

**Environmental Mitigation and Monitoring Plan
EMMP**

Sajhedari Bikaas Project
Partnership for Local Development

Revised June 2016 / Original April 2016

Table of Contents

Acronyms.....	ii
1. Project Introduction	1
2. Environmental Mitigation and Monitoring Plan.....	2
2.1. USAID IEE Determinations	2
2.2. EMMP for New Construction or Rehabilitation of Small-Scale Community Infrastructure	2
3. IEE for New Construction or Rehabilitation of Small-Scale Community Infrastructure	5
4. Conclusion	14

Acronyms

CFUG	Community Forest Users Group
CITES	Convention on International Trade of Endangered Species of Wild Fauna and Flora
CSO	Civil Society Organizations
DFO	District Forest Office
EMMP	Environmental Mitigation and Monitoring Plan
IEE	Initial Environmental Examination
IPC	Implementation Partner Committee
IUCN	International Union of Conservation Nature
NGO	Non-Governmental Organization
RAIDP	Rural Access Improvement and Decentralization Program
RAP	Rural Access Program
RRRSDP	Rural Roads Rehabilitation Sector Development Project
SB	Sajhedari Bikaas
SSIP	Small Scale Infrastructure Project
USAID	United States Agency for International Development
VDC	Village Development Committee

1. Project Introduction

Project Background

Sajhedari Bikaas (SB) is a five-year, United States Agency for International Development (USAID) funded project aimed at empowering communities to direct their own development. The project is designed to offer sustainable, locally appropriate development solutions while maintaining the programmatic flexibility necessary to quickly respond to a dynamic operating environment. Through SB's activities, Pact ensures that targeted communities have the capacity to identify and access financial resources to fund local development activities that the communities themselves have identified in an inclusive and participatory manner. The targeted communities should have the capacity to manage, implement, and provide for operations and maintenance of small-scale development activities; access to appropriate community stabilization initiatives that focus on development; and that local government bodies in the targeted communities possess the capacity to function effectively.

Project Objectives

The project objective framework includes:

- Objective A: Enabling environment for community development established
- Objective B: Communities access resources for development
- Objective C: Communities implement inclusive development projects effectively
- Objective D: New local government units function effectively

Objective A: Enabling environment for community development established

Activities under this objective relate to the strengthening of local organizations to address causes and consequences of instability and conflict at the community level. Support includes a combination of training and technical assistance.

Objective B: Communities access resources for development

Activities under this objective strengthen selected CSOs by building their organizational capacity through a combination of training, technical assistance, and commodity support. The project provides subcontracts directly to communities to fund micro-projects. These micro-projects build community capacity, strengthen involvement in planning processes, and initiate tangible development results. Micro-projects may include the rehabilitation of infrastructure for potable water, sanitation structures, road repairs, educational programs, vocational training, and other micro-project components.

Objective C: Communities implement inclusive development projects effectively

Activities under this objective relate to strengthening of local community groups through orientation, management and technical training, and workshops. Activities may also include the provision of limited commodity support, such as computers or office equipment.

Objective D: New local government units function effectively

Activities under this objective strengthen local government bodies to carry out their mandate, and better collaborate with community groups. Activities include orientations, management and technical training, workshops, and study tours. Activities may also include the provision of limited commodity support, such as computers or office equipment.

2. Environmental Mitigation and Monitoring Plan

2.1 USAID IEE Determinations

In December 2010, USAID issued its Initial Environmental Examination (IEE) of Pact's SB Project. In this IEE, the intervention for Objective B, *new construction or rehabilitation of small-scale community infrastructure*, received a rating of Negative Determination with Conditions. The intervention for Objectives C and D, *limited commodity support – procurement of computers/office equipment*, also received a rating of Negative Determination with Conditions. The purpose of this EMMP is to ensure and document that the interventions mentioned above are implemented in a manner whereby there will be no cumulative potential adverse environmental impact.

SB will implement 200-300 Small Scale Infrastructure Projects (SSIPs) in 12 districts in Nepal, and will provide computer equipment for Village Development Committees (VDC) in six districts of the Mid and Far West of Nepal. Pact is committed to *do no harm* culturally, economically, and environmentally. SB operates on the belief that in all geographic areas of its work, and especially at the village level, the environment, in all its complexity, is the principle source of food, water and livelihoods for every Nepali. This EMMP documents and demonstrates Pact's awareness of and intent to take all necessary measures to ensure environmental compliance.

At the heart of the EMMP is the participatory process that informs all SB activities and interventions. SB will provide leadership, training, and professional expertise from program staff and civil and environmental engineers to project beneficiaries to empower them to inspect and report on any environmental concerns arising from implementation of the project.

This EMMP is informed by the Government of Nepal's five major environmental policies:

1. To manage natural and physical resources efficiently and sustainably
2. To balance development efforts and environmental conservation to fulfill the basic needs of the people in a sustainable manner
3. To safeguard the national heritage
4. To mitigate the adverse environmental impacts of development projects and human actions; and
5. To integrate the environment and development through appropriate institutions, adequate legislation and economic incentives, and sufficient public resources

2.2 EMMP for New Construction or Rehabilitation of Small-Scale Community Infrastructure

The social and environmental compliance of the SSIP process begins long before construction activities commence. SB program staff with district-based Non-Governmental Organization (NGO) partners will coordinate with VDC officials and local citizen groups to consider lists of potential SSIPs. Chief among the social considerations is the GESI and governance impact of the proposed project. All projects will be vetted through a feasibility study, which includes an environmental review.

The following potential negative environmental effects will be specifically monitored and, if observed, will be mitigated immediately:

1. Rehabilitation or construction of small, gravity-fed water supply systems may lead to erosion and improper disposal of excavated material.
2. In the rehabilitation of proper buildings such as schools and health clinics, care must be taken to protect the users by ensuring that materials are environmentally friendly. Site runoff can cause erosion problems.
3. Drinking water from hand-pumps and wells may be susceptible to arsenic contamination. Previous studies have concluded that approximately 7.4% of all tube wells tested were higher than the Nepal Standard of 50 ppb of arsenic contamination. However, 76.3% of tube wells are below the World Health Organization guidelines of 10 ppb in the national database of 2003, which consists of 18,635 arsenic tested tube wells from 20 districts.
4. Drinking water may also be contaminated by various forms of coliform bacteria due to proximity to toilets and improper sanitation and hygienic behavior.
5. Landslide and erosion control works may lead to improper disposal of excavated material.
6. Construction sites present hazards to the safety of both construction workers and others in the area
7. Road, trail, and footbridge construction and rehabilitation can lead to improper excavation and disposal of excavated materials, erosion, and geotechnical problems.

List of Small Scale Infrastructure Projects (SSIPs) in the project

1. Road repair
2. Gabion, retaining wall and culvert repair and construction
3. Water supply repairs, rehabilitation or construction
4. Latrine construction
5. One story community structure
6. Community electrical project
7. River protection and bank stabilization
8. Extension of irrigation system
9. Foot trails or foot bridge

Roles and responsibilities for environmental mitigation and monitoring

SB's field teams include program experts, staff engineers, and engineering consultant firms. SB has hired two engineering firms to assist with SSIPs in the Original and Recovery districts. Each engineering firm has experienced, expert staff dedicated to environmental mitigation and monitoring), GESI experts, and M&E experts who are responsible for monitoring potential adverse environmental impacts. Working in close partnership with SB field teams are district-based NGOs with social mobilizers who work at the community level. The NGOs will work hand in hand with SB staff to identify potential adverse environmental impacts. Every SSIP will be managed by a Ward-level Implementation Partner Committee (IPC). These IPCs will be trained to manage the SSIP. They will form a structured committee, elect officers, open a bank account, select signatories, procure supplies, and submit milestone reports for contract payments. While it is SB that has the primary responsibility of environmental monitoring, by training IPCs, district-based NGOs and project beneficiaries participate in and lead the process. By developing local capacity to monitor and mitigate environmental compliance, SB will

promote social accountability of all projects and develop critical capacity to sustain environmental security far into the future.

Throughout SB's activities, Pact will be guided by the following guidelines as well as others that may be developed and approved by USAID:

1. USAID: Sector Specific Guidelines
2. USAID: Environmental Guidelines for Small Scale Activities in Africa
3. International Finance Corporation: Environmental, Health, and Safety Guidelines
4. World Bank: Pollution Prevention and Abatement Handbook 1998: Toward Cleaner Production

Environment Mitigation and Management Plan (EMMP) for SSIP

The EMMP provides mitigation actions to environmental issues, its monitoring actions and the responsibility for mitigation, monitoring and reporting. The EMMP will be prominently posted at every SSIP work site. IPCs and local beneficiaries will be trained to understand the EMMP Throughout the planning and construction phases, and during social audits, IPCs and local beneficiaries will be encouraged to raise any questions or objections regarding the environmental compliance of the SSIP. Stakeholders at all levels will be encouraged to verify that all mitigation measures have been effectively implemented in their totality.

Once construction begins, SB's NGO partners will be present at work sites on a regular basis. SB's engineers will visit every work site 8-10 times with a mandate to inspect for any environmental impacts. SB's greatest resource in monitoring and mitigating environmental impacts will be the community and its vigilant members. Every project will hold 1-2 public audits. These audits will attract community members who will be encouraged to raise questions and comment upon any element of the project. Aware that their lives and livelihoods depend on the environment, negative environmental impacts are expected to be questioned by the community members. Not only will SB establish an exemplary record of environmental stewardship, but also in many cases SB will dramatically improve the environment by reducing water runoff and soil erosion with the improvement of local roads and drainage and the construction of culverts.

The IEE for EMMP is provided in the table below.

IEE: Environment Mitigation and Management Plan for small scale construction activities in Sajhedari Bikaas				
S.No	Environmental issues	Mitigation Measures	Monitoring indicators	Responsible person for mitigation, monitoring and reporting
1	Site Selection for all type of construction activities			Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	Site may contain habitat of importance, sensitive ecosystems, vulnerable sites for natural disasters like flooding, landslides or private land	Site should be selected in consultation and approval from local government and communities and private owner if owned privately. Site should be avoided in vulnerable areas	Approval letter from VDC or municipality or private owner	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
2	Planning and design for all type of construction activities			Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	Improper design might cause failure of the infrastructure as well as affect environment	Design, specification and estimate of each construction activity as per the government standard and approved by engineers of the project	Design and estimate for each construction activity.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu

	Improper design might cause failure of the infrastructure as well as affect environment			Khaireni, for all projects in Recovery Districts.
		Design must be seismically resistance and incorporate measures for erosion, landslide and flood protection	Design incorporating seismic resistance, protection for flood, erosion and landslide	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
3	Construction phase			Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
3a	For all types of construction activities			
	Construction material quality might impact the overall quality of the construction activities	Construction materials procured as per the standard specification and estimates approved by the project engineers	Construction materials specification developed prior the construction and documentation of site checking by engineers on the quality as per the specification.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.

	<p>Improper disposal of construction and demolition debris might cause pollution in the environment</p>	<p>Proper disposal plan for construction and demolition debris should be in place. There should be disposal of debris in the designated place or fill up in eroded gullies, burrow pits and any other depressed areas which does not have any environmental harm. There should be strict restriction for the disposal in forestland, nearby water bodies, agricultural land and any other sensitive areas.</p>	<p>Documentation of Proper disposal plan</p>	<p>Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.</p>
	<p>Construction might disturb neighbors creating noise and dust.</p>	<p>Carry out noisiest types of work into as short period as possible and during least disruptive times of the day. Wet ground if water is easily available to avoid dust pollution during construction</p>	<p>No complain made by the neighbors</p>	<p>Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.</p>
	<p>Construction site might not have water and sanitary facilities for workers which might cause open defecation in the area</p>	<p>There should be drinking water facilities to protect their health and temporary pit latrine at construction sites to avoid open defecation</p>	<p>Availability of water and sanitary facilities at the site</p>	<p>Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.</p>

	Construction workers might have safety risk during construction	There should be mandatory use of personal safety equipment (PSE) like masks, shoes, and helmet for the workers. There should be work duration only in daytime. There should be availability of first aid kit on the construction site.	Workers in their PSE, no work at night and presence of first aid kit at the site	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
3b	Road Repair. Gabion wall, retention wall, culvert, foot trails or foot bridge, river protection, bank stabilization			
	Inappropriate drainage might create pools of stagnant water	Design must consider well design drainage as per the need of the site. There should be connection of all drainage with the natural drainage system to avoid possible gully formation especially on hilly slopes. There should not be diversion of natural channels for the construction.	Well design drainage incorporated in overall design of the structure	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	These kind of construction might accelerates soil erosion and landslide if not constructed well	There should be bioengineering plantation to avoid soil erosion where appropriate	Bioengineering structure at the area prone for erosion.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	Improper excavation and disposal of excavated materials might cause erosion, and geotechnical problems	There should be good planning document for excavation and disposal of excavated materials without any environmental harm.	Excavation and disposal planning document and no improper disposal of excavated materials in environment.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in

				Recovery Districts.
3c	For Water Supply system specific			
Contamination of water with nutrients and bacteria from animal waste and water pool at tap stand.	The water source should be protected/fenced to keep away from animal graze or any kind of human contamination. Water distribution junction (manhole) should be protected with cover slabs There should be water quality testing and awareness in the community for drinking water treatment if needed. There should be availability of drainage pipe	Protected water source with fetch, tanks covered with slab, Water quality testing reports, drainage, no pool of stagnant water at tap stand.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.	
There might be leakages which results the loss of water	There should be good monitoring of leaks from cracked containment structures, broken pipes, faulty valves and similar structure Nepal Standard Quality Pipes should be promoted for water supply purpose The pipeline for water supply should be buried minimum 1 meter underground.	NS stamped pipes are in use Masons are supervised by the technical staff on maintaining proper depth during construction No pipes seen outside the ground. No leakages seen.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.	
There is a chance of source dried up after the construction	Source water flow should be at least 0.1 mps during dry season.	Source flow rate measured and recorded in the report during feasibility study.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in	

				Recovery Districts.
3d	Latrine			
	Improper construction might increase transmission of vector borne diseases, contamination of water bodies	Pit/Septic pit should be 1-1.5 meter depth. If the water table is high, two-pit latrines should be promoted to reduce depth of septic tank for waste water contamination with underground water sources or raise the height of the structure	All pit/septic have 1-1.5 m depth, two pits latrine or raised latrine if water table is high.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	Lack of ventilation inside toilet might cause bad smell	Gas pipe with minimum 2 inch diameter and 6 ft. height with net cap should be installed for the offset septic pit or to improve the temporary/ VIP latrines	All septic pits and/or improved pit latrines have appropriate gas pipes	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	Lack of superstructure and locks might disturb users privacy especially for women and girls	The walls of the superstructures should be well covered so that privacy is maintained	Four walls are well covered	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
		Toilet locks on the door should be installed at child-friendly place	Inside and outside locks of the door are reachable for adults and children	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in

				Recovery Districts.
	Lack of water inside toilet might result bad smell and unhealthy environment for the users	Either water tap or water availability in buckets inside the latrine	Clean surfaces in latrine, constant water presence in bucket and alternate bucket available in school, health posts and public latrine	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	Unsafe disposal of feces from the pit might cause contamination in environment	Training on safe disposal of feces after pit/tank filled up	All households have knowledge on safe feces disposal	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	Unhygienic toilet might cause disease to users as well as nearby environment	Training on cleanliness of latrines with proper orientation on the use of sanitation facilities	Latrines are clean with sanitation facilities in place such as toilet cleaner, brush, slipper, water bucket with water	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
3e	Extension of irrigation system			

	Extension of irrigation system might reduce water availability for drinking and conflict in communities	Drinking water should be given the first priority. Extension is done only if water is sufficient for irrigation us There should be consensus from the community and VDC for the extension of irrigation system	No complain from the community, consensus letter from VDC or municipality or community.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	The quality of water used for irrigation might contain high level of contaminant which are not good for farming	Water quality must be ensured for the irrigation	Water quality testing report	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
3f	One story, semi enclosed or open air community structures			
	Liquid pollutants such as paint or oil could leak into water table.	All liquid pollutants should be stored in well-sealed drums and removed offsite to a secure facility.	Visual examination and photo evidence of work site and storage facility.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
3g	Community electrical project			
	Potential erosion of riverbanks of micro hydro projects	Construction should be on stable suitable land with minimal impact on water flow and animal movement. There should be environmental awareness	Engineer inspection and clearance for the construction.	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu

		among local people on how to prevent erosion.		Khaireni, for all projects in Recovery Districts.
	Disruption of existing local infrastructure	There should not be blockage of roads or foot trails or interfere with existing power lines, poles, junction boxes or other infrastructure	No complain from the community	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.
	Potential reduction of biodiversity	During construction all care should be given to impact the local environment as minimally as possible. There should be environmental awareness among workers and local people on biodiversity conservation.	Environmental awareness on biodiversity conservation conducted among workers and local people. No complain from communities or any local authorities	Lomash Adhikari, SB Engineer Manager, Nepalgunj, for all projects in Core Districts and Santosh Raj Panthee, SB Engineer Manager, Anbu Khaireni, for all projects in Recovery Districts.

4. Conclusion

The provisions within this EMMP will inform all project designs, estimates, bill of quantity, and contract documents. All EMMP provisions will be implemented routinely and consistently throughout SB project implementation and commodity support. The primary responsibility of EMMP implementation will lie with Pact's SB project and its staff. Emphasis will be placed on building the capacity of project partners and beneficiaries to ensure the environmental review process from start to finish is rigorous and transparent, and to equip NGOs and beneficiaries with the skills necessary to inspect future private or government sponsored construction or development projects with the aim of ensuring their environmental compliance.

SB expects to extend a contract to Equal Access, a current SB partner, to establish a simple reporting system in SB's recovery districts. This reporting system will allow for the immediate and anonymous reporting of all areas of concern with respect to GON performance. This system will also allow any user with a cell phone to register complaints, concerns, observations or suggestions concerning SB's SSIPs in the recovery districts.

All SB activities will be informed by Nepal's Environmental, Occupational, Health and Safety standards and other relevant laws and regulations, standards, norms and best practices for environmental protection and management. Pact will ensure compliance with USAID regulations, policies, procedures, and best practices.

All activities will seek to raise environmental awareness, promote environmentally and socially sustainable development, conserve biodiversity, reduce climate change, and foster a culture of environmental compliance and governance.

SB will include environmental compliance considerations into all aspects of the program implementation and will promote and train local counterparts on environmental requirements and standards across all of the program's activities.

Compliance of all EMMP provisions will be monitored regularly by SB staff. Signs will be posted at every work site with the site specific IEE Checklist to encourage local beneficiaries to inspect the project as owners and report any concerns to SB staff on a dedicated email or text to cell phone. Similarly, social audits will be carried out midway through and at the end at which time beneficiaries will be encouraged to state their concerns or observations.

Outside organizations will receive a standing invitation to visit any site to inspect the work to date and SB's environmental compliance.

SB is committed to Nepal's unique environment and ensuring that every component of every project is completed with the utmost respect for the environment and its relationship to the community beneficiaries whose lives depend on it.