Capacity building training on Climate Resilient Water Safety Plan to Sekota town water utility and Stakeholders

23-26 May 2017.

Sekota town, Amhara Region, Ethiopia

Training participants of CR-WSP, 23 May 2017

Netherlands Development Organisation-SNV in collaboration with Ministry of Water, Irrigation and Electricity and World Health Organization

29 May 2017

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1. Background:

Climate change and variability impact nearly all social and economic sectors including water sector with significant consequences. Ethiopia has one of the most complex and varied climates in the world due its diverse geography. Hence, climate change is expected to intensify the already high hydrological variability and frequency of extreme events. Reduction in rainfall may cause reduce ground water recharge, which would significantly reduce its contribution to stream flow. Recurrent flooding can have also long-term negative effects on agriculture and destroying basic social services including water supply schemes. The potential Climate Change is likely to have significant impacts on the availability of water resources of Ethiopia. Some of the impacts of climate variability and change are increasingly manifested in increasing number of extreme events including flood, drought, water borne diseases, poor water quality, increase of energy demand and others.

In Ethiopia, systematic and comprehensive water quality monitoring and assessment is lacking, except ad hoc water quality testing that often follow outbreak of diseases and/or reported health problem related to water, sanitation and hygiene. Hence, continuous and comprehensive water quality monitoring and surveillance activities have not been in place in most institutions and organization. To overcome the aforementioned problem the government of Ethiopia has prioritized the implementation of Water Safety Plan approach for the relegalization of Growth and Transformation Plan II to ensure both rural and urban water safety through water quality monitoring system and water safety plan implementation through increased involvement of development partners in water and improved sanitation safety development as part of on-going WASH sector support in terms of budget, capacity building and Pilot risk based management of water quality and safety in utilities and rural community managed water supply schemes.

Netherlands Development Organization-SNV Ethiopia in collaboration with Ministry of Water, Irrigation and Electricity and World Health Organization provided capacity building training on Climate Resilient Water Safety plan at Sekota town mainly to enhance the capacity of Sekota town water utility, rural community managed water supply schemes and other Woreda town water utilities in Waghimra Zone of Amhara Region to scale up implementation of Climate Resilient Water Safety Plan approach.

2. Objective:

The overall objective of the training is to capacitate participants and able to engage/contribute in the design and implementation of Climate Resilient Water Safety Plan to the respective water supply scheme/system through risk assessment and management approach. The specific objectives will include:

- Provide capacity building training on climate resilient Water Safety Plan approach for about 35 trainees drawn from Sekota town water utility, selected sectors from Sekota town and Waghimra Zone departments, six woreda water offices in Waghimra Zone and other selected relevant stakeholders.
- Enable participants to acquire the skill and knowledge to support Climate Resilient Water Safety Plan implementation in the respective water utilities/community managed water supply schemes.
- Complete risk assessment matrix and develop incremental improvement plan of action for Sekota town water utility.
- Conduct baseline data assessment including water quality testing for Sekota town water utility.

Zone Administrator delivering opening speech, 23 May 17

3. Expected output:

- Participants/experts trained as trainer and acquired brief knowledge on climate resilient water safety plan in Waghimra Zone.
- Sekota town water utility capacitated to implement climate resilient water safety plan and benefit more than 35,000 population in the town.
- Woreda water offices capacity enhanced to cascade training on Water safety plan so that urban utilities and community managed water supply schemes in Waghimra zone can implement climate resilient water safety plan approach.
- Draw way forward and actions for implementation of Climate Resilient Water Safety Plan in Sekota town and Waghimra Zone at large.

4. Expected outcome:

- Capacity of Sekota town water utility and other WASH sectors improved through implementing Climate Resilient Water Safety Plan to ensure water safety which includes quality, quantity and sustainability
- Contributed to the Suitable Development Goal 6 of water and sanitation target aimed at ensuring safety and Ethiopia Growth and Transformation Plan II of the water sector Goal 2.6 and 3.4 respectively.
- Contributed to the reduction of morbidity and mortality related to unsafe water supplies.

5. Summary of the training achievement:

- The training was facilitated by 3 trainers one each from Ministry of Water, Irrigation and Energy(MoWIE), World Health Organisation(WHO) and Netherlands Development Organization-SNV who had ample experiences and attended the international training of trainers on Climate Resilient Water Safety Plan organized by MoWIE and WHO.

Presentation by Waltaji T, WHO on CR-WSP, 23 May 2017

- A total of 33 participants were attended the capacity building training on Climate resilient Water Safety Plan held at Sekota town from 23-26 May 2017. The participants were drawn from Sekota town water utility, selected sectors of Sekota town and Waghimra Zone departments, six woreda water offices in Waghimra Zone and other selected relevant stakeholders(annex IV).
- Participants have acquired the necessary knowledge and skill on Climate Resilient Water Safety Plan that will enable them to implement Water Safety Plan in Sekota town utility and other respective sites/areas. Therefore, adequate practical experiences gained on Water Safety Plan as a result of participants' utmost interaction guided by trained facilitators.

Water quality expert demonstrating water quality testing to water quality technicians 25, May 2017

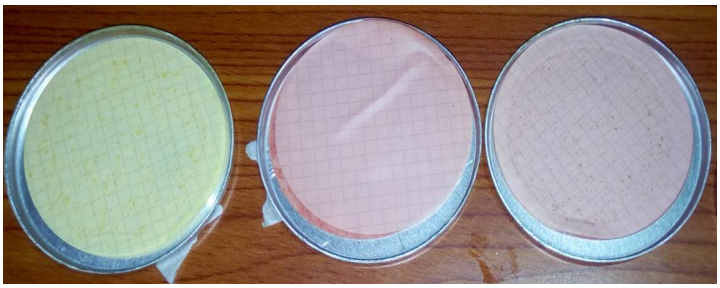
Eight water quality technicians from Sekota town utility, Waghimra Zone Water, Irrigation and Energy department and from the respective Woreda Water, Irrigation and Energy offices have practically gained knowledge and skill on how to conduct physical, chemical and bacteriological water quality testing using rapid portable water quality laboratory testing kit. It is well understood that water quality technicians are not practically conducting water quality testing and analysis in the respective assigned areas mainly due to capacity gap in using the available portable water quality laboratory test kits.

- During both theoretical and practical field sessions participants were able to thoroughly identify and assess risks using adopted risk assessment matrix at Sekota town water supply system from catchment/source of water to consumers/Households. Based on the Risk assessment table participants has developed an incremental improvement plan of action for Sekota town water utility(annex I and II).

Participants engaged in group work exercise, 24 May 17 ***Field visit at Borehole water source, 25 May 17***

- A brief summary of baseline data assessment for Sekota town water utility is completed to support in tracking implementation progresses, Water Safety Plan auditing and future proposed actions/approaches(annex V)
- Physical and bacteriological water quality testing and analysis was done on collected samples from water sources, reservoirs and households. Result of physical parameters in tested samples showed that it is within the range of maximum permissible level as per the Ethiopian compulsory drinking water standards.

- The bacteriological water quality testing results showed that samples collected from households were found to be contaminated with faecal coliform which is above maximum permissible level as per the Ethiopian compulsory drinking water standards. However, samples taken from water sources/Boreholes/, and reservoirs were found with no faecal coliform (annex III).



Bacteriological test result showing that faecal coliform in sample taken from households, 26, 2017

6. Way forward:

- Sekota town water utilities to revise the incremental improvement plan based on the risk assessment matrix completed and submit to Amhara region Water, Irrigation and Energy Bureau so that cash request to Ministry of Water, Irrigation and Electricity can be made as soon as possible.
- Ministry of Water, Irrigation and Energy to facilitate timely disbursement of cash to Amhara Water, Irrigation and Energy Bureau so that allocated budget can be transferred to Sekota town water utility.
- Based on the risk assessment findings; implementation need to focus in cleaning open and waste filled water chamber box in the distribution network along with constructing proper cover for the chamber box/manholes. Moreover, intervention to focus on promoting household water treatment and safe storage/handling practice.
- Sekota water utility to work on awareness creation on CR-WSPs to utility staffs and other stakeholders.
- Fix the problem related to automatic water treatment (chlorine dosing) machine to ensure appropriate community water treatment practice is in place.
- Each woreda participants to support in cascading the training to Woreda sector offices/stakeholders and lobby to include Water Safety Plan implementation approach in their annual work Plan in particular with woreda supported by one WASH program.
- Sekota town water utility to establish mini water quality laboratory room and procure at least one rapid portable water quality testing kit to conduct regular water quality monitoring and testing in Sekota town. The water quality technician was actively involved with the team during water quality testing and believed that she has acquired the skill to conduct water quality testing and analysis.
- SNV to provide technical support in the implementation of Water Safety Plan within the project woreda. Moreover, Zone Water, Irrigation and Energy department to support implementation in all Woredas of Waghimra zone.

Annex I: Risk Assessment Matrix of Sekota town water utility:

				Are controls effective?				Risk assessment				Additional control needed?		
Process Step	**Hazardous Event**	**Hazard Type**	**Existing control measures**	**Yes**	**No**	**Somewhat**	**Validation notes**	**Likelihood**	**Consequences**	**Risk score**	**Risk level**	**Yes**	**No**	**If yes, proposed controls** *(to be further detailed in improvement plan)*
Catchment	Contamination of water sources at Boreholes # 6, 7 due to agricultural practices and use of pesticides	Chemical, Microbial & Physical	None		✓			2	3	6	H	✓		Enhance soil and water conservation work around water sources/potential water sources and replace eucalyptus trees with indigenous trees.
Catchment	Contamination of water sources at Boreholes # 6, 7 due to absence of fence cattle grazing, and leakage of main pipe	Microbial	None		✓			2	3	6	H	✓		Construct standard fence with secured gate, and maintain leaked main outlet pipe
Catchment	Use of un improved water sources due to frequent interruption of water supply due to reduction of water recharge of water sources.	Quantity and Microbial	Establishment of new well			✓	Field observation showed that the available water source yield from 3 sources are not adequate to supply the community as the discharge is decrease from time to time.	3	3	9	H	✓		Establish additional water sources. Meanwhile promote household water treatment and handling practice. Moreover, advocate that private wells to treat water with household water treatment chemical. Afforestation with indigenous trees around water sources and removing eucalyptus trees gradually
storage/reservoir	Contaminated water distributed due to non-function automatic chlorine dosing machine (inconsistent chlorine dosing) that may result in excess or low dose of chlorine.	Microbial and Chemical	Chlorination			✓	It is observed that water is being treated with chlorine at the reservoir. However, the dosing is not consistent to the standard as it is done manually because of dosing machine is not functional	3	2	6	H	✓		Maintain automatic chlorine dosing machine and consistently treat water with required chlorine dose. Train operator on how to treat water regularly with appropriate dose along with Revised SOP
Distribution	Contamination of water due to exposed pipelines to solid and liquid wastes /run offs, and old and damaged galvanized pipelines.	Microbial , Chemical & physical	Maintenance and replacing old pipes			✓	Visual inspection and documentations showed that old galvanized pipelines are exposed to contamination and water loss	2	3	6	H	✓		Properly maintain and place the pipelines and change damaged & very old galvanized pipelines with High Density Poly Ethylene pipes step by step.

Distribution	Contamination of water in public water stand points due to improper/ absence of fence, exposed chamber and lack of proper management	Microbial & Physical	Fence		✓			2	3	6	H	✓		Construct standard fence with secured gate, replace damaged faucet, and put covers for chamber box.
Users	Contamination of water at HH level due to un clean storage containers (absence of household safe storage and treatment practice), poor basic sanitation and hygienic practice.	Microbial	Hygiene promotion activities by town Health Extension Workers			✓	Observation showed that HH store water in Un clean container, hygienic practice is also poor. Households are not also treating water at household level	2	3	6	H	✓		Promote basic sanitation and hygiene practices Promote water treatment practice at household level

Annex II. Improvement Plan of Action of Sekota town water utility:

S.NO	Specific improvement action	Arising from *(relevant hazardous event)*	Responsible person/ Organization	Implementation Timeline	Implementation Cost(BIRR)	Remark
1	Conduct technical training on CR-WSP to operators, care takers, water quality technicians, environmental health workers, education experts, natural resource experts & others	Risk of different types of water and sanitation related diseases due to inadequate /poor capacity at all level.	Sekota town Water Supply Service	June to July 2017	30,000.00	
2	Conduct sensitization and awareness creation to stakeholders on CR-WSP	Risk of different types of water and sanitation related diseases due to inadequate /poor capacity at all level.	Sekota town Water Supply Service	July-17	60,000.00	
3	Promote hygiene and sanitation through creating adequate awareness in the community	Risk of microbial contamination of water due to poor sanitation and hygienic practice	Sekota town Water Supply Service	June 2017 onwards	_	
4	Enhance soil and water conservation work around water sources/potential water sources and replace eucalyptus trees with indigenous trees.	Water recharge reduced from time to time due to absence of strengthened soil and water conservation and practice of deforestation	Sekota town Water Service Environmental protection Woreda Agriculture(natural resource office)		1,500,000.00	
5	Construct new/maintain existing fence at water sources(Bore hole # 6, 7, 8), Reservoir and public water points	Faecal contamination of water source at Boreholes and public water points due to animal entrance in the source	Sekota town Water Supply Service	June to July 2017	180,000.00	
6	Maintain the automatic chlorine treatment machine to treat water consistently with required dose.	Microbial/chemical contaminated water distributed to the community due to low/excess chlorine dose because of inconsistent chlorination dose.	Sekota town Water Supply Service	July to October 2017	300,000.00	
7	Properly maintain and place the pipelines and change damaged and very old galvanized pipelines with HDP step by step	Risk of physical and microbial Contamination of water due to exposed pipelines to solid and liquid wastes and run offs	Sekota town Water Supply Service	June 2017 onwards	300,000.00	step by step
8	Properly clean chamber box filled with wastes and construct proper cover for the chamber box/manhole	Risk of microbial and physical contamination due to waste disposed in open chamber box	Sekota town Water Supply Service	June to July 2017	40,000.00	
9	Procure one portable water quality testing kit		Sekota town Water Supply Service	June to Dec 2017	150,00.00	
10	Supportive supervision, monitoring and review of CR WSPs		Sekota town Water Supply Service		40,000.00	
	Total				**2,450,000.00**	

Annex III. Water quality test result of Sekota town water utility:

Summary of Bacteriological and Physical Water Quality Test Results, MoWIE in collaboration with SNV and WHO
Region: Amhara Zone: Waghimra Town: Sekota town Date of Analysis: 25 May, 2017 Source: Bore hole

Sample Code	Physical Parameters					Bacteriological Parameters		Risk Level
	EC (µs/cm)	TDS (mg/l)	PH	Temperature (o_C)	Turbidity (NTU)	Total coliform (CFU/100ml)	Fecal coliform (CFU/100ml)	
SS1	714	354	8.4	22.3	1.05	3	0	Low
SS2	700	350	7.86	23.9	1.48	0	0	Low
SR1	649	324	8.11	23.7	1.8	0	0	Low
SR2	659	327	8.69	22.6	2	0	0	Low
SHH1	42.3	20.9	8.41	24.4	3.55	NTC	NTC	High
SHH2	685	342	8.31	25	2.47	NTC	23	High
SHH3	975	487	7.4	25.9	1.29	15	0	Medium

SS1= Sekota Borehole #7(Gaqo michael)
SS2= Sekota Borehole #8 (Tirki)
SR1= Sekota Reservoir (Digru Reservoir)
SR2= Sekota Reservoir (Medelba Reservoir)
SHH1= Sekota Household with poor economic status
SHH2= Sekota Household with good economic status
SHH3= Sekota Household with better economic status

Risk Score = Likelihood X Consequence
Likelihood 1 to 3
Consequence 1 to 3
Risk Score $\leq$2 = Low Risk Level
Risk Score 3-5 = Medium Risk Level
Risk Score $\geq$6 = High Risk Level
NTC=Numerous To Count

Annex IV. List of Participants:

WSP training participants
23-26 May 2017
Sekota town, Waghimra Zone, Amhara Region

S/N	Name of Participant	Organization	Position	Telephone
1	Amare Wodaju	Dehana Woreda Water Office	Water Supply Officer	
2	Sisay Ayalew	Gasgibla Woreda Water Office	Head	0932856270
3	Asfaw Tafere	Sekota town	Expert, natural resource	
4	Mebratu Kebede	Sekota Zone Health Department	Expert, Hygiene	0914603738
5	Tehay Mokenen	Sekota town water board	Member, water board	0914661719
6	Akele Endeshaw	Sekota	Expert	0914671461
7	Meheret Ayalew	Sekota Hospital	Infection Prevention	0917618102
8	Mahederu Desta	Sekota town water board	Member, water board	
9	Mantegbosh Kebede	Abergele Woreda Water Office	Officer	0913809412
10	Gete Takla	Sekota Water Supply Service	Plan and program	0940202589
11	Adane Yalew	Sekota Water Supply Service	Finance	0914170204
12	Mulugeta Benenu	Sehala Woreda Water Office	Head	0914326493
13	Meseret Worku	Sekota Water Supply Service	Water Quality technician	
14	Assefa Tasew	Sekota Environmental Protection	Expert	0914602874
15	Gobena Azezew	Abergele Woreda Water Office	Head	0967172312
16	Alamerie Aseresie	Ziquala Woreda Water Office	Head	0914326272
17	Melkamu Kassie	Sehala Woreda Water Office	Officer	0912935814
18	Almaz Zewdu	Sekota	Expert	0967171814
19	Shimbal Shemelis	Ziquala Woreda Water Office	Officer	0914321663
20	Siyoum Sisay	Gasgibla Woreda Water Office	Officer	0925458159
21	Solomon Melese	Sekota Water supply service	Manager	0913934347
22	Tigabie Setu	Sekota Woreda Water Office	Head	0931549837
23	Emiwedew Sisay	Dehana Woreda Water Office	Head	0935595760
24	Yeshiwork Desta	Sekota Women Affairs	WASH team	
25	Kidist Adugna	Sekota Woreda Water Office	Officer	0931114387
26	Atena Assefa	Sekota Education office	Expert	0914602712
27	Kibruyisfa Kiros	Sekota Water supply service	Expert	0914602739
28	Bisetegn Gubena	Sekota TVET College	Sanitary Expert	0914326047
29	Teshome Seyoum	Sekota Woreda ORDA	Community Mobilizer	0914345456
30	G/Medhin Tadesse	Sekota Agriculture Office	Natural Resource Expert	0922905056
31	Bazezew Chane	SNV	Sanitation & Hygiene mobilizer	0938227141
32	Sisay Abraham	Sekota town Administration	Mayor	
33	Tegegn Mebrat	Waghimra Zone Water Dep't	Head	0910013436
34	Osman Yiha	Trainer from SNV	WASH Advisor	0911876059
35	Belachew Eshetu	Trainer from MoWIE	Water Quality Expert	0913796596
36	Waltaji Terfa	Trainer from WHO	NPO/PHE	0911312934

Summary V: of baseline data assessment:

Sekota town water utility, May 2017

- It is estimated that more than 35,000 people served by the water supply.
- It is located in midland agro ecological zone
- Source of water is from three deep wells.
    - Borehole #7 with 360 m depth and yield of 17 lit/second established in 2006 Ethiopian Calendar
    - Borehole #6 with 210 m depth and yield of 3 lit/second established in 1999 Ethiopian Calendar
    - Borehole #8 with 360 m depth and yield of 8 lit/second established in 2006 Ethiopian Calendar
- Three reservoirs made of concrete
    - Two reservoirs each with capacity of 200 m^3, and one reservoir with 300 m^3.
- A total of eight functional public water points/stands.
- A total of 2,445 households are customers each with household taps
- No plan exists as to operations and management practices including:
    - Operational monitoring plan such as sanitary inspections, water quality monitoring
    - Compliance monitoring plan
    - Consumer satisfaction monitoring
    - Standard operating procedures
    - Emergency response plan
    - Operator or caretaker training programs
    - Consumer education/training programs
    - Equipment maintenance/calibration schedules
- Annual operating costs per unit of water produced is 3,181,345 Birr / 182,500 m^3 = 17.43 Birr
- Annual operating costs per # of consumers is 3,181,345 Birr / 35,000 consumers = 90.89 Birr
- Total revenue collected per consumer over past 12 months is 9,869,774.28 Birr/118,649 = 83.18 Birr
- Total revenue as a % of total operating costs over past 12 months is 3,600,000 Birr/3,181,345 Birr =113.2%
- No budget received from government for WSP and other activities
- No water safety training or awareness raising events conducted. Moreover, water safety meetings within water supply and other relevant organizations in past 12 months was not also conducted.
- Understanding of water supply system, hazards and hazardous events that threaten the water supply system is found to be poor
- No data or records available on the extent to which equity is considered by water supplier.
- Water supply coverage of the town is about 35%.
- Unaccounted water loss is reported to be 21 %. A total of 38,325 m^3 water lost in the last 12 months out of 182,500 m^3 water produced.
- Water treated with chlorine at reservoir. But the automatic chlorine dosing machine is not currently functional.

- Water sample for both bacteriological, physical and chemical analysis was not done in the last 12 months except residual chlorine tests with no records and/or data available regarding the test result.
- No consumer satisfaction survey in place.
- No data available on proportion of HHs practicing correct use of recommended HWT technologies
- A total of estimated 5,534 households(out of 8,139 HHs) have latrine facility in Sekota town with coverage of 68%
- No reported outbreaks of water-related illness for the past 12 months.
- Sekota town Water Supply service enterprise has 47 employees
    - Manager 01
    - Water supply and facility administration process owner 01
    - Water engineer 01
    - Water Quality technician 01
    - Operator 06
    - Plumber 06
    - Finance section 09
    - Planning and evaluation 01
    - HR and other supporting staff members 21
- Sekota town Water Supply service enterprise has an established and active board. There are 8 board members chaired by mayor of the town.
- Ato Solomon Melese manager of Sekota town water supply service enterprise.
    - Cell phone +251913934347