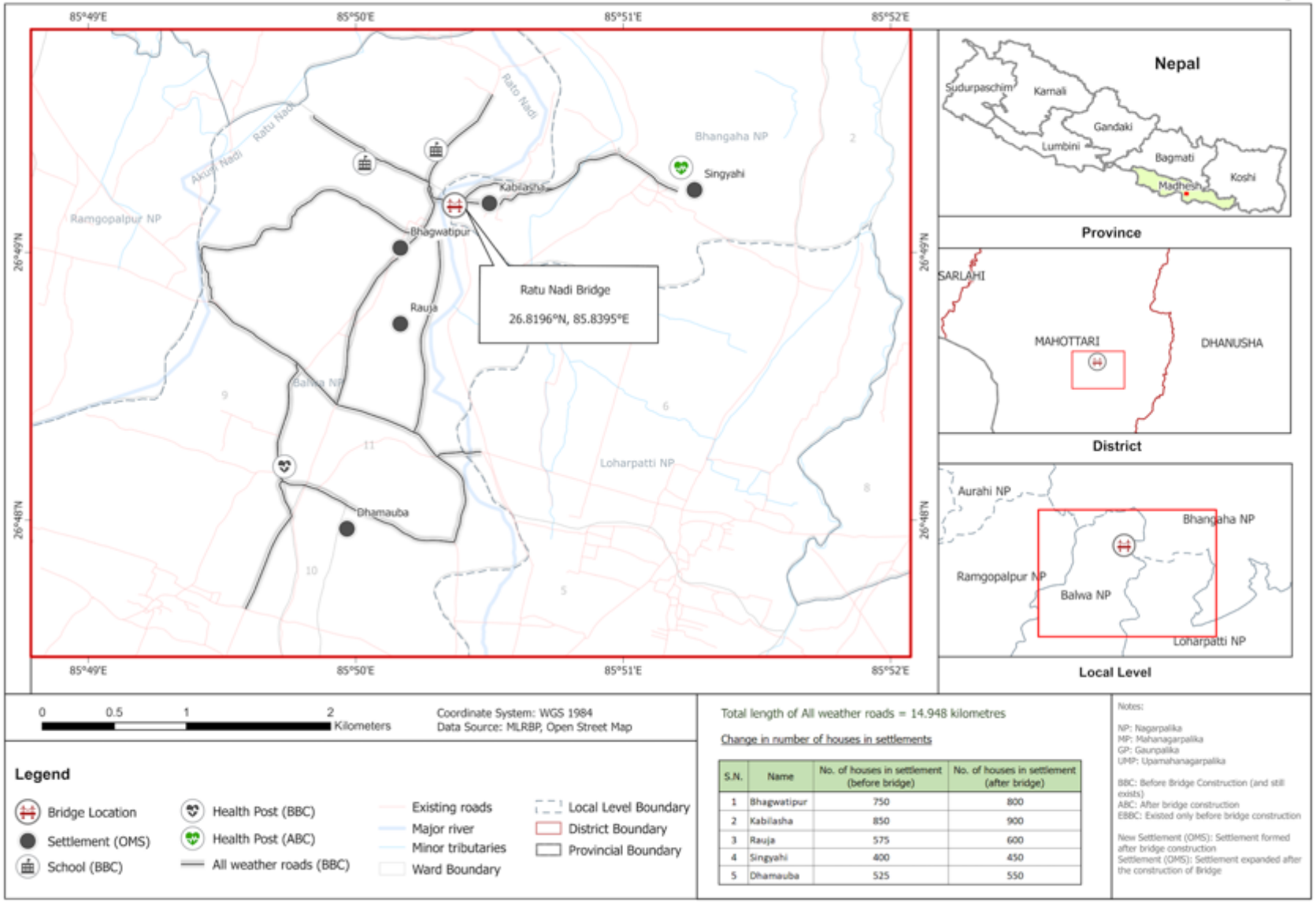
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New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge


Map of Nayagaun Bairagithati Motorable Bridge, Rukum West
82°26'E
82°27'E
28°37'N
28°36'N
Shree Sisne Academy
Shree Balkaryan
Solabang
Nayagaun Bairagithati Motorable Bridge
28.6109°N, 82.4451°E
Nayagaun Bairagithati
Musikot NP
Nepal Rashtra
Sinkhet Health Post
Janak Ma.Vi.
Jumlabang
Tribeni GP
Nepal
Sudurpaschim
Karnali
Gandaki
Lumbini
Bagmati
Madhesh
Koshi
Province
RUKUM_E
RUKUM_W
SALYAN
ROLPA
District
Sani Bheri GP
Sisne GP
Musikot NP
Tribeni GP
Local Level
0
0.5
1
Kilometers
Coordinate System: WGS 1984
Data Source: MLRBP, Open Street Map
Total length of All weather roads = 7.033 kilometres
Notes:
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New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge
Legend
Bridge Location
Settlement (OMS)
School (BBC)
Health Post (BBC)
All weather roads (BBC)
Existing roads
Minor tributaries
Ward Boundary
Local Level Boundary
District Boundary
Provincial Boundary

Map of Ratu Nadi Bridge, Mahottari



Total length of All weather roads = 14.948 kilometres

Change in number of houses in settlements

S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Bhagwatipur	750	800
2	Kabilasha	850	900
3	Rauja	575	600
4	Singyahi	400	450
5	Dhamauba	525	550

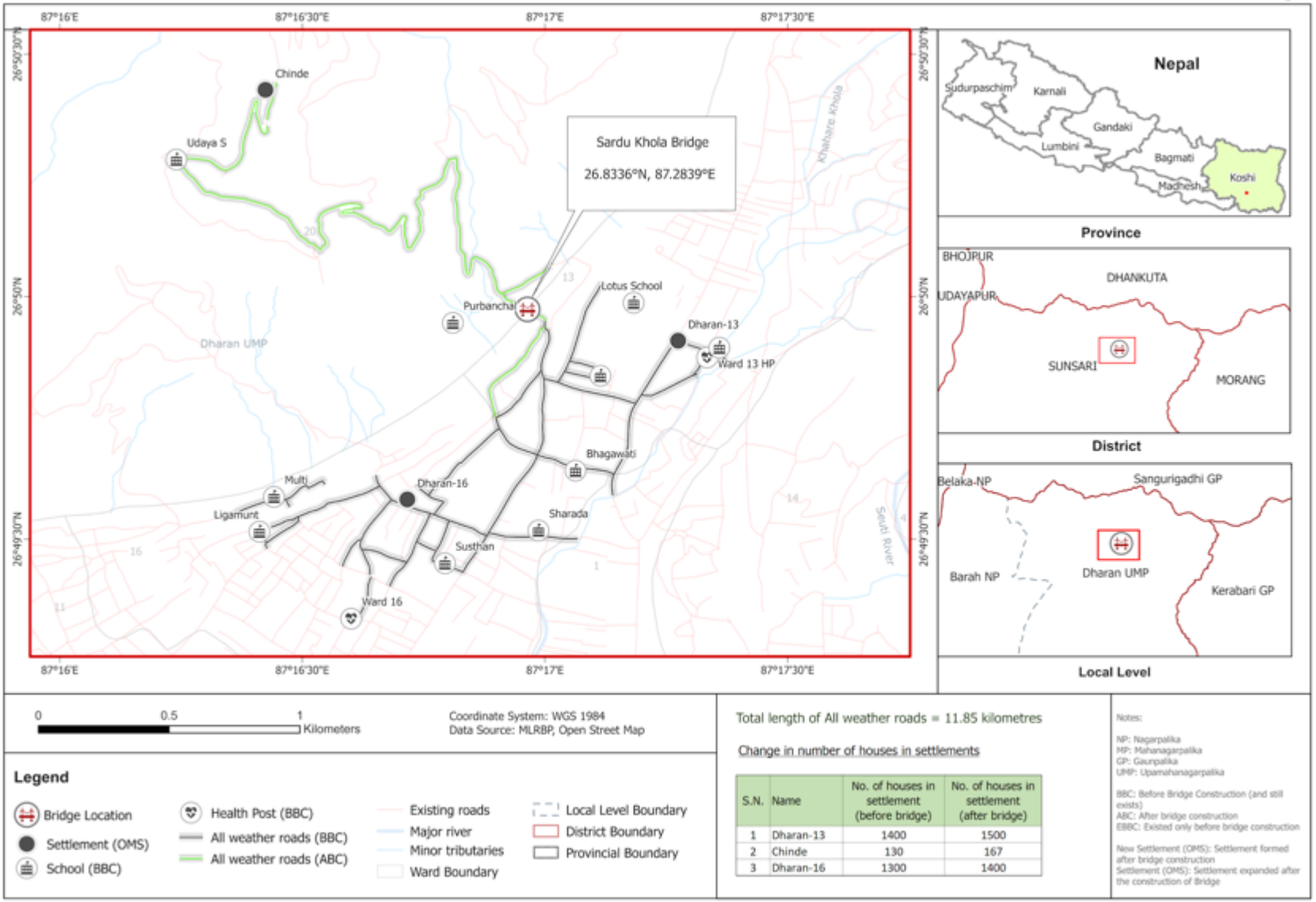
Notes:

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MP: Mahanagarpalika
GP: Gaunpalika
UMP: Upamahanagarpalika

BBC: Before Bridge Construction (and still exists)
ABC: After bridge construction
EBBC: Existed only before bridge construction

New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge

Map of Sardu Khola Bridge, Sunsari



Total length of All weather roads = 11.85 kilometres

Change in number of houses in settlements

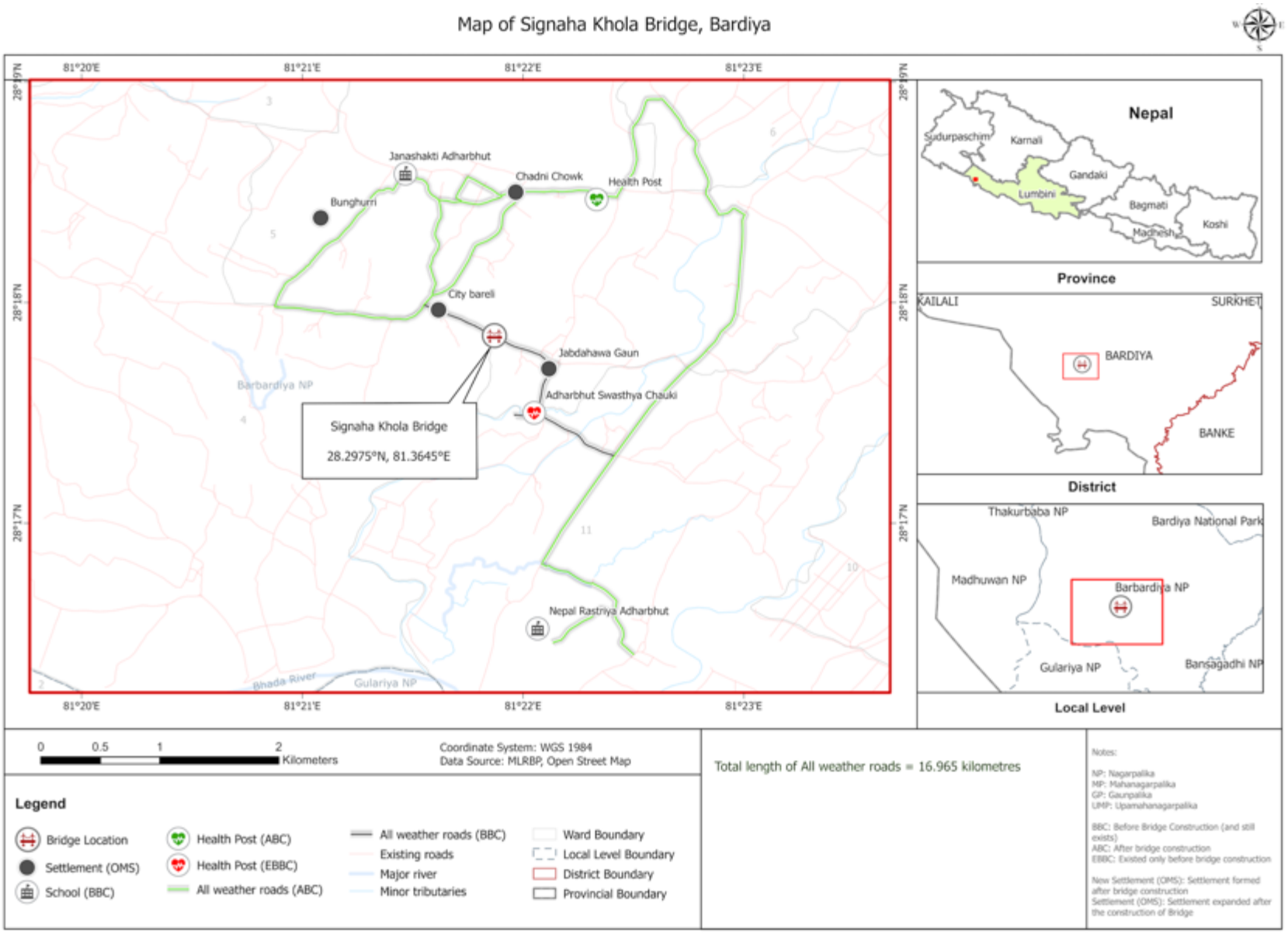
S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Dharan-13	1400	1500
2	Chinde	130	167
3	Dharan-16	1300	1400

Notes:

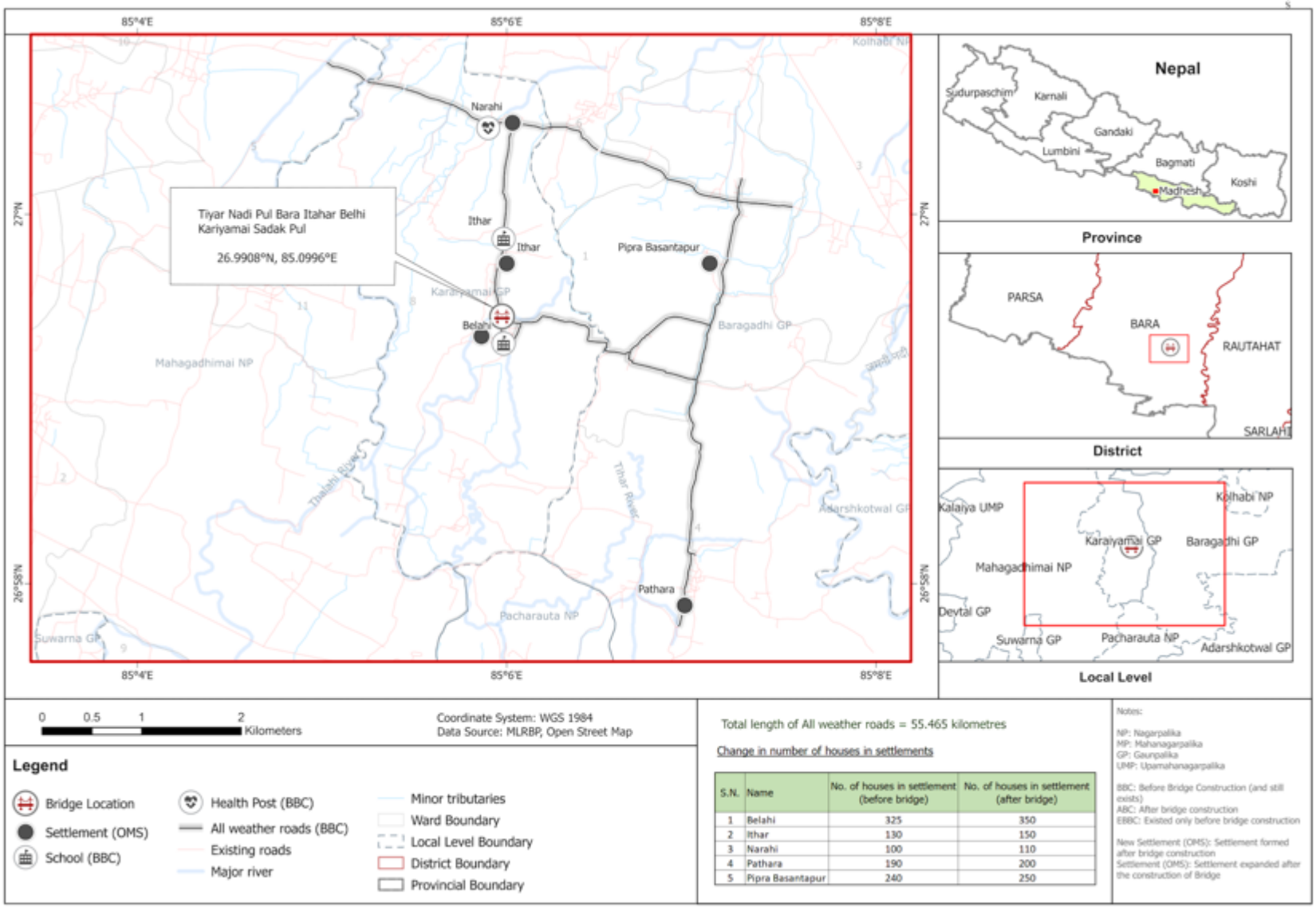
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UMP: Upamahanagarpalika

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ABC: After bridge construction
EBBC: Existed only before bridge construction

New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge


Map of Signaha Khola Bridge, Bardiya
81°20'E
81°21'E
81°22'E
81°23'E
28°19'N
28°18'N
28°17'N
Janashakti Adharbhut
Chadni Chowk
Health Post
Bunghurri
City bareli
Jabdahawa Gaun
Adharbhut Swasthya Chauki
Signaha Khola Bridge
28.2975°N, 81.3645°E
Barbardiya NP
Nepal Rastriya Adharbhut
Bhada River
Gulariya NP
Nepal
Sudurpaschim
Karnali
Gandaki
Lumbini
Bagmati
Madhesh
Koshi
Province
KAILALI
SURKHET
BARDIYA
BANKE
District
Thakurbaba NP
Bardiya National Park
Madhuwan NP
Barbardiya NP
Gulariya NP
Bansagadhi NP
Local Level
0 0.5 1 2 Kilometers
Coordinate System: WGS 1984
Data Source: MLRBP, Open Street Map
Total length of All weather roads = 16.965 kilometres
Notes:
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ABC: After bridge construction
EBBC: Existed only before bridge construction
New Settlement (OMS): Settlement formed after bridge construction
Settlement (OMS): Settlement expanded after the construction of Bridge
Legend
Bridge Location
Settlement (OMS)
School (BBC)
Health Post (ABC)
Health Post (EBBC)
All weather roads (ABC)
All weather roads (BBC)
Existing roads
Major river
Minor tributaries
Ward Boundary
Local Level Boundary
District Boundary
Provincial Boundary

Map of Tiyar Nadi Pul Bara Itahar Belhi Kariyamai Sadak Pul, Bara



Total length of All weather roads = 55.465 kilometres

Change in number of houses in settlements

S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Belahi	325	350
2	Ithar	130	150
3	Narahi	100	110
4	Pathara	190	200
5	Pipra Basantapur	240	250

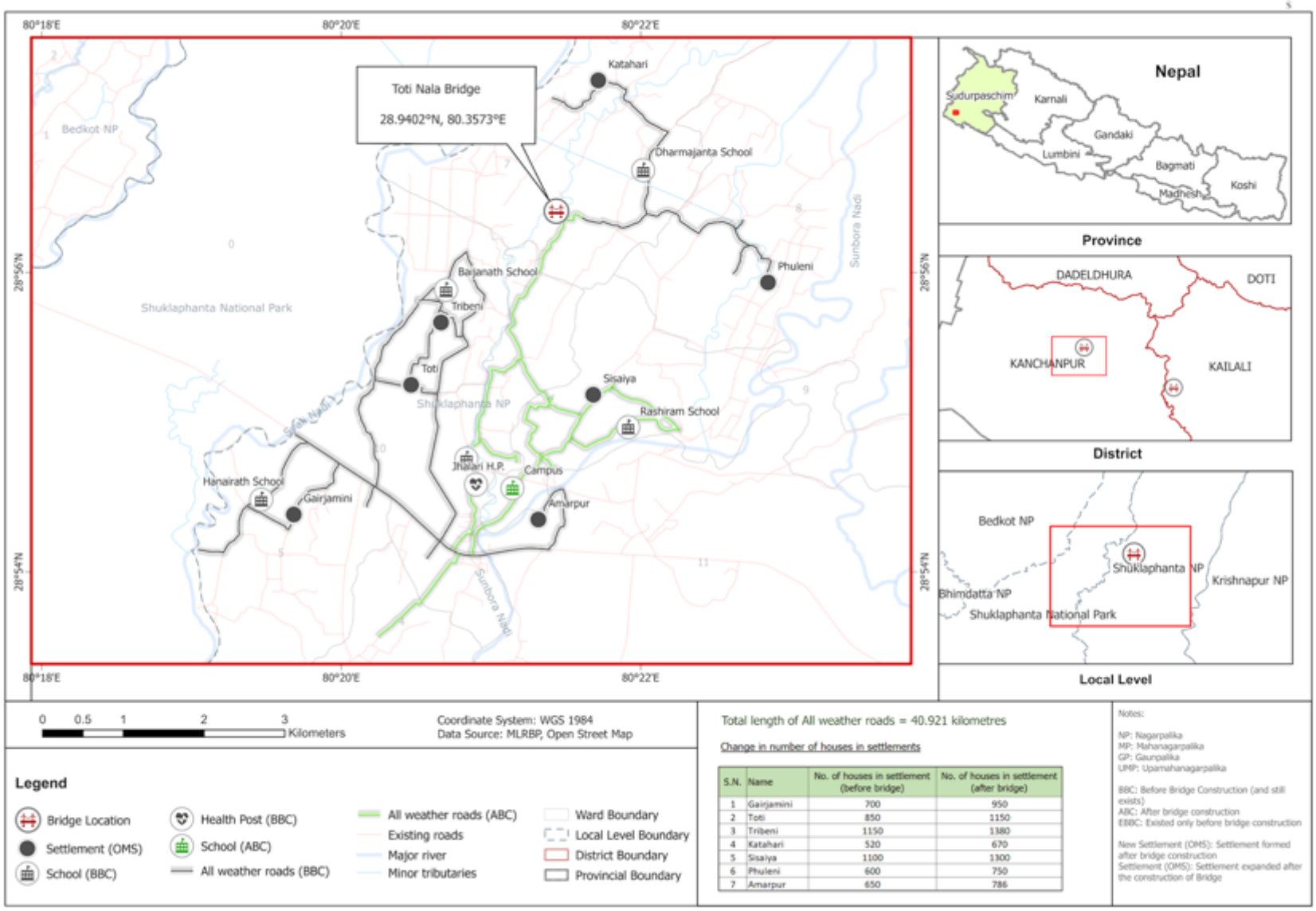
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Settlement (OMS): Settlement expanded after the construction of Bridge

Map of Toti Nala Bridge, Kanchanpur



Total length of All weather roads = 40.921 kilometres

Change in number of houses in settlements

S.N.	Name	No. of houses in settlement (before bridge)	No. of houses in settlement (after bridge)
1	Gairjamini	700	950
2	Toti	850	1150
3	Tribeni	1150	1380
4	Katahari	520	670
5	Sisaiya	1100	1300
6	Phuleni	600	750
7	Amarpur	650	786

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Settlement (OMS): Settlement expanded after the construction of Bridge

Map of Wardi Khola Bridge, Kaski

