

Sustainable Sanitation for All

A Guide for the Urban Poor Communities



May 2022

**Japan Association of Drainage and Environment
Community Re-construction Centre**

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PREFACE

A sustainable sanitation is the one of the human basic needs and the keeping a sanitary environment is required to bring about a healthy life reduce the frequency of suffering from serious water borne diseases like diarrhea.

This booklet is written for the people living in the urban poor communities and those who are aiding the communities aiming at establishing a sanitary environment and making it sustainable.

The people should recognize that the sustainable sanitary environment is not a given service. Therefore, the authors would like to share the following principles with the people living in the poor settlements and the persons involving the activities to achieve the aim.

- ❖ Habitual hygiene behavior of the individual is a base of sustainable sanitary environment.
- ❖ Division of water sources for drinking and cooking purpose from water used for toilets is one of keys to reduce infectious risk.
- ❖ Community people should aid each other and take due responsibility.
- ❖ Sanitary environment is one of the common-pool resources. When someone put severe damage to it, no one can enjoy the benefits provided.
- ❖ Provision from the beginning to minimize the malfunction is necessary.
- ❖ Females, as they have a deep concern and responsibility for the health of their family members, should take the initiative although support from males might be necessary sometimes.

The followings are the essential steps to achieve the sustainable sanitary environment.

STEP 1 Learn about the way to reduce health risks and act on hygiene behavior

STEP 2 Make-up facility plans to get fixed the hygiene behavior of the community people by themselves.

STEP 3 Organize a community-based committee to manage the sanitary environment

STEP 4 Install the facilities according to the plan made in step 3.

STEP 5 Make the facilities function well continuously through provision for emergency and renewal.

This Booklet is released based on the results and experiences of the project activity titled “Activities to Enhance Behavior Change on Sanitation and Form Hygiene Environment in Urban Slums at Khulna City of Bangladesh” with funding from Japan Fund for Global Environment (JFGE) grant of Environmental Restoration and Conservation Agency (ERCA).



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1. Learning about rational hygiene behavior (STEP 1)

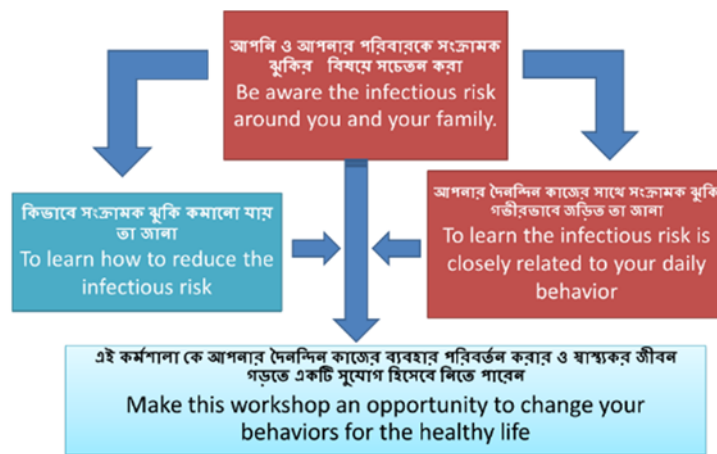
To learn about the rational hygiene behavior, “Workshop I” will be conducted.

(1) Workshop I participants

- Female community members are targeted as females should take initiative
- One from each household and cover about 90% of households.
- Participants should be responsible for not only changing their behavior, but also disseminate what she learns to her family members and neighbors.

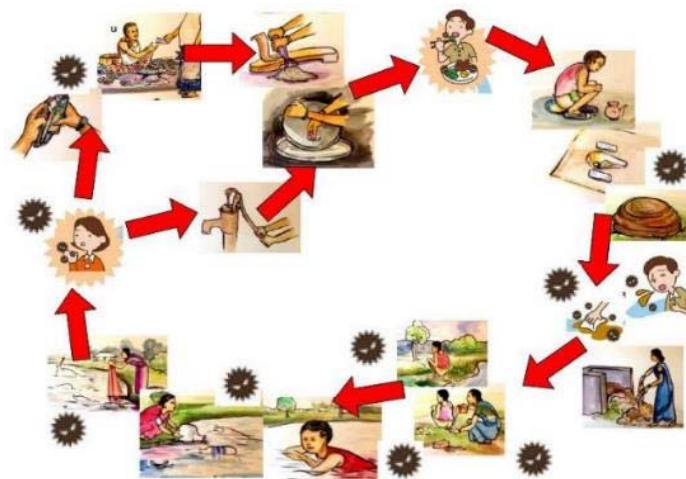
(2) Workshop I Procedure

- (a) Ice break: simple “Q & A” regarding hygiene behavior
- (b) Confirming the purpose of the workshop I



(c) Card gaming

- Identify the infectious medium
- Arrange the extracted card to show the infectious route



- (d) Share a result of risk analysis showing the diarrhea risk intensity of daily behaviors (also learn “what is a risk”) [Refer to (3)]
- (e) Watch the video related to the infectious disease: Ex. “The story of Cholera” (Global Health Media)

(f) Group Discussion

Example of theme

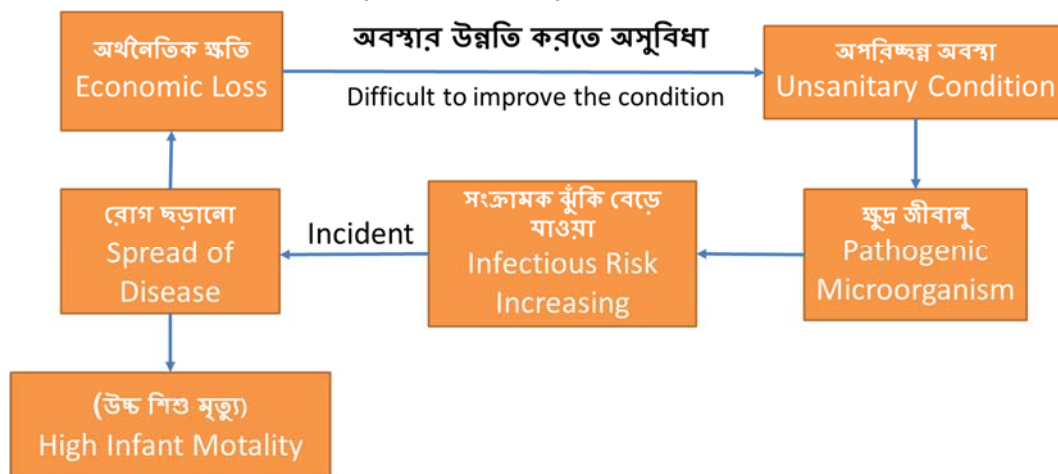
- The hygiene behavior to conduct right after the workshop
- Who are most vulnerable? What kinds of support can you provide?
- How to convince hygiene behavior to your family members?

(3) Workshop I Materials

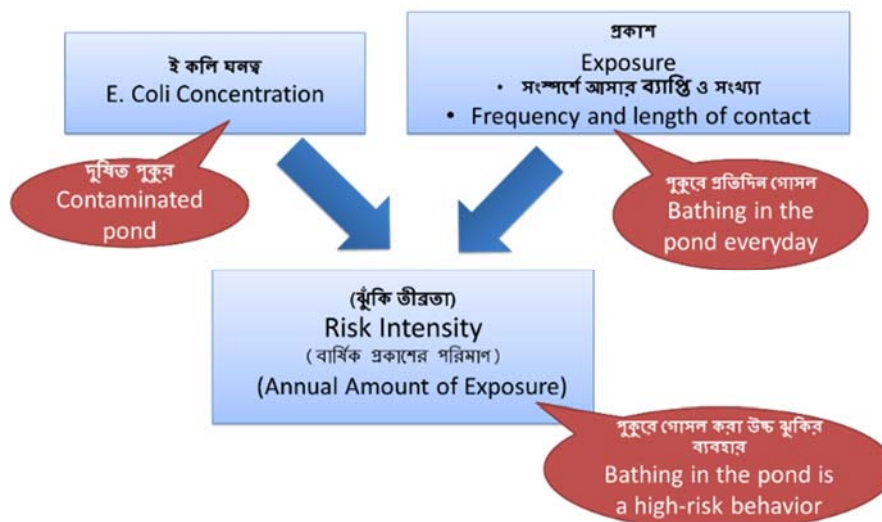
(a) Explanation of infectious risk

- Risk indicates the probability of suffering from diseases.
- It is necessary to quantify, as too late after suffering from disease.
- We can feel ease under low risk conditions.

(b) Vicious chain between poverty and insanitary condition

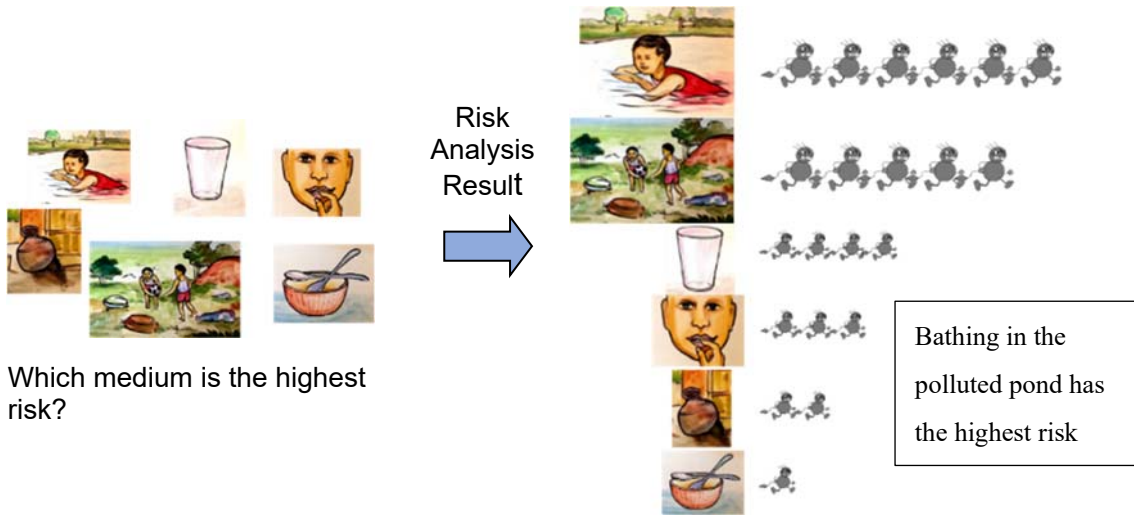


(c) Index of the risk intensity = Annual exposure to E. Coli¹



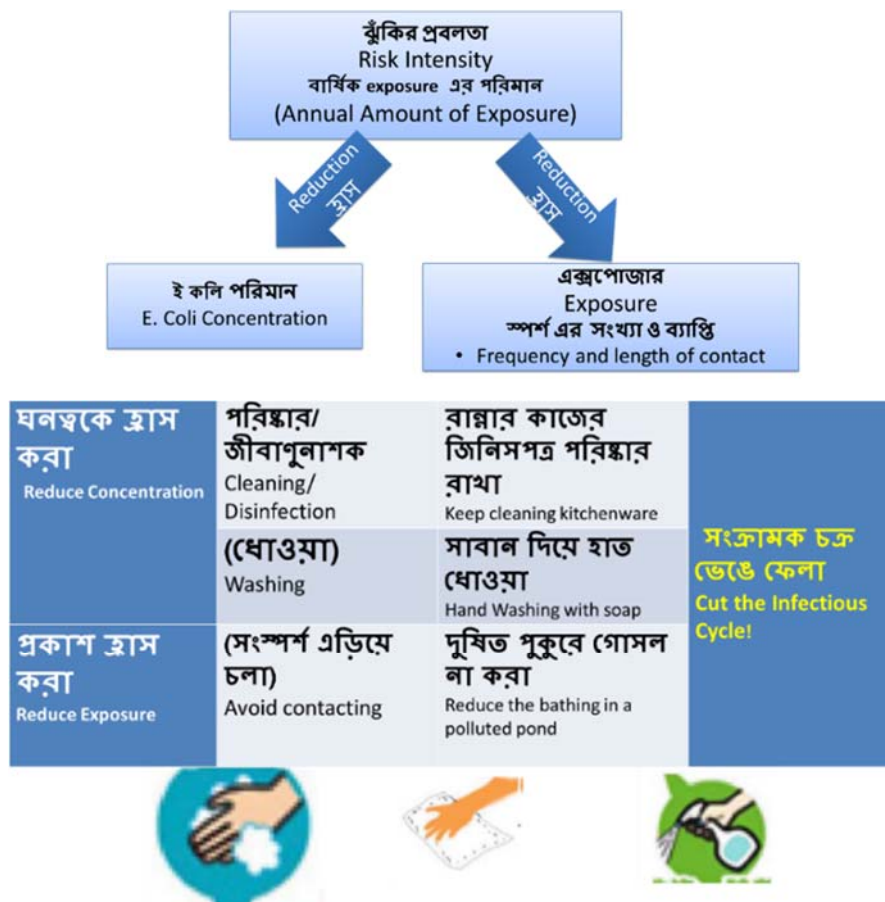
¹ E Coli is an indicator for disease causing microorganisms. E Coli. itself is not always harmful, however if E Coli. is detected, some pathogenic microorganism might exist, and E Coli. is easy to be detected. Therefore, E Coli. is used as an indicator of infectious risk.

(d) Risk intensity of infectious medium (result of risk analysis²)



(e) How to decrease the risk intensity

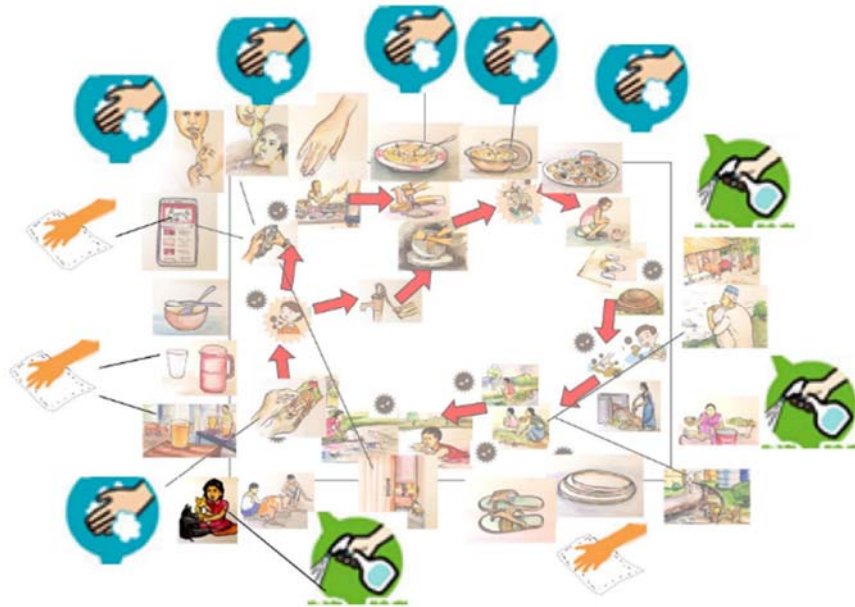
- Decrease E. Coli concentration = Pollution control of ponds/ Handwashing/ wash kitchen ware
- Reduce the frequency of contact with contaminated medium



² The risk analysis result shown here is based on the research implemented by a Japanese University at a community in Khulna. This result shows among daily behaviors, bathing in a contaminated pond has the highest infectious risk.

(f) How to cut the infectious route

- Put the cards showing the measures to clean the medium on the infectious route which the participants made at (2) (c).
- Discuss what kind of behavior change is required, and participants should recognize proper behavior change will decrease infectious risk.



(g) Measure the cleanliness of hands of participants and surrounding materials

- There are tools to measure the cleanliness of the surfaces of hands and surrounding materials.
- Using one of the tools, measure the cleanliness and recognize the necessity to make them clean, wash hands, and avoid touching before meal and so on.
- The picture is a result of measurement using “Lumitester³” showing children hands are most dirty, and mobile phone, money is also contaminated.
- This content is not always possible, however possible to share the previous results.



(h) Instruct the proper way of handwashing

³ Lumitester is a tool to measure ATP on the surfaces of materials and hand made in Japan. Although it does not measure the pathogen microorganism, useful to know the cleanliness of hands, kitchen wares, and to check the effect of cleaning.

(4) Follow-up of workshop I

- After several weeks from the workshop I, a follow-up survey should be conducted using questionnaire and/or hearing.
- The purposes of the follow-up are as follows; To confirm the understanding of the shared knowledge, actual hygiene behavior change, and how the participants disseminated to others what she has learned.
- Targeted to the persons who haven't participated in, ask whether disseminated from the participants and enhanced to change the hygiene behaviors.
- The outsiders should evaluate this follow-up and take some necessary action, like the improvements of the presentation, support dissemination for example.
- The outsiders also support the community members to get fixed their hygiene behavior.

(5) Summary of What to Do (STEP I)

Community	Outsider (NGO)
(At the workshop) <ul style="list-style-type: none"> ● Identify infectious medium and those transmission ● Learn infectious risk intensity of medium ● Learn behaviors to reduce risk and make it practice 	(For the workshop) <ul style="list-style-type: none"> ● Prepare the workshop to enhance the change for hygiene behavior.
(After the workshop) <ul style="list-style-type: none"> ● Make the hygiene behavior into practice ● Identify the requirements to get fixed the hygiene behavior 	(After the workshop) Supporting to identify the requirements

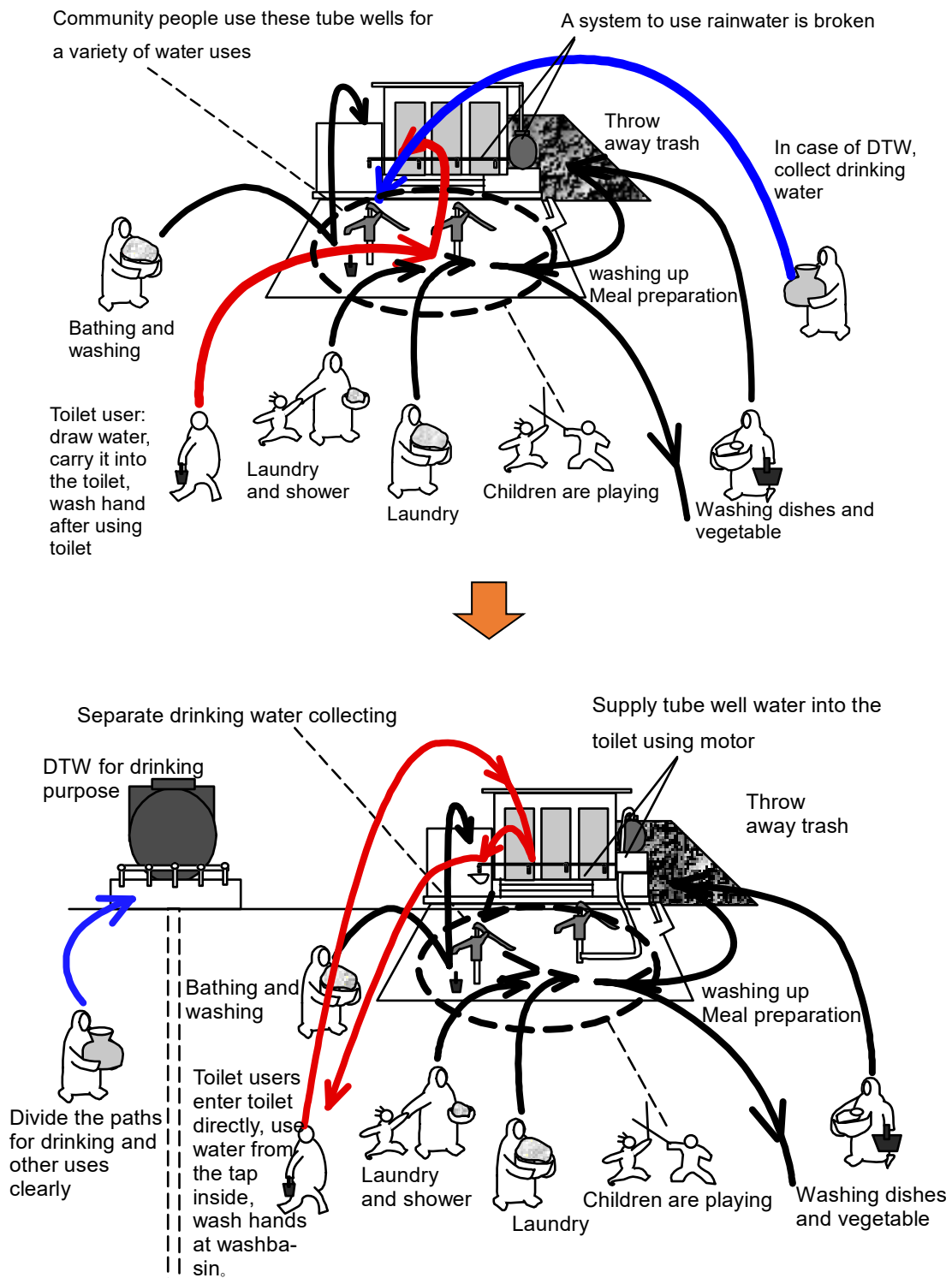
❖ CRC has the following materials useful for the workshop I

- Cards of infectious medium
- Presentation files

2. Make-up facility plans to get fixed the hygiene behavior

For the community members to keep hygiene behaviors, it is necessary to install facilities and equipment and make it easy conducting hygiene behaviors.

(1) Real situation observed frequently and the way to improve



- Renew or repair equipment for water supply into each toilet
- Divide TWs for various water use, drinking and cooking/ toilet use. If necessary, install a new station for drinking water supply. DTW with submersible pump is a recommended option.

(2) Conducting Workshop II

(a) Purpose

Workshop II is an opportunity for the community members to reflect what they have learned on facility plan to get fixed the hygiene behaviors by themselves.

(b) Participants

Select participants who will intentionally involve the activity. The participants are also the candidates of the management committee members. (See next section)

(c) Discussion agenda and Outputs

- i. Identify the serious problems related to establishing the sanitary environment.
- ii. What are the prioritized matters to solve the problems?
- iii. Sites of the facilities
- iv. Role of the communities to manage the facilities and equipment.

(d) Procedure

- i. Icebreaking
- ii. Confirm the intention participating this activity
- iii. Walk around in the community and confirm problems by making a “problem map”.(Prepare a community map previously)
- iv. Discuss the above agenda
- v. Draw a facility plan on the community map



Walk around in the community

❖ Participants should consider the reason why the facilities and equipment has broken and is out of order.

(3) Summary of What to Do (STEP II)

Community	Outsider (NGO)
<ul style="list-style-type: none"> ● Select the alternative and make solution to each requirement ● Select the sites for the necessary facilities 	<ul style="list-style-type: none"> ● Prepare the workshop to make-up the facility plan ● Propose alternatives to fulfill the requirements

3. Organize the community-based Management Committee (STEP 3)

(1) Purpose

The purpose of the management committee is to make the sanitary environment sustainable.

(2) Selection of the management committee members

- Female should take responsibility and if there is some other community-based organization exists, the members should be arranged considering the relationship with the existing organization. This is an idea that the management committee will be one section of existing organization.
- This is also an idea that some male members involve as supporting members. In this case it is necessary to make it clear the roles of the male members.
- In the case there are several communal toilets, although each toilet will be maintained by the users, the management committee should manage all the communal toilets.

(3) Responsibilities (roles) of the management committee

- Facility management: The committee shall keep functionality and safety of the facility through appropriate maintenance, including response to emergent events.
- Enhancing hygiene behavior: The committee shall encourage the community people to keep sanitary behavior, so that maintain the community led healthy life. The committee shall raise awareness on sanitation by suitable media in the community.
- Monitoring: cleanliness of the toilets, function, hygiene behavior (Obedience of the rules)
 - ❖ Monitoring is one of the key roles of the committee, and necessary for the management of the common-pool resources (see STEP 5). The purpose of monitoring is discovering signs of disorder, improper uses and make the countermeasures based on the monitoring results. Filling the monitoring sheet is not the purpose.
 - ❖ The outsiders prepare a draft of monitoring sheets, and committee members will edit them adoptively.
- Communication with the facility users: Communication with the community people shall be kept, sharing the necessary information, and hearing the claims of the community people.
- Set the payment amount:
 - Registration for using the drinking water station
 - Monthly charging: at the beginning, the amount corresponds to the direct expenses, like electricity
- Making rules
 - Clean the toilet by duty roster system
 - Keep flushing the pan after defecation
 - Take care after children or aged persons use
 - Pay the charge
- Inventory management: As the facilities require consumables and materials for temporary repair, the committee should keep



Toilet clean-up

and procure the consumables and materials.

(4) The procedure of organizing the management committee

- (a) Member selection
- (b) To confirm the purpose and the responsibility
- (c) Setting the charge amount and rule making
- (d) Making articles of the committee
 - Purpose of the committee
 - Committee's responsibility
 - Committee member: classifications and roles/ selection and tenure
 - Meetings: general meeting and regular meeting
- (e) Responsibility of the users
 - To follow the instructions to use the toilet and water supply facilities
 - Paying the registration and usage charge.
- (f) Accounting works and account management
- (g) Change of the articles



Committee Meeting with the users

- ❖ The outsiders should prepare the draft of the articles
- ❖ The articles will be edited finally at the STEP 5
- ❖ Involvement of established committee with suggestions and advises is useful when a new committee is organized.

(5) Summary of What to Do

Community	Outsider (NGO)
<ul style="list-style-type: none"> ● Select the committee members ● Members should recognize the purpose and responsibility of the committee ● Make-up rules of utilization (including the charge amount) and communicate with the users 	<ul style="list-style-type: none"> ● Prepare the training workshop to the committee members ● Support to make-up rules ● Support to establish the articles

- ❖ CRC has a prototype of articles of a management committee.

4. Install the facilities

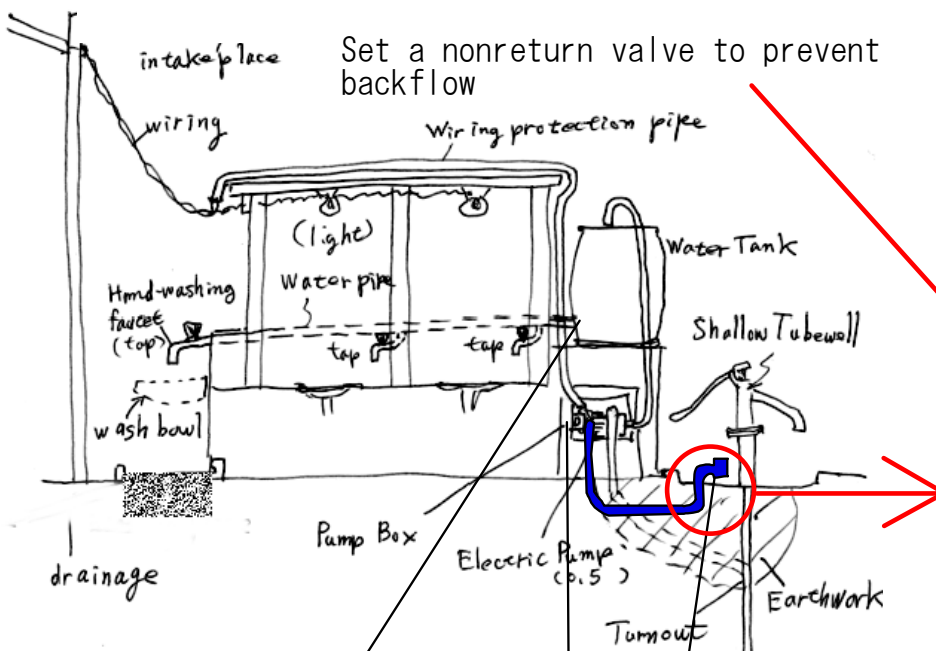
(1) Renew or repair the equipment to supply water into each toilet

- Use the present tube well near the toilet
- Use present materials as much as possible: water tank, pipe and so on

Shower room



Water intake from a well
Hand wash ball
Electric pump
water tank



Set a nonreturn valve to prevent backflow

Use existing materials/
replace broken materials

Raise the base for water tank:
make space for tank and make
water flow smooth.

Divide water line from tube-well

(2) Drinking water supply station

- To divide water source from toilet use is highly recommending. If there is no proper facility for drinking water supply, installing new facility is necessary for the sanitary environment.
- In this case, DTW with submergible pump has been installed.



Examples of Drinking water supply station

Construction Cost (BDT)

Materials and Labor	(BDT)	
Submersible DTW material	Materials	70,000
	Labor	35,000
Water tank		21,000
Brick construction	Materials	18,000
	Labor	12,000
Iron made door (for security)		10,000
Sanitary	Materials	4,000
	Labor	1,000
Submergible Electric pump		12,000
Total		183,000

*Year of construction: 2019

(3) Summary of What to Do

Community	Outsider (NGO)
● Cooperate the construction works	● Supervise the construction works

5. For the Sustainability of Sanitary Environment

(1) Why is sustainability aimed at?

- If sanitary environment does not sustain, what will happen?
- Sanitary environment is one of the Basic Human Needs and for the community it is a Common-pool Resource (CPR⁴)
- Who will manage CPR? CPR must be managed under the community which shares CPR.

(2) Planning Workshop III

- Understanding the concept of CPR = Learning “tragedy of commons”.
- Learning the principles of CPR management by the community⁵.
- Understanding concept of insurance
- What is necessary for sustainability
 - Repair against damage
 - Renewal of equipment
 - Restoration against the damage caused by natural disaster
- Knowing the weight of burden and effects for the sustainability of the facility
- Agreement on provision for sustainability and reflect on final edition of the article

(3) Give the widest dissemination among the community members

(4) Summary of What to Do

Community	Outsider (NGO)
<ul style="list-style-type: none"> ● Recognize the necessity of sustainability ● Make provision for the emergency and renewal in the future ● Give the widest dissemination among the community members 	<ul style="list-style-type: none"> ● Convince to make provision: telling the concept of common-pool resource/ showing the cost-benefit comparison

An Example of the Schedule

	Months												
	1	2	3	4	5	6	7	8	9	10	11	12	
Preparation													
STEP 1													
STEP 2													
STEP 3													
STEP 4													
STEP 5													

⁴ If someone deteriorate the CPR, everyone in the community cannot enjoy the benefit which the CPR provides. Someone make severe damage on the communal toilet, then every user will suffer from higher infectious risk.

⁵ 1) To keep equity of benefit and burden among the community members, 2) Flexible management rule and provide the right to participate decision making, 3) Monitoring, 4) Sanction against rule violation and mediation system

6. Future perspective toward “Leave no one behind”

Organizing the cooperative among the community-based organizations is one of the major subjects for the sustainable sanitary environment. The main reason of necessity of cooperative is that to prevent outbreak of infectious disease a sanitary environment in a community is not sufficient. Sanitary environment should be maintained widely beyond a community scale. If a community manage sanitary environment properly, this community is still being exposed infectious risk, as many people are coming and going, and contacting mutually.

The advantages of the cooperative are as follows:

- Sharing and exchanging experiments related to the sanitary management among the community-based organizations
- To support newly organized committee
- To negotiate with local government and so on representative of the community -based organizations
- To keep the materials and inventories commonly
- Possible to rational implementation of Fecal Sludge Management (FSM)
- For the local government, it is possible to reduce the administrative burden
- There is a possibility to reduce the infectious risk in a whole city area
- In the future, possible to conduct income generating activities

