

Report on Short-Term Monitoring (STM) Survey of schemes completed in FY 2077-78 (2020-21 July, 2024

1. BACKGROUND

SIP-II aims to construct and/or rehabilitate about 1,300 schemes (20,000 hectares) in its programme area and sustainability of these schemes after construction remains a high priority for the project. The logical framework of the programme states that, "90% of irrigation schemes built or rehabilitated under the programme are functioning well after 3 years of completion". This is to be assessed through a short-term monitoring (STM) survey of the constructed/rehabilitated schemes.

2. OBJECTIVES

The main objective of the assignment was to assess the sustainability and functionality status of completed irrigation systems three years after its completion.

More specifically, the assignment aimed to:

- Examine the physical status of irrigation infrastructure established under SIP-II to ensure water availability in targeted command areas;
- Assess institutional functionality and performance of water users' associations;
- Assess sustainability of irrigation system in terms of service delivery and operation and maintenance (O and M),
- Identify areas of improvement and learnings to ensure sustainability of the irrigation systems.

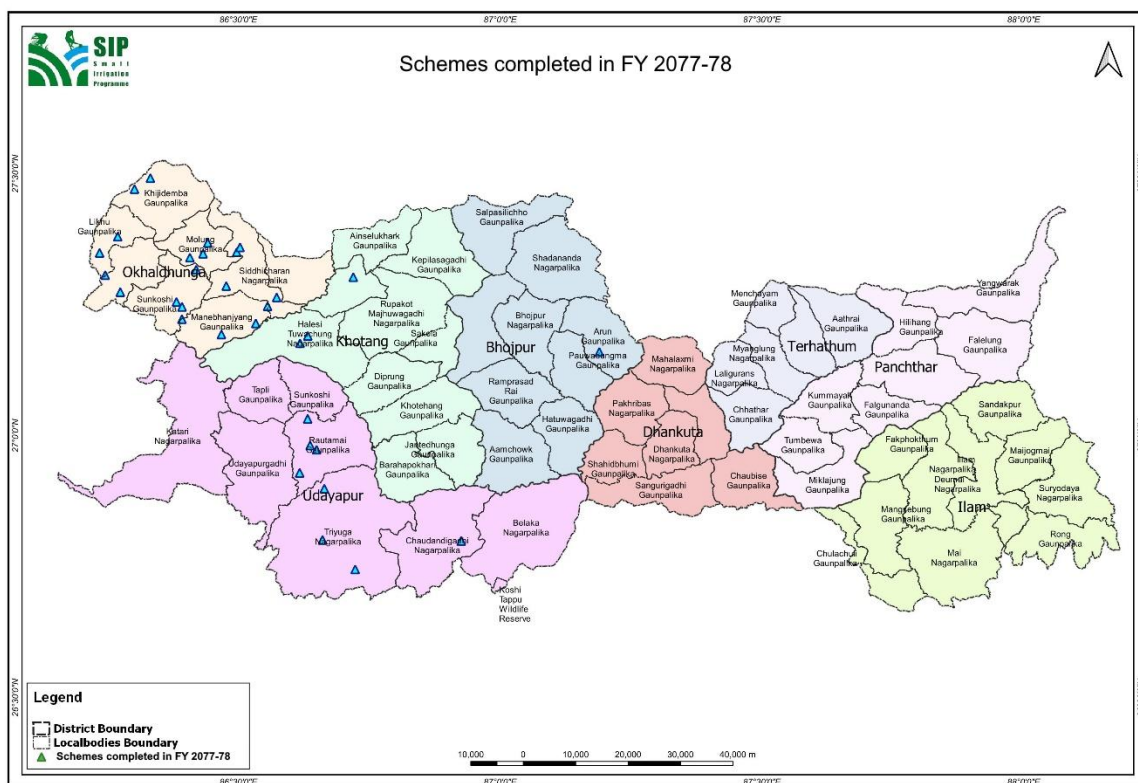
3. SCOPE OF WORK

This periodic STM survey is intended to be carried out in the irrigation schemes after at least three years of its completion period and considered four aspects:

1. status of physical infrastructure,
2. institutional functionality status,
3. sustainability in terms of service delivery and
4. operation and maintenance (O&M) practices within WUA of the irrigation system.

4. STUDY AREAS

The survey was carried out in 32 schemes constructed/rehabilitated three years back, i.e., FY 2077-78 in thirteen local governments of SIP-II programme areas in May 2024. The geographical distribution of surveyed schemes is shown in the map below and further details of the schemes are provided in **Annex-01**.



5. METHODOLOGY

The survey included site visits and data collection by the cluster team – assisted by Trainee Engineers and data analysis by PMISC program team. The study adopted both qualitative and quantitative methodologies. Quantitative, as well as some qualitative data were collected from field survey which included discharge measurement and walk-through survey for observation of infrastructure status, while qualitative data were collected from WUA meetings as well as through field observations. Primary source of information were the programme beneficiaries, while data from secondary sources like documents and reports were also reviewed.

6. OBSERVATIONS AND FINDINGS

The study found that 97% of schemes are functioning well after three years of completion with only one scheme partially operational due to damages to its intake during road construction. Only 6% of WUAs have regularly renewed their associations; mostly due to inactiveness or lack of awareness. Financial audits were found to be minimal, with just 6% undergoing regular audits, and most WUAs have not kept formal meeting records. Water availability is generally sufficient, with 59% of schemes meeting the requirement; while, 16% of the schemes had no discharge due to prolonged drought and also due to water being directed into the upstream canal.

With regards to O&M, only one scheme had a formal policy, while others relied on traditional practices and do not collect O&M funds regularly.

The followings section briefly presents the observations and findings of the study.

A. Status of physical infrastructure

97% of the schemes are functioning well, after three years of completion. One system was found to be partially operational out of the 32 schemes surveyed while the remaining thirty-

one were fully operational. One scheme in Likhu Rural Municipality, Okhaldhunga was only partially operating as its' intake was damaged during road construction. As the road construction work is ongoing, a temporary alternative intake is being used and the LG has assured to restore the intake once construction work is completed.

B. Institutional functionality status

B.1 Renewal of WUAs

Among the 32 WUAs, only two (6%) have renewed their associations on a regular basis while four (13%) have only renewed it once, and the remaining twenty-six (81%) have not renewed it after the completion of the construction work. During the interviews, four WUAs reported that they have not registered in PAN, which was initially optional, while seven WUAs reported that they were inactive after the work was completed. The primary reason for their inactiveness was the understanding that once the construction work is completed, the system would require less supervision, hence WUA need not remain active. Nine schemes reported that WUAs were unaware of the renewal provision and its procedures while WUA in ten schemes did not know the reason behind this.

B.2 Financial audit

Only two (6%) have conducted a financial audit on a regular basis while three (9%) WUAs have only had one audit. The remaining twenty-seven (85%) have not conducted financial audits till date. Committee members from nine schemes mentioned that WUAs were inactive and did not have sufficient funds to do it. In these schemes, the cost of the audit was high in the first year due to high volume of the transaction in the bank account. Five WUAs reported unawareness about the processes while one scheme did not conduct the audit as initially when they registered as a WUA, registration in the PAN was not required.

B.3 Meetings

All WUAs have held meetings as and when required. Thirteen (41%) WUAs have maintained a formal register to record their meetings, whilst one WUA has maintained minutes in loose copies. Meeting minutes were not maintained by eighteen (56%) WUAs as they believe that verbal discussions and decisions would suffice.

C. Service delivery

C.1 Water availability at source

Out of the total 32 schemes, nineteen (59%) had adequate water at the source compared to the required amount during the survey. Eight schemes (25%) had less than required water, however, WUA members stated that they have adequate water for the remainder two seasons (monsoon and winter) of the year.

Five schemes (16%) had no discharge at the source during the survey. Among them, water in three schemes was diverted into the upstream canal, while in two schemes the condition had arisen only this year as a result of the prolonged drought. WUA members assured that water was available when needed as they have an agreement with the upstream users for water sharing.

C.2 Satisfaction level of the beneficiaries

Users in eight schemes (25%) were fully satisfied with the irrigation system, receiving adequate and timely service. In twenty schemes (63%), users are fairly satisfied, finding the service adequate despite infrastructure issues and insufficient water availability which was not as per their expectation. However, users, particularly the tail-end user in four schemes (13%) expressed their dissatisfaction, as they face problems such as inequitable water distribution,

poor communication with absentee landowners, water scarcity due to road disruptions, and inadequate infrastructure.

D. Operation and Maintenance (O&M)

D.1 Water distribution policy

Only one scheme (3%) had formulated a policy for the distribution of water while the other thirty-one schemes (97%) have continued to distribute water according to their conventional practices as they thought it was effective enough.

D.2 Operation & Maintenance worker

In six schemes (19%), an O&M worker is employed on a salary basis, while in the remaining twenty-six schemes (81%), WUA responded that they operate and manage the system themselves. In these schemes, beneficiaries responded that after rehabilitation of the earthen canal to concrete structure, the need of maintenance is low and manageable by themselves.

D.3 O&M plan

One scheme (3%) has developed and is implementing an O&M plan, while the remaining thirty-one schemes (97%) rely on traditional practices. Among these, users and WUAs are considered inactive or unwilling in six schemes. In seventeen schemes, the traditional approach of taking decisions as and when required are deemed to be sufficient.

D.4 Working operation/irrigation schedule

Two schemes (6%) regularly prepare and implement a written irrigation operation schedule. In contrast, thirty schemes (94%) rely on verbally agreed schedule. Among these, sixteen schemes find traditional practices effective and believe a written schedule is unnecessary.

D.5 Status of O&M fund

Out of 32 schemes, nine (28%) collect O&M funds regularly, while twenty-three (72%) collect funds as needed. Among the latter, eight schemes deemed the current collection system sufficient and did not see a need for regular enforcement. Two schemes reported users' unwillingness while one scheme was unaware of the regular collection provision. WUA members in twelve schemes were unable to respond to this question.

7. LESSONS LEARNT

The following are the lessons learnt from the STM survey and its findings;

A. Irrigation infrastructure and other physical aspects

- Riverbed levels are lowered at few schemes causing issues with water retention for which either provision of scour protection or install diversion weirs should be accomplished.
- Local stream discharge has become more erratic and drier as reported by the users and future designs must include source protection. However, given the small scale of SIP projects, requesting concerned authorities including local government should be considered.
- Users often request more lining, but SIP's current practice of lining up to the command area is sufficient. Future projects should avoid single-sided lining, as users do not prefer it.

- Polythene pipes in canals were damaged by wildfires and floods, though only one instance of each was found. Pipes should be buried, supported on pillars, or wrapped in heat-resistant material. RCC lining is preferred over pipes due to discharge bottlenecks.
- Most of the schemes report unstable hill slopes, with current focus on hardware for protection. Future construction should incorporate more bio-engineering methods.
- Design defects such as uneven canal slopes, incomplete designs, lack of bio-engineering, and insufficient protection were observed. Future work should focus on careful design and construction to prevent these issues.
- Better coordination within LG's other infrastructure works so as to avoid damages to structures.

B. Institutional aspects

- Increased awareness on WUA renewal, auditing and its importance during public hearing, institutional development training, operation and maintenance training.
- Engagement with local governments to improve institutional support for WUAs.

C. Irrigation service

- Most schemes did not have appointed O&M workers, relying on users instead, which limits water conveyance and maintenance. Users should be encouraged to focus on O&M, as it is crucial for system efficiency and tied to the O&M fund.
- Improving irrigation service can be achieved by establishing water distribution schedules and O&M plans before each crop season.

D. Operation and Maintenance (O&M)

- O&M is practiced mostly ad-hoc in schemes, with users sticking to conventional habits. The project should develop a hybrid approach combining traditional practices with modern methods.
- Users prefer the current, simple distribution schedule and resist more complex, improved options despite its effectiveness.
- Raising regular O&M funds is challenging. The project should directly engage users, as current efforts through WUA representatives are ineffective.

8. ANNEXES

Annex-01: Details of surveyed schemes

S.N	District	Scheme		Palika Name	Ward No.	Command Area, ha	Survey		Cost, NRs		Household No.	Completion Date
		Name	Code				Done by	Date	Estimated	Final Bill		
1	Bhojpur	Bayu Khola Hudai Salleri Kulo Nirman	10605SI004	Arun Rural Municipality	5	5	Kritishree /Ambica	7-May-2024	1,113,165	1,113,120	11	2021-07-07
2	Udaypur	Goguned Khola Dhukurthung Kabhre Sichai	11404SI001	Rautamai Rural Municipality	1	6.5	Smriti	8-May-2024	1,511,241	1,511,187	24	2021-07-01
3	Udaypur	Sana Sichai Rasuwa Dhamini Dewane Kulo Nirman	11404SI003	Rautamai Rural Municipality	4	6.7	Smriti	9-May-2024	1,733,464	1,723,165	44	2021-07-01
4	Udaypur	Tarkhola Sinchai	11404SI006	Rautamai Rural Municipality	7	3	Prajina	10-May-2024	779,308	779,145	32	2021-07-01
5	Udaypur	Sichai Nirman Krishi Kulo	11404SI008	Rautamai Rural Municipality	8	6.7	Smriti	10-May-2024	1,646,100	1,638,542	33	2021-07-02
6	Udaypur	Khajodi Dovan Sichai Yojana	11403SI002	Triyuga Municipality	3	17	Prajina	7-May-2024	2,203,566	2,153,775	132	2021-06-28
7	Udaypur	Babiya Paterchap Sichai Yojana	11403SI008	Triyuga Municipality	2	9	Prajina	8-May-2024	1,331,329	1,192,724	24	2021-06-24
8	Udaypur	Bhorel Sichai Kulo Marmat Yojana	11403SI011	Triyuga Municipality	16	15	Prajina	9-May-2024	2,384,008	2,185,312	36	2021-06-27
9	Udaypur	Chaukidadha Tole Bikas Samiti Ajingarey Kulo	11402SI011	Chaudandigadhi Municipality	4	11	Prajina/Smriti	5-May-2024	1,783,049	1,629,810	32	2021-07-02
10	Okhaldhunga	Senikhola Sinchai Yojana	10404SI008	Khiji Demba Rural Municipality	3	5	Chetana	10-May-2024	1,314,532	1,133,352	9	2021-06-17
11	Okhaldhunga	Koirale Theldim Irrigation Project	10404SI012	Khiji Demba Rural Municipality	4	12	Chetana	9-May-2024	1,759,419	1,458,433	47	2021-06-30
12	Okhaldhunga	Agraakhe Kulo Marmat Sinchai Yojana	10405SI002	Likhu Rural Municipality	2	6.7	Chetana	12-May-2024	2,125,949	1,832,780	44	2021-06-27
13	Okhaldhunga	Mahabir Khola Muhan Bhalu Danda Chuwa Danda Sinchai Yojana	10405SI005	Likhu Rural Municipality	4	23	Chetana	11-May-2024	3,977,333	3,429,198	71	2021-06-28
14	Okhaldhunga	Chunbote Kulo Sinchai Yojana	10405SI007	Likhu Rural Municipality	1	5	Chetana	13-May-2024	1,018,371	782,804	36	2021-06-26
15	Okhaldhunga	Punakhola ratmate jalkeni sichai yojana	10406SI001	Champadevi Rural Municipality	1	7.2	Priyanka	8-May-2024	2,072,382	1,786,939	44	2021-06-25
16	Okhaldhunga	Lapse Katunje Besi Sinchai Yojana	10407SI003	Sunkoshi Rural Municipality	10	5	Jigyasa	15-May-2024	1,100,130	945,724	15	2021-06-27
17	Okhaldhunga	Dhad Khola Odare Muhan Dhade Sichai Yojana	10407SI009	Sunkoshi Rural Municipality	3	5.3	Ambica	11-May-2024	1,643,233	1,416,713	19	2021-06-22

S.N	District	Scheme		Palika Name	Ward No.	Command Area, ha	Survey		Cost, NRs		Household No.	Completion Date
		Name	Code				Done by	Date	Estimated	Final Bill		
18	Okhaldhunga	Dhad Khola Muhangari Dhamalato Sichi Kulo	10407SI028	Sunkoshi Rural Municipality	6	12	Priyanka		2,551,360	2,199,934	56	2021-06-22
19	Okhaldhunga	Khahare Khola Mane Salleri Gurukul Harkpur Sichi Yojana	10403SI001	Molung Rural Municipality	4	11.24	Karuna	6-May-2024	2,949,535	2,542,713	74	2021-06-22
20	Okhaldhunga	Dipli IP	10403SI015	Molung Rural Municipality	8	5.8	Priyanka		1,660,303	1,404,903	43	2021-07-01
21	Okhaldhunga	Kool Khola Dhad Besi Sichi Yojana	10403SI002	Molung Rural Municipality	4	9.6	Karuna	6-May-2024	2,273,479	1,960,278	91	2021-07-03
22	Okhaldhunga	Pokting Surke Sinchai	10402SI002	Siddhicharan Municipality	7	8.5	Karuna	5-May-2024	2,177,008	1,862,296	61	2021-06-02
23	Okhaldhunga	Gangatay Khola Mul Kulo	10402SI010	Siddhicharan Municipality	2	5.8	Karuna/Niraj	7-May-2024	1,562,939	1,146,351	23	2021-07-06
24	Okhaldhunga	Argeli Taksar Irrigation Project	10402SI041	Siddhicharan Municipality	7	15	Jigyasa	5-May-2024	2,526,150	2,177,971	63	2021-05-03
25	Okhaldhunga	Mulkulo Sicha Yojana	10402SI013	Siddhicharan Municipality	10	10.5	Jigyasa	6-May-2024	2,653,511	2,287,241	70	2021-06-25
26	Okhaldhunga	Balaiche Muhan Gari Jalkini Sinchai Yojana	10402SI019	Siddhicharan Municipality	1	6.2	Priyanka		1,562,939	1,347,650	12	2021-06-07
27	Okhaldhunga	Majhitar Sichi yojana	10408SI018	Manebhanjyang Rural Municipality	1	6.2	Karuna/Niraj	7-May-2024	1,802,008	1,553,175	30	2021-07-03
28	Okhaldhunga	Kabre Mahabir Sichi Yojana	10408SI020	Manebhanjyang Rural Municipality	8	7.5	Jigyasa /Kritishree	11-May-2024	2,247,162	1,937,581	30	2021-06-03
29	Okhaldhunga	Tallo Richuwa Sichi IP	10408SI024	Manebhanjyang Rural Municipality	6	5.6	Jigyasa /Kritishree	10-May-2024	1,649,695	1,409,842	17	2021-06-22
30	Khotang	Dube Khola Muhan Bhai Tallo Dhaeraney Taar IP	10503SI013	Rawabesi Rural Municipality	4	7	Sophiya/Usha	6-May-2024	1,830,731	1,829,814	35	2021-07-11
31	Khotang	Seluwa Khola Belbote Sana Shinchai Haleshi	10504SI008	Halesi Tuwachung Municipality	7	3.9	Sophiya/Usha	7-May-2024	1,673,607	1,443,091	10	2021-07-04
32	Khotang	Bayaku Khola Garabu Small Irrigation Project	10504SI013	Halesi Tuwachung Municipality	8	8	Sophiya/Usha	8-May-2024	2,900,174	2,500,636	27	2021-07-04

Annex-02: Survey questionnaires

१: विवरण सङ्कलन फाराम (Data collection form)

योजनाको नाम र कोड :

सिंचित क्षेत्रफल :

पालिका :

वडा नं. :

कर्मचारीको नाम :

प्रतिवेदन मिति :

१. भौतिक स्थिति

तल उल्लेखित संरचनाहरू काम गरिरहेका छन् वा छैनन् ?

क्र.सं.	संरचनाको नाम	छ	छैन	कैफियत
१.१	मुहान/इन्टेक			
१.१.१	मुहान गहिरिएको			
१.१.२	छेकवार (Weir)			
१.१.३	ट्र्यास च्याक			
१.१.४	बालुवा छान्ने पोखरी			
१.१.५	एस्केप			
१.२	कुलो			
१.२.१	माटो कुलो			
१.२.२	पक्की कुलो			
१.२.३	पाइप कुलो			
१.२.४	शाखा कुलोहरू			
१.३	कुलो संरचनाहरू			
१.३.१	सुपरप्यासेज			
१.३.२	केबल क्रसिंग			
१.३.३	एक्वीडक्ट			
१.३.४	पुल/पुलेसा			
१.३.५	आउटलेट			
१.३.६	अन्य (.....)			

Ⓢ नोट्स:

१. काम गरिरहेको छैन भने "छैन" मा चिनी लगाई काम नगर्नुको कारण र संचालनमा ल्याउने योजना खुलाउनुहोस् ।

२. कठिनाइपूर्वक काम गरिरहेको भए "छ" मा चिनी लगाई के कठिनाइ छ, र सो सुधार गरी राम्रोसँग संचालनमा ल्याउन के गर्नुपर्छ, खुलाउनुहोस् ।

२: सरोकारवालाहरूसँगको छलफल प्रश्नावली (Community Meeting questionnaire)

२.१ जल उपभोक्ता संस्था (ज.उ.स.) को संस्थागत स्थिति

क्र.स.	विवरण	छ	छैन	कैफियत (छैन भने कारण खुलाउनु होस्)
२.१.१	ज.उ.स नवीकरण गरिएको छ वा छैन ?			
२.१.२	ज.उ.स.को समितिको नियमित बैठक बस्छ वा बस्दैन?			
२.१.३	बैठकको निर्णयहरू रेकर्ड गरिएको छ कि छैन?			
२.१.४	मर्मत सम्भार तथा संचालन योजना तयार गरिएको छ वा छैन?			
२.१.५	तयार गरिएको मर्मत सम्भार तथा संचालन योजना कार्यान्वयन गरिएको छ वा छैन?			
२.१.६	ज.उ.स.ले मर्मत सम्भार तथा संचालनको लागि रकम उठाएको छ वा छैन ?			
२.१.७	मर्मत सम्भार तथा संचालन शुल्कको दर कति तोकिएको छ ?	...(इकाइ, उल्लेख गर्नुहोस्, जस्तै – रु. प्रति रोपनी प्रति वर्ष)		
२.१.८	हालसम्म उठेको रकम वा जिन्सी	(जिन्सी भए इकाइ, उल्लेख गर्नुहोस्, जस्तै – बोरा सिमेण्ट, पाथी धान)		
२.१.९	जम्मा गरिएको रकम कहाँ राखिने गरिएको छ ?	☐ बैंक ☐ सहकारी ☐ घुम्ती कोष ☐ अन्य...		
२.१.१०	वित्तिय संस्थाको नाम र ठेगाना			
२.१.११	मर्मत सम्भार तथा संचालन कार्यकर्ता चयन गरिएको छ ? यदि छ भने वार्षिक पारिश्रमिक कति छ ?			पारिश्रमिक: (इकाइ उल्लेख गर्नुहोस्, जस्तै: रु. प्रति वर्ष, पाथी धान प्रति वर्ष आदि)
२.१.१२	मर्मत सम्भार तथा संचालन कोषमा मासिक शुल्क बाहेक कुनै अन्य स्रोतबाट रकम जम्मा गरिन्छ कि गरिदैन ? यदि गरिन्छ भने, स्रोतहरू उल्लेख गर्नुहोस् ।			स्रोत:
२.१.१३	ज.उ.स.ले वार्षिक लेखा परीक्षण गर्ने गरेको छ वा छैन ?			