Development of Training System in Sewerage Sector in the Syrian Arab Republic

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Abstract
Syria and Japan have launched the joint project aiming to develop the training system in sewerage sector in the Syrian Arab Republic in May 2009. The project covers activities related to training implementation and quality control system. Activities for training implementation consist of preparation of training curriculums and training textbooks, training of trainers, and trial trainings. Regarding administration matters, budget planning and logistics have been considered. Regarding quality control system, the training supervising committee has been established for sustainable upgrade of the training system. The training supervising committee plays a crucial role in PDCA cycle.

Keywords
Human recourses; capacity development; training course; PDCA

INTRODUCTION

Syrian Arab Republic (hereinafter refers to Syria) is suffered from shortage of water resources because of limited precipitation amount constantly. In particular, almost no rainfall is observed in farming season. For this reason, treated water from sewage treatment plants is expected to be alternate water resources in the country. Hence, the Syrian government has commenced to implement large amount of sewerage works, and to employ new staffs for covering increasing sewerage facilities in the near future. Due to this background, Syrian related organizations and Japan International Cooperation Agency (hereinafter refers to JICA) has launched the joint project to develop training system in sewerage sector, 'Human Resources Development Project in Sewerage Sector in the Syrian Arab Republic' (hereinafter refers to HUREPS), in May 2009.

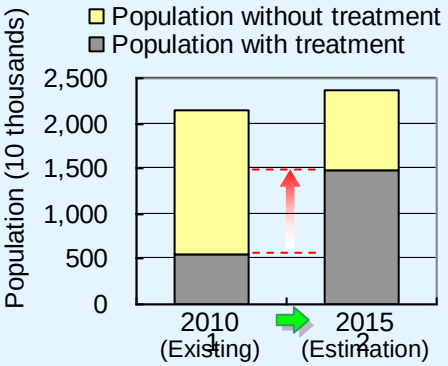

Figure 1. Population with sewage treatment in Syria

Source:
Population with treatment: by Ministry of Housing and Construction, Syria
National population: data 2010 by World Bank, data 2015 by estimation based on 2.0 % of annual growth

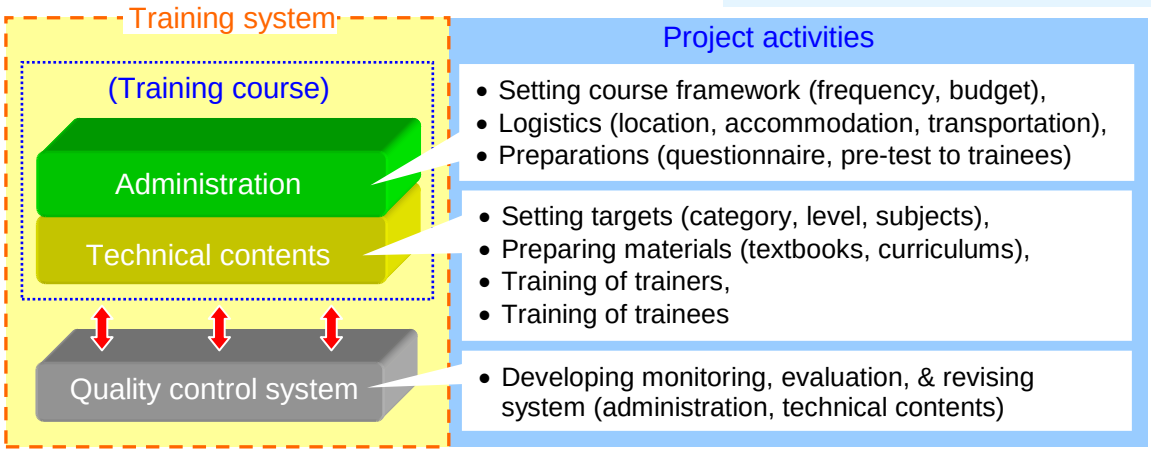

Figure 2. Outline of training system and project activities

METHODS

Project implementation organizations

HUREPS is implemented by Ministry of Housing & Construction (hereinafter refers to MOHC) and Damascus Sanitary & Drainage Company (hereinafter refers to DSDC) with technical cooperation from JICA. Two directorates from MOHC, Training & Qualification Directorate (hereinafter refers to TQD) and Sewerage Directorate, are involved in HUREPS. TQD of MOHC covers administration issues, and Sewerage Directorate of MOHC and DSDC cover technical contents of training system. Figure 3 shows the project framework.

Project purpose and activities

The project aims to establish training system in sewerage sector through collaboration among implementation organizations. To achieve this purpose, the project consist of three main activities. The first one is to develop technical training capacity, including preparing training curriculums and textbooks, training of trainers, and trial trainings to trainees. The second one is to arrange administration issues for training implementation, such as consideration of training schedule, budget, and other logistics. The final one is to establish the quality control system for sustainable development of training courses.

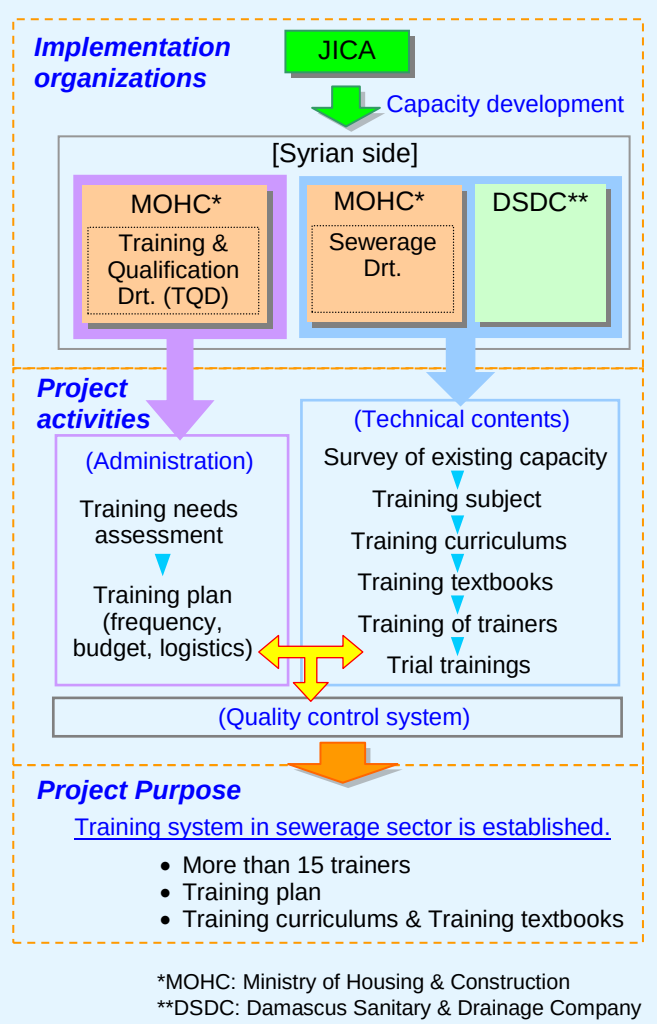

Figure 3. Project framework

For maximizing project achievement, the project set action policies, which are respecting self-initiative of Syrian side, reflection of actual on-site condition, and technical transfer. These policies have been fully shared among project members during project period.

Training plan

The training plan of HUREPS, the foundation for effective training implementation and sustainable upgrade of training system, shows clear pictures for why, what, when, and how to implement training courses until the target year 2015.

Annual training frequency is an important factor of the training plan because it affects amount of necessary budget, the key for steady implementation of training courses. Annual frequency of the training course is estimated as shown in the Figure 4. Estimated necessary number of employees in 2015 is allocated to each year, then, the annual trainee number is allocated to each training course based on the allowable trainee number of each course.

Training of trainers

Training of trainers (hereinafter refers to TOT), which aims to improve capacity of trainer candidates for making lectures by themselves, consists of two main components such as capacity assessment and lectures, as shown in the Figure 5.

Capacity assessment is conducted for selected trainer candidates before and after lectures in order to check their personal capacity, including technical and teaching skills. The result of assessment done before lectures is used for checking existing capacity of trainer candidates and considering contents of lectures. On the other hand, the result of assessment done after lectures is used for checking feasibility for making lecture by trainer candidates. Trainer candidates who have sufficient capacity for making lectures are approved as official trainers. New trainers will be continuously added on a regular basis through procedures mentioned above.

Lectures in TOT have three components such as lectures for technical knowledge and teaching skill by Japanese experts, and trial lectures by trainer candidates. Interactivity between lectures and other attendees is important to maximize the depth of their understanding on subjects. For this reason, technical lectures include not only theoretical explanation but also practical session, Q&A, on-site lecture, and trial lectures by candidates. Through trial lectures by themselves, trainer candidates polish their own abilities including technical knowledge and teaching skill.

Trial training course

The trial training course, conducted under same technical curriculums and administration procedures as the planned training course, aim to clarify problems through actual training implementation, and upgrade training system including administration issues and technical contents of training courses. To achieve this purpose, it is necessary to conduct proper preparation before training implementation and evaluation after it, as shown in the Figure 6.

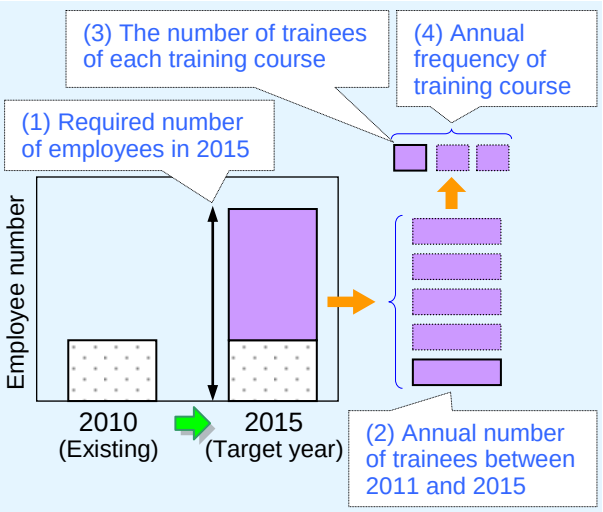

Figure 4. Setting procedure of annual frequency of training courses

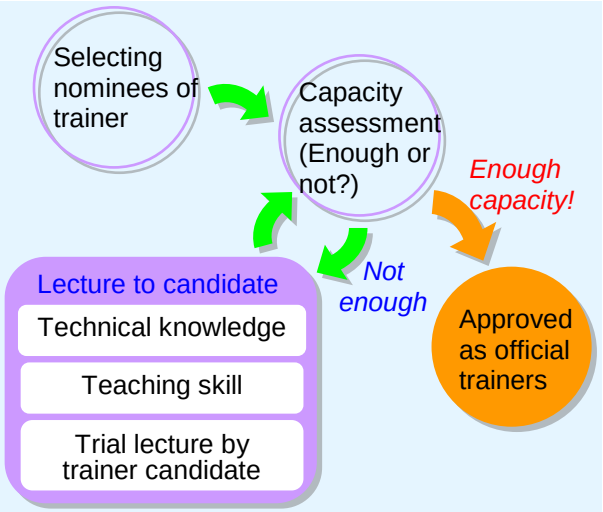

Figure 5. Work procedure for training of trainers

Figure 6. Work procedure of trial training

RESULTS AND DISCUSSION

Target training category

Sewerage works consist of two main categories, technical and management issues, as shown in the Figure 7. Technical issues include planning, design, construction, and operation & maintenance (hereinafter refers to O&M). On the other hand, management issues include finance, organization, legislation, and public awareness. HUREPS selects design and O&M, grey-coloured parts in the Figure 7, as the target training categories in consideration of the priority based on the existing capacity in the country and limitation of project inputs. The training course covers whole of sewerage facilities such as sewer network, pumping station, and sewage treatment plant. Also, some parts of management issues in sewerage sector are now supported by the other overseas agency.

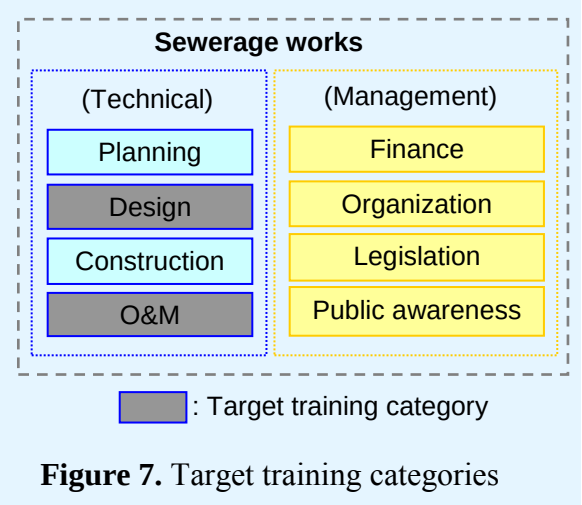

Figure 7. Target training categories

Target training level

The target trainees of the training course are inexperienced employees to be hired in the near future. For this reason, our project focuses on the 'primitive' or 'basic' level as the main target training level, as shown in the Figure 8. The training courses for 'Design check' and 'O&M of Sewage Treatment Plant' cover basic level, and target engineers and technicians. On the other hand, courses for 'Sewer Maintenance' covers basic and primitive level, and targets engineers, technicians, and workers.

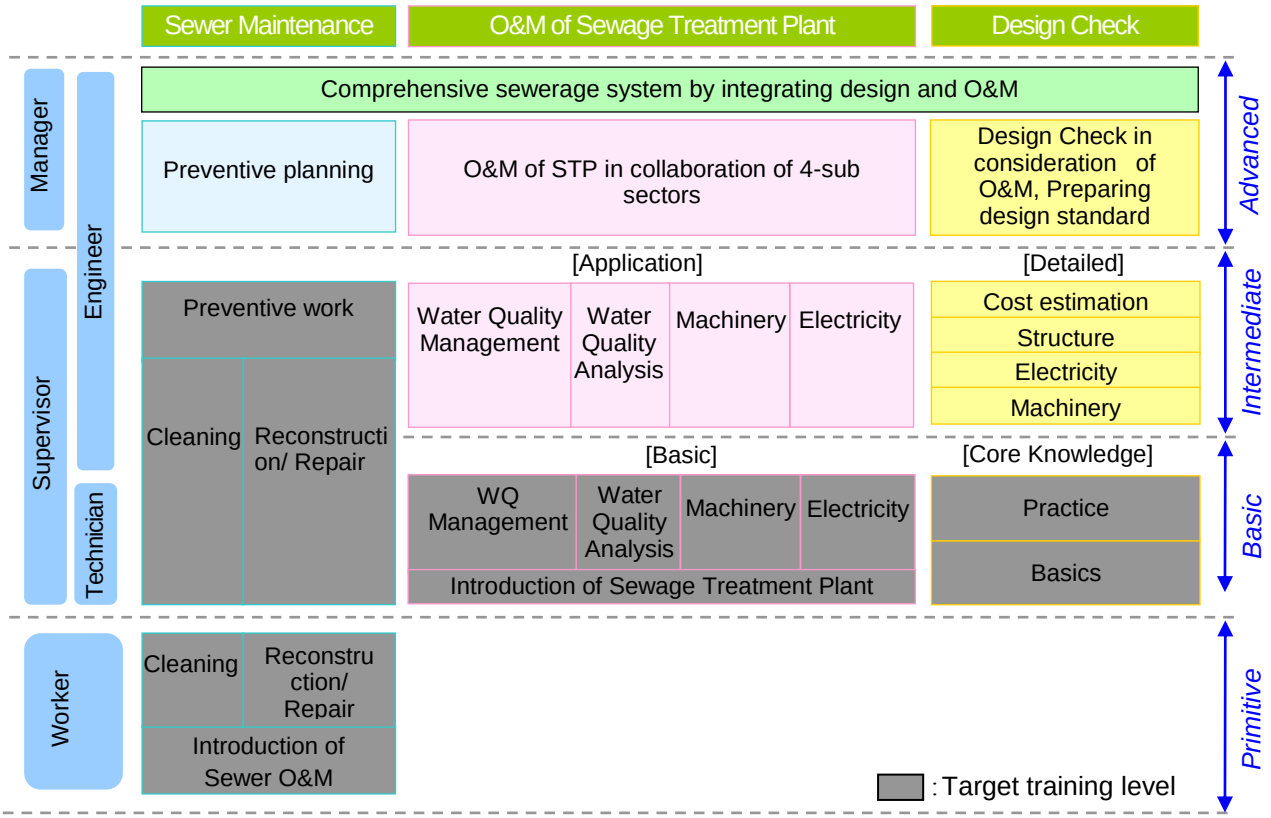

Figure 8. Target training level

Training curriculum

'Sewer Maintenance' has two types of training courses in primitive level and basic level, which cover work procedures of cleaning and repair of sewers, and preventive maintenance. The primitive-level course has two days, and the basic-level course has five days in 'Sewer Maintenance'. 'O&M of Sewage Treatment Plant' has four types of training courses for five days in basic level, which are water quality management, water quality analysis, machinery, and electricity. 'Design Check of Sewerage Facility' has two types of training courses for five days in basic level. The first type covers sewerage planning, design of sewer network, and design of pumping station, and the second one covers design of sewage treatment plant, in 'Design Check'. Figure 9 shows the type and course duration for each course.

The training course consist of not only technical lectures but also some necessary works for sustainable upgrade of course quality, such as pre- & post-test to trainees, discussion with trainers and trainees, collection of operational data and problems, and questionnaires on the technical contents of lectures and trainer's performance, as shown in the Figure 10. These work results are used for evaluation of training courses, and contribute to the upgrade of course contents. For this purpose, trainees need to bring operational data of sewage treatment plant such as water quality and problems which they faces in daily work on the actual maintenance site.

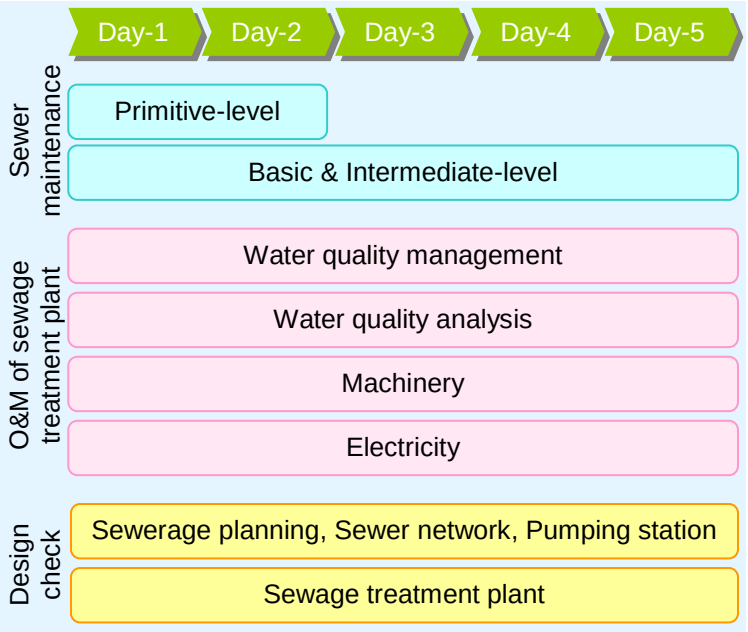

Figure 9. Outline of training curriculum

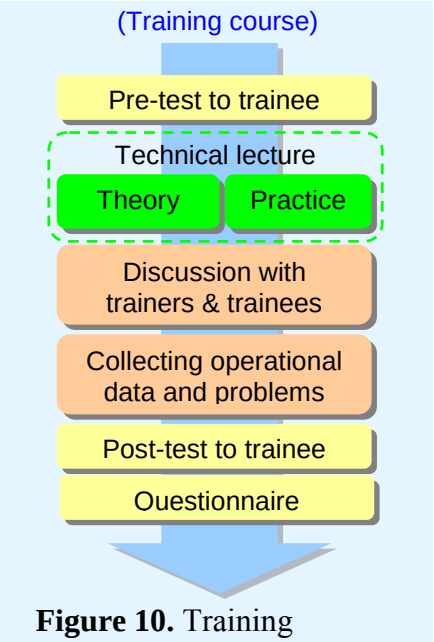

Figure 10. Training implementation procedure

Training site

The location of the training course affects sustainable and efficient implementation of training. From this point of view, the training course in Design Check is held in five governorates. With this idea, trainees can select a nearby location from their hometown. On the other hand, training courses for O&M are held in Damascus only because on-site lectures in the course require actual sewerage facilities in operation which trainers have sufficient experiences to use.

Training of trainers (TOT)

Trainer candidates have been selected from MOHC and DSDC. TOT has been conducted in combination of theoretical lectures by Japanese experts, practical works, and trial presentation by

trainer candidates, as shown in the following photos.

Figure 11. Photos of training of trainers in Design-Check sector

Training supervising committee

The training supervising committee has been established for sustainable quality control of the training system. Committee members consist of representatives from related organization, such as TQD, Sewerage Directorate of MOHC, and DSDC, as shown in the Figure 12. The committee makes primary decisions for cross-cutting issues including technical contents and administration, and takes a responsibility for the management of the number and capacity of trainers.

Those decisions from the committee are brought to practical sub-groups, such as TQD and trainer's group. TQD covers logistics or administration matters, such as announcement to trainees, budget planning, and other logistics. On the other hand, trainer's group takes a responsibility for upgrading technical materials, such as revising text books and curriculums. The trainer's group consists of trainers from every technical sector in the training course, such as Sewer Maintenance, O&M of Sewage Treatment Plant, and Design Check.

Figure 12. Relationship between related organizations for quality control

CONCLUSIONS

PDCA cycle, Plan-Do-Check-Act, an iterative four-step management process, is crucial for the sustainable upgrade of the training system. 'Plan' means preparation of training planning including budget planning to be done before the training course. 'Do' means training implementation, the main activity in the training system. 'Check' and 'Act' consist of activities for evaluation and upgrading existing training contents. Results of 'Act' are used for the training course to be held in the next year. In those four steps, the training supervising committee plays the most important role for quality control and of the process. The Figure 13 shows the outline of PDCA cycle of the training system.

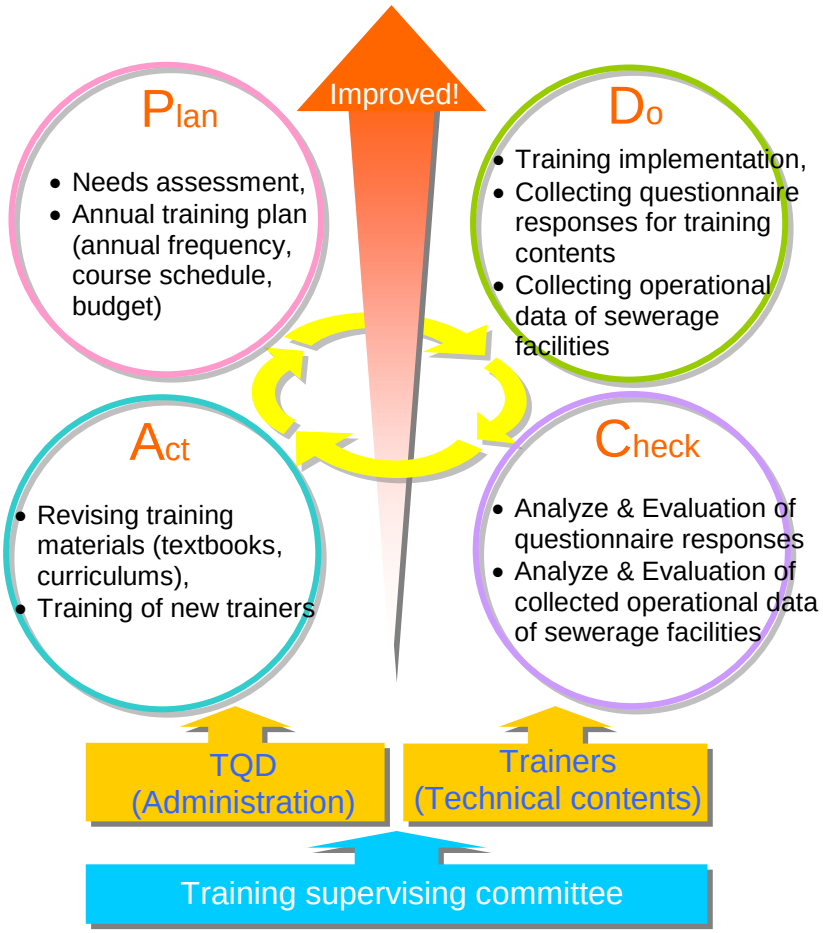

Figure 13. PDCA cycle of the training system

DISCLAIMER

This paper is the result of activities of the joint project between JICA and related organizations in Syria. However, the paper does not purport to represent the views or the official policy of JICA.

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