Disaster Rick Reduction and Livelihood Restoration for Earthquake-Affected communities Project (RRP NEP 49202)

Rapid Assessment of Model Schools in 14 Districts

Vol I: Summary of Assessment

Project Number: 49202
Grant Number: JFPR 9180

Japan Fund for Poverty Reduction

Nepal: Disaster Risk Reduction and Livelihood Restoration for Earthquake-Affected Communities Project

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ABBREVIATIONS

DRRLREACP	=	Disaster Risk Reduction and Livelihood Restoration for Earthquake Affected Communities Project
ADB	=	Asian Development Bank
CLPIU	=	Central Level Project Implementation Unit
CTEVT	=	Council for Technical Education and Vocational Training
DIU	=	District Implementation Unit
DOE	=	Department of Education
DPD	=	Deputy Project Director
DUDBC	=	Department of Urban Development and Building Construction
DEO	=	District Education Office
DSC	=	Design and Supervision Consultant
EA	=	Executing Agency
EEAP	=	Earthquake Emergency Assistance Project
ECD	=	Early Childhood Development
GESI	=	Gender Equality and Social Inclusion
GON	=	Government of Nepal
ICT	=	Information and Communication Technology
JFPR	=	Japan Fund for Poverty Reduction
LB	=	Load Bearing (Structure)
MOE	=	Ministry of Education
MOF	=	Ministry of Finance
NRM	=	Nepal Residence Mission
NRA	=	National Reconstruction Authority
NTC	=	Nepal Telecom Company
NBC	=	Nepal Building Code
PAM	=	Project Administration Manual
PD	=	Project Director
SF	=	Steel Frame (Structure)
SFC	=	Small Farmers Cooperative
SFDB	=	Small Farmers Development Bank
TLC	=	Temporary Learning Centre
SMC	=	School Management Committee
RC	=	Reinforced Concrete (Structure)
R&R	=	Recovery and Reconstruction
TOR	=	Terms of Reference
USD	=	United States Dollar
VAT	=	Value Added Tax
VDC	=	Village Development Committee

ACKNOWLEDGMENT

We would like to express our heartfelt gratitude towards ADB and CLPIU (MOE) for providing us an opportunity to be the part of this reconstruction project. We would like to appreciate the guidance and support provided by Dr. Bal Bahadur Parajuli (ADB NRM) throughout the project along with extended courtesy to Imanarayan Shrestha (PD, CLPIU) and Dilip Shekhar Shrestha (DPD, CLPIU) for creating environment to carry out the project and providing necessary supports. Besides, we would like to thank teachers, principals, school management committees and other stakeholders who have directly or indirectly helped in completion of this assessment work.

Assessment Team.

Rabindra Adhikari, Structural Engineer/Team Leader
Poonam Amatya, Architect

I. PROJECT DESCRIPTION

A. Background

1. The Disaster Risk Reduction and Livelihood Restoration for Earthquake Affected Communities Project (DRRLREACP) will support the Government of Nepal (GoN) to accelerate recovery and reconstruction following the devastating earthquake on 25 April 2015 and major aftershock on 12 May 2015. The Project will support model disaster resilient schools, microcredit for livelihood restoration and disaster risk reduction capacity building. It will support the GoN to accelerate recovery and reconstruction following the devastating earthquake. Total cost of the project is 17.80 Million USD and ADB (JFPR Grant 9180) is 15.00 Million USD and the project will be closed by 31 March 2019 (PAM, 2015)

B. Impact and Outcome

2. The impact of the project will be: (i) improved equity and enhanced social inclusion; and (ii) improved disaster preparedness and resilience of earthquake-affected communities. The outcome will be livelihood and schooling in poorer and more severely earthquake-affected communities restored with better disaster resilience. (PAM, 2015)

C. Output

3. **Output 1: Schools in poorer and severely affected districts constructed or rebuilt as model disaster resilient school.** This will rebuild or retrofit at least 14 model schools (e.g., grades 1-12 senior secondary schools) with disaster resilient standards in line with the government's school reconstruction plans and to be equipped with ICT equipment, science laboratories and improved learning space, furniture, and amenities. The component will be implemented using the same implementation arrangements of the Earthquake Emergency Assistance Project (EEAP). (PAM, 2015)

4. There shall be no overlaps between EEAP and the Project locations, while covering the 14 most affected districts. The output will have a strong linkage to disaster risk reduction capacity building (Output 3) to make the model schools serve as local learning centers for disaster risk reduction. (PAM, 2015)

5. **Output 2: Microcredit facility for livelihood restoration provided to small farmer cooperative (SFC) members.** This will provide microcredit to approximately 12,500 affected households to restore damages from the earthquake. The microcredit will have flexible purposes to meet various needs of affected households and could finance (i) reviving microenterprises; (ii) restoring livestock, agricultural activities, and other means of livelihood; and (iii) essential expenses during the recovering period such as food. Microcredit will be channeled through the networks of small farmers cooperatives (SFCs) affiliated under Small Farmers Development Bank (SFDB). SFCs are member-owned and member-governed cooperatives with small and poor farmers as members. SFDB has 85 SFCs in the affected districts with the total 150,000 member households. (PAM, 2015)

6. Using the grant proceeds, the government provides a loan to SFDB. SFDB onlends the loan to SFCs and SFCs relend to its members. Microcredit will be provided in the same areas for the model schools. SFC members' networks will also be utilized to provide training on disaster-resilient construction, and community-based disaster risk management (Output 3).

7. Output 3: Disaster risk management capacity of the affected communities strengthened. The component will conduct training programs on disaster resilient construction and disaster risk management. The disaster resilient construction training will adopt the training of trainer methodologies in which trained masons and carpenters will conduct community level training. (PAM, 2015)

8. The Project will also support disaster risk management trainings for the settlements associated with the concerned community schools, including maintenance of school buildings, as potential evacuation centers in the event of disasters. The Project will prepare community based disaster risk management plans for the individual school areas, and train teachers, education administrators, school management committee members and village development committee members, selected at the local level. The base cost of the output 1, 2 and 3 are 8.1, 7.0 and 1.9 Million USD, respectively. Similarly, output 2 and output 3 will be achieved with different scope of work. Out of $17.8M budget, about $8.1M has been allocated for Model Disaster Resilient Schools (output 1). (PAM, 2015)

II. SCOPE AND METHODOLOGY

A. Scope of this Assessment

This rapid assessment work has been carried out to meet some specific objectives as follows:

- To confirm the model school selection criteria and EEAP safeguards;
- To perform rapid assessment of school site in terms of topography, vulnerability to natural disasters, need of further investigations like soil test, geo-technical investigations and other study;
- To perform rapid assessment of existing infrastructures in terms of approximate dimensions, earthquake damage, seismic vulnerability, and recommend intervention;
- To perform rapid Environmental Assessment under the ADB safeguard checklist;
- To perform facility gap analysis and suggest upgrading of existing infrastructure, adding the devoid facility, improving water-supply, sanitary and power system;
- To prepare tentative master plan with preliminary architectural plan; and
- To perform preliminary cost estimation for proposed facilities.

A total of 45 working days had been allocated for a team of a structural engineer and an architect for the document revision, field visits, interaction, report preparation and presentation.

B. Methodology

9. This assessment has been carried out by a team of a structural engineer and an architect supported by other personnel from CLPIU, DIU, DEO and the selected schools. Before the fieldwork, various document study and literature review was done to clarify the definition of a model school. Based on government standards and various international standards, a space requirement and facility requirement documents have been finalized in co-ordination with CLPIU.

10. After the literature review, field study had been carried out for all 13 selected schools to be upgraded as model school under JFPR-9180 project. A visual inspection of site and the infrastructure assisted with simple measurements had been done by the team as a preliminary investigation, as a part of the project.

11. At each school, the team conducted meeting with teacher representatives, SMC representatives, guardian representative and other stake-holders. They were informed about the status of existing structures, model school concept and discussion was done regarding essential infrastructures required for the school, specific requirements of school, social and cultural impacts, and mandatory considerations for design and construction activity in the school.

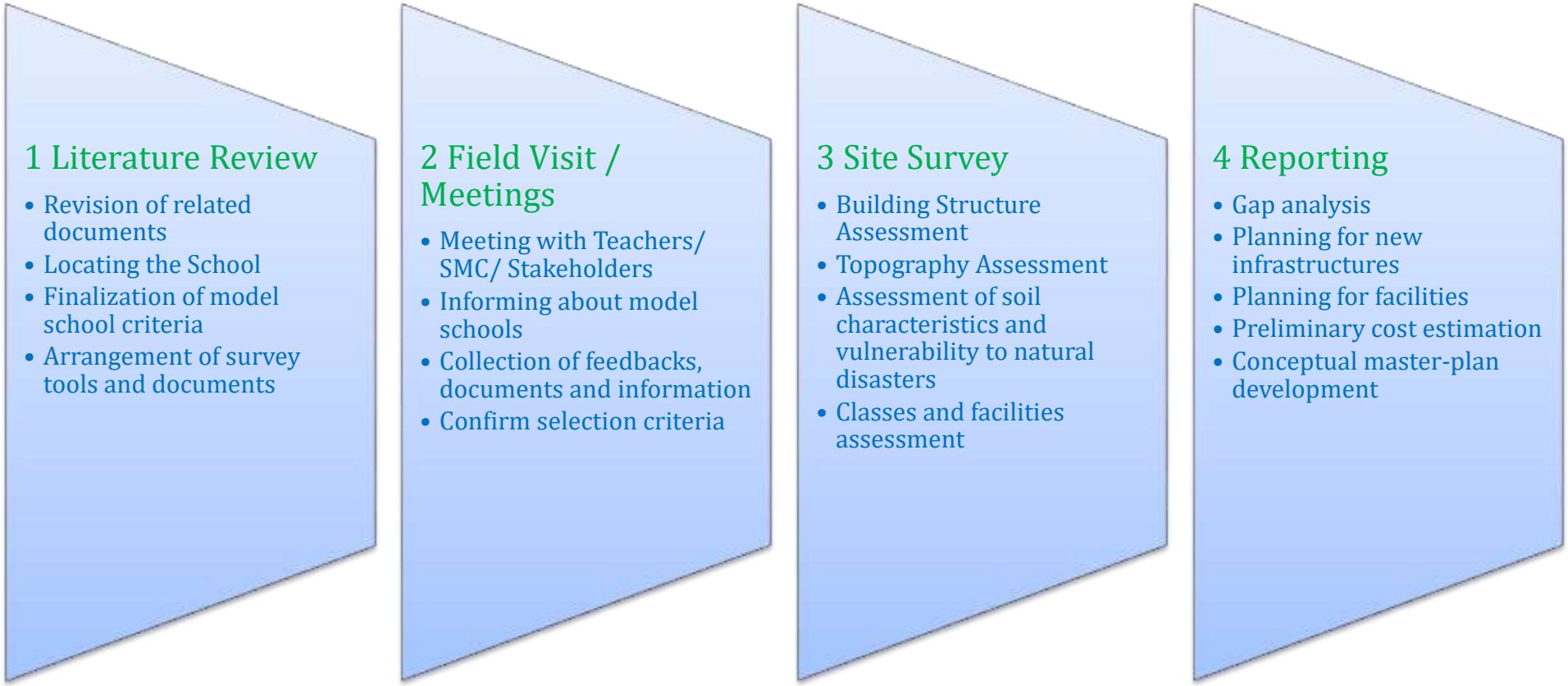


Figure 1: Methodology of Assessment Work

III. MODEL SCHOOL REQUIREMENTS

A. Model School Description

12. Ideally a model school shall have i) good academic learning environment with modern pedagogical facility, ii) adequate infrastructure needed for conducting the classes, iii) disaster resilient and environment friendly structures and iv) good management and steering committee.

B. Infrastructures in Model School

13. As per draft design guidelines for developing model schools in Nepal by CLPIU, MOE, following facilities are prioritized in the model schools:

1. Classrooms (ECD-12 grade) with modern ICT facilities with three faculties (Science, Management and Arts)
2. Labs – Science, Computer and Arts (Drawing, Dance, Music etc.)
3. Library with e-learning
4. Administrative – Principal Room, Staff room, Admin, Accounts, Meeting room, Counseling
5. Toilets with changing rooms, Differently abled friendly
6. Canteen/Cafeteria
7. Auditorium
8. Hostel
9. Playground
10. Garden
11. Parking
12. Boundary wall
13. Water and Sanitation
14. Electricity and Internet
15. Renewable energy

C. Related guidelines

14. A draft document for “Design guidelines for developing model schools in Nepal” has been prepared by CLPIU, MOE. It has recommended the required facilities and considerations necessary in design of model schools. The recommended infrastructures and the gap-assessment are based on this document while prioritizing to use the existing structures as far as possible by compromising some standard to a small extent in some cases.

IV. SELECTED MODEL SCHOOLS

A. Selection Procedure

15. The Ministry of Education has done the final selection of the schools. The procedure involved the following steps:

- ❖ MOE provided the selection criteria to DOE
- ❖ DOE published public notice for application from the school
- ❖ DEO organized a meeting of principals from all higher-secondary schools in the district
- ❖ Interested schools applied for the selection by submitting the letter and required documents to DEO.
- ❖ Initial evaluation (short listing) was done by DEO and forwarded to DOE.
- ❖ DOE performed the field-verification of the short-listed schools
- ❖ DOE forward the list of eligible school to MOE
- ❖ MOE did the final selection of school, one from each district under the project.

B. Selection Criteria

16. The selection school was done in two stages. First stage involved verification for minimum requirement of the school to be short-listed for the evaluation, while the second stage involves the evaluation of the short-listed schools. The details of minimum requirements and basis of evaluation for the selection are explained in the following sections.

17. The four minimum requirements of applicant school to be short-listed for the evaluation for the selection for upgrade to model school are:

- ❖ Must be running higher secondary education
- ❖ Have sufficient land in the name of school (minimum of 2 Bigha for school in Terai region and 10 Ropani for school in hilly or mountainous region)
- ❖ Shall be in safe location in relation to natural disasters
- ❖ Written commitment from the school SMC to upgrade to Model school and written commitment from local authority regarding its coordination and support for upgrading to Model school and running of the school.

18. For the evaluation of the school, a document "*नमूना बिद्यालय छनौटका आधारहरु ०७३*" (Basis of selection for Model Schools) has been prepared by MOE. As per the document, following indicators were evaluated to allocate a score to competent school for the selection.

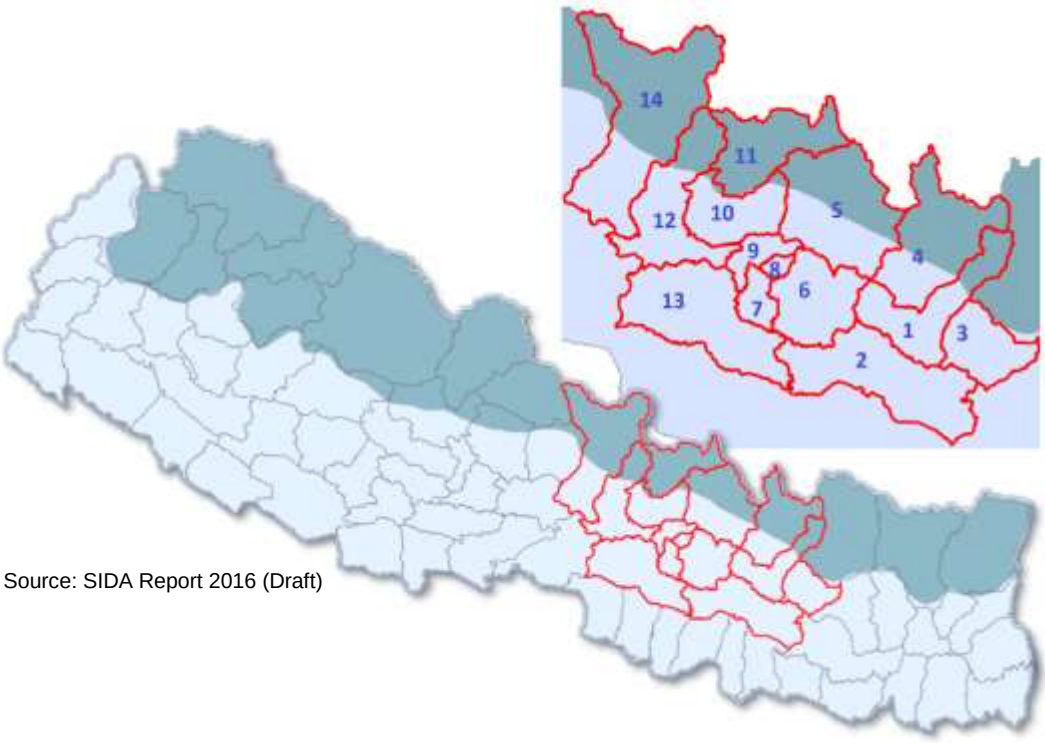
- ❖ Subjects offered in class 11 and 12 (20 marks)
- ❖ Total area of the available land (20 marks)
- ❖ Ratio of students in different grade in relation to district-average (15 marks)
- ❖ Accessibility and catchment of the school (20 marks)
- ❖ Student participation in Past SLC and results (15 marks)
- ❖ Availability of electricity and internet in the community near school (10 marks)

C. Selected Schools

19. The list of selected schools to be upgraded as Model schools under JFPR-9180 project are as follows:

1. Sharada Secondary School, Those, Ramechhap
2. Kamala Secondary School, Hatpate, Sindhuli
3. Rumjatar Secondary School, Rumjatar, Okhaldhunga
4. Shree Hanumanteshwor Secondary School, Kabre, Dolakha
5. Shree Bagh Bhairab Secondary School, Thokarpa, Sindhupalchowk
6. Shree Prava Secondary School, Kattikedeurali, Kavre
7. Shree Padma Secondary School, Bhaktapur
8. Janasewa Secondary School, Panga, Kathmandu
9. Tribhuwan Trishuli Secondary School, Trishuli, Nuwakot
10. Shree Kalika Himalayan Secondary School, Dhaibung, Rasuwa
11. Nilkantha Secondary School, Dhading-besi, Dhading
12. Janapriya Secondary School, Hatiya, Makwanpur
13. Mahendra Secondary School, Kundurtar, Gorkha

20. The project districts are shown in Figure 2. Location of the selected schools in satellite image is shown in Figure 3 while the list of selected schools with its GPS location is shown in Table IV-1.



Source: SIDA Report 2016 (Draft)

Figure 2 Most affected districts due to April 25, 2015 Earthquake

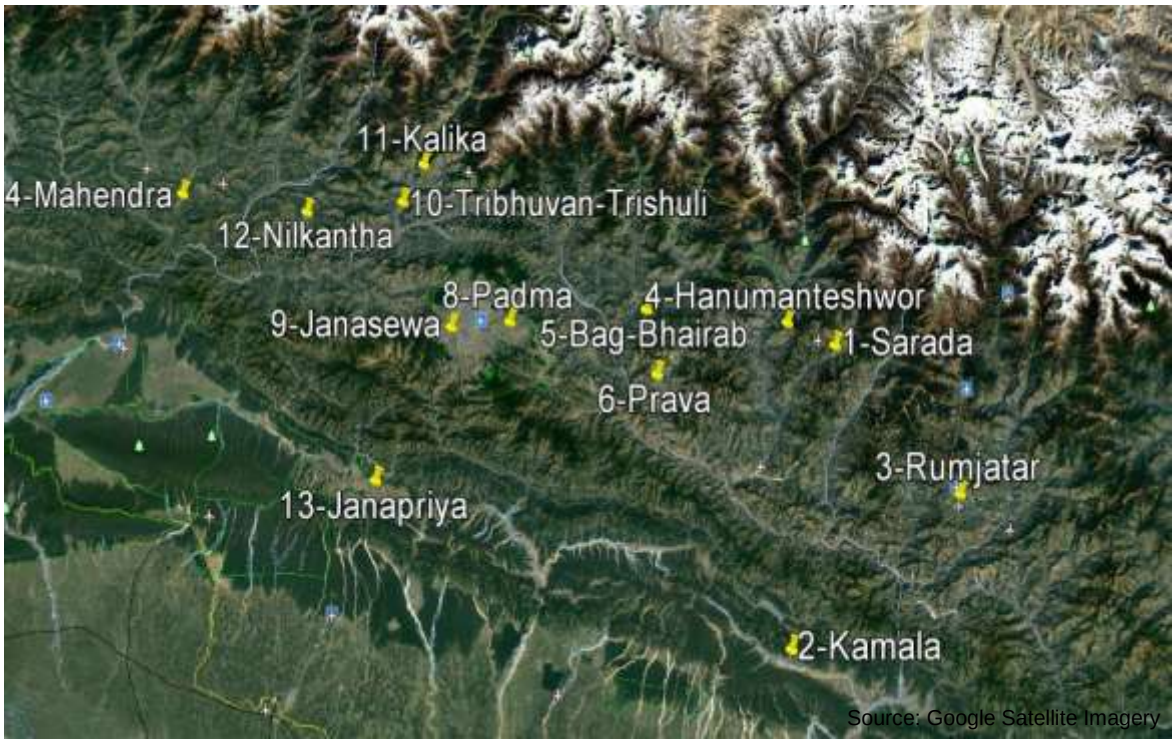


Figure 3: Location of selected schools in Google - satellite image

Table IV-1: List of selected school for JFPR-9180 Model schools

(GPS Source: Field Measurement)

Sn	District	School Name	GPS (Lat Long)
1	Ramechhap	Shree **Sharada** Secondary School	27.5959, 86.263
2	Sindhuli	**Kamala** Madhyamik Vidhyalaya	27.0399, 86.099
3	Okhaldhunga	**Rumjatar** Secondary School	27.303, 86.547
4	Dolakha	Shree **Hanumanteshwor** Ma Vi	27.645, 86.144
5	Sindhupalchowk	Shree **Bagh Bhairab** Ma Vi	27.684, 85.782
6	Kavre	**Shree Prava** Secondary School	27.557, 85.802
7	Lalitpur	Not Selected	
8	Bhaktapur	**Padma** Secondary School	27.673, 85.427
9	Kathmandu	**Janasewa** Secondary School	27.668, 85.275
10	Nuwakot	**Tribhuwan** Trishuli Ma Vi	27.923, 85.15
11	Rasuwa	Shree **Kalika** Himalaya Ma Vi	27.998, 85.206
12	Dhading	**Nilkantha** Madhyamik Vidhyalaya	27.912, 84.895
13	Makwanpur	**Janapriya** Secondary School	27.382, 85.080
14	Gorkha	Shree **Mahendra** Ma Vi	27.961, 84.56

V. ENVIRONMENTAL ASSESSMENT

Environmental study is a very important aspect of any activity. Due consideration is required from very initial phase of the project formulation to counter the negative environmental impacts of the project and the subsequent activities. During current field assessment, physical, biological and socio-cultural facets of environmental aspects were focused and explained in the following sections.

A. Physical Impact

21. There are no adverse effects on the surrounding due to the new construction. However, appropriate location of quarry and disposal is required to be identified in advance.

B. Biological Impact

22. There is no encroachment on the precious ecosystem and the project won't harm the plants and animals around the school due to the recommended interventions. However, few trees are required to be cut which shall be compensated by replantation.

C. Socio-Cultural Impact

23. There is no displacement of any communities, female and children in the locality due to the new construction. There are no conflicts for building construction in the available land of schools except in Bhaktapur, which lies in the "Preserved Cultural Heritage Zone". Nevertheless, there are some issues on various sites due to the adjoining religious structures like a Church in Dhading, Temples in Nuwakot, Ramechhap, Bhaktapur, Rasuwa, and graveyard and bus-park in Nuwakot. School at Okhaldhunga is adjacent to domestic-airport. These sites may require some clearance or no objection letter from the community and/or related authorities for the construction activities.

D. Summary of Environmental Assessment

24. It is thus clear that project mainly comprises retrofitting and construction activities. No new land will be required and any civil work will be done within the school premises. However, there exist some religious/cultural sites adjoining to some schools whereas a school in Bhaktapur lies in protected zone of cultural heritage. Similarly, school in Okhaldhunga is adjacent to domestic airport.

25. Any construction activity needs an environmental compliance certification. A simple clearance or no-objection letter from community is deemed to be necessary for all schools. Based on the preliminary investigation and minimal potential impacts, a full EIA is not deemed to be necessary, and hence Environment Category B is recommended. However, special instruction for design and construction for schools of Bhaktapur and Okhaldhunga shall be obtained from the concerned department and followed accordingly.

VI. FINDING SYNOPSIS

A. Verification of Model School Criteria

26. From the observation in rapid assessment, the selected schools fulfill the minimum model school selection criteria as per section B to an acceptable level as described in Table VI-1. However, further detailed investigation is suggested to confirm the slope stability especially in Rasuwa and Sindhupalchowk due to history of many landslides in the districts and the sloped terrain of the area. Any effect to the airport or by the airport shall also be investigated for the school in Okhaldhunga. Figure 4, and Figure 5 summarizes the land area, offered streams (faculties) and number of students and teachers respectively for each school. It is observed that Dhading has the highest number of students and Sindhuli has the lowest student number. Hence, the space planning needs to be done depending on the student number.

Table VI-1: Checklist for model school criteria

(Data Source: Field Assessment)

Sn	School Name	Grade	Non-technical faculties	Land Area (Ropani)	Risk of site-specific natural Disaster	Written commit-ment
1	EMIS210530008 - Shree Sharada Higher Secondary School, Ramechhap	Upto Higher Secondary	Science, Management, Education	10.19	Not Observed	Yes
2	EMIS200180005 - Kamala Uchha Madhyamik Vidhyalaya, Sindhuli	Upto Higher Secondary	Management, Humanities	34.56	Not Observed	Yes
3	EMIS120440005 - Rumjatar Higher Secondary School, Okhaldhunga	Upto Higher Secondary	Science, Management, Education, Humanities	11.81	Not observed, Nearby Airport (500 m)	Yes
4	EMIS220260008 - Shree Hanumanteshwor Uchha Ma Vi, Dolakha	Upto Higher Secondary	Education, Management, Humanities	29.75	Not Observed	Yes
5	EMIS230740004 - Shree Bagh Bhairab Uchha Ma Vi, Sindhupalchowk	Upto Higher Secondary	Management, Education	29.75	Not Observed, Secondary data shall be referred for landslide	Yes
6	EMIS240380004 - Prava Higher Secondary School, Kavre	Upto Higher Secondary	Science, Education, Management, Humanities	30.81	Not Observed	Yes
7	EMIS260030087 - Padma Higher Secondary School, Bhaktapur	Upto Higher Secondary	Science, Education, Management, Humanities	32.17	Not Observed	Yes

8	EMIS270330027 - Janasewa Higher Secondary School, Kathmandu	Upto Higher Secondary	Education, Management	15.75	Not Observed, Liquefaction potential shall be investigated	Yes
9	EMIS280080027 - Tribhuwan Trishuli Uchha Ma Vi, Nuwakot	Upto Higher Secondary	Science, Education, Management, Humanities	72.13	Not Observed	Yes
10	EMIS290090010 - Shree Kalika Himalaya Uchha Ma Vi, Rasuwa	Upto Higher Secondary	Science, Education, Management	38.06	Not observed, though adjacent slope needs to be studied	Yes
11	EMIS300350015 - Nilkantha Uchha Ma Vi, Dhading	Upto Higher Secondary	Science, Education, Management, Humanities	15.00	Not Observed	Yes
12	EMIS310190008 - Janapriya Higher Secondary School, Makwanpur	Upto Higher Secondary	Education, Management, Humanities	53.06	Not Observed	Yes
13	EMIS360500021 - Shree Mahendra Uchha Ma Vi, Gorkha	Upto Higher Secondary	Education, Management	74.00	Not Observed	Yes

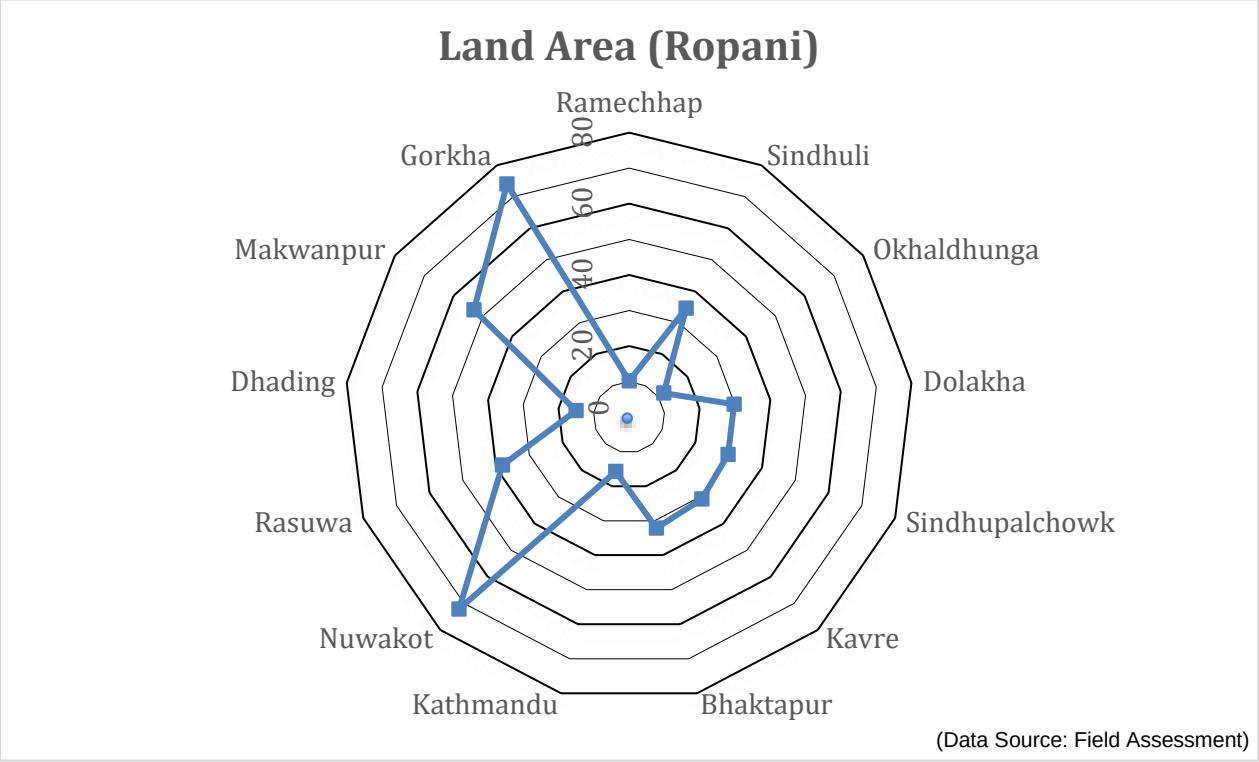


Figure 4: Land area in selected schools of different districts

Table VI-2: Faculties offered in different selected schools of different districts

(Data Source: Field Assessment)

Stream	Ramechhap	Sindhuli	Okhaldhunga	Dolakha	Sindhupalcho	Kavre	Bhaktapur	Kathmandu	Nuwakot	Rasuwa	Dhading	Makwanpur	Gorkha
Science	Offered	Not Offered	Offered	Not Offered	Not Offered	Offered	Offered	Not Offered	Offered	Offered	Offered	Not Offered	Not Offered
Commerce	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered
Education	Offered	Not Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered	Offered
Humanities	Not Offered	Offered	Offered	Not Offered	Not Offered	Not Offered	Offered	Not Offered	Offered	Not Offered	Not Offered	Not Offered	Not Offered
Arts	Not Offered	Not Offered	Not Offered	Not Offered	Not Offered	Offered	Not Offered	Not Offered	Not Offered	Not Offered	Offered	Offered	Not Offered

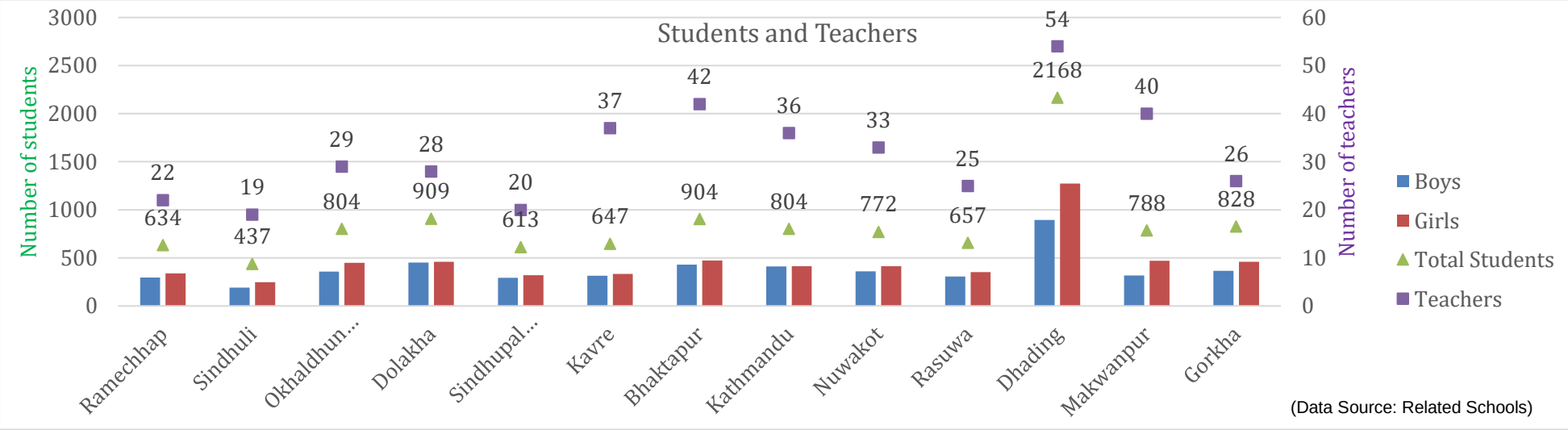


Figure 5: Student and teacher population on selected school of different districts

B. Existing Infrastructures Review and Gap Analysis Synopsis

27. Different facilities in each school were also recorded and compared against the requirements. Table VI-3 summarizes the findings and recommends the required improvements for these facilities.

Table VI-3: Synopsis of facilities in different schools and their requirements

(Data Source: Field Assessment)

				Water and Sanitation		Electricity & Internet			Fences and Parks		Sports		
Sn.	**Dis-trict**	**School Name**	**Drinking Water**	**Sanitation Water**	**Toilet Blocks**	**Grid Electricity**	**Backup**	**Internet**	**Garden /Park**	**Compound /Fences**	**Volleyball**	**Basketball**	**Football**
1	Ramechhap	Shree Sharada Higher Secondary School, Thosey	Good No intervention	Available No intervention	Good but insufficient Additional toilets required	Available No Management Required	Small Solar Insufficient	Available	Small area allocated Need to develop fully	Available in Few Locations only Needs in most of the location	Available Needs Improvement	Not present Needs new Development	Not Present Cannot be provided

				Water and Sanitation		Electricity & Internet			Fences and Parks		Sports		
Sn.	**Dis-trict**	**School Name**	**Drinking Water**	**Sanitation Water**	**Toilet Blocks**	**Grid Electricity**	**Backup**	**Internet**	**Garden /Park**	**Compound /Fences**	**Volleyball**	**Basketball**	**Football**
2	Sindhuli	Kamala Uchha Madhyamik Vidhyalaya, Bhaluwai	Average Need intervention	Available No intervention	Good but insufficient Additional toilets required	Available Minor Management Required	No solar panels	Not available No telephone connection	No garden	Available in Few Locations only Needs in most of the location	Not present Needs new Development	Not present Can't be provided	Available Needs Improvement
3	Okhaldhunga	Rumjatar Higher Secondary School, Rumjatar	Good No intervention	Available No intervention	Good but insufficient Additional toilets required	Available No Management Required	Small solar panel	Available	No garden	Needed in playground plot	Available Needs Improvement	Not present Can't be provided	Available Needs Improvement

				Water and Sanitation		Electricity & Internet			Fences and Parks		Sports		
Sn.	Dis-trict	School Name	Drinking Water	Sanitation Water	Toilet Blocks	Grid Electricity	Backup	Internet	Garden /Park	Compound /Fences	Volleyball	Basketball	Football
4	Dolakha	Shree Hanumanteshwor Uchha Ma Vi, Kabre	Average No intervention	Available No intervention	Good but insufficient Additional toilets required	Available Minor Management Required	Small solar panel	Available	Small area allocated Need to develop fully	Available	Available Needs Improvement	Not present Needs new Development	Available Needs Improvement
5	Sindhupalchowk	Shree Bagh Bhairab Uchha Ma Vi, Thokarpa	Bad Need intervention	Bad Need intervention	Good but insufficient Additional toilets required	Available Minor Management Required	Small solar panel	Available Very slow	No garden	fencing needed	Available Needs Improvement	Not present Needs new Development	Available Needs Improvement

				Water and Sanitation		Electricity & Internet			Fences and Parks		Sports		
Sn.	Dis-trict	School Name	Drinking Water	Sanitation Water	Toilet Blocks	Grid Electricity	Backup	Internet	Garden /Park	Compound /Fences	Volleyball	Basketball	Football
6	Kavre	Prava Higher Secondary School, Kattike Deurali	Bad Need intervention	Bad Need intervention	Bad and new construction of toilet needed	Available but Management Required	No solar panels	Available	No garden	Fencing needed	Available Needs Improvement	Not present Needs new Development	Not present Needs new Development
7	Bhaktapur	Padma Higher Secondary School, Bhaktapur	Average No intervention	Available No intervention	Good but insufficient Additional toilets required	Available but Management Required	Small solar panel	Available	Garden encroached by local people	Available	Available Needs Improvement	Not present Needs new Development	Not present Can't be provided

				Water and Sanitation		Electricity & Internet			Fences and Parks		Sports		
Sn.	**Dis-trict**	**School Name**	**Drinking Water**	**Sanitation Water**	**Toilet Blocks**	**Grid Electricity**	**Backup**	**Internet**	**Garden /Park**	**Compound /Fences**	**Volleyball**	**Basketball**	**Football**
8	Kathmandu	Janasewa Higher Secondary School, Panga	Good No intervention	Available No intervention	Bad and insufficient Additional toilets required	Available but Management Required	Solar panel available	Available	Small area allocated Need to develop fully	Available	Available Needs Improvement	Available Needs Improvement	Available Needs Improvement
9	Nuwakot	Tribhuwan Trishuli Uchha Ma Vi, Trishuli	Bad Need intervention	Available No intervention	Bad and insufficient Additional toilets required	Available No Management Required	Small solar panel	Available	no garden	Available in Few Locations only Needs in most of the location	Not present Needs new Development	Not present Needs new Development	Available Needs Improvement

				Water and Sanitation		Electricity & Internet			Fences and Parks		Sports		
Sn.	Dis-trict	School Name	Drinking Water	Sanitation Water	Toilet Blocks	Grid Electricity	Backup	Internet	Garden /Park	Compound /Fences	Volleyball	Basketball	Football
10	Rasuwa	Shree Kalika Himalaya Uchha Ma Vi, Dhaibung	Average No intervention	Available No intervention	Bad and insufficient Additional toilets required	Available Minor Management Required	No solar panels	Available	no garden	Available	Available Needs Improvement	Not present Can't be provided	Available Needs Improvement
11	Dhading	Nilkantha Uchha Ma Vi, Dhadingbesi	Good No intervention	Available No intervention	Bad and insufficient Additional toilets required	Available Minor Management Required	No solar panels	Available	Small area allocated Need to develop fully	Available	Not present Needs new Development	Not present Can't be provided	Not present Can't be provided

				Water and Sanitation		Electricity & Internet			Fences and Parks		Sports		
Sn.	Dis-trict	School Name	Drinking Water	Sanitation Water	Toilet Blocks	Grid Electricity	Backup	Internet	Garden /Park	Compound /Fences	Volleyball	Basketball	Football
12	Makwanpur	Janapriya Higher Secondary School, Hatiya	Average No intervention	Available No intervention	Good but insufficient Additional toilets required	Available Minor Management Required	No solar panels	Available	No garden	Available in Few Locations only Needs in most of the location	Available Needs Improvement	Not present Can't be provided	Not present Needs new Development
13	Gorkha	Shree Mahendra Uchha Ma Vi, Kundurtar	Average Need intervention	Available No intervention	Good but insufficient Additional toilets required	Available Minor Management Required	No solar panels	Available	No garden	Available in Few Locations only Needs in most of the location	Not present Needs new Development	Not present Can't be provided	Available Needs Improvement

C. New Master Plan with added infrastructure

28. After the review of existing infrastructures, shuffling is done to rearrange the classrooms in the existing buildings so as to optimize the use of standing buildings. This resulted in shifting of the classrooms in some schools, which imply that the usage of the room may alter from the original purpose. As the size of the existing room is smaller, it will adjust lesser number of students compared to the new building. In most of the schools the areas used for administrative purpose is reused for the same purpose. Emphasis is given to the addition of classroom and other facilities rather than new administrative block. The following table summarizes the classrooms that can be used in the existing buildings (after the strengthening as suggested by structure engineer) and what number needed to be constructed in each school. The planning for each school is done based on the total number of students that can be accommodated in the available and planned classes. The projection of total number of students for 10 years at the rate of 5% per year is also prepared and the additional classes needed after 10 years is also calculated. For the future projected number, a separate building shall be planned in the school complex. The dotted building line shows the building in which additional classes are to be built.

Table VI-4: Classroom planning after addition of new infrastructures

(Student Data Source: From the documents provided by the school)

S.N	School	Description	ECD	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total students	Planned Classroom	Planned other rooms	10 yrs. Student Projection	Total rooms after 10 yrs	Total teacher
1	Sharada SS	Existing students	26	18	16	22	31	30	47	37	55	95	89	100	68	634					22 (Existing)
		Usable rooms	1	1													2	8			
		New rooms			1	1	1	1	2	2	2	3	3	3	3		22	2			
		Planned Students	20	35	35	35	35	35	70	70	70	105	105	105	105	**825**			**1344**		28
		Total															**24**	**10**		**39**	

S.N	School	Description	ECD	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total students	Planned Classroom	Planned other rooms	10 yrs. Student Projection	Total rooms after 10 yrs	Total teacher
2	Kamala SS	Existing students		15	20	20	23	23	27	37	42	75	43	75	37	437					19 (Existing)
		Usable rooms	1	1	1	1	1	1	2	2	2						12	2			
		New rooms										3	3	3	3		12	8			
		Planned Students	20	33	35	35	32	32	64	64	64	105	105	105	105	**799**			**1301**		27
		Total															**24**	**10**		**39**	
3	Rumjatar SS	Existing students	16	17	20	21	25	32	68	62	78	104	54	151	156	804					29 (Existing)
		Usable rooms	2	1	1	1	1	1	2	2							11	6			
		New rooms									2	4	4	4	4		18	7			
		Planned Students	30	25	25	25	25	25	50	50	70	128	128	128	128	**837**			**1363**		28
		Total															**29**	**13**		**47**	
4	Hanumanteshwor SS	Existing students	33	14	15	22	31	26	80	112	109	147	147	84	89	909					28 (Existing)
		Usable rooms	2	1	1	1	1	1	2	2							11	4			
		New rooms									2	3	3	3	3		**14**	**4**			
		Planned Students	34	45	45	45	45	45	90	90	90	105	105	105	105	**949**			**1546**		32
		Total															**25**	**8**		**41**	

S.N	School	Description	ECD	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total students	Planned Classroom	Planned other rooms	10 yrs. Student Projection	Total rooms after 10 yrs	Total teacher
5	Bagh Bhairab SS	Existing students	18	20	22	38	58	38	42	54	59	61	57	71	75	613					20 (Existing)
		Usable rooms	1	1	1	1	1	1	2	2	2	3	3				18	5			
		New rooms												3	3		6	5			
		Planned Students	18	32	32	32	32	32	64	70	70	90	90	105	105	**772**			**1258**		27
		Total															**24**	**10**		**39**	
6	Shree prava SS	Existing students		39	22	21	20	27	56	58	70	84	86	90	94	667					37 (Existing)
		Usable rooms	2	1	1	1	1	1	2	2	3						14	6			
		New rooms										3	3	3	3		12	2			
		Planned Students	40	30	30	30	30	30	60	60	72	105	105	105	105	**802**			**1306**		27
																	26	**8**		**42**	
7	Padma SS	Existing students	110	22	33	37	48	50	61	77	159	148	159			904					42 (Existing)
		Usable rooms	2	1	1	1	2	2	2	2	2	3	3				21	4			
		New rooms												3	3		6	3			
		Planned Students	38	24	24	24	48	48	70	70	70	105	105	105	105	**836**			**1362**		28
		Total															**27**	**7**		**44**	

S.N	School	Description	ECD	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total students	Planned Classroom	Planned other rooms	10 yrs. Student Projection	Total rooms after 10 yrs	Total teacher
8	Janasewa SS	Existing students	59	24	32	52	44	53	52	57	81	106	75	99	70	804					36 (Existing)
		Usable rooms	2	1	1	1	1	2	2	2	2						14	6			
		New rooms										3	3	3	3		12	4			
		Planned Students	36	30	30	30	30	60	60	60	60	105	105	105	105	**816**			**1329**		27
		Total															**26**	**10**		**42**	
9	Tribhuwan TRishuli SS	Existing students	48	39	17	24	25	23	52	52	56	64	47	176	140	772					33 (Existing)
		Usable rooms	2	1	1	1	1					3	3	3	3		18	8			
		New rooms						2	2	2	2						8	4			
		Planned Students	50	45	45	45	45	70	70	70	70	105	105	105	105	**930**			**1515**		31
		Total															**26**	**12**		**42**	
10	Shree Kalika himlaya SS	Existing students	19	21	24	24	31	39	56	49	57	115	102	55	65	657					25 (Existing)
		Usable rooms	1	1	1	1	1	1	2	2	2	1	1	1	1		16	10			
		New rooms										2	2	2	2		8	1			
		Planned Students	15	25	25	25	25	25	50	50	70	115	115	115	115	**770**			**1254**		26
		Total															**24**	**11**		**39**	

S.N	School	Description	ECD	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total students	Planned Classroom	Planned other rooms	10 yrs. Student Projection	Total rooms after 10 yrs	Total teacher
11	Nilkantha SS	Existing students	63	36	33	64	61	84	162	182	245	262	326	429	326	2273					54 (Existing)
		Usable rooms	1	1	1	1	2	2	3	3	3						17	8			
		New rooms										4	4	4	4		16	1			
		Planned Students	45	42	42	42	84	84	126	126	126	140	140	140	161	**1298**			**2114**		43
		Total															**33**	**9**		**54**	
12	Janapriya SS	Existing students	41	29	51	29	29	33	78	66	101	89	61	88	93	788					
		Usable rooms	2	1	1	1	1					4	4	4	4		22	8			
		New rooms						1	2	2	2						7	4			
		Planned Students	48	28	28	28	28	35	70	70	70	140	140	140	140	**965**			**1572**		32
		Total															**29**	**12**		**47**	
13	Mahendra SS	Existing students	81	48	33	42	61	64	94	93	88	72	62	48	40	826					26 (Existing)
		Usable rooms	2	1	1	1	1	2	2	2	2	3					17	7			
		New rooms											3	3	3		9	5			
		Planned Students	50	28	28	28	28	56	56	56	56	90	105	105	105	**791**			**1288**		26
		Total															**26**	**12**		**42**	

D. Costing Abstract

29. The costing for building is divided into three parts viz. Repair costing, retrofitting costing and other costing (includes new construction, demolishment, reconstruction, debris removal, etc.). The cost-estimates are preliminary and are based on plinth-area of the building.

30. The repair and retrofit class assignment is based on typical intervention for that class. However, actual intervention and cost needs to be recalculated after detailed assessment of each buildings. The costing for each class of intervention is associated with typical cost for that intervention and are given in Table VI-5, Table VI-6 and Table VI-7.

Table VI-5: Repair classes and associated unit-cost

Source: SIDA Report 2016 (Draft)

1 Repair Costing

Sn.	Repair Class	Sub-Class	Structural Typology	Typical intervention	Rate (per Sq.ft.)	Rate (per Sq.m.)
1	Cosmetic Repair	CRL	LB	Providing puttings and painting	7	78
2	Cosmetic Repair	CRM	LB	sealing of cracks, painting	9	100
3	Cosmetic Repair	CRH	LB	repointing of deteriorated mortar	11	120
4	Structural Repair	SRL	LB	Stitching of minor cracks	19	200
5	Structural Repair	SRM	LB	Stitching/sealing of moderate cracks	28	300
6	Structural Repair	SRH	LB	Stitching/sealing of severe cracks	37	400
7	Structural Replacement	SEL	LB	Replacement/addition of few walls/parapets	93	1000
8	Structural Replacement	SEM	LB	Replacement of some walls and some roofs	139	1500
9	Structural Replacement	SEH	LB	Replacement of major portion of walls/roofs	186	2000
1	Cosmetic Repair	CRL	RC	Providing puttings and painting	7	78
2	Cosmetic Repair	CRM	RC	sealing of cracks, painting	9	100
3	Cosmetic Repair	CRH	RC	repointing of deteriorated mortar	11	120
4	Structural Repair	SRL	RC	Grouting of wall-cracks, few	19	200
5	Structural Repair	SRM	RC	Grouting of wall-cracks, some	28	300
6	Structural Repair	SRH	RC	Grouting of wall-cracks, many	37	400
7	Structural Replacement	SEL	RC	Replacement of few walls	93	1000
8	Structural Replacement	SEM	RC	Replacement of some walls and some roofs	139	1500
9	Structural	SEH	RC	Replacement of major	186	2000

	Replacement			portion of walls/roofs		
1	Cosmetic Repair	CRL	SF	Providing puttings and painting	7	78
2	Cosmetic Repair	CRM	SF	sealing of cracks, painting	9	100
3	Cosmetic Repair	CRH	SF	repointing of deteriorated mortar	11	120
4	Structural Repair	SRL	SF	Grouting of wall-cracks, few	19	200
5	Structural Repair	SRM	SF	Grouting of wall-cracks, some	28	300
6	Structural Repair	SRH	SF	Grouting of wall-cracks, many	37	400
7	Structural Replacement	SEL	SF	Replacement of few walls	93	1000
8	Structural Replacement	SEM	SF	Replacement of some walls and some roofs	139	1500
9	Structural Replacement	SEH	SF	Replacement of major portion of walls/roofs	186	2000

Table VI-6: Retrofitting classes and associated unit-cost

2 Retrofit Costing

Sn.	Retrofit Class	Sub-Class	Structural Typology	Typical intervention	Rate (per Sq.ft.)	Rate (per Sq.m.)
1	Trimming	TFL	LB	Removing some portion of walls/floor	56	600
2	Trimming	TFM	LB	Removing top floor	93	1000
3	Trimming	TFH	LB	Trimming major portion of building	139	1500
4	Enhancements	EFL	LB	Providing seismic bands	418	4500
5	Enhancements	EFM	LB	providing splints and bands	511	5500
6	Enhancements	EFH	LB	providing bands, anchorages and braces	604	6500
7	Stiffening	SFL	LB	Partial Jacketing	651	7000
8	Stiffening	SFM	LB	One side jacketing	790	8500
9	Stiffening	SFH	LB	Full jacketing	930	10000
1	Trimming	TFL	RC	Removing some portion of walls/floor	56	600
2	Trimming	TFM	RC	Removing top floor	139	1500
3	Trimming	TFH	RC	Trimming major portion of building	232	2500
4	Enhancements	EFL	RC	Providing seismic bands	418	4500
5	Enhancements	EFM	RC	providing splints with wall-additions	511	5500
6	Enhancements	EFH	RC	providing bands, anchorages and braces	604	6500
7	Stiffening	SFL	RC	Few column jacketing	790	8500
8	Stiffening	SFM	RC	Wall-jacketing (Masonry)	930	10000
9	Stiffening	SFH	RC	Column and Wall Jacketing	1115	12000
1	Trimming	TFL	SF	Removing some portion of walls/floor	56	600
2	Trimming	TFM	SF	Removing top floor	93	1000
3	Trimming	TFH	SF	Trimming major portion of building	139	1500
4	Enhancements	EFL	SF	Providing seismic bands	418	4500

5	Enhancements	EFM	SF	providing splints and bands	511	5500
6	Enhancements	EFH	SF	providing bands, anchorages and braces	604	6500
7	Stiffening	SFL	SF	Partial Jacketing	651	7000
8	Stiffening	SFM	SF	One side jacketing	790	8500
9	Stiffening	SFH	SF	Full jacketing	930	10000

Table VI-7: Other classes and associated unit-cost

3 Other Costing

Sn.	Retrofit Class	Sub-Class	Structural Typology	Typical intervention	Rate (per Sq.ft.)	Rate (per Sq.m.)
1	Demolish	DEM	LB	Demolish and remove the debris	372	4000
2	Debris Removal	DBR	LB	remove the debris of collapsed building	186	2000
3	Reconstruct	REC	LB	Demolish and reconstruct	2510	27000
4	New Construct	NEC	LB	Totally new building	2324	25000
5	No intervention	x	LB	nothing	0	0
1	Demolish	DEM	RC	Demolish and remove the debris	744	8000
2	Debris Removal	DBR	RC	remove the debris of collapsed building	279	3000
3	Reconstruct	REC	RC	Demolish and reconstruct	2789	30000
4	New Construct	NEC	RC	Totally new building	2603	28000
5	No intervention	x	RC	nothing	0	0
1	Demolish	DEM	SF	Demolish and remove the debris	372	4000
2	Debris Removal	DBR	SF	remove the debris of collapsed building	186	2000
3	Reconstruct	REC	SF	Demolish and reconstruct	2510	27000
4	New Construct	NEC	SF	Totally new building	2324	25000
5	No intervention	x	SF	nothing	0	0

31. Each assessed building are associated with one or more required intervention-classes as above. Total cost for each building is estimated by multiplying the unit cost of each intervention with the total plinth area of each building. Table VI-8 summarizes the number of buildings in each school requiring different interventions and total cost estimates (without VAT). The cost for furniture, lab-equipment, development of other facilities including playgrounds & fences, etc. needs to be added to this cost for the estimate of total cost. Roughly, 25% of the presented cost in Table VI-8 can be added for such other facilities.

32. The reusable material during demolishment of the required structures are not considered at this time, as they can be used by the school for developing other facilities in the school.

Table VI-8: Summary of repair, retrofit and new construction required and their cost estimate

			Number of Existing Buildings									Number of New Buildings						Estimated Budget		
			Repair Only			Repair+Retrofit			Demolish			N/N1	N2	N3	N4	N5/N6	U_C	Exist.	New	Total
Sn.	District	School Name	RCC	LB	SF	RCC	LB	SF	RCC	LB	SF	Academi	Admin	Hall	Canteen	Hostel	Other	Crore	Crore	Crore
1	Ramechhap	Shree Sharada Higher Secondary School	-	-	-	2	-	3	1	4	-	2	-	1	1	2	-	0.77	8.60	9.38
2	Sindhuli	Kamala Uchha Madhyamik Vidhyalaya	-	-	-	1	-	1	-	6	-	2	-	1	1	2	2	0.52	7.31	7.83
3	Okhaldhunga	Rumjatar Higher Secondary School	-	-	-	3	7	-	-	1	-	1	-	1	1	2	-	0.66	3.91	4.57
4	Dolakha	Shree Hanumanteshwor Uchha Ma Vi	-	-	2	3	1	-	-	2	5	1	-	1	1	2	1	1.32	7.24	8.56
5	Sindhupalcho	Shree Bagh Bhairab Uchha Ma Vi	-	-	3	2	-	3	-	-	3	1	-	1	1	1	2	0.86	4.76	5.61
6	Kavre	Prava Higher Secondary School	-	2	-	1	-	1	-	3	1	1	-	-	-	2	1	0.43	4.97	5.40
7	Bhaktapur	Padma Higher Secondary School	1	1	-	-	4	-	-	2	-	-	-	-	-	-	-	0.24	5.54	5.78
8	Kathmandu	Janasewa Higher Secondary School	-	-	-	1	4	1	-	2	2	1	-	1	1	2	-	1.23	5.76	6.99
9	Nuwakot	Tribhuwan Trishuli Uccha Ma Vi	2	-	1	1	-	-	-	2	-	1	1	1	1	1	-	0.51	7.29	7.80
10	Rasuwa	Shree Kalika Himalaya Uchha Ma Vi	1	-	-	1	-	1	-	1	-	1	-	1	1	2	-	0.75	5.19	5.94
11	Dhading	Nilkantha Uchha Ma Vi	2	-	-	5	4	3	-	-	-	1	-	1	1	2	-	2.13	8.91	11.04
12	Makwanpur	Janapriya Higher Secondary School	-	-	-		1	4	-	3	-	1	-	1	1	2	-	0.87	5.94	6.82
13	Gorkha	Shree Mahendra Uchha Ma Vi	1	-	-	2	1	1	-	1	-	1	-	1	-	2	1	1.08	5.86	6.94
											Total Estimated Budget for Buildings (Nepali Crore):						**11.37**	**81.28**	**92.65**

E. Issues in each School

33. Every project comes up with some challenges. There might be some issues for implementation of project, if due consideration is not made for different aspects of environment and society. Table VI-9 summarizes the major things to be settled in the beginning phase of the project to avoid any future problems.

Table VI-9: Probable issues in selected schools of different districts

School of District:	**Probable Issues**
Ramechhap	There is a small temple adjacent to one of the plot of the school but the civil work will not be carried out in this plot.
Sindhuli	Possibility of roadway extension but enough land is available for construction.
Okhaldhunga	There is nearby airport (less than 500m from the school plot).
Dolakha	There is a small seasonal stream adjoining the school boundary that may collect rainwater.
Sindhupalchowk	There is a motorable roadway leading to village-houses from the school, Water is not sufficient in the area.
Kavre	Public pathway crossing the school land. Land exchange with VDC needs to be settled. There is water scarcity.
Bhaktapur	School lies in preserved heritage zone, earthquake affected families still residing in school land.
Kathmandu	There were temporary shelters by earthquake affected families.
Nuwakot	School lies in preserved heritage zone, earthquake affected families still residing in school land.
Rasuwa	Area has steep slope requiring high cutting & retaining; Adjacent Temple; possibility of highway extension
Dhading	There is church adjacent to school land; One building under construction has issues with set-back from road; Retaining structures needed at some places
Makwanpur	Agriculture is also offered (CTEVT + Government) requiring more infrastructures.
Gorkha	Some land of school is maintained as community forest.

VII. **CONCLUSION**

34. Rapid field assessment of 13 selected schools to upgrade to model schools under JFPR-9180 has been completed. The program conducted revision of available documents, field assessments, conduction of on-site meetings, collection of relevant document and information and performed the gap-analysis to determine devoid facilities to develop as model school. Finally, a preliminary master-plan has been developed for each school showing the planned facilities.

35. The whole assessment project and its finding can be summarized as follows:

- ❖ The selected school fits in the criterion of the model school
- ❖ Construction materials can be made available on the site due to presence of motor able-road.
- ❖ Enough Land is available for new construction, though good planning is required in some case with multiple plots.
- ❖ No adverse impact on environment due to the new construction is observed during initial assessment but further investigation is required during detail design.
- ❖ Detail geographical survey for contour lines and boundary verification as well as geological survey for soil type needs to be done.
- ❖ Master planning is based on tentative calculation; hence for detail design space needs to be reconsidered.
- ❖ Before carrying out the detail design, this preliminary master planning needs to be discussed with the school personnel and locals for the inclusive planning.

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- Consultation/ Meeting with CLPIU, ADB NRM.
- Minute of discussion of Experts, Officers and Secretary at MOE.

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