

Country Name	The Project for the Improvement of the Equipment for Groundwater Development
Federal Democratic Republic of Ethiopia	

I. Project Outline

Background	In Ethiopia, the population with access to safe water was about 22% (by UNDP in 2004). The Government of Ethiopia aimed at achieving the water supply coverage 98% in rural area and 100% in urban area by 2012 (Universal Access Program in 2005). For achieving the goal, around 50,000 technical staffs to be engaged in water supply projects were needed besides construction costs. JICA had been supporting technical trainings at the Ethiopian Water Technology Center (EWTEC) through technical cooperation project, "The Ethiopian Water Technology Center Project (EWTEC Project) ¹ ". Further, it was necessary to replace the aged training equipment and facilities of EWTEC and Technical and Vocational Education and Training Colleges (TVETCs) in order to cope with new training needs.				
Objectives of the Project	To improve quality and quantity of practical technical trainings for groundwater development by installation of training equipment for practical training at EWTEC and TVETCs.				
Outputs of the Project	<ol style="list-style-type: none"> 1. Project Site: EWTEC (Addis Ababa) and 9 TVETCs (Assela, Woliso, Bahir Dar, Kombolcha, Maychew, Awassa, Merka, Jijiga, and Asossa) 2. Japanese side Procurement of equipment of 99 items in total, including 300m excavator, service rig, high pressure compressor, electromagnetic explorers, crane truck, vehicles, etc. 3. Ethiopian side: Energy source, storage spaces for the procured equipment 				
Ex-Ante Evaluation	2009	E/N Date	March 10, 2009	Completion Date	May 25, 2011
Project Cost	E/N Grant Limit: : 557 million yen, Actual Grant Amount: 417 million yen				
Implementing Agency	Ministry of Water, Irrigation and Energy (MOWIE) (before October 6, 2006, Ministry of Water Resources)				
Contracted Agencies	Kokusai Kogyo Co., Ltd., Kanto Bussan Co., Ltd (Lot 1), Sirius Corporation (Lot 2)				

II. Result of the Evaluation

1 Relevance	<p>This project has been highly consistent with Ethiopia's development policy to increase water supply coverage in rural area under the programs such as "Water Sector Development Program (2002-2016)", "the Universal Access Program (2002 and 2011) and the One WASH National Program (2013), and development needs to train technical human resources to be engaged in groundwater development in order to improve access of rural population to safe water at the time of both ex-ante and ex-post evaluation. It was also consistent with Japan's ODA policy for supporting capacity building for development of underground water prioritized by the Country Assistance Plan (2008) at the time of ex-ante evaluation. Therefore, relevance of this project is high.</p>				
2 Effectiveness/Impact	<p>The project has partially achieved its objective, "of improving quality and quantity of technical trainings for groundwater development". In the target year of 2012, the number of trainees exceeded the target value at EWTEC and 9 TVETCs, respectively. As EWTEC has been transitioned to the Ethiopian Water Technology Institute (EWTI) since August 2013, the number of trainees received in Academic Year 2013 and 2014 was limited. This transition process severely hampered the training operations because of preparation works such as developing strategic plan, designing of training courses and materials and turnover of staffs. At the TVETCs, the number of trainees has been fluctuating because the number of training courses has been changed by each TVETC based on change of needs and strategy of Technical and Vocational Education and Training (TVET). Also, the absence of the qualified trainers constrained continuously delivering the various training courses at TVETC level. On the other hand, the proportion of practical trainings in the training curriculum at EWTEC and TVETCs considerably increased from 10-30% before the project to more than 60% after the project because of utilization of the equipment procured by the project. In terms of quality of trainings, the instructors of EWTEC and TVETCs, who were responding to survey of this ex-post evaluation, supposed that the practical trainings using the procured equipment significantly contributed to promote trainees' understandings what they theoretically learned in the classroom.</p> <p>As for their impacts, 1,581 trainees successfully completed the training courses at EWTEC in total under the EWTEC project phase III² supported by JICA. 503 participants were instructors of TVETCs while 622 participants were officers from different</p>				

¹ On 6th August 2013 the official proclamation for the establishment of Ethiopian Water Technology Institute is declared by council of Ministers in Federal Negarit Gazette, with Regulation No. 293/2013. Hence, "EWTEC" refers to the training center before Aug 2013, EWTI refers to training center after Aug 2013. In this Ex-post Evaluation Report, the EWTEC project Phase III indicates the technical cooperation project "the Groundwater Development and Water Supply Training Project Phase III" (2009~2013). EWTEC was under MOWIE and EWTI is an autonomous institution which directly receives budget from Ministry of Finance and Economic Development (MoFED).

² The Groundwater Development and Water Supply Training Project (Phase I-III) (TC, 1998-2003, 2005-2008, 2009-2013) had

level of water offices, including regional, zonal and woreda³. The trained instructors of TVETCs and the trained officers from the water offices improved their technical knowledge and practical skills. Some of the ex-trainees transferred technical skills and knowledge to their fellows and colleagues. There was no environmental negative impact observed.

In sum, as for project purpose, indicator 1 was achieved and 2 was partially achieved in the target year, while indicator 1 and 2 are achieved except indicator 1 for EWTEC at the time of ex-post evaluation. The number of trainees participating at the EWTEC declined in Academic Year 2013 and 2014 due to influence of EWTEC's transition as mentioned before, although Technical Cooperation Project was implemented.

Therefore, effectiveness/impact of this project is fair.

Quantitative Effects

Indicator		Year 2008 (before the project) Actual value	Year 2012 (target year) Target value	Academic Year* 2012 (Target Year) Actual value	Academic Year 2013 Actual value	Academic Year 2014 (Ex-post Evaluation)
Indicator 1: The number of trainees participating the training courses per year	EWTEC	300-500	300-500	325	114	88
	9 TVETCs	1,350	1,350	1,486	2,054	2,062
Indicator 2: Proportion of practical trainings in the training curriculum	EWTEC	10-30%	70%	66%	68%	70%
	9 TVETCs	10-30%	70%	60%	65%	70%

Source: Interviews conducted during Ex-post Evaluation Survey in July, August and September, 2014

*note1: Academic year starts in September and ends in following June. (Year 2012: Sep 2011 ~ Jun 2012, Year 2013: Sep 2012 ~ Jun 2013, and Year 2014: Sep 2013 ~ Jun 2014)

3 Efficiency

Although the project cost was within the plan (ratio against the plan: 74.9%), project period considerably exceeded the plan (ratio against the plan: 205%) because handover of the rig was delayed by trouble after the arrival of equipment. Therefore, efficiency of this project is fair.

4 Sustainability

As for the institutional aspect, EWTEC was transferred to EWTI in 2013 according to approval of the Council of Ministers. As a result, EWTI became an independent autonomous public institute and has a responsibility to provide high quality trainings continuously. Thus, EWTI plans to increase staff size including academic and support staff from the current (2014), which is 64 total number of staff to 218 during July 2015 to June 2016. However, recruitment plan of adequate number of technical staff has not been realized at the time of ex-post evaluation. The mandate for overall management of the Water Departments in all 9 TVETCs has been transferred from the former MOWIE to TVET Agency/Commission at zonal and regional level since 2010. Then in 2012, most of TVETCs have been upgraded and fully accredited to Polytechnic Colleges.⁴ The surveyed 9 TVETCs have 122 teachers but the available number of teachers in the Water Department at each TVETC varies due to the types and number of training courses at each TVETCs. Due to above mentioned management transfer, comparing to before the project, TVETCs accept less number of students⁵ and turnover of teachers became higher. Besides, there is no independent O&M unit established at the TVETC, therefore teachers have to be responsible on O&M of procured equipment. From these, therefore, there are some concerns in the institutional aspect.

In the technical aspect, the course coordinators and instructors of EWTI have sufficient knowledge and skills to utilize most of the equipment installed by the project for the practical trainings. However, they have only limited knowledge about some of the equipment installed by the project, such as nozzle tester, diesel compression gauge set, and so on. For TVETCs, since many counterpart personnel have left after the project completion, knowledge transfer was not well achieved, therefore, course management ability in some courses is low. On the other side, most of the teachers of TVETCs have no problem to use the equipment installed by the project for the practical training though some newly assigned trainers have limited knowledge to use some equipment such as water quality tester to fully utilize for the practical trainings at 3 TVETCs. The manuals for maintenance of those equipment delivered by the project have been used except 1 TVETC.

As for financial aspect, the budget for EWTI from Ministry of Finance and Economic Development (MoFED) has been secured since it became an independent autonomous public institute. The annual budget of EWTI dramatically increased from 1.651 million Birr in the fiscal year of 2012/2013 (actual) to 15.0 million Birr in 2014/2015 (approved) to cover necessary O&M cost. On the other hand, most TVETCs do not have sufficient budget to cover cost for necessary operation and maintenance activities

been implemented.

³ Administrative Division in Ethiopia: Region, Zone, Woreda and Kebele.

⁴ All TVETCs used to provide training programs from level 1~3. However, most TVETCs shifted to a Polytechnic college which provides training program including level 4~5 focusing some selected courses based on the Ethiopian Occupational Standard.

⁵ There are 2 reasons; (1) before the mentioned management transfer, students in water department received incentives such as cash, but after the management transfer, students are required to shoulder a part of cost, while (2) although TVETCs expected to receive students from nearby woreda (the third-level administrative division in Ethiopia), in these nearby woredas, the vacant positions in the water offices got saturated with students.

in spite of significant increment in these years. Although most of TVETCs are capable to generate own revenue for better class management, the amount they can earn is not enough to finance necessary O&M.

The equipment procured by the project at EWTI have been functional and are ready for full utilization for the practical trainings except few equipment. For TVETCs, some of the equipment installed at TVETCs have not been properly utilized due to the lack of proper knowledge and skills of teachers and absence of specific need for the trainings using those equipment. In addition, in the case of critical breakdown, such as submersible pump and generator with a sign of problems, TVETCs need to request the Regional TVET Agencies to repair, but it takes time and is not delivered when needed. Moreover, TVETCs do not have any experience to procure spare parts except some consumables; therefore, it might be difficult for them to procure spare parts quickly. Consequently, it affects timing to conduct trainings.

Therefore, the sustainability of this project effect is fair

5 Summary of the Evaluation

The project has partially achieved its objectives to improve quality and quantity of the trainings for groundwater development at EWTI and TVEECs. In particular, the equipment installed by the Project largely improved quality of practical trainings. The improved practical trainings contributed to improvement of technical knowledge and skills of the trained officers from various water offices.

As for sustainability, institutional and financial capacity of EWTI has been enhanced due to the transition to the independent autonomous public institute. Though there are some problems observed in terms of current status of operation and maintenance, technical level of teachers and limited budget at TVTECs, each TVETC is making their level best to maintain equipment as much as possible.

In terms of efficiency, the project period considerably exceeded the plan.

In light of the above, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations to implementing agency:

For TVETCs and Polytechnic Colleges

- 1. Provision of short-term on-demand trainings:** the Ex-post evaluation study revealed that some teachers have limited skill and knowledge on how to utilize some equipment. In this respect, it is important to build technical capacity of teachers and enable them to properly utilize procured equipment for the practical trainings and transfer their knowledge and skill to their students. Hence, it is necessary for respective TVETCs to make necessary arrangement for their teachers to get short term trainings at EWTI. To this effect it is possible to get the following short-term trainings courses at EWTI (i) Electro Mechanical & Machinery Maintenance (EMMM) and (ii) Water supply Engineering. Moreover, as EWTI is identified as a “center of excellence” in capacity building in water sector. Each TVETCs can enquire EWTI to arrange on-demand trainings based on their particular area of training needs and capacity gaps.
- 2. Creating an internal revenue generation mechanism:** Most visited TVETC mentioned that allocated budget is not sufficient enough to properly undertake necessary O&M measures. Hence, taking the lesson from Asella Polytechnic College it is advisable for TVETCs to engage in an internal revenue generation activities by utilizing existing capacity, without jeopardizing the business of the private sector i.e. SMEs, in order to resolve problems related to budgetary constraints. In this regards, major income generating efforts include a sales of educational materials and furniture from its production unit, COC (Competency assessment) fee, extension training program fee, Garage maintenance services, fees paid by the training participants, and from sales of other production activity in different department (wood work and metal works) should be referred.

For EWTI:

- 1. Capacity building for trainers:** As EWTI is currently recruiting new instructors, those newly employed trainers do not have enough knowledge to make use of equipment for practical trainings. Therefore, technical handover and/or transfer from skilled trainers to unskilled ones are imperative in order to conduct practical training by fully utilizing the procured equipment. It is also advised that EWTI would incorporate such capacity building for trainers as part of strategic plan as well as annual plan with necessary budgetary allocation. Especially capacity building training for trainers in the following training areas should be considered in this regards;
 - Technical training on Drilling Machinery Maintenance: application of measuring and maintenance equipment and tools (i.e. Diesel tacho tester, Nozzle tester, Diesel compression gauge set, Valve spring tool, Valve lifter & compressor, Valve lapper, etc) Electromechanical equipment installation and maintenance: application of electrical/ electronics trainer and measuring equipment (i.e. Experimental machine for DC motor & generator, for 3 phase induction motor and generator, for Synchronous motor & generator, low voltage switch gear experimenter, etc).

Lessons learned for JICA:

[Coordinated project implementation with technical cooperation project]

- Procurement of such diverse and different kinds of equipment to many vocational training institutions is very difficult to sustain its effectiveness. Geographical locations of TVETC and Polytechnic Colleges are so scattered around the country and integrated monitoring is not so easy. However, technical cooperation project that had close linkage with TVETC and Polytechnic Colleges helped effective implementation as well as contributed to realization of positive impact of the Project. Therefore in such a case, program approach, such as integrated implementation of both Grant Aid and Technical Cooperation should be taken into consideration when the project is formulated.

[Adaptation to local environment and capacity of colleges]

- Operational capacity of the colleges are different from place to place. Those which upgraded to Polytechnic Colleges have courses with higher level (such as level 4 and 5) and they are also capable of generating own revenue for better class management and equipment maintenance. However, comparatively small colleges, such as Lucy and Jijiga, are not so much capable of generating enough maintenance budgets for the all equipment and facility. Therefore, during the preparatory survey for the similar project in the future, specific needs of each college should be investigated more carefully in consideration of their respective capacity and training requirement; so that more suitable equipment be provided.



Pic 1 Practical Training at Bahir Dar Polytechnic Collage



Pic 2 Donated Bus at Assosa Collage



Pic 3 Arc welding machine at Bahir Dar Collage



Pic 3 Generator at Kombolcha