

The Capacity Development Project for the Improvement of Water Supply Management in Semi-urban Areas in Nepal WASMIP-II



August 24, 2021

Chief Advisor

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1,751



Fiscal year	MoWS	DWSSM/ NWSSTC	FWSSMP	MoPID	RMSO/ WSSDO	WUSC	Others	Total
2016	-	38	-	-	42	129	19	228
2017	4	92	-	-	12	-	25	133
2018	1	49	1	2	30	245	10	337
2019	7	88	29	0	2	281	13	420
2020	1	6	46	1	6	91	32	182
2021	-	15	39	4	-	384	9	451
Total	12	288	114	7	92	1,130	108	1,751

As of April 30, 2021

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- For providing safe and quality drinking water to pa
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Background



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11	I N	er	al	S	DGs

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Target and Indicators	2015	2025	2030
6.1-1 Population using safe drinking water (%)	15	65	90
6.1-2 Households with access to piped water supply (%)	49.5	76.5	90
6.1-3 Basic water supply coverage (%)	87.0	95	99
6.1-4 Households with E. coli risk level in household water ≥ 1 cfu/100ml (%)	82.2	27.4	1
6.1-5 Households with E. coli risk levels in source water ≥ 1 cfu/100ml (%)	71.1	23.7	1
6.4-1 Wastage of water – Irrigation (Field losses in %)	40	20	1
6.4-4 Non-Revenue Water	20	10	5

Source: Sustainable Development Goals, Status and Roadmap: 2016-2030, National Planning Commission, Government of Nepal, (2018, Feb.)

2) WASMIP-I (Phase-1)

Target area: Morang and Jhapa districts in Province No.1

WUSCs: 20

4

Duration: January 2010 to September 2013

Achievements: Formulation of Management Model and Support Model

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ements. Formulation of Management Model and Support Model



1. Outline of the WASMIP-II

1-1. Project Purpose



Overall Goal:

Continuous support to WUSCs in semi-urban towns is provided by DWSSM/NWSSTC.

Project Purpose:

<u>Support to the WUSCs</u> in semi-urban towns <u>is provided and</u> <u>strengthened by DWSSM and NWSSTC</u> using government and non-government organizations' personnel.

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1-2. Outputs



Outputs:

- 1. Baseline survey and capacity assessment of DWSSM, NWSSTC, FWSSMP and the target WUSCs are conducted, and project implementation plan is finalized.
- 2. Supporting capacity of DWSSM regarding O&M and management for WUSCs in semi-urban towns is strengthened.
- 3. Implementing capacity of NWSSTC regarding the training for WUSCs in semi-urban towns is strengthened.

Total: 68 WUSCs in semi-urban towns (Served population: 5,000-40,000)

Original Project Duration:
June 2016 - May 2021 (5 years)

Legend

PROVINCE NO. 1

WUSC

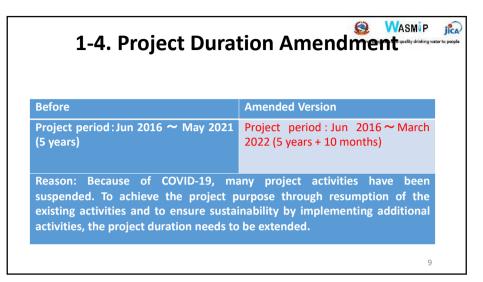
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WUSC

WUSC

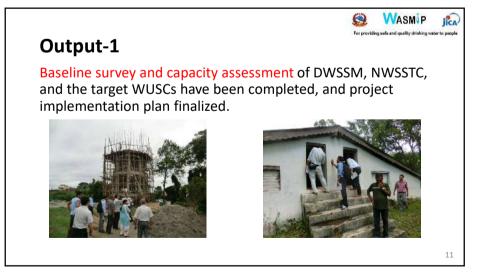
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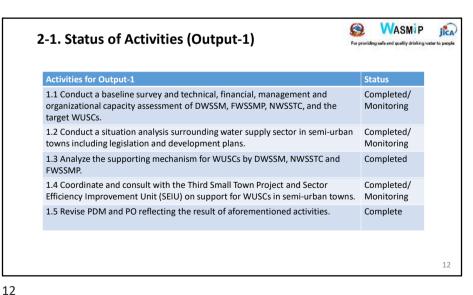
WUSC

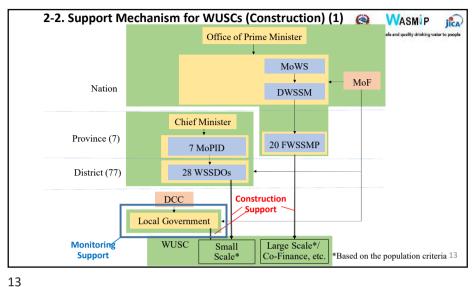


2. Status of Activities of Each
Output

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2-2. Support Mechanism for WUSCs (Construction) (2) WASMIP (1) Construction of Water Supply Facilities The criteria of the projects are showed as below: Local Federal Mountainous More than 1.000 500 - 1,000Up to 500 Hill Up to 3,000 More than 5,000 3,000 - 5,000Plain More than 15,000 5,000 - 15,000 Up to 5,000 Source: Budget and Program FY 2076/77 14

14

2-3. Roles and Responsibilities (Monitoring) (1)



- (1) Nepal Government (MoWS, DWSSM, FWSSMP)
 - 1) Large Project on National level related to water supply and sanitation
 - 2) Foreign Assistance Project and Co-Finance Projects
 - 3) Projects providing access of water supply and sanitation to the specified population of specified area
 - 4) Projects related to more than one province
 - 5) Multipurpose wastewater treatment and management that requires large capital investment
 - 6) Projects that transfers water from one resource to another area
 - 7) Projects specified by the Government of Nepal
 - 8) Monitoring of water supply and sanitation projects

Source: "Draft WaSH Bill" prepared by MoWS

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2-3. Roles and Responsibilities (Monitoring) (2)



- (2) Provincial Government (MoPID, WSSDO)
 - 1) Projects providing access of water supply and sanitation to the specified population of specified area
 - 2) Wastewater management and treatment
 - 3) Projects related to more than one local bodies within a province

Source: "Draft WaSH Bill" prepared by MoWS

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2-3. Roles and Responsibilities (Monitoring) (3)

WASMIP For providing safe and quality drinking water to people

(3) Local Government

- 1) Water supply service and its monitoring in local level
- 2) Raising awareness on sanitation
- 3) Operating wastewater management system
- 4) Projects providing access of water supply and sanitation to the specified population of specified area
- 5) Maintenance and rehabilitation work of water supply and sanitation projects operated in local level

Source: "Draft WaSH Bill" prepared by MoWS

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2-5. Capacity Level of WUSCs



Level	Situation	Cause
1	Not installed delivered Equipment (e.g. flowmeter)	No understanding of equipment importance/ proper positions, No fittings/ Insufficient budget
2	Installed but no operation record	No understanding of record importance
3	Keep recording, but no analysis	No understanding of data analysis, how to analyze data
4	Analyzing data and Detecting/ Preventing Errors	Next stage: securing budget, human resources

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2-4. Baseline Survey on Local Governments



- 1) Lack of skills and knowledge on O&M, design and cost estimation
- 2) Lack of human resource (several engineers cover a wide range of fields such as road, irrigation, construction, waterworks, etc.)
- 3) Lack of supervision capacity for construction and repair works
- 4) Small budget for construction and O&M of water treatment facilities because top management of NP / GP lacks understanding on importance of water supply and prioritizes road construction
- 5) Low ratio of budget for water supply business to the total of NP / GP

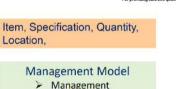
20 municipalities: 0.1-1.0%,

1 municipality: 5.0-10%,

9 municipalities: denied disclosing data.

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2-6. Sound Operation and Maintenance



WASMIP

Record Management Model Accumulating data Management

Location,

- > SOPs 3. Analysis/Improvement
- 1. Equipment Installation

1. Equipment

Installation

- 1) Identify installation location and quantity
- 2) Determine specifications
- 3) Procure/install
- 2. Record Keeping on O&M
- 3. Analysis Data and Improvement of O&M Activities

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2-7. Summary of Output-1



- 1) The activities on Output-1 of the PDM have been completed.
- 2) The additional baseline survey for Provincial and Local Governments has been completed.
- 3) Monitor continuously a situation analysis surrounding water supply sector in semi-urban towns
- 4) According to the draft WaSH Bill, Local Governments (LGs) have a responsibility for maintenance and repair of water supply systems in WUSCs, however, LGs have insufficient capacity for it.

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Output-2



Supporting capacity of DWSSM regarding O&M and management for WUSCs in semi-urban towns is strengthened.





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2-8. Status of Output-2 (1)



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Activities for Output-2	Status
2.1 Study the monitoring and management evaluation indicators suited on the currencondition of WUSCs in semi-urban towns, and revise the Management Model for enhancing the usability of the model for WUSCs in semi-urban towns by DWSSM.	t Completed
2.2 Plan necessary rehabilitation works for some of target WUSCs in semi-urban towns by DWSSM.	Completed
2.3 Conduct necessary rehabilitation works for some of target WUSCs in semi-urban towns by DWSSM.	Completed
2.4 Prepare a design manual of specifications on rehabilitation works for target WUSCs in semi-urban towns by DWSSM.	Completed
2.5 Identify and document the section of departments responsible for training implementation for WUSCs in semi-urban towns by DWSSM.	Completed
$2.6 \ \ Formulate an outline of the Training of Trainers (ToT) regarding the Basic Training and On-site Training and instruct NWSSTC to implement the training by DWSSM.$	Completed
2.7 Formulate an outline of the Basic Training for the WUSCs in semi-urban towns and instruct NWSSTC to implement the training by DWSSM.	Completed

2-8. Status of Output-2 (2)

WASMIP For providing safe and quality drinking water to people

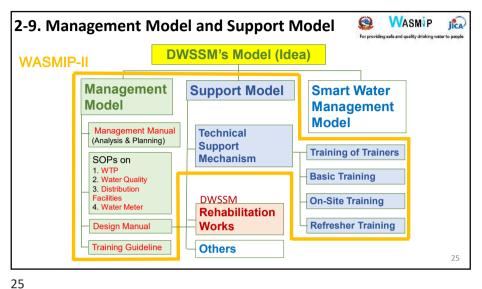
Activities for Output-2	Status
2.8 Formulate an outline of the On-site Training for the WUSCs in semi-urban towns and instruct NWSSTC to implement the training by DWSSM.	Completed
2.9 Formulate an outline of the Refresher Training for the WUSCs in semi-urban towns and instruct NWSSTC to implement the training by DWSSM.	Completed
2.10 Evaluate the above-mentioned trainings conducted by NWSSTC, and reflect its results on the training on the Management Model for WUSCs in semi-urban towns in following years by DWSSM.	Completed/ Continue
2.11 Allocate a hudget for NWSSTC to implement the above-mentioned trainings by	Completed/

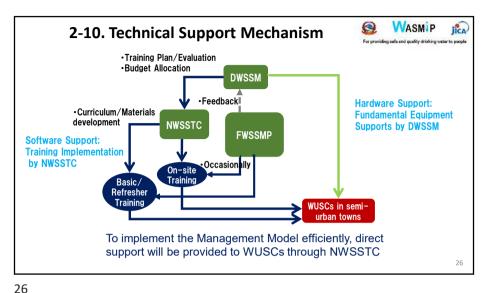
2.12 Re-update the Management Model for WUSCs in semi-urban towns upon receiving feedbacks from Output 3.

Completed in WASMIP-II Completed

Continue

2.13 Conduct the support activities in response to the COVID-19 emergency





2-11. Hardware Support



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I. Design Manual of Specifications on Rehabilitation Works developed by WASMIP

68 target WUSC's water supply schematic flow diagrams were developed and extracted equipment which should be installed or replaced (e.g., flow meter, chlorination unit).

II. Rehabilitation Works implemented by DWSSM

Rehabilitation works for 68 target WUSCs were completed. Rehabilitation work has been expanded to other WUSCs in semi-urban towns.

Items: Flow meter, Chlorination unit, Pressure gauge, Water quality test kit, Electric Devices (digital clamp meter, insulation continuity tester, earth tester), Safety tools (mask, glove, goggles), Aeration filter media

2-12. Design Manual MANUAL OF **REHABILITATION WORKS** FOR WUSC IN SEMI-URBAN TOWNS

2.12.1 Objectives of Design Manual



1.1 Definition

Rehabilitation Work is providing semi-urban WUSCs for essential equipment (chlorination unit, water meter)

1.2 Sustainable Water Supply to Consumers

1) To supply sufficient water amount

 \rightarrow To measure/grasp the supplied water amount, with bulk/flow meters.

2) To provide safe water

 \rightarrow To conduct water quality test, and grasp if the water quality meets the Water Quality Standards.

3) To extent the facility life time

→Without the maintenance to the facility, the facility performance might be gradually deteriorating and finally, facility function suspends.

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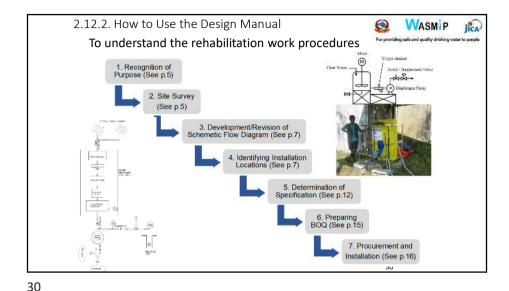
2.12.3 Expected Effect

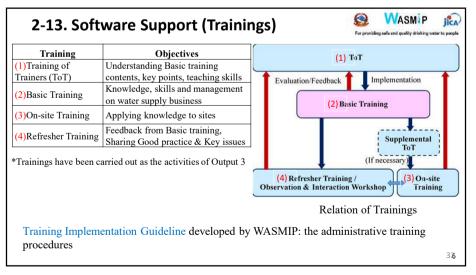


- 1) To understand the current water supply system at WUSCs
- 2) To identify the appropriate number and location of flow meters and chlorination units
- \rightarrow Recover the original water supply function
- \rightarrow Eliminate wasteful capital investment



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2-14. Budget Secured for the Project



6	Fiscal Year	Rehabilitation Works (Hardware Support)	Trainings (Software Support)
1	2073/74	15 million	2.5 million
2	2074/75	50 million 24 million (5 RMSOs)	2.5 million
3	2075/76	10 million	2.5 million
4	2076/77	20 million	4.0 million
5	2077/78	15 million	6.0 million
6	2078/79		6.0 million

*Unit: NPR

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2-15. Additional Support in response to COVID-19 (1) For providing sale and quality drinking souther to people



PDM: Conduct the support activities in response to the COVID-19 emergency

- 1. Bleaching powder (3.1 ton) for 3 months 11 WUSCs in Jhapa district in Province No.1 →16,424 households (108,268 people)
- 2. Bleaching powder (11.05 ton) for 2 months 52 WUSCs all over the country → 95,862 households (607,772 people)
- 3.Equipment (Chlorination units:2, Water quality test kits:9, Toilet: 6, Handwashing: 15)

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2-15. Additional Support in response to COVID-19 (3)









Chlorination unit

Toilet

Handwashing

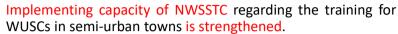
Water quality test kit

2-16. Summary of Output-2



- 1) The activities on the PDM for Output-2 have been completed.
- 2) Management Model has been revised and evaluation indicators (Key Performance Indicators) have been set.
- 3) Management Model has been continuously re-updated receiving feedback from Putput-3
- 4) Draft design manual of specifications on rehabilitation works was developed.
- 5) Outlines of Trainings have been formulated.
- 6) Necessary budgets for the training and rehabilitation works have been secured by DWSSM. The rehabilitation works have been implemented.
- 7) The additional procurement of breaching powder, handwash tank and toilets in response to Covid-19 was carried out and delivered.

Output-3







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2-17. Status of Activities (Output-3) (1)



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Activities for Output-2 3.1 Evaluate the training implementation mechanism and equipment by NWSSTC.

3.2 Draft a training implementation guideline and a plan for the training on the Completed Management Model for WUSCs in semi-urban towns by NWSSTC. 3.3 Select candidates for ToT regarding the training on the Management Model Completed/ for WUSCs in semi-urban towns from MoWS, DWSSM, NWSSTC, FWSSMP, Continue WUSCs and other organizations by NWSSTC.

3.4 Plan the ToT regarding Basic Training and On-site Training by NWSSTC. Completed/ Continue

3.5 Implement the ToT regarding Basic Training and On-site Training by NWSSTC. Completed/ Continue 3.6 Plan the Basic Training for the WUSCs in semi-urban towns by NWSSTC.

3.7 Implement the Basic Training by NWSSTC.

Completed/ Continue Completed/ Continue

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2-17. Status of Activities (Output-3) (2)

feedbacks from results of aforementioned trainings by NWSSTC.

2.0 Non-the On-site Training for the WILICO in agent when to we have her NIMICOTO

Activities for Output-2



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Status

3.8 Plan the On-site Training for the WUSCs in semi-urban towns by NWSSTC.	Completed/ Continue
3.9 Implement the On-site Training for WUSCs in semi-urban towns by NWSSTC.	Completed/ Continue
3.10 Plan the Refresher Training for the WUSCs in semi-urban towns by NWSSTC.	Completed/ Continue
3.11 Implement the Refresher Training for WUSCs in semi-urban towns by NWSSTC.	Completed/ Continue
3.12 Re-update the following: (i) training implementation guideline,(ii) training plan, (iii) training curriculums, and (iv) training materials upon receiving	Completed in WASMIP-II

2-18. Training of Trainers (ToT)



- 1) Objectives:
 - ✓ Sound management and proper O&M in water supply services
 - ✓ Chairperson, board member, manager from one WUSC
 - ✓ Board member's understanding management and O&M importance
 - ✓ They have a decision to dispatch staffs.
- 2) 5 times
- 3) 67 trainers ⇒ In DWSSM: 40 trainers
- 4) Venue: NWSSTC, Online

/11

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2-19. Basic Training



- 1) Objectives:
 - ✓ Sound management and proper O&M in water supply services
 - ✓ Chairperson, board member, manager from one WUSC
 - $\checkmark \ \ \text{Board member's understanding management and O\&M importance}$
 - $\checkmark\,$ They have a decision to dispatch staffs.
- 2) 5 times included in 1 online
- 3) 63 WUSCs participated
- 4) Venue: NWSSTC, Online



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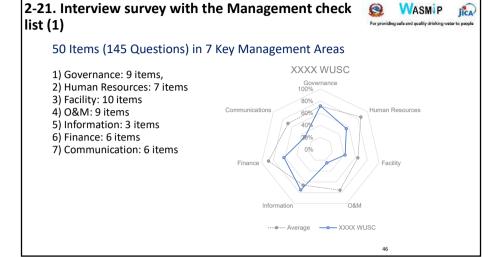


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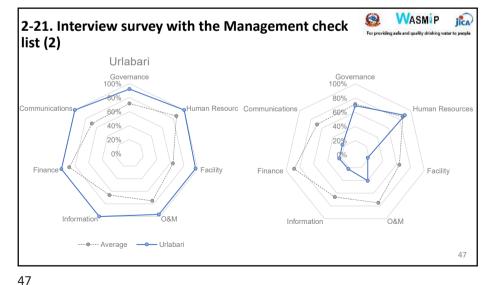
2-20. On-site Training (1)



- 1) Objectives:
 - ✓ To confirm other knowledge and skills acquired in the Basic Training
 - ✓ To check the O&M records
 - ✓ To confirm the situation of collection Key Performance Indicators (KPIs)
 - ✓ To confirm the schematic flow diagrams (water supply system drawings) compared to current systems
 - ✓ To conduct interview survey to WUSCs with the Management check sheet
- 2) 41 WUSCs participated
- 3) Visiting WUSC sites



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2-22. Refresher Training (1)

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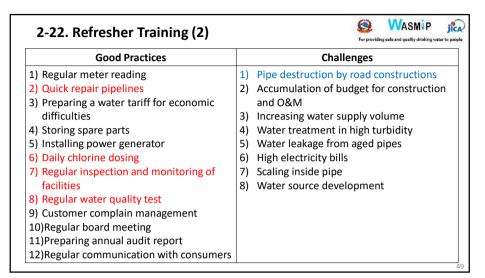
Called "Observation and Interaction Workshop"

1) Objectives

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- a. To observe water supply facility in the model WUSC as good practice.
- To observe O&M, record keeping, water quality test and disclose.
- To facilitate interaction and discussion among DWSSM/NWSSTC and WUSCs.
- To recognize the gaps between the model WUSC and other WUSCs
- e. To lecture WUSCs by NWSSTC
- 2) 3 times

- 3) 59 WUSCs participated
- 4) WUSC sites





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S.N	DWSSM/NWSSTC	WUSCs
1	Improvement of training skills(teaching, facilitation) of trainers.	Opportunity with DWSSM and other WUSCs identifying problems and solution.
2	Increasing number of trainers in fields of O&M and management on water supply system.	Recognizing importance of O&M and financial records and KPIs.
3	,	Identifying correct O&M procedures (e.g: operation of sedimentation tank) in site.
4	Opportunity to visit and give lecture at the site and visualize O&M of WUSCs.	Obtained essential equipment such as flowmeter, chlorine dosing, water quality test kit for proper O&M and safe water supply from DWSSM.
5	Identifying roles of WUSCs as stipulated by government policies, rules and regulation regarding water supply service.	

2-24. Summary of Output-3



- 1) Prepared the training materials (PowerPoint slides, videos)
- 2) Nominated and trained the trainers from DWSSM/NWSSTC/FWSSMPs by ToT
- 3) Planned and implemented the Basic Training, On-site trainings and Refresher Training.
- 4) Updated continuously the training materials and training implementation guideline receiving feedback from training results

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3. Achievement, Deliverables and Remaining Activities

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WASMIP

For providing safe and quality drinking water to people

3-1. Achievements



- 1) Studied the situation surrounding water supply sector and support to WUSCs (Output 1)
- 2) Revised Management Model and set evaluation indicators (Key Performance Indicators) (Output 2)
- 3) 67 trainers with ToT (Output 3)
- 4) Formulated and conducted Trainings; ToT (5times), Basic (3 times), On-site (18 sites), Refresher (3 times) (Output 3)
- 5) Conducted rehabilitation works of water supply facilities of WUSCs with DWSSM budgets (Output 2)
- 6) Procured and delivered breaching powder, handwash tank and toilets in response to Covid-19 emergency (Output 2)

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3-2. Deliverables



2) Training Materials (Output 3)

SOPs, Management, Videos, PowerPoint, Handy type SOPs

(Management of Water Supply Facilities, Water Quality Management, Water Distribution Facility, Household Connections and Water Meters, Analysis of Water Supply Management , Planning of Water Supply Management)

- 3) Design manual of specifications on rehabilitation works (Output 2)
- 4) Data Book (KPIs) on target WUSCs in WASMIP-II (Output 1)

3-3 Remaining Activities



Management Model Approved by DWSSM

 The final version of 1) Management Model, 2) Training Implementation Guideline, 3) Training Plan, 4) Training Curriculums for WUSCs in semiurban towns are officially approved/authorized by DWSSM.

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4. Discussion and Sustainability after the Project

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4-2. Sustainability of Support to WUSCs For providing sale and quality drinking

- 1) Full cooperation of FWSSMPs to keep moving forward
- > In Basic training, participating as a trainer (online)
- In On-site training, visiting and monitoring WUSCs when visiting WUSCs as supervisor
- ➤ DWSSM issued the request letter to FWSSMPs

2) Helpline in DWSSM/NWSSTC for WUSCs

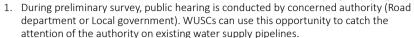
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To tackle requests from WUSCs for information

1) Construction, 2) Training, 3) O&M, 4) Rehabilitation work

DWSSM/NWSSTC homepage can guide WUSCs to a related section

4.1 Preventive Measures for Broken Water Pipes



- 2. WUSC will prepare a map of the water supply system, including transmission and distribution pipes, showing the location, material, and size of the pipes.
- 3. WUSC will submit to concerned road construction authorities (Local Government, Road department) to avoid damage to pipes.
- 4. When road construction begins, WUSC will contact the concerned road authorities (federal, state, and local) and disseminate the information on the water distribution network map.
- 5. To ensure that water pipes are not broken during road construction, WUSC will request the relocation of water pipes by letter.
- 6. In case of breakage of water distribution pipes, WUSC will submit a tentative estimate of possible damages to the relevant authorities.

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4-3. Sustainability after WASMIP-II (1)

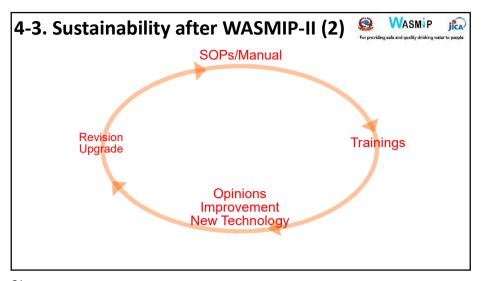
(1) Training system

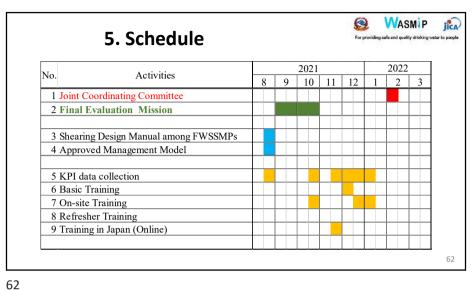
- >Updating Training materials (SOPs, management, videos, etc.)
- ➤ Training of Trainers (sustaining trainer capacity)
- Securing Budget continuously for trainings

(2) Rehabilitation works

- > Practical use of "Design Manual of Specifications on Rehabilitation Works"
- ➤ Instructing WUSC with the Manual in the training
- ➤ Securing Budget for rehabilitation works (DWSSM/MoPID/LGs)

WASMIP





Thank you very much for your attention!