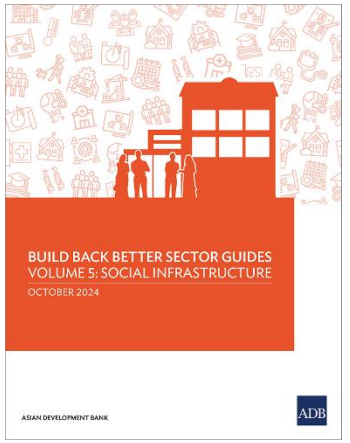
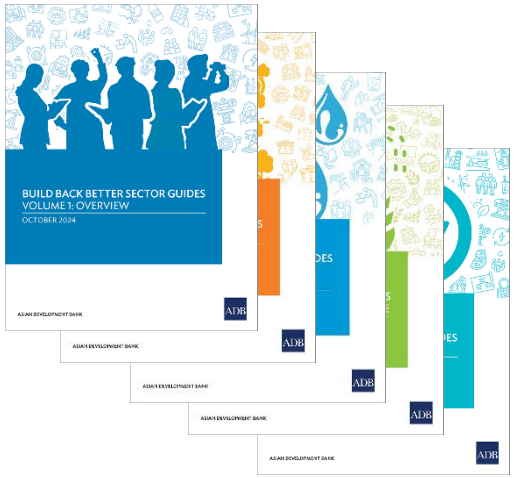
BUILD **BACK BETTER**

Sector Dialogues

Event 6: Social Infrastructure

Friday 28 March 2025,





https://www.adb.org/publications/series/build-back-better-sector-guides

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Lessons from BBB Approach from ADB's School Reconstruction Support

Naresh Giri

Senior Project Officer (Urban Development)

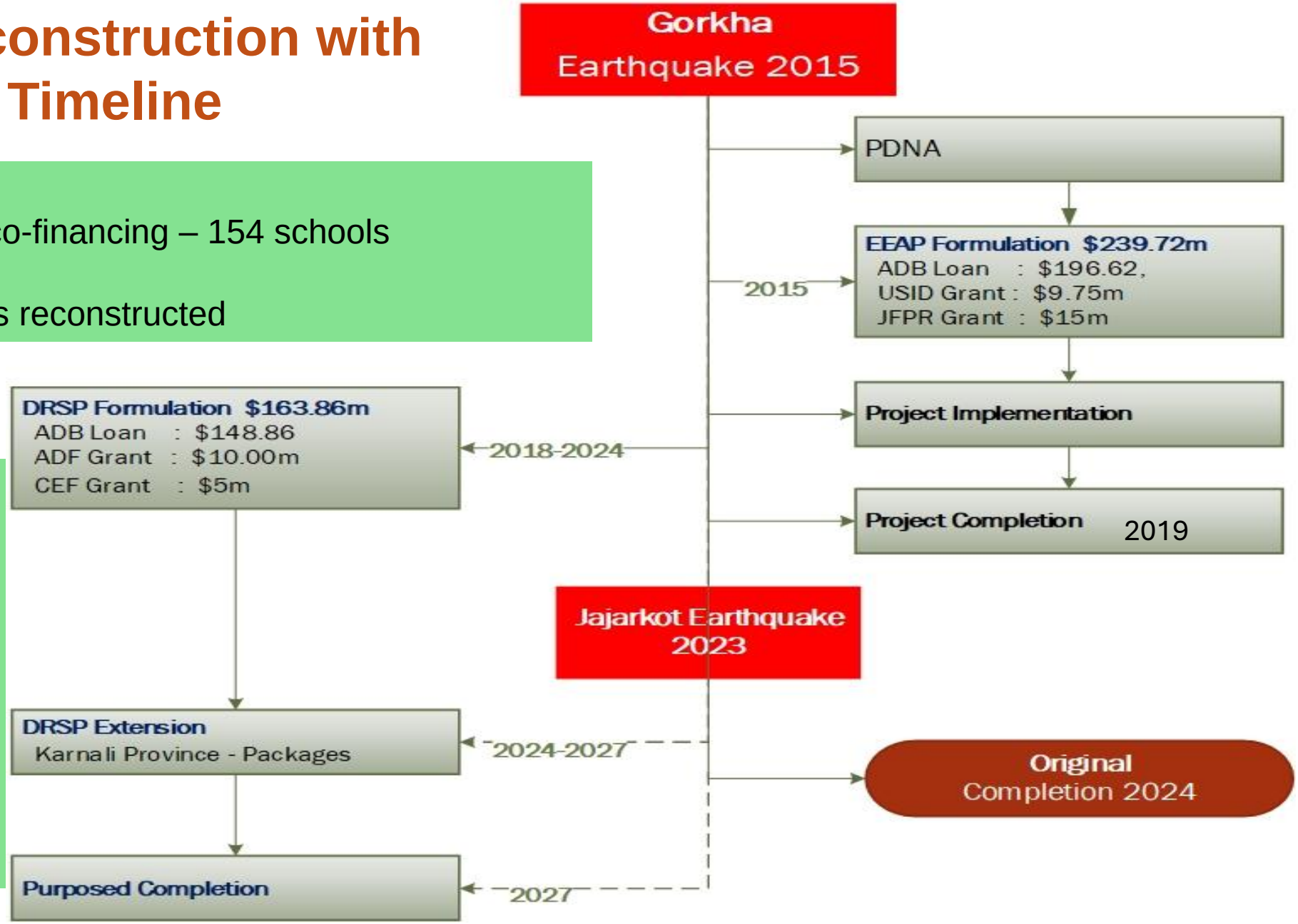
Earthquake Reconstruction with BBB - Projects Timeline

EEAP (2015 to Dec 2019)

- ADB Loan and USAID co-financing – 154 schools reconstructed.
- JFPR – 8 model schools reconstructed

DRSP (2018 to 2024, extended till Mar 2027)

- ADB Loan, ADF and CEF grant
- 230 schools reconstruction,
- 141 schools retrofitted.
- 130 schools Solar powered



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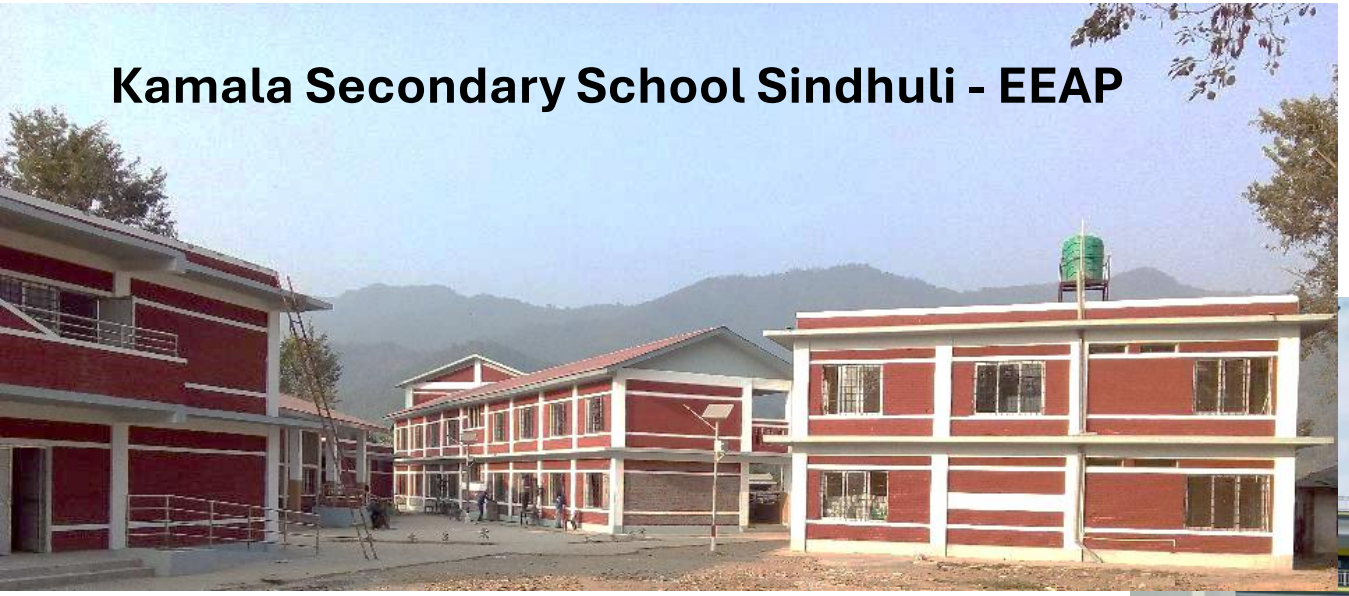

Institutional Framework

Initial Arrangement – Department of Education (DOE) of Ministry of Education, PDNA Sector Lead

- Initiated the rapid assessment and planning for Emergency Reconstruction work.

Challenges: Overwhelmed with infrastructure and Educational support/ restoration, inadequate technical and management capacity, no dedicated authority.

Initiatives:

- National Reconstruction Authority (NRA) established in Dec 2015.

- NRA developed PDRF

- Sector wise Central Level Project Implementation Units (CLPIUs) formed.

Institutional Framework

Lessons from NRA's Establishment:

- Efficient and effective in resource generation, management and mobilization, efficient implementation, quality assured and completion ensured.
- Implemented **Fast Track** approach in processes and procedures.
- Effective implementation of BBB approach (Resilient, inclusive and climate responsive infrastructure, hazard mapping and disaster mitigation)
- **Frequent transfer of NRA chief affected smooth implementation.**

Site Selection

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Challenges and Limitation:

- Short available time to conduct site wise damage assessment
- Rely on Government data from preliminary assessment
- Lack of accurate data, precise assessment and initial planning.
- Remoteness and scattered school sites – Hilly Terrain
- Geo-physical condition of affected areas

Approach:

- Deploy ADB TA consultant in DPR preparation
- Priority to assessable schools, risk free construction site, risk mitigation or school relocation from hazard prone sites
- Primary level schools in first phase, big schools in following phase.

Site Selection

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Lessons:

- Inventory of Schools - EMIS

- Allocate adequate time in planning phase to acquire reliable data and conduct detail site survey to control time and cost overrun

- Easy Access, Ownership, disaster mitigation, WASH need.
- Community consultation on site selection,

Massive Site Development and Protection Works

Design and Planning - Reconstruction

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Challenges and Limitation:

- Insufficient land for buildings and WASH facility planning.
- Not possible to prepare separate designs for each individual schools in mass scale emergency reconstruction.
- Different agencies prepared their own type of designs, lacked harmonization with local architecture in designs implemented by them.

Approach:

- Primary school design prepared by ADB TA support for project readiness.
- 16 standard type designs for large schools developed to meet desired performance standards ensuring resilience, climate and GESI responsive, inclusive, child and disable friendly.
- Developed robust school design standard criteria to comply with prevailing codes and school design guideline.
- Enhanced Inter Agency coordination for harmonized designs and mutual collaboration.
- Remote school designs developed and tested through ADB TA support,
- Climate responsive school WASH integrated in reconstruction plans.
- National Building Code revised

Design and Planning - Reconstruction

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Lessons:

- Appropriate design and careful planning is the first step to ensure BBB and resiliency.
- Readily available standard type designs help to ensure resiliency, ensure BBB approach and save preparation time.
- Interagency coordination is important to exchange lessons and best practices.
- Design Basis Report by the agencies
- Collaboration with JICA / USAID/ India was particularly important to exchange designs, tools and harmonized design approach.
- Climate responsive resilient design, Incorporation of school WASH, provision of separate toilets for girls and menstrual hygiene facilities, accessible toilets and buildings for people with disability, and greenery development enhanced inclusiveness ensured resiliency and BBB approach, and increased enrolment.

Design and Planning – Retrofitting

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Challenges and Limitation:

- No standard damage/structural vulnerability assessment tools readily available.
- No specific codes no separate norms in place for retrofitting.
- Limited availability of adequately trained detail vulnerability assessment and retrofit design engineers.
- No contractor led retrofitting experience in the past

Approach:

- Damage/ structural vulnerability assessment tools for schools developed.
- Codes and norms available for new design used for retrofit design and costing.
- Technical Committee formed to review and certify retrofit design.

Lessons:

- Comprehensive Retrofitting rather than only Structural Retrofitting
- At the initial stage, the community showed less interest in retrofitting compared to new construction. The acceptance was high at completion as the cost and time required was less.
- Separate code and norms for retrofitting is required for accurate vulnerability assessment, appropriate and economic retrofit design.

Implementation- Reconstruction

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Challenges and Limitation:

- Quality assurance and maintaining construction progress was a major challenge to ensure BBB and resiliency basically due to -
  - Remoteness of school sites, poor accessibility and scattered school sites.
  - High demand and limited production/supply of quality construction material.
  - Shortage of skilled workers in disaster resilient construction and retrofitting.
  - Inadequate technical and management capacity of contractors to handle large size contracts.
  - Inadequate supervision skills among DSC technical staff on quality assurance of earthquake resistant construction.
  - High turnover rate of trained supervision staff (as more opportunities after the earthquake).

Implementation- Reconstruction

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Lessons:

- Regardless of several challenges, the contractor led construction modality for large schools worked well to ensure timely completion.
- Role of NRA and CLPIU was very supportive in timely completion.
- ADB TA supported Project Monitoring Information System (PMIS) and establishment of extended Monitoring Hub was effective in real time progress and quality monitoring.
- Provision of dedicated site engineer in each site was effective.
- Training to technical staff on resilient construction is essential to ensure construction quality.
- Providing overall education infrastructure needs (Class room, Science Lab, ICT Lab, Library, Office, furniture, power backup plant, WASH) is a good initiative to enhance quality education.
- Whole school safety approach in DRSP (Reconstruction and retrofitting) ensured disaster resiliency.

Implementation- Reconstruction

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Best Practices:

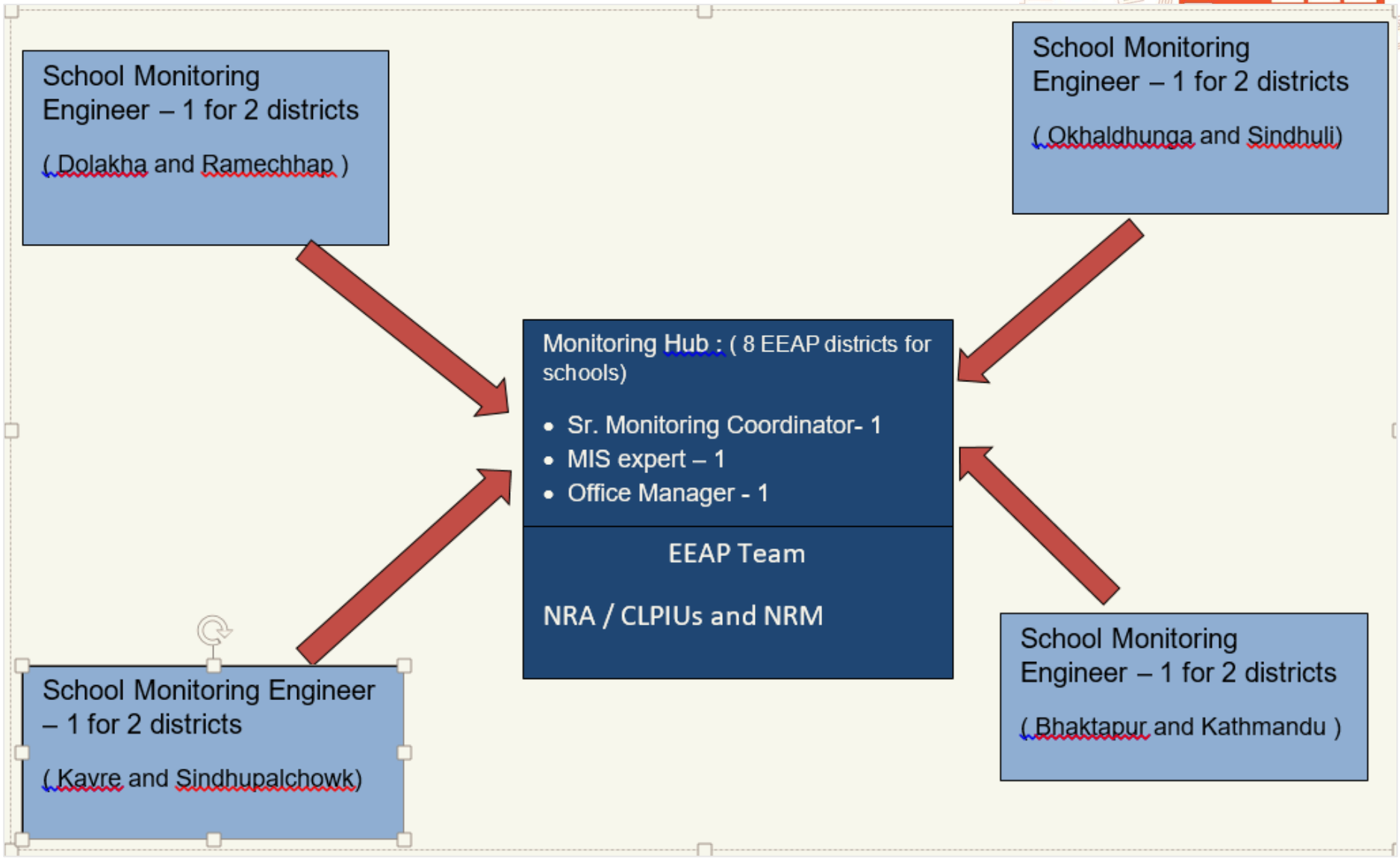
1. **Introduction of Monitoring HUB - Near Earthquake impacted area**
   - **Physical Progress**
   - **Quality Monitoring**
   - **Safeguards Compliance**

2. **Project Monitoring Information System (PMIS) –**

3. **Type Designs for Remote Schools with Stones and Mud (Local materials)**

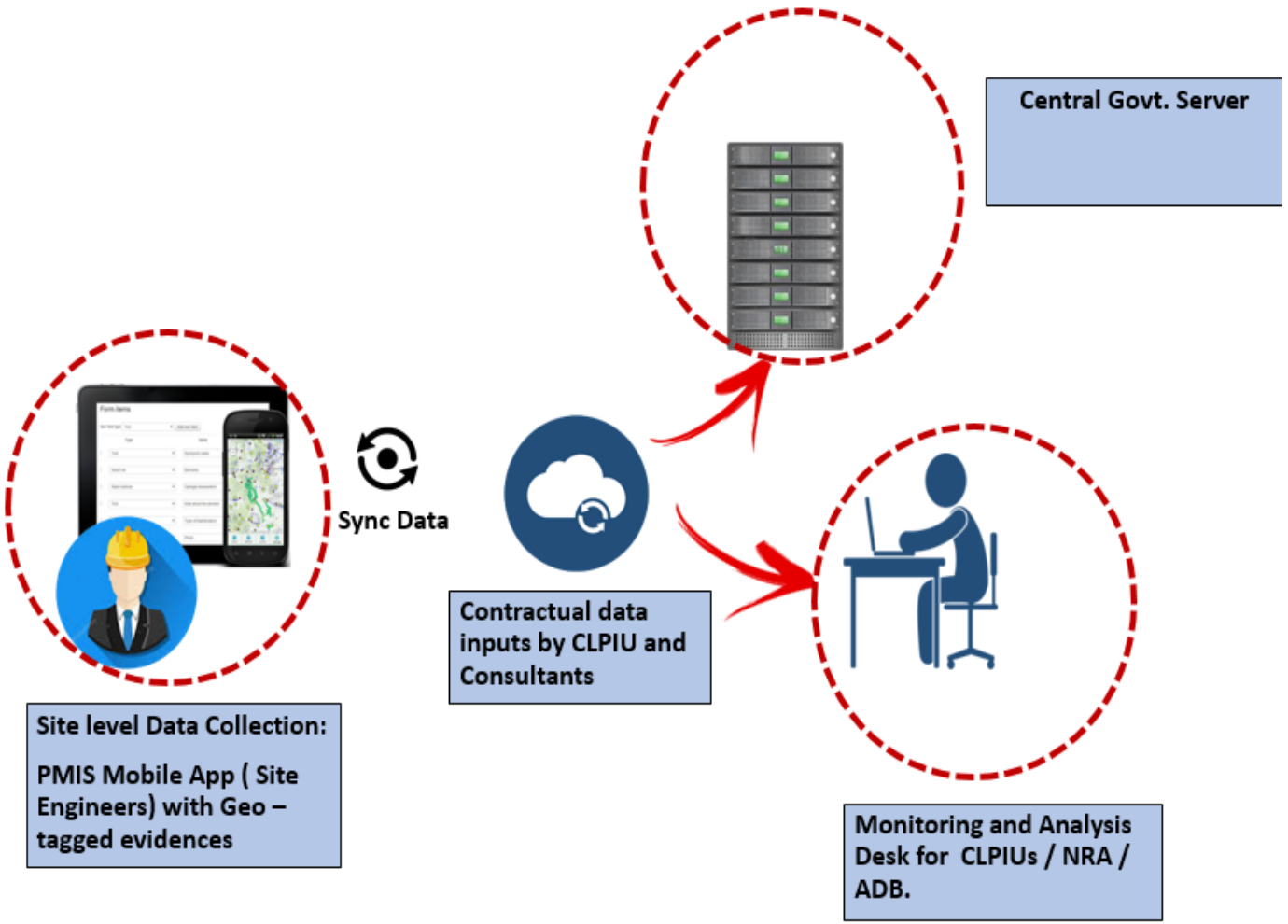
4. **School DRM Plans**

Implementation-
1.Monitoring HUB :

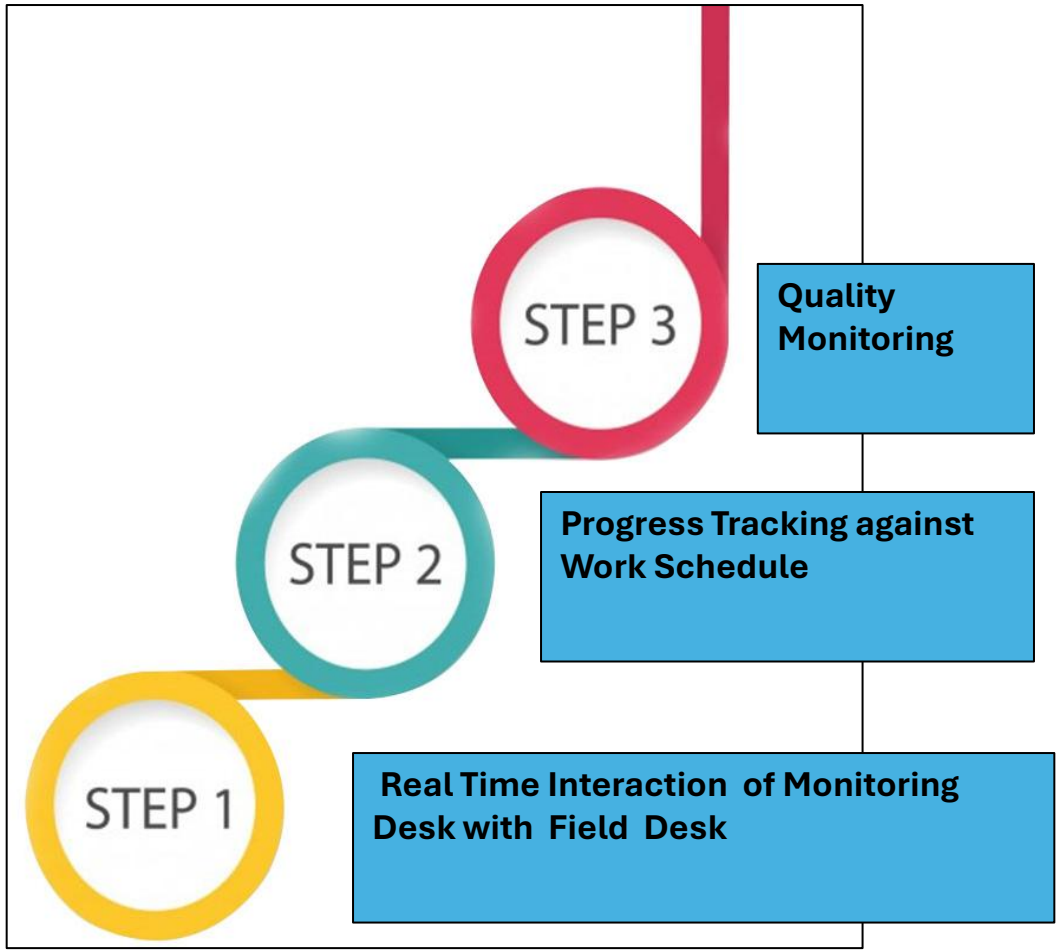


Inside Monitoring Hub :

- **How it works ?**



2. Use of Project Monitoring Information System (PMIS)



- **Cloud based project Monitoring Software**
- **Mobile Apps for real-time progress tracking in diverse geography**
- **A platform for comple**te information related to Reconstruction Project – EEAP
- **Tracking** Details project information

Project Monitoring Information System (PMIS)

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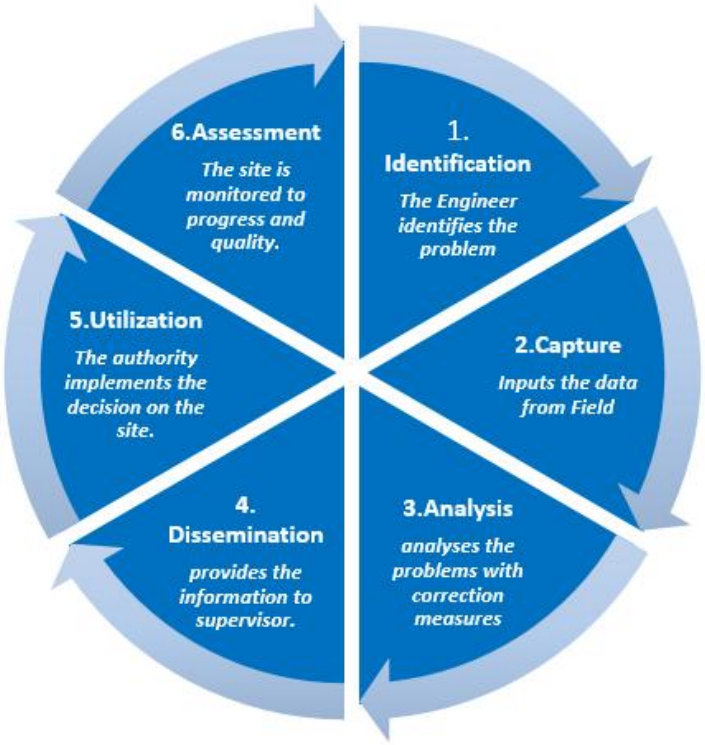
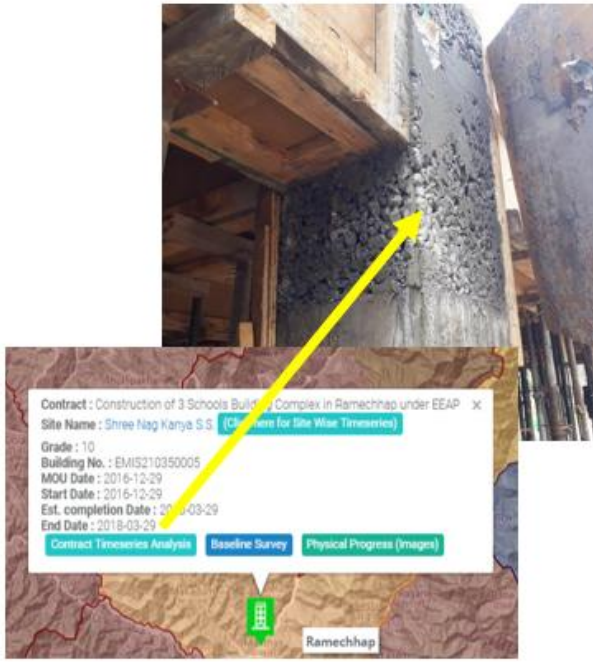
Quality Control Assessment in a real case - Using PMIS Visual Monitoring Method in Nag Kanya School , Ramechhap





Problem Identified and Captured

- **How it works ?**

Inside Monitoring Desk :

Realtime Monitoring of

3. Type Designs

for Remote Schools Using Local materials

- For easy dissemination
  - Illustrative guidelines (for each Type design)
  - Videos (for each Type design)

Reconstruction of school buildings

RC frame buildings with masonry infill in accessible areas

Reconstruction of school buildings in Remote Areas

- Physical inaccessibility to cement and steel and skills
  - Transportation cost
  - Logistical challenges (material delivery, technological, etc)

4. School DRM Plan prepared and implemented

Recommendation

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- Dedicated Institutions like NRA is essential in emergency recovery and reconstruction.
- Provision of readily available standard type designs
- Web based monitoring tools such as PMIS, should be employed for in remote and scattered sites to track work progress and quality.
- Priority should be given in Supervision and quality monitoring to ensure compliance with the design performance standard.
- Skill development package should be included in construction packages.
- Separate code and norms for retrofitting should be developed.
- Orientation to material producers on quality production should be conducted.
- Complete school safety approach should be implemented in future reconstruction.

Recommendation

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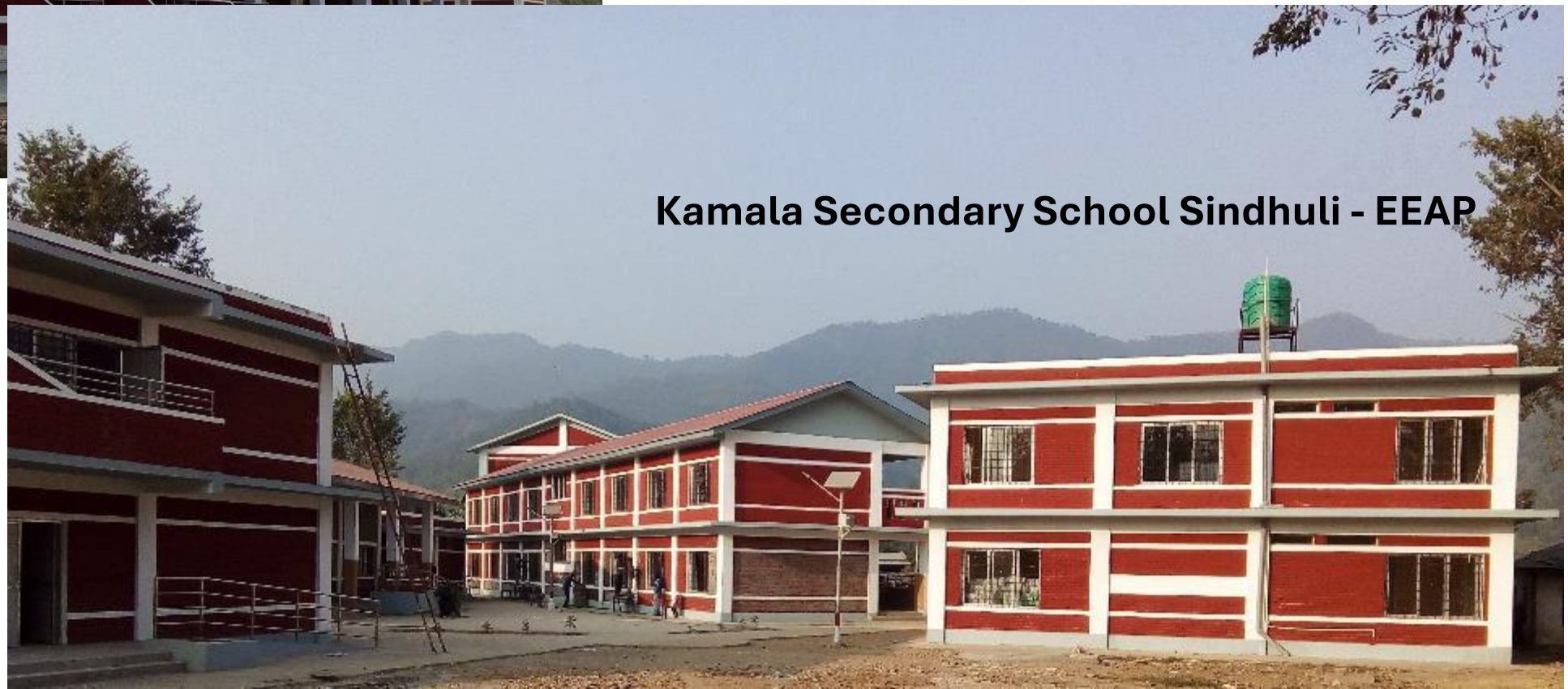
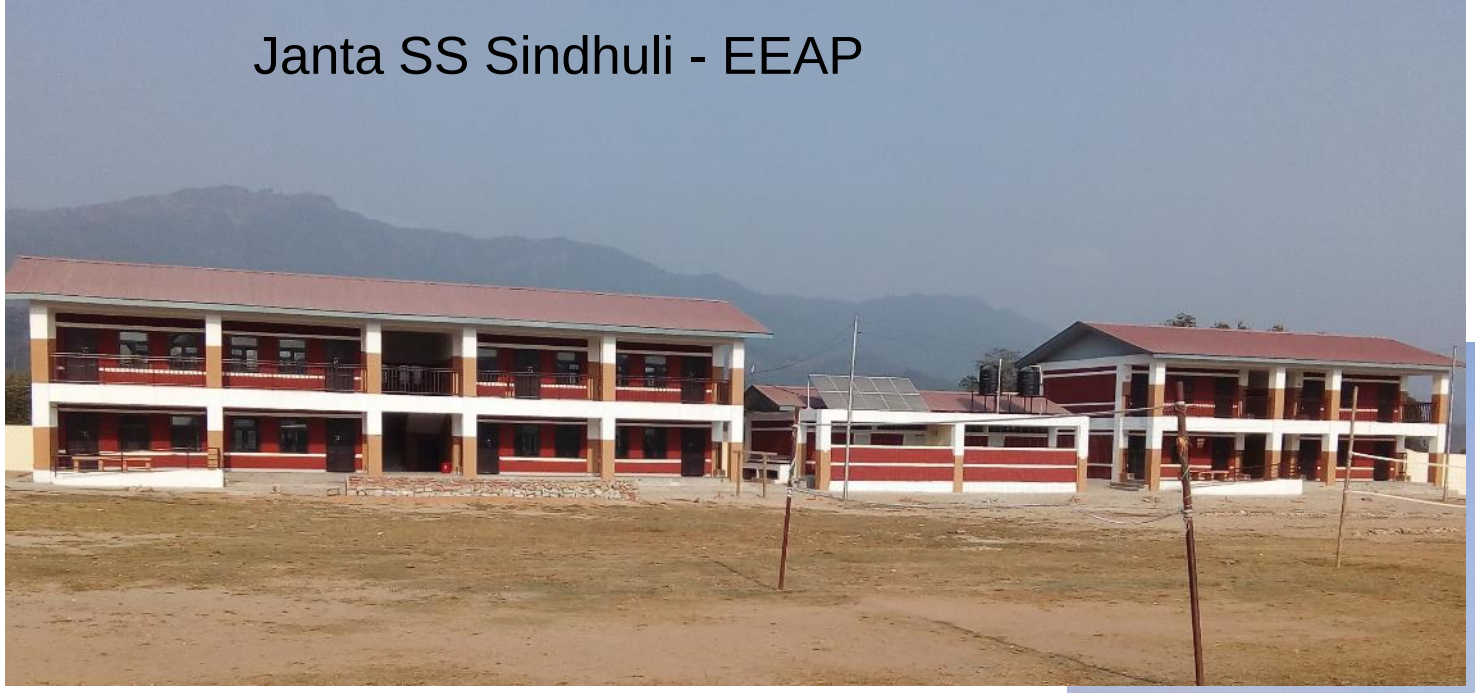
- WASH and Resilience measures to be included in the package.
- Safety of school buildings not rebuilt.
- Technical assistance support for timely start-up of emergency projects.
- Challenges with adopting building back better concept.
- Strengthening capacities in procurement, management, and contract management.

Gourishankar Secondary School of Ramechhap
Before and after reconstruction

Janajagriti Secondary School Sindhuli - EEAP



Kamala Secondary School Sindhuli - EEAP


Janta SS Sindhuli - EEAP


Panitanki SS Sindhuli - EEAP


Solar Plant
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Safe Water
2019/08/08 12:27


Age Specific Furniture
2019/08/08 12:21


Climate Risk Mitiga
2019/08/07 10:32

IEC Materials developed and dessiminated


Thank You