MENON ECONOMICS

REPORT

END OF PROJECT REVIEW

Capacity Building Program for Vietnam in the Water, Sanitation and Solid Waste Management Sector under the Norad/KfW Mixed Credit Scheme

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By Øyvind N. Handberg and Sofie W. Skjeflo

Preface

Through the framework agreement with KPMG and Norad, Menon Economics has been commissioned with conducting an End of Project review of the Capacity Building Program for Vietnam under the Norad/KfW mixed credit scheme. The purpose of the review is to evaluate the Capacity Building Program according to the OECD DAC evaluation criteria, and to document and publicise developmental results of the program. The review team consisted of Sofie W. Skjeflo and Øyvind N. Handberg. Kristin Magnussen has been the quality assurer. Field work, with valuable and professional support from Bui Xuan Hung, was conducted from November 8 to November 21, 2017. We visited five out of twelve projects under the Norad/KfW mixed credit scheme.

The review team would like to express their gratitude to all the program stakeholders at the five project sites and at the Ministry of Construction that gave their time to provide us with necessary information and documentation. We would also like to thank Norad for an interesting assignment. Our contact person has been Henrik Lunden.

The views expressed in this report are those of the reviewers. They do not represent those of Norad or any other organizations referred to in the report. Any remaining mistakes are our own.

February 20, 2018

Sofie W. Skjeflo,

Project manager

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List of abbreviations

ADB	The Asian Development Bank
CB	Capacity building
DoC	Department of Construction
DoF	Department of Finance
JSC	Joint stock company
KfW	KfW Development Bank, Germany
MABUTIP	Management Board of Technical Infrastructure Development Projects
MoC	Ministry of Construction
ODA	Official Development Assistance
O&M	Operation and Maintenance
PPC	Provincial People's Committee
PPMU	Provincial Project Management Unit
PPP	Purchasing power parity
URENCO	Urban Environment Company
ToR	Terms of Reference
WSC	Water Supply Company

Executive summary

Norad has supported a capacity building program related to the Norad/KfW mixed credit portfolio of twelve infrastructure projects in the Vietnamese water supply, wastewater/drainage and solid waste sectors. This report presents the end of project review of the capacity building (CB) program. The review is carried out according the OECD DAC evaluation criteria, and includes a two-week long field work in Vietnam, with visits and interviews at five project sites. **Our main conclusions are:**

- The CB program has likely improved the operation and maintenance of the mixed credit investment projects and contributed to these projects' compliance with the Norad and KfW requirements.
- The program has facilitated the process towards increased cost recovery through tariffs in the wastewater/drainage and solid waste sectors.
- A major strength of the program was the decision to combine funds for capacity building that were intended for more practical O&M training at each project site, to allow for important sector-level capacity building. This is likely to improve sector performance and sustainability beyond the 12 infrastructure projects funded through the mixed credit scheme.
- Several of the program's activities have only to a limited extent contributed towards these outcomes, and the additionality of some of the activities is questionable.
- The program has struggled somewhat under delays and unclear program documents.

A more careful targeting of activities towards the sectors with the greatest need could have mitigated these problems, and greatly added to the impact of the program.

The review of program documents and information from interviews with program stakeholders indicate that the already better developed organizations, regulatory setting and tariff systems in the water supply sector, relative to the wastewater/drainage and solid waste sectors, is the main explanation for greater perceived progress in terms of achieving program objectives for this sector. Our results indicate that substantive parts of this progress could possibly have been made without the support from the CB program. In the drainage/wastewater and solid waste sectors, the program outcomes are further away from being achieved, yet the situation probably would have been worse without the support from the program. We therefore conclude that there is a trade-off between the additionality of the capacity building activities and the perceived success in terms of achieving program outcomes. Several of the capacity building activities were successfully adjusted to the needs of the specific sectors, but by further adapting the activities to each sector and by prioritizing the wastewater and solid waste companies with the lowest capacity, the additional impacts of the CB program could have been further improved.

Assessing impacts on economic growth and poverty reduction requires a thorough evaluation of the mixed credits projects. Although the overall goal includes poverty reduction, the focus of the capacity building program has been on achieving sustainable management and operations through cost recovery. This is of course essential to ensure continued and improved supply of water and sanitation facilities in the project towns. However, a stronger focus on affordability for the urban poor could have added to the likely fulfilment of the overall development goals.

We recommend that:

- The executing agency, MABUTIP, closely follows up the provincial tariff processes for the wastewater/drainage and solid waste projects, both with the operators of the infrastructure and with the local authorities.
- The Ministry of Construction considers fusions of water supply and drainage/wastewater services, e.g., by encouraging that the same companies provide both services.
- The water supply, wastewater/drainage and solid waste companies – together with local authorities – continue their work on enhancing community awareness. The work could focus on the importance of the water, wastewater and solid waste services, of sustainable tariffs, and of proper usage of the services.
- Norad commissions an evaluation of the mixed credit projects. Regarding impacts on health and poverty, the evaluation should also consider to what extent the projects have benefitted the urban poor.

Key results

The three expected outcomes of the capacity building program, which this report is based on, are: "a) a road map for increasing tariffs to cover 100% of the operational and maintenance costs including, for water supply and wastewater-projects, depreciation costs of short-lived assets, e.g. electro-mechanical equipment; b) the completed systems are properly operated and maintained; and c) the capacity building program will ensure that Norad's, KfW's and the Government's technical and financial requirements will be complied with, thereby improving the investment effectiveness and efficiency of the projects."

Relevance: The review shows that the program activities are relevant for mitigating the main challenges that motivated the capacity building program. The approach for designing the activities of the program, including a needs assessment with extensive stakeholder involvement, seems relevant and necessary for meeting stakeholder needs. Still, the three expected outcomes of the program would have benefitted from being more specific and from being coherent across program documents.

Effectiveness: Outcome a) is achieved for the water supply projects, but not for projects in the two other sectors. Still, the additional effect of the program may be larger for the wastewater and solid waste sectors; the water supply projects would likely have met the outcome without the support of the CB program. Also for outcome b) more progress has been made in the water supply sector than in the other two sectors, with a major reason being different preconditions. Outcome c), seems to have been largely fulfilled, but not due to the main activities aimed towards the outcome. These activities were implemented towards the end or after the construction period of several of the projects, and are therefore likely to have modest effects. Other, more informal support, from the program seems to have been more important for achieving this outcome.

In our view, the activities directed at developing tariffs in the wastewater/drainage and solid waste sectors, including regulatory support, and at conducting information, education and communication (IEC) activities have the largest potential effect. It is still too early to assess the extent of these effects. In the water supply sector, the customer management training may have had the strongest additional effect for the companies.

Efficiency: Our interviews with program stakeholders indicate that the organization structure of the program has been successful and efficient. Efficiency was increased by organizing a joint capacity building program for all twelve projects under the mixed credits scheme, rather than separate activities for each investment project. Cost effectiveness could have been improved by reallocating funds from activities that show limited effectiveness, but account for large shares of the costs, to activities that score better on effectiveness and account for smaller shares of the costs. For instance, a disproportionate share has been spent on supplying software and hardware with uncertain additionality (36% of the budget). Some of these funds could have been spent on supporting tariff development for wastewater and solid waste projects, or IEC activities, where the potential effects are larger.

Impact: Evaluating the program's impact on "improved standard of living, sustained urban economic growth, and reduced poverty in project towns" requires an evaluation of the mixed credit projects. We find that several of the CB activities have contributed to improved management and operations of these projects. Some of the activities are also likely to have impacts on health and living conditions, especially through improvements in the drainage and wastewater treatment sector. One concern is, however, that the program's focus on increasing tariffs could exclude poor households, for whom the potential impact of enhanced water access is large.

Sustainability: Although the CB program was unsuccessful in reaching its outcome a), the support for developing sustainable tariffs has initiated processes that may improve the sustainability of wastewater/drainage and solid waste projects across Vietnam. The support to implement national regulations for solid waste tariffs is particularly likely to positively affect the sustainability of solid waste projects. The extent of these effects crucially depends on the Ministry of Construction following up the tariff processes in the provinces. Some organizational support for operation and maintenance and for the IEC activities may also enhance the program sustainability.

1. Background

This chapter presents background information for understanding the context of and motivation for the capacity building program. We start by briefly summarizing the status of the water supply, drainage and wastewater, and solid waste sectors in Vietnam, before presenting the Norad/KfW mixed credit project to which the capacity building program is linked. Finally, we describe the details of the capacity building program.

1.1. Water, sewerage and solid waste in Vietnam

With a population of 93 million, Vietnam is a relatively large country in Southeast Asia. The economy is and has been rapidly growing, with annual GDP growth rates at 5,2 – 7,8 percent since 2001.[1] Half of the population lived in extreme poverty in 1993 (less than 1,90 PPP dollars per day), compared to less than 3 percent of the current population. Also access to basic infrastructure, such as electricity, sanitation and clean water has greatly improved.

The water supply, wastewater[2] and solid waste sectors have undergone significant reforms the last 30 years.[3] For urban water supply, household access to improved facilities increased from a coverage of 88 percent in 1990 to 99 percent in 2011, with 58 percent having house connection. For urban wastewater, household access to improved facilities increased from a coverage of 64 percent to 93 percent in the same time period, with an almost universal use of flush toilets. Although the numbers are lower for rural areas, Vietnam seems already to have met the Millennium Development Goals for water supply and sanitation coverage. These improvements are, however, not enjoyed equally by all, with the poor, rural inhabitants and ethnic minorities suffering under inferior access. The wastewater is also to a small extent treated; in 2012 less than 10 % of the urban wastewater was treated.

For solid waste, the Capacity building program's inception report states that in 2014 there were 22 solid waste plants in the country, with a total capacity of 4 000 tons per day. An additional 25 plants with a total capacity of 3 000 tons per day were being prepared for investment. The total amount of waste produced in Vietnam were estimated at 61 500 tons per day in 2012, and the majority ends up at uncontrolled landfills or is unaccounted for.

Figure 1-1 Map of mixed credit project locations (numbers correspond with Table 1-1)

The Ministry of Construction (MoC) is responsible for the water supply, wastewater, and solid waste management in Vietnam, and a number of decrees and circulars regulate these. As presented in the Main consultant's needs assessment report, the regulations and their enforcement concerning tariffs are more developed in the water supply

[1] *https://data.worldbank.org/country/vietnam [15.12.17]*
[2] *This report refers to the wastewater sector as both wastewater and drainage collection and wastewater treatment. The services are specified when describing specific projects financed under the mixed credit scheme.*
[3] *https://www.wsp.org/sites/wsp.org/files/publications/WSP-Vietnam-WSS-Turning-Finance-into-Service-for-the-Future.pdf [15.12.17]*

sector than for the other two sectors. For solid waste, the regulations were unclear on managing domestic waste, as it focused on hazardous waste. According to a report from the Asian Development Bank, the regulations concerning tariffs in the wastewater sector in Vietnam were complex and therefore difficult to follow until Decree 80 in 2014.[4] As will be presented, the capacity building program has contributed to the development of a circular for solid waste tariffs, while the German development agency has made similar contributions for wastewater tariffs.

With likely origins in economic reforms initiated in 1986, the government encourages privatization of the service providers in the three sectors, and the water supply sector is by far the most privatized. Still, the companies are not free to set their own tariff levels, as these must be approved by local authorities.

A major difference between water supply and wastewater and solid waste management, is that the benefits of water supply largely accrue to the household, while wastewater- and solid waste management benefit the community as a whole, i.e., there are large, positive externalities associated with access to wastewater- and solid waste treatment.[5] Households' incentives for water supply are thus different than for the wastewater and solid waste services. It is therefore not surprising that the tariff regulations and tariffs are more developed for the former than the latter two.

1.2. The Norad/KfW mixed credit projects

Table 1-1 Overview of Norad/KfW mixed credits projects. Sources: IPA and Fichtner project completion reports, project appropriation documents and the main project completion report

	Town, province	Type of project	Max. credit amount, USD*	Construction period
1	Hoi An, Quang Nam	Water supply	5 million	June 2012 - Mar. 2014
2	Song Cong, Thai Nguyen	Water supply	4,2 million	Oct. 2012 - Feb. 2015
3	Dien Bien Phu, Dien Bien	Water supply	4,1 million	Apr. 2014 - Sept. 2015
4	Lai Chau, Lai Chau	Water supply	4,1 million	Sept. 2013 - Sept. 2014
5	Thuy Van, Phu To	Wastewater collection and treatment	3,4 million	Dec. 2013 - Oct. 2015
6	Thai Binh, Thai Binh	Drainage, wastewater collection and treatment	10,5 million	June 2014 - Dec. 2016
7	Hong Linh, Ha Tinh	Drainage, wastewater collection and treatment	9,1 million	Oct. 2012 - Sept. 2015
8	Cao Lanh City, Dong Thap	Drainage, wastewater collection and treatment	16,5 million	Expected finished in 2018
9	Chau Doc, An Giang	Drainage, wastewater collection and treatment	6,9 million	Jan. 2013 - Jan. 2015
10	Son La, Son La	Solid waste collection and treatment	6,4 million	Oct. 2012 - Oct. 2014
11	Soc Trang, Soc Trang	Solid waste collection and treatment	8,5 million	Feb. 2014 - Oct. 2016**
12	Quang Tri, Quang Tri	Drainage, wastewater collection and treatment	6 million	Apr. 2014 - Nov. 2016

**Indicated costs are the revised maximum credit amounts from February 28, 2010, as reported in Addendum no. 2 to the MoU between Norway and Vietnam. Costs for Thuy Van, Thai Binh, Cao Lanh, Chau Doc and Quang Tri are reported in EUR and converted to USD with the exchange rate 1 EUR=1.18 USD. ** According to Main Consultant's Project Completion Report. We have, however, been informed by Norad that some elements of the infrastructure remain to be completed.*

[4] *Urban Sanitation Issues in Viet Nam: https://www.adb.org/publications/urban-sanitation-viet-nam*

[5] *The benefits of wastewater- and solid waste treatment include improved disease environment. These benefits accrue to all households, regardless of whether they connect to the wastewater system, or pay for solid waste treatment. Such services are referred to as "impure public goods" (see for instance Burchard-Dziubinska in Ecohydrology and Hydrobiology, 2005). Households can therefore "free ride" on the benefits of these services, which may affect the incentive to pay. The benefits of clean water are closely linked to the household itself gaining access to clean water, and there is less incentive to free ride, creating a greater incentive to pay for access. Although there are positive externalities from access to clean water as well, the private benefits relative to the external benefits are greater for water than for wastewater and solid waste.*

The Norad/KfW mixed credit scheme was initiated in 2003 through a Memorandum of Understanding (MoU) between the Ministry of Planning and Investment in Vietnam and Norad and involves concessional mixed credits with a grant element of up to 50 percent.

Four water supply projects, six drainage collection and/or wastewater collection and treatment projects, and two solid waste projects across Vietnam were approved and funded. Due to delays in selecting the lending agency for the credit component, construction did not start until 2012 for the first of the 12 approved mixed credit projects. Table 1-1 gives an overview of the location, type, total cost and construction period of each of the 12 projects. The map in Figure 1-1. shows the project locations, with the numbers referring to the project numbers in Table 1-1.

1.3. Motivation for the capacity building program

Linked to the mixed credit projects, a grant equivalent to 3 percent of the contract amount for each project was made available from Norad to support training and capacity building for managing the infrastructure. It was jointly decided to pool these funds to create a joint capacity building (CB) program for the mixed credit projects. The Ministry of Construction (MoC) is the program owner, with the Management Board of Technical Infrastructure Development Projects (MABUTIP) as the executing agency. The program document, drafted by the MoC and dated December 2011, outlines the rationale for the capacity building program, the objectives, and the scope of the work. The motivation for the capacity building program is based on observations made by Norad/KfW during the preparation and project appraisals of the individual mixed credit projects, and include:

Lack of project management capacity and operations and maintenance (O&M) skills: Lack of experience in implementing ODA funded projects is expected to cause difficulties in financial and technical management of the mixed credits project. Examples are provided of project sites where previous ODA projects have been delayed due to limited capacity of project management units. Lack of O&M experience is mentioned as an important barrier for wastewater and solid waste projects.

Lack of cost recovery resulting in lacking investments: A cross cutting issue for all three sectors is too low service tariffs, compared to O&M costs and capital expenditures. However, as discussed above, this problem is much greater for wastewater treatment and solid waste treatment than for water supply. It is mentioned that this is due to both difficulties in calculating actual O&M costs, and due to lack of political will to set tariffs that correspond to actual costs.

Operational inefficiencies: The public operation enterprises in the three sectors have limited experience operating as autonomous entities. The government of Vietnam is in the process of equitizing the water supply-, wastewater- and solid waste companies. Although the equitization process is more advanced for the water supply companies, it is argued that companies in all three sectors are inefficiently managed and require support for customer management and management of human resources, and to set up business plans.

Incomplete sector regulatory framework: The program document points to outdated regulations, lack of regulatory transparency, and weak enforcement of existing regulation as problems that contribute to poor performance and lack of financial sustainability of water supply, wastewater and solid waste companies. A Circular (No. 95/2009) exists for setting tariffs for water supply, while solid waste and wastewater regulations were less specific regarding the implementation of tariffs at the time of writing the program document.

Lack of community awareness and participation: Inadequate awareness regarding benefits of environmental sanitation services leads to lack of willingness to invest in household sanitation facilities, lack of protection of infrastructure and lack of willingness to pay for water supply, wastewater treatment and solid waste services.

1.4. Program design

To evaluate the capacity building program, we need a clear understanding of the program design, i.e. the activities, expected outcomes, objectives and goals. The program consists of three inter-related components, (i) capacity building for water supply and urban environment companies; (ii) capacity building for central and local authorities, and (iii) capacity building/training for Provincial Project Management Unit (PPMU) staff on project management (including financial and contract management). The objective of the program is, according to the agreement between MoC and Norad:

> *Capacity building for the key stakeholders of the Mixed Credit projects financed jointly by Norad and KfW, to secure investment effectiveness and efficiency during project implementation and ensure long-term financial and technical sustainability and operational benefits of the participating Water Supply and Sanitation Companies (WSSCs) and Urban Environmental Companies (URENCOs).*

Our review of program documents reveals that there are some discrepancies in the more detailed stated program objectives between documents, which we will get back to in section 4.1. For describing the program design, we rely on the program summary in the agreement between MoC and Norad, dated December 2012. Annex 1 to the agreement, which is attached as Appendix III to this report, outlines the overall program impact, the program goal, program specific objectives and specific outcomes of the program. The program summary also lists several program benefits, which could be interpreted as a more detailed description of the program specific outcomes. Based on the program summary and the information in the agreement, we summarize the program design in a results chain, in Figure 1-2.

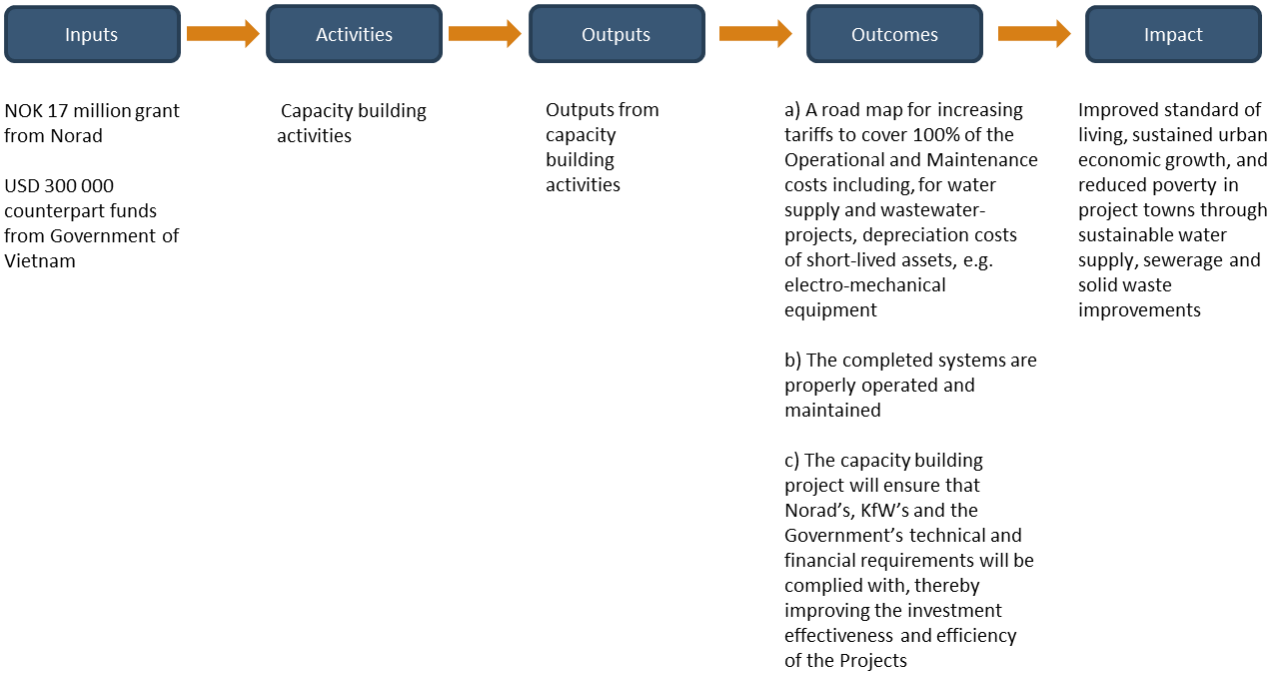

Figure 1-2 Results chain of the capacity building program

According to the program's financial statement from October 2, 2017, the total program costs are about USD 2,5 million, where USD 334 000 are counterpart funds from the Government of Vietnam. The funds are spent on capacity building activities aimed at the three components described above. The outputs of the activities should contribute to achieving three outcomes. The first outcome is a road map for increasing tariffs for water supply, wastewater treatment services, and solid waste treatment services, in each of the mixed credit project localities. The second outcome is related to the operation and maintenance of the physical infrastructure from the mixed credit project, and the third outcome is related to the fulfilment of technical and financial requirements for the mixed credit projects. The overall impact of the CB program is improved standard of living, sustained urban economic growth, and

reduced poverty in project towns through sustainable water supply, sewerage and solid waste improvements. We will get back to the logic and relevance of the results chain in section 4.1. It is worth keeping in mind that, in terms of costs, the activities covered by this review amount to 2,1 million Euros[6], while the total credit amounts for the Norad/KfW mixed credit projects amount to 84,5 million Euros, as shown in Table 1-1.

1.4.1. Implementation arrangements and timeline

The agreement between Norad and the MoC stipulates that the program is to be carried out through recruitment of an international main consultant and several national training consultants or institutions. A central project management unit under MABUTIP is responsible for developing Terms of References (ToRs), recruiting, and signing contracts with the selected consultants. The agreement between Norad and MoC also states that an inception report written by the main consultant should be submitted within one month after the consultant is mobilized. The agreement does not include a timeline for program implementation, however the CB program document states that the program should be implemented from the second half of 2012 through the end of 2015, and that the program consultants should be recruited by the third quarter of 2012 to avoid delays.

The semi-annual reports and reports for the annual program meetings show that the recruitment of the main consultant was delayed for 11 months. In October 2013, the main consultant contract was signed between BKT Co. Ltd, KWWA (joint venture between two Korean companies), Watech Construction Consulting Ltd (local sub-consultant) and the MoC. The inception phase and needs assessment also took longer than planned, and resulted in an additional delay of three months for finalizing the plan for capacity building activities. As a result of this delay and additional delays in recruiting local consultants, the procurement of the local consultants was not completed until November 2015, with eight contracts signed with five local consultants. Several of the capacity building activities were thus delayed, and an extension of the program period until June 2017 was granted by Norad in May 2016. We will return to how the delays in the initial phase of the program affect program effectiveness in Chapter 4.

1.5. Program activities

A preliminary overview of capacity building activities is provided in the CB program document. These activities are further developed and detailed in the needs assessment conducted by the main consultant. The purpose of the needs assessment was to base the design of capacity building activities on the needs of the participating entities. The needs assessment was carried out by the main consultant from October 2013 until July 2014, and resulted in a plan of activities that was approved in August 2014. Some supplementary activities, including study tours for stakeholders, additional software for O&M units and additional support for developing local regulations on drainage management, were proposed in the report for the annual meeting in September 2016. The final list of activities, with responsible consultants, targeted sectors, participating stakeholders and outputs, is shown in Appendix II. Prior to implementation, stakeholders made requests for which activities to attend and their content.

In total, there are 18 activities under the capacity building program. Three activities are aimed at central and local authorities, 12 activities are aimed at O&M units, and one activity is aimed at the PPMUs. Finally, the three study tours (considered as one activity) and the IEC activity involve various stakeholders. Some activities are targeted to a specific sector, with four activities targeting solid waste projects, two activities targeting water supply projects and five activities targeting wastewater projects. The remaining seven activities target all three sectors. The sectoral focus and the targeted stakeholders of the activities is summarized in Table 1-2.

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[6] *Exchange rate 1 EUR=1.18 USD*

Table 1-2 Sectoral- and stakeholder focus of the capacity building activities

	Central and local authorities	O&M units	PPMUs	All stakeholders	SUM
Water	-	2	-	-	2
Wastewater	2	3	-	-	5
Solid waste	1	3	-	-	4
All sectors	-	4	1	2	7
SUM	3	12	1	2	18

The activities can also be grouped by thematic focus. Three activities can be broadly categorized as **regulatory support**. Aimed at the central government, activity 1.1[7] involves support to the MoC to draft a policy for calculating solid waste treatment tariffs. Activity 1.2 involves preparing draft orientation plans[8] in wastewater project provinces. Activity 1.3 involves drafting local regulation for drainage management in the same project provinces. The activity also involves support for the owners of wastewater treatment and drainage infrastructure built to enter into performance contracts with O&M units. This is aimed at local authorities (who are normally the asset owners), but also involves management support for O&M units of wastewater infrastructure through formalizing their responsibilities and conditions.

Five activities are related to **support and training for setting tariffs for O&M units**. O&M units in all three sectors were offered support for preparing service tariffs and road maps towards achieving full cost recovery through tariffs (activities 2.3-2.5). This includes support for submitting the tariffs to the appropriate agencies for political approval. In addition, O&M units from the wastewater and solid waste projects were offered separate training courses on calculating O&M costs to calculate appropriate tariff levels (activities 2.1-2.2).

A second group of four activities provides **organizational support and trainings for O&M units**. Activity 2.7 provides software and hardware for O&M units, including customer management software. Connected to this, O&M units from all three sectors were offered customer management training in activity 2.10. Accounting software and human resource (HR) software and hardware is provided through activity 2.12, while activity 2.13 involves support for establishing business plans for O&M units.

Three activities involve **technical support and training for O&M units**. O&M units of wastewater projects were offered support for developing Standard Operating Procedures (SOPs) for each element of the drainage/sewerage system supported through the mixed credit projects (activity 2.6). Some of the software and hardware supplied through activity 2.7 is also related to technical support: asset management software and hardware, automated control (SCADA) software and equipment for water supply companies and water quality monitoring software and equipment for wastewater treatment systems. In addition, the water supply O&M units received non-revenue-water management training (activity 2.8) and solid waste O&M units received training in solid waste management (activity 2.9).

One activity (based on what was originally two activities, 4.1 and 4.2) provides **organizational support and training for provincial project management units (PPMUs).** This activity involves a training course on risk management of investment projects and training on financial and disbursement management, related to the requirements of the mixed credit project.

Finally, the capacity building activities also include **information, education and communication (IEC) activities** (activity 5.1), focusing on sanitation, health, environment and the importance of clean water supply, wastewater

[7] *All activity numbers refer to the activity table in Appendix II*
[8] *Orientation plans are mandatory, official documents that guide the long-run planning of the local drainage system and wastewater treatment.*

treatment and solid waste treatment. Three **study tours** were also organized as part of the capacity building program. A study tour to Binh Duong (Vietnam) was organized to exchange and learn from management and operation of water supply, drainage and solid waste treatment systems. A study tour to Japan focused on sewerage, and the third study tour to Korea focused on water supply and solid waste treatment. The relevance of the activities for achieving the program objectives is discussed in section 4.1, while our review of the effectiveness of the activities is discussed in detail in section 4.2. The next section outlines the methodology of the review.

2. Methodology

In line with the ToR (Appendix IV), this review is carried out according to the OECD DAC evaluation criteria: relevance, effectiveness, efficiency, impact and sustainability. The specific evaluation questions and criteria outlined in the ToR are reorganized under each of these five criteria in an evaluation matrix, presented in Appendix I. The matrix also reports the data sources and the analytical approach applied to answer each of the questions. This chapter gives an overview of the data collection, before discussing limitations and ethical considerations of the review.

2.1. Data collection

The review is based on three main sources of information:

1. Desk study of program documents from the CB program and the mixed credit projects. A list of reviewed documents is attached in Appendix V.
2. Interviews with key stakeholders from Norad, MoC and from five project sites, further described in Chapter 3. A list of interviewees is provided in Appendix VI.
3. Questionnaire to participants in trainings organized through the CB program from the same five project sites.

In accordance with the ToR, two water supply projects, two wastewater projects and one solid waste project were chosen as case studies for the review. The sample was selected by Norad with the purpose of representing the three sectors. A desk study of program documents was carried out in Norway prior to selecting interviewees and preparing interview guides for semi structured interviews that were carried out in Vietnam in November 2017. Questionnaires for participants in training activities were also prepared based on the desk study of program documents. The questionnaires were translated by a local consultant, who also acted as interpreter during the interviews where interviewees did not speak English. The questionnaires and a formal letter stating the purpose of the review and the visit from the review team were forwarded to contact persons at the project sites from the MoC at least one week prior to the visits. Most of the interviews were carried out in groups, both due to practical requirements and because several people were involved in the same activities. Some of the respondents at the case study project sites had prepared detailed reports of their participation in and experiences from the CB program, while other respondents were largely unprepared for the interviews despite being notified of the agenda and purpose of the meetings in advance. The quality and level of detail of information from the interviews therefore varies. In cases where information was lacking after interviews were completed, the contact persons at the project sites were contacted via e-mail and asked follow-up questions. Where possible, we collected completed questionnaires when we visited the project sites, and these questionnaires were then translated by the hired interpreter and returned to the review team.

Information acquired through interviews with stakeholders was triangulated with information from the desk study of program documents, including local consultant completion reports, semi-annual and annual reports, and interviews with other stakeholders.

2.2. Limitations and ethical considerations

2.2.1. Scope of the review

This is not a review of the Norad/KfW mixed credit project. However, since the potential impacts of the capacity building program is closely linked to the impacts of the investments funded through the mixed credit scheme, we will discuss aspects of the individual investment projects whenever necessary. As far as possible, we have therefore also reviewed project documents from the 12 mixed credit projects to get a picture of the relevance and the potential impact of the CB activities. Our ability to obtain detailed information about each of the mixed credit projects is limited by time and resources, and the review therefore relies more heavily on the five case study project sites than the remaining seven projects that were not visited as part of the field work.

Although the desk study has been an important source of information and used for triangulation, the results of this report rely extensively on the information gained through the field work, and particularly interviews with key stakeholders in the case study provinces (see list in Appendix VI). The information gained through the interviews relies on the accuracy of the descriptions and insights of the individuals that were interviewed.

2.2.2. Independence of the evaluator

To carry out interviews at the five project sites, we had to rely on a local consultant who was familiar with the program, both to facilitate contact and logistics for visits, but also to understand technical details of each project at the visits. Whenever necessary, this consultant acted as an interpreter at project visits and translated questionnaire responses from Vietnamese to English. The consultant is employed at the local sub-consultant, Watech Construction Consulting, and has acted as a coordinator for the main international consultant under the CB program. This may cause issues related to independence. Still, interpretation during interviews required a level of technical understanding, as well as understanding for the program context, that would be hard to find in an external interpreter. The consultant was not involved in choosing the project sites, choosing contact persons for each project site, developing questionnaires or interview guides, nor did he take part in the analysis and interpretation of data. Some of the project sites we visited also had personnel that spoke English, in which case we relied on them as interpreters during the interviews, rather than on the local consultant. We are aware of the potential conflict of interest, and have mitigated this potential problem by carefully triangulating information from the project site interviews with information from program documents and interviews with other stakeholders. We have also tested samples of the translated questionnaires.

3. Case studies: Five project sites

Two water supply projects, two wastewater projects and one solid waste project across five provinces were visited during a two-week field work in Vietnam. This chapter provides a brief introduction to each of these.

3.1. Song Cong water supply project in Thai Nguyen province

The Song Cong water treatment plant is the third largest of seven plants operated and maintained by Thai Nguyen water supply company (WSC). The company is also the PPMU of the mixed credit project. The Song Cong project involves increasing the capacity of an existing water supply plant from 1972. The capacity of the plant was about 7000 m^3 treated water per day before the expansion, which is increased to about 20 000 m^3. The construction period was from October 2012 to February 2015. The plant is currently operating at about half capacity, due to lower than expected demand. Thai Nguyen WSC participated in several activities through the CB program, both as O&M unit and as PPMU. They received support for preparing a water supply tariff and the road map towards full cost recovery,

training courses in customer management and in non-revenue water management, they received software for personnel management, support for establishing a business plan, and participated in study tours in Vietnam and to South Korea. In addition, Song Cong water treatment plant received support for information, education and communication activities through the program.

3.2. Lai Chau town water supply project in Lai Chau province

The Lai Chau town water treatment plant and accompanying pipelines are operated and maintained by Lai Chau WSC, which is also the PPMU of the project. The construction period was from September 2013 to September 2014. The plant replaced an old plant, and increased the capacity from 4 000 to 12 000 m^3 treated water per day. The plant is currently operating at more than 100 % capacity. Lai Chau WSC has taken part in all capacity building activities.

3.3. Thai Binh wastewater project in Thai Binh province

The drainage and wastewater treatment systems in Thai Binh are currently operated and maintained by the contractor, SEEN Technologies Corporation. The construction period was from June 2014 to December 2016. The project involved both construction of new systems and rehabilitation of existing systems, and construction of a treatment plant. The plant has a capacity of 10 000 m^3 wastewater per day, and is currently operating at 80-90%. The O&M unit in Thai Binh was intended to be the Thai Binh urban environment company (URENCO), but the local authorities decided that the O&M unit should be selected through a bidding process, which is planned for the beginning of 2018. The contractor is temporarily operating the systems and the plant. Although it is highly uncertain if Thai Binh URENCO will be chosen as the O&M unit, the company has benefitted from several of the capacity building activities. The PPMU consists mainly of representatives from the local authorities, but also with one representative from Thai Binh URENCO.

3.4. Chau Doc wastewater project in An Giang province

The Chau Doc drainage and wastewater system is operated by Chau Doc URENCO, formerly under Chau Doc's People's committee, now an enterprise of the provincial environmental company, An Giang URENCO. The PPMU is An Giang Power and Water Supply JSC. Before construction, the PPMU was thought to also be the O&M unit. The construction period was from January 2013 to January 2015. The capacity of the treatment plant is about 5 000 m^3 wastewater per day. Because of the change in O&M unit and that Chau Doc URENCO became an enterprise under An Giang URENCO, not all CB activities directed towards O&M units reached the Chau Doc O&M unit. Chau Doc URENCO did not receive the business plan, the SOPs, customer management training, the training for calculating O&M costs and setting wastewater tariffs, nor did they attend the study tour to Japan. These activities were instead directed to An Giang URENCO or An Giang Power and Water Supply JSC.

3.5. Son La solid waste project in Son La province

The Son La solid waste treatment plant and related infrastructure is operated by Son La URENCO, which also has representatives in the PPMU. The plant consists of landfill cells, leachate treatment facilities and composting facilities. The construction period was from October 2012 to October 2014, although some components remain unfinished. The capacity as of July 2017 was 70 tons of waste per day, and the plant operated at about 86%. The aim is a capacity of 80 tons per day. The project has had several technical difficulties, including too steep slopes in landfill cells and leachate ponds, which collapse during the rainy season; lack of sorting of solid waste before composting, which reduces the composting efficiency and quality; and dust from the composting, which represents a health hazard for operators if the compost is not moistened. Son La URENCO attended several of the CB activities. The participants of the risk and financial management training were absent during the interview and those present knew

nothing about this. They also did not attend the study tour abroad (but they stated to have arranged and financed their own tour to South Korea).

4. Review

This chapter presents our responses to the ten questions presented in the evaluation matrix in Appendix I. These are organized under each of the five evaluation criteria: relevance, effectiveness, efficiency, impact and sustainability

4.1. Relevance

We start by assessing the relevance of the capacity building activities presented in section 1.5 for achieving the program outcomes, followed by an assessment of the overall approach and an assessment of the relevance of the program outcomes. This involves an assessment of the results chain presented in Figure 1-2.

4.1.1. Relevance of expected outcomes

The bilateral agreement between Norad and the MoC presents three expected outcomes of the capacity building program (to be reached upon completion of the investment project constructions):

a) A road map for increasing tariffs to cover 100% of the operational and maintenance costs including, for water supply and wastewater-projects, depreciation costs of short-lived assets, e.g. electro-mechanical equipment
b) The completed systems are properly operated and maintained
c) The capacity building program will ensure that Norad's, KfW's and the Government's technical and financial requirements will be complied with, thereby improving the investment effectiveness and efficiency of the projects

The first outcome is clearly defined and can easily be verified. Our desk study, however, shows that there are discrepancies between how this outcome is presented in various program documents. For instance, in the Project Completion Report and the CB program document, this outcome is formulated as follows: "Tariffs are in place covering 100% of the O&M costs; for water supply-projects and wastewater-projects, tariffs need to cover in addition at least depreciation costs of short-lived assets, e.g. electro-mechanical equipment". This formulation implies a more ambitious, and perhaps less realistic, expected outcome of the program. Both decree 88/2007 and 80/2014 allow for socio-economic adjustments over time, i.e. a road map, provided provincial subsidy to compensate for this adjustment, which means that requiring cost recovery from the start of operations would imply a stricter requirement than the national regulation.

It is not clear whether the inconsistencies in program documents has impacted program implementation. A potential impact, if the CB program document rather than the agreement is followed, is increased focus on submitting tariffs for political approval.

The second and third expected outcomes are less clear, and it is difficult to verify whether they have been achieved. In general, program outcomes are defined as intended, intermediate effects on target groups, and they should be clearly linked to program goals.[9] It is not clear to us what "properly operated and maintained" implies, and as far as

[9] *https://www.norad.no/globalassets/import-2162015-80434-am/www.norad.no-ny/filarkiv/vedlegg-til-publikasjoner/results-management-in-norwegian-development-cooperation.pdf [15.12.17]*

we can see, neither this outcome nor the specific technical and financial requirements are further defined in other program documents. This may be a challenge for program managers, who lack clearly defined outcomes to guide their efforts.

4.1.2. Relevance of capacity building activities

The presentation of the capacity building activities in section 1.5 group the activities into seven thematic areas: 1) Regulatory support, 2) Support and training for setting tariffs, 3) Organizational support and trainings for O&M units, 4) Technical support and trainings for O&M units, 5) Organizational support and trainings for PPMUs, 6) Information, education and communication activities and 7) Study tours. To what extent are these activities relevant for achieving the three program outcomes presented in the results chain (Figure 1-2)?

The regulatory support is aimed at supporting both tariff development in the solid waste sector (relevant for outcome a)) and the development of the drainage and wastewater sector in general, through the support for orientation plans and local drainage management. This could contribute to proper operation and maintenance of the drainage and wastewater infrastructure, supported by the mixed credit projects (outcome b)).

All activities related to support and training for setting tariffs are directly relevant to outcome a), while the organizational support and trainings for O&M units seems more related to outcome b). Organizational support for PPMUs is the only activity that seems to address outcome c). It is less clear how the IEC activities and the study tours are directly relevant for the expected program outcomes. The study tours could affect motivation and attitudes, which again has an impact on O&M, however this effect is difficult to measure. The operation of the infrastructure may also be affected by the behaviour of its users (e.g. waste separation), which provides motivation for the IEC activities.

The activities implemented as part of the program seem more directly relevant to meeting the sector and provincial challenges presented in the CB program document: 1) lack of project management capacity and O&M skills, 2) lack of cost recovery resulting in lacking investments, 3) operational inefficiencies, 4) incomplete regulatory framework, and 5) lack of community awareness. In our view, these identified challenges correspond clearer to the CB activities (listed in Appendix II), and they respond clearer to the program goal (Appendix III). Besides more coherent documentation, an improved program design would perhaps have had limited practical implications, as the activities seem to be designed to address these challenges.

4.1.3. Relevance of overall approach, methodology and work plan

As discussed above, the CB program methodology could have benefitted from clearer defined result framework, with verifiable outcomes. However, as we find that the program activities seem relevant for mitigating the main challenges that motivated the capacity building program the weaknesses in program methodology may not have had significant negative impacts on implementation.

Both the CB program document and the main consultant's inception report present a design and monitoring framework with indicators and risks. As far as we can see, this monitoring framework is not used in any of the program reports (annual, semi-annual or completion report). Continued application of the monitoring framework could have helped guide and adjust the program implementation and, through this updated information, improved the relevance of the activities. Such use of a monitoring framework is particularly relevant considering the delays in both the mixed credit projects and the CB program. More clearly defined program outcomes could have facilitated this.

The approach to design the activities of the program with a needs assessment with extensive stakeholder involvement seems relevant and necessary for designing capacity building activities that meet the needs of the stakeholders. As noted, the needs assessment was more demanding than expected, and when added to the delay in

recruiting the main consultant, the start of the capacity building activities was delayed by more than a year. We will get back to how this affects the effectiveness of the program, but these delays indicate that the work plan may have been too ambitious.

4.2. Effectiveness

The following section addresses the effectiveness questions of the evaluation matrix (Appendix I). 4.2.1 responds to question 4. 4.2.2 responds to question 5 by discussing the effects of the capacity building activities on the work of the receiving organizations (hereafter *effects*) under seven activity groups. 4.2.3 responds to question 6. Responses to question 4 and question 6 draw on descriptions in 4.2.2.

4.2.1. Achieved outcomes relative to the agreement

This section addresses question 4 of the evaluation matrix, and thus the specific outcomes of the CB program described in the agreement between Norad and the MoC, as presented in 4.1.1.

Draft roadmaps have been prepared by the local consultant and handed over to the relevant stakeholders for all projects. This is an important output from the project, however, as shown in Table 4-1, the roadmaps have only been politically approved at three project sites We therefore conclude that outcome a) is reached for the water supply companies, but for few of the projects in the other sectors. Still, as will be discussed, the additional effect of the project may be larger for the wastewater and solid waste sectors, than the water supply sectors.

Outcome b) is more challenging to evaluate. Also here, the outcome seems better achieved in the water supply sector, than in the other two sectors, with a major reason being the different preconditions in the sectors. It is however likely that more progress has been made in the wastewater and solid waste sectors. 4.2.2 presents and discusses the effects of each CB activity on improving the O&M of the constructed system.

For outcome c), the investment projects seem to a large extent to have complied with what we understand as the technical and financial requirements of Norad and KfW. As discussed below, the main activities aimed to achieve this outcome (activities 4.1-4.2) have only to a certain extent contributed to this. The delayed implementation of the activities meant that they were implemented towards the end or after the construction period of several of the projects. It is, however, our impression that the five projects interviewed are pleased with the more informal guidance and follow-ups provided by Norad. Since the projects seem not to be reliant on activities 4.1-4.2, it seems unlikely that these have ensured that the requirements are complied with.

4.2.2. Short- and long-run effects

This section addresses question 5 of the evaluation matrix. Our assessments are mainly based on interviews with stakeholders at the five case study sites, which are supplemented and triangulated with information from program documents. The CB activities are evaluated by assessing (i) the likely short- and long-run effects of the activities and (ii) the additionality of these effects. An observed effect is only additional if it had not occurred in the absence of the given activity. Establishing whether an effect is additional or not requires identifying the causal relationship between activities and certain outcomes. This again requires comparing outcomes to credible counterfactuals. In this case, it is difficult to find a good counterfactual to each project site, and our assessment relies on discussing and assessing

which effects (intended and unintended) are likely to be achieved as a result of the activities.[10] The following therefore discusses each activity, where we evaluate the observed effects against a *likely* activity-free scenario.

Regulatory support

The support to draft a circular that guides principles and methods for calculating solid waste management tariffs (activity 1.1, Appendix II) appears to have been successful, with the circular signed and implemented in 2017. It is our impression that the support from the main consultant has been important in this process. It is plausible that this will have long-run effects on the implementation of tariffs for solid waste systems in all of Vietnam. A similar circular exists for water supply and is being developed for wastewater, meaning that a circular for solid waste would likely have been developed at some point, also without the assistance of the CB program. In any case, the CB program has likely sped up the process considerably.

Local authorities at the six wastewater projects have received orientation plans that guide the long-run planning of the local drainage system and wastewater treatment (activity 1.2). It is difficult to assess these plans, as the potential effects are long-term. Thai Binh DoC has received the orientation plan from the local consultant, and states to use these in consultation and planning with the PPC. It is, however, unclear how or to what extent it is useful. With the assistance of a Japanese consultant, Thai Binh is currently developing new city plans, including wastewater and drainage management. The orientation plan may be useful in this process, or it may be replaced by new plans. In Chau Doc, local authorities are waiting for MOC to approve their orientation plan. The plan is therefore not implemented. Based on these two case studies, it is difficult to assess what the long-run effects of the orientation plans will be. It depends on the implementation in the provinces.

The local authorities for the wastewater projects have also received draft performance contracts for O&M of the systems and treatments, and draft local regulations for drainage management (activity 1.3).[11] Chau Doc has received the draft contract and will likely apply this. Still they point out that they would have been able to generate this on their own. Thai Binh is unaware of the draft contract, and is therefore unlikely to apply this in the agreement with their future O&M unit. On this basis, we find it unlikely that the draft performance contracts have had a substantial additional effect on the work of the organizations.

The local regulations are based on the national decrees 80 and 154, and outlines procedures and responsibilities of the project owner and O&M unit. Chau Doc received draft regulations and some support from the local consultant, but they ended up completing the regulations themselves. They also expressed that they could have prepared everything themselves, but the work of the consultant saved them time. Thai Binh also received draft regulations, but the DoC was already developing regulations on urban infrastructure management, so they did not make use of the provided draft. On this basis, we find it unlikely that the draft regulations have had a substantial additional effect on the work of the organizations.

Support and training for calculating O&M costs and setting tariffs and road map[12]

The activities 2.1-2.5 include training and support to calculate O&M costs, set tariffs and establish tariff road maps towards full cost recovery for O&M units in the three sectors. In our view, the effect of these activities varies across the three sectors. The expected program outcome is a road map for increasing tariffs to cover 100% of the O&M costs including, for water supply and wastewater-projects, depreciation costs of short-lived assets, e.g. electro-mechanical equipment. The status of tariff- and road map approval for each of the projects is shown in Table 4-1. The committed level referred to in the table corresponds to O&M costs for solid waste projects, and O&M costs and

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[10] This of course requires not only that the company has the resources to conduct or fund the activity, but also that it recognizes the need for the activity. Customer management training, for instance, appears to be an activity that has not been prioritized by some companies, but which effects are appreciated in hindsight.

[11] Quang Tri already had the regulations in place and therefore did not participate in this activity.

[12] All discussions on tariffs assume that the O&M cost and tariff level calculations are correct.

depreciation costs of short-lived assets for water supply and wastewater projects. We see that all four water supply projects have approved tariffs that exceed the committed level. This only holds for one wastewater project, and in fact, only three of the wastewater projects have approved tariff plans, and none of the solid waste projects.

The difference in tariff approvals across the sectors mainly reflects that this work is familiar for the water supply sector, whereas setting such tariffs is new to the wastewater and solid waste sectors. Related, as will be exemplified by Chau Doc, local authorities seem to be reluctant to approve tariffs to cover calculated costs, and prefer to base the tariffs on observed costs, which naturally delays the process and make the training for calculating costs less useful. Note that the infrastructure in Cao Lanh has not yet been completed, and some elements also remain for the Soc Trang solid waste treatment infrastructure, such that tariff approval cannot be expected for these project sites. Some of the differences in progress may be due to the fact that several of the water supply projects were completed before the wastewater and solid waste projects.

The two water supply companies interviewed have established tariffs that exceed committed levels by 33% in Song Cong, and by 12% in Lai Chau. In Song Cong, the company has their own tariff road map covering all their seven plants, and preferred this over the road map they received through the CB program. In Lai Chau, the established tariff road map aims to cover all costs in 2020. The water supply companies have a longer history of tariffs for households and are more equitized than companies in the other two sectors. The incentive to and the process of reaching tariff levels that recover costs is therefore more advanced for the water sector. The training and support in calculating O&M costs still appear to have facilitated an 11% increase in the tariff in Lai Chau from 2014 to 2015. A major reason is the leverage the information provided (Box 4-1).

Box 4-1: Effects of training and support to calculate O&M cost

The CB program has provided leverage for water supply- and urban renovation companies to convince local authorities to approve tariffs and increases in tariffs sooner than they would have been without the CB program. The program has also contributed to increased awareness of the need for cost recovery to ensure sustainable operations.

The wastewater sector has a less developed tariff system. The approved tariffs in Thai Binh and Chau Doc only cover parts of their committed levels, 24% and 31%, respectively. (Table 4-1). Thai Binh presently has an environmental protection fee at 10% of the water tariff, and plan to implement the new tariff in December 2017. They have also approved the tariff road map, which will be adjusted annually. In Thuy Van, the approved tariff covers 105% of the committed tariff level. This can perhaps be explained by the fact that Thuy Van is an industrial area, implying that the tariffs mainly address businesses, not households.

Chau Doc implemented the new tariff in June 2017 and the PPC expresses an intention to increase the tariff in 2019 based on the observed costs of the wastewater treatment system. It remains to be seen whether the tariff will be implemented in Thai Binh and whether the tariff will increase in Chau Doc. In Chau Doc, it was the PPMU rather than the O&M unit, that participated in the cost calculation training. Adding to this, the PPC aims to base their tariff increases on observed costs, which suggests that Activity 2.1 has been less influential for this project. Interviewees at both locations express that support from the CB program has helped communicate suggestions of tariff increases to local authorities and customers, which in turn can facilitate tariff increases.

The tariff system for solid waste is the least developed of the three sectors. In Son La, the tariff level for households was being considered for approval by the PPC at the time of the interview. The tariff to be approved implies an increase of 30% from the environmental protection fee, but it is far from enough to cover O&M costs. Both the URENCO, PPMU and PPC received training for calculating O&M costs. The interviewees expressed that the training is

of limited use today, as they are too far away from reaching a sustainable level for it to be a feasible goal. [13] The training may be useful for future cost calculations, although it is likely that observed costs are preferred to calculated costs, when these become available.

Table 4-1 Tariff level and tariff road map overview

	Town, province	Present tariff level as percentage of the committed level	Road map	Sector
1	Hoi An, Quang Nam	118%	-	Water supply
2	Song Cong, Thai Nguyen	133%	(uses their own road map)	
3	Dien Bien Phu, Dien Bien	193%	-	
4	Lai Chau, Lai Chau	112%	19% increase until 2020	
5	Thuy Van, Phu To	105%	-	Wastewater treatment
6	Thai Binh, Thai Binh	24%	25% increase until 2020.	
7	Hong Linh, Ha Tinh	-	-	
8	Cao Lanh City, Dong Thap	-	-	
9	Chau Doc, An Giang	31%	-	
10	Son La, Son La	-	-	Solid waste
11	Soc Trang, Soc Trang	-	-	
12	Quang Tri, Quang Tri	-	-	Wastewater treatment

Except as a tool for political pressure, these activities are unlikely to have had effect on the level of the water supply tariffs. Since the water tariffs regulations are well-developed, it is not surprising that the water tariffs in all four water supply projects under the mixed credit scheme exceed the minimum level required by the KfW. The program design did, however, take into account that the water sector is more experienced, since the training course for calculating tariffs was not offered to the water supply projects.

For the solid waste and waste water companies, the potential effect of the activities is larger. Although most of these companies do not have tariffs or road maps approved, the processes have started. Since these sectors did not have tariff regulations, it is unlikely that the processes would have been initiated as soon without the CB program. The process of developing tariff plans in collaboration with the local consultant may also have spurred greater awareness of setting tariffs to recover costs in these sectors, and increased understanding of the Vietnamese regulations. This has likely sped up the process of submitting and approving tariffs and tariff plans in the wastewater and solid waste sectors. The additional effect is therefore likely larger in these sectors than the effect in the water supply sector.

Organizational support and training for O&M units

Activities 2.7, 2.10, 2.12-2.13 include training and support for physical assets management, customer management, human resource management and accounting, and to establish business plans for the O&M units. Also for these activities, the different preconditions of the three sectors influenced their effects.

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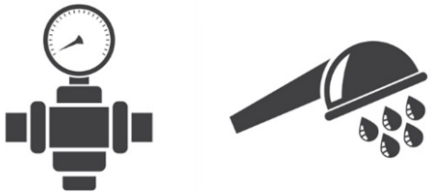
[13] *The IPA project completion report focuses on payments from local authorities to the operator for collection, transport and treatment of the waste, but we regard this as less important for the work of the receiving organization, as such subsidies are made in both the solid waste and wastewater sectors, and to some extent in the water supply sector.*

The O&M units received different types of software and hardware, adjusted to their sector and their specific needs (activities 2.7 and 2.12). Customer management software was received by two water-, three wastewater- and two solid waste projects. Asset management software was received by two water-, two wastewater-, and one solid waste project. Accounting software was received by one water- and five wastewater projects. Personnel management software was received by three water-, five wastewater- and two solid waste projects.

Box 4-2: Effects of customer management training in Thai Nguyen

The three employees from Thai Nguyen WSC who attended the customer management training, organized a course for the other employees upon arriving from Hanoi. The stated effect of these activities includes a 50% reduction in customer complaints regarding meter reading. Also, with new techniques learned through the training, each employee is now able to read meters in the homes of 1200 customers per year, an increase of 30% from before the training.



Thai Nguyen water supply company received personnel management software, which replaced *ad hoc* computer solutions, such as Excel sheets. They expressed that this has been useful for all their operations. Lai Chau water supply company received software for personnel management and for asset management, and state that both increase their operational efficiency. The personnel management software replaced a paper based system. Both the Thai Binh, Chau Doc and Son La urban renovation companies received personnel management and accounting software. The personnel management software replaced paper-based systems, and the O&M units state that this has increased efficiency. However, in Chau Doc, this accounting software has already been replaced by software supplied by their new parent company, An Giang URENCO.

Hoi An water supply company and Dong Thap water supply, sanitation and urban environment company received automated control (SCADA) software to supervise their equipment. Through the interviews, we were informed that the Lai Chau water supply company received this software through the mixed credits project, and not the CB program.

It is possible that especially the water supply companies have the financial resources to purchase this type of software and hardware on their own, as they do for other software they find useful for their operations. If that is the case, the positive effects of the support are only additional if the companies did not recognise the need to make these investments prior to the CB program. This is plausible. In that case, a more efficient activity by the CB program would be to inform and convince the companies about the importance of such software. It is also plausible that the companies did recognise the benefits of the software also before the CB program, but prioritized other (more efficient) investments to enhance their capacity. In sum, the additional effects of the software and hardware support is uncertain in the water supply projects. For the wastewater and solid waste projects, it is more likely that the supported software has had additional effects, as the companies have less resources to purchase the software without support.

Customer management appears to have been a low priority for the visited project sites, prior to the CB program. Both Thai Nguyen (see Box 4-2) and Lai Chau water supply companies and Son La URENCO state that the customer management training (activity 2.10) has increased their focus on customer relations. They also state that methods learned through the training has made their customer management more efficient. Son La URENCO state that after the training course, they established a service department that is responsible for customer contracts and IEC activities.

According to the completion report of the local consultant responsible for this activity, five of twelve (potential) O&M units did not attend the training (the URENCOs of Thai Binh, Chau Doc, Hong Linh and Quang Tri, and the company for infrastructure development in Thuy Van). Of the seven attending O&M units, only three received the customer management software. The low URENCO attendance may reflect that these companies prioritize other challenges in

their organization. Other capacity building activities could therefore have been more beneficial for them. The two water supply companies interviewed, however, expressed that the training was useful and relevant.

Business plans have been prepared at all the 12 project sites (activity 2.13). The O&M unit at Thai Nguyen took part in preparing the business plan and has implemented it. The plan is made for the company and not specifically for the Song Cong treatment plant. Similarly, in Chau Doc, the business plan was prepared for and handed over to the parent company, An Giang URENCO, not the specific O&M unit: Chau Doc URENCO, who was unaware of the plan when interviewed. In Lai Chau, the company already had a long-term business plan, and used the plan prepared through the CB program to adjust their existing business plan. The interviewees in Son La were largely unaware of the business plan. Similarly, in Thai Binh, the business plan seems to have been of little, if any, use.

The business plans may fall between two stools: water supply companies have already established such plans and the wastewater and solid waste companies are only to a small extent able to make use of them. This impression is also supported by the fact that high level representatives from some of the interviewed companies were at first unaware that these plans had been prepared.

Technical support and training

Activities 2.6, 2.8 and 2.9 are technical support and training for O&M units in the wastewater, water supply and solid waste sectors, respectively.

The standard operation procedures (SOPs) are aimed at the wastewater companies. The SOPs for Thai Binh have neither been provided to the PPMU, the URENCO nor the temporary O&M unit (according to the URENCO and PPMU in Thai Binh and the local consultant responsible for the SOPs). Also in Chau Doc, the O&M unit is unaware of the existence of these SOPs. This does not necessarily imply that the O&M units for the four other wastewater projects have not received their SOPs. In Thai Binh, the O&M unit is yet to be decided and the local consultant has stated that they are prepared to deliver the SOPs to the assigned company. In Chau Doc, it is uncertain why the O&M unit has not received the SOPs. The SOPs are relevant for this enterprise, and not for An Giang URENCO.

The training for non-revenue/unaccounted-for water (NRW/UFW) management was provided to all four water supply companies. In addition, Dong Thap water supply, sanitation and urban environment company attended, presumably because they also provide water services, not because it is will be useful for their wastewater project (project 8, Table 1-1). The two water supply companies interviewed expressed satisfaction with the course. Lai Chau stated that water loss has not been a focus for them before the training, but it is now. Thai Nguyen stated that they learned from the training. Still, they will finance a training course themselves, organized by Japanese experts, which will be on-site and which they therebefore state to be even more useful. That the company takes initiative to such trainings and can finance it, reflects that the training, although relevant, is not necessarily additional for all companies.

The training for O&M of solid waste management was well-received by Son La URENCO, and they thought it was relevant for their plant. The O&M units in Soc Trang and in four wastewater projects also attended the training. That most participants were not in solid waste may have positive implications outside the scope of the CB program. It is likely that the training improves the operations and maintenance by the solid waste O&M units.

Organizational support and training for PPM units

The training on risk and financial management for the PPMUs (activities 4.1-4.2) are particularly sensitive to timing, as it aims to improve the process and organization of the investment project construction. The training took place in November-December 2014, and as apparent from Table 1-1, this is after several of the investment projects had completed construction. Lai Chau WSC, for instance, pointed out in the interview that they received the training too late to be useful for the construction of their treatment plant. They do point out that the training can still be beneficial for other projects, especially for donor funded ones. Also in Son La, construction finished before the training was received. For Song Cong and Chau Doc, the training was implemented during the construction period, which they

point out also is too late for being fully beneficial. Thai Binh PPMU was happy with the timing and the content of the training. Particularly it made documentation for Norad more efficient.

The potential short-run implication for these activities is more efficient and problem-free management of the investment project constructions. As the training came too late for several of the projects, this potential implication only applies to certain projects. Long-run implications are possible spill-overs to better construction processes in future projects. The two water supply companies interviewed pointed out that this is a likely (unintended) implication for them.

Information, education and communication activities

The support to implement information, education and communication (IEC) activities (activity 5.1) was addressed at both the O&M and PPM units. They were carried out in collaboration with one or both units and with local actors, often the Women's Union.

All five interviewed companies expressed that the activity has been useful and that they are overall pleased with the support. How it was useful varied somewhat. Song Cong expressed that it has increased environmental awareness and recognition of the importance of water, while Lai Chau focused on the customers' recognition of why tariffs are necessary. Neither of these sites have conducted such activities before.

Thai Binh and Son La also expressed that the activity has been useful, but they also wished the program was more flexible to be adjusted to local conditions. Thai Binh requested more wastewater specific material and Son La requested material adjusted to the ethnic minority in their province. The material was to a little extent flexible to accommodate these requests. Son La and Chau Doc already had some experience conducting IEC activities and will continue with these activities. They still appreciate the budget and inputs, which have improved and extended their IEC activities

As pointed out by several interviewees, IEC activities need to be conducted regularly to have an effect ("people forget"). Potential effects include more efficiently maintained facilities (e.g., customers throw less trash in the toilets), more efficient use of the services (e.g., customers use less water), and that tariffs are increased quicker (because of greater customer acceptance). This activity could spur more and better IEC activities in the future, and the potential effects are dependent on these future activities. Most of the visited companies expressed an aim to hold IEC activities in the future, but it depends on budget allocations. The activity may therefore have positive long-run effects, but the extent of these are uncertain.

Study tours

The interviewed participants of the study tours to Binh Duong and Japan (for wastewater companies) or South Korea (for water supply and solid waste companies) expressed that the activities were relevant and useful.

For the Binh Duong study tour, all but one province attended, and the tour participants were pleased. The implications for the investment projects, however, seem to be limited. Son La expressed that the tour will lead to several changes in their O&M, while Song Cong pointed to a specific idea they plan to implement: to apply smart phones for water metering. Representatives from Chau Doc, Lai Chau and Thai Binh, however, pointed out that the facility at Binh Duong has better technology than theirs and is thus inspiration for the next project, rather than transferable information to the present facility. If they should have affected the technology used, the study tours should have been held much earlier. The visited facilitates in South Korea or Japan are even more advanced, meaning that the transferability of the specific lessons learned on these tours is even more limited.

As all study tours were held in 2017, the potential effect is mainly through improved O&M. Several PPMU staff attended the study tours, and their attendance cannot have improved the management of the investment project; at that time all projects except Cao Lanh were constructed. The questionnaire respondents stated that they are in

contact with colleagues at other sites whom they met during the study tour. The study tours could therefore have strengthened the networks of the O&M units and thus improved operations through co-learning.

4.2.3. Relevant organization in the context of the physically completed projects

This section addresses question 6 of the evaluation matrix. It is our impression that for the water supply projects, where the project owners are involved both as PPMU and O&M unit and the existing organization is robust, the organization has been relevant and the environment has been enabling. For the two wastewater cases, it has been a challenge that the O&M unit has not been decided from the start of the project. In Thai Binh, the contractor is the temporary O&M unit, while the URENCO (which may not become the O&M unit) has received training and support. In Chau Doc, the decision to change the O&M unit from An Giang power and water supply JSC to Chau Doc URENCO, and the company becoming part of An Giang URENCO, have limited the possibility to benefit from the CB program. The roles have been more stable for the solid waste project in Son La. This project has had multiple technical problems, as described in the completion report for the investment project, some of which are yet to be resolved. Being in the solid waste sector, the organization is weaker than in the water supply sector, but it is difficult to assess the extent better organization could have minimized the technical problems.

The organization and environment around the physically completed projects depend on several factors besides the project owners and the physically completed projects, e.g., the socio-economic and political situations. Still it appears that the organization and environment established by the owners of the physically completed projects have been influential for the ability to benefit from the CB activities. In particular, replacements of the O&M unit have been a major challenge in Thai Binh, and to some extent in Chau Doc.

4.3. Efficiency

To evaluate the efficiency of the CB program, we focus on two aspects of efficiency. First, whether the ratio between the costs of carrying out the capacity building activities and the output from the activities seems reasonable. Second, we briefly assess whether the program was efficiently organized in terms of reporting requirements and program organization structure.

Table 4-2 Program costs disaggregated by local consultant contract

Consultant contract	Capacity building activities included in contract	Total cost of consultant contract (USD)	Share of total
Main consultant	1.1; 2.1-2.5; 4.1-4.2; Study tours	637 000	29 %
LC1	1.2; 1.3	288 000	13 %
LC2	2.6; 2.13	177 000	8 %
LC3	2.7	586 000	27 %
LC4	2.8	15 000	1 %
LC5	2.9	11 000	1 %
LC6	2.10	11 000	1 %
LC8	2.12	199 000	9 %
LC9	5.1	267 000	12 %
Total		2 191 000	100 %

Note: Costs associated with each contract are based on disbursed funds in the Financial Statement dated 2/10/2017. LC=local consultant. LC7 was removed from the project at an early stage due to insufficient funds.

The overview of capacity building activities in Appendix II shows that several of the activities are carried out by local consultants. The program financial reports show the costs associated with eight local consultant contracts, in addition

to the costs of the main consultant contract. The main consultant contract and some of the local consultant contracts include more than one activity, which limits the possibility to assess the costs associated with each activity. The available information is summarized in Table 4-2.

As expected, the main consultant stands for the largest share of program costs. This consultant is both responsible for the needs assessment, coordination, monitoring and all the tariff related activities – both regulatory support for the MoC, trainings for O&M units and support for preparing and submitting tariff plans. In addition, the main consultant is responsible for the study tours to Binh Duong, Korea and Japan. Unfortunately, we are not able to disaggregate the costs according to the different tasks of the main consultant.

The second largest share of costs are associated with activity 2.7, which includes customer management software for seven O&M units, asset management software and hardware for five O&M units, SCADA monitoring software and hardware, and water quality monitoring software and equipment for one O&M units. It seems likely that a large share of these costs is associated with hardware, but we do not have access to more disaggregated cost information. The local consultant reports indicate that the hardware is beneficial for more than this specific activity, for instance related to general management, HR and accounting software supplied under activity 2.12. Still, this activity alone accounts for 27 % of the total costs in Table 4-2. The accounting and HR software and hardware under activity 2.12 account for 9 % of the budget, implying that the total costs of software and hardware supplied to the O&M units account for as much as 36 % of total costs.

The support for orientation plans for the drainage and wastewater treatment project provinces, support for wastewater treatment O&M contracts, and development of local regulations for drainage management account for 13% of the costs. The information, education and communication activities organized in the 12 project localities account for 12 % of the costs. Finally, the support for drafting business plans and SOPs (activities 2.6 and 2.13) account for 8 %, while the remaining activities 2.8 – 2.10 each account for about 1 % of the budget. These three activities are all training modules directed at the water projects, the solid waste projects, and finally for all projects (customer management training).

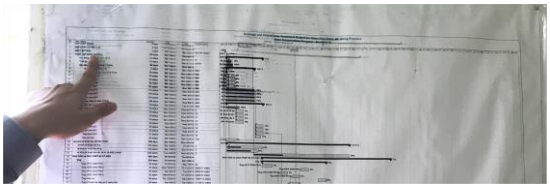
When we combine this information with our assessment of the effectiveness of each of the activities, our first impression is that funds could have been more efficiently spent by reallocating funds from activities that show limited effectiveness, but account for a large share of the costs, to activities that score better on effectiveness, and account for a smaller share of the costs. For instance, a too large share of the budget seems to have been spent on supplying software and hardware that several of the companies would have purchased without the support of the program. Some of these funds could have been spent on supporting tariff development for wastewater and solid waste projects, to increase the impact of the resources spent. On the other hand, the marginal effect of spending more on tariff activities is uncertain, since the effects of these activities ultimately rely on political decisions. Several of the interviewees felt that more funds for and focus on IEC activities is important to increase community awareness and support. It is plausible that these activities could ultimately be important for political acceptability of tariffs in the wastewater and solid waste sectors, as well as the sustainability of the physical infrastructure supported through the mixed credit scheme. For instance, the functioning of the solid waste treatment technology in the Son La project depends on how well the waste is separated by households before it is collected and transported to the treatment facility.

4.4. Impact

This section discusses the fulfilment or expected fulfilment of the overall development goals of the program: "Improved standard of living, sustained urban economic growth, and reduced poverty in project towns through sustainable water supply, sewerage and solid waste improvements." This development impact is expected to be achieved through improving the quality, reliability and sustainability of water supply, wastewater disposal and solid waste management services in the 12 mixed credit project towns. The underlying assumption is therefore that the mixed credit projects have the potential to increase standard of living, sustained urban economic growth and reduced poverty, and that the CB program will contribute to realizing this potential through ensuring the sustainability of the mixed credit projects. Our assessment of impact therefore consists of two parts. First, assessing whether the CB program has succeeded in improving the sustainability of the mixed credit projects, and second, assessing the potential impacts of the mixed credit projects on standard of living, sustained economic growth and reduced poverty. A satisfactory assessment of the latter is clearly beyond the scope of this review. The projects completed under the mixed credit scheme have not been evaluated, and one project is not yet completed. Our assessment of the development impact of the mixed credit projects is therefore based on our knowledge of the mixed credit projects from project appraisal reports and project completion reports, as well as the insights we have gained through the five project visits.

Box 4-3: One CB program

For each investment project, a grant equivalent to 3 percent of the project costs was earmarked for support and capacity building for managing the infrastructure. It was jointly decided to pool these funds to create the CB program. This decision has been praised by several of the interviewees, as it has increased efficiency through economies of scale. The decision has also enabled more overarching activities, such as drafting the solid waste circular.



As indicated in 4.2, our results show that the activities aimed at the wastewater and solid waste sectors are likely to have had a positive and additional impact on the sustainability of the mixed credit projects. Although the companies still could improve their organizations and their cost recovery through tariffs, the CB program has positively impacted these areas and thus contributed to the sustainability of the mixed credit projects. The additional impact in the water supply sector is more limited.

Identifying causal impacts of the mixed credit projects on standards of living, economic growth and poverty reduction requires a full-scale evaluation of the projects, with comparisons to credible counterfactuals. This is complicated by the strong economic growth and progress made in reducing poverty and improving standards of living in Vietnam over the past decades, as described in Section 2. Comparing indicators of health and poverty at project sites before and after project implementation would clearly misrepresent the impact that can be attributed to the project. Moreover, the mixed credit projects were planned and appraised between 2003 and 2008, while construction of the first project did not start until June 2012, and construction is still ongoing for one project. The delay from planning until implementation makes it particularly important to assess whether projects that were expected to have important impacts on poverty reduction and economic growth in the early 2000s, were still appropriate at the time of implementation.

One expected project benefit stated in the CB program document is "improved access to the most essential water supply and sanitation services" for poor households. The program's focus on increasing tariffs benefits the sustainability of the mixed credits projects, but it could also restrict access for poor households and thus reduce impacts on poverty reduction and improvements in living standards. This is particularly relevant for water supply, where household tariffs are presently higher than in the other two sectors. For poor households, the alternative to

tap water is largely untreated water, e.g., from collected rainwater, wells and rivers. The cost of increased risk of disease due to contaminated water may well exceed the cost of connecting to the water supply network and paying the water tariff. However, barriers such as cash constraints, lack of information and the urgency of more short-run needs may prevent these households from investing in access to clean water. This issue was raised in several of the appraisal reports for the mixed credits water supply projects, where high tariffs and connection costs are mentioned as barriers for poor people to benefit from the investments. Although substantial progress has been made in poverty reduction in Vietnam since these reports were written, the issue still deserves attention, if only to confirm that this is no longer a problem. It is our view that the lack of focus on ensuring affordable access to clean water for the poor population may have been a hindrance for positively impacting living standards and reducing poverty.

In conclusion, we find that several of the activities conducted under the CB program have contributed to improved management and operations of the infrastructure constructed under the mixed credits projects. Some of the activities are also likely to have wider impacts by contributing to the overall development of the drainage and wastewater treatment sector. There are important environmental and health benefits of improved wastewater treatment and improved solid waste treatment, and there is increasing focus on the importance of these sectors for improving health and living conditions.

4.5. Sustainability

This section evaluates if the benefits and impacts (here defined as effects) of the CB program are likely to endure in the future, after project completion.

As described in Section 4.2, several of the positive effects of the CB program will likely endure also after project completion. Particularly, the circular developed with the support of the program will influence future tariff work in the two solid waste projects, and in other solid waste projects across Vietnam. Also, the support to develop tariff plans and road maps for the wastewater and solid waste projects is likely to influence the sustainability of the projects. Although the CB program was unsuccessful in reaching its outcome a) for these projects, the support has initiated processes that can be continued by the stakeholders and create future benefits. This long-term effect crucially depends on MoC following up the tariff processes in the provinces.

It is plausible that some of the organizational support for the O&M units will have positive effects also in the future. The four O&M units who attended customer management training appear to have benefitted from the training. With salient benefits, the changes the training caused is likely to endure.

The IEC activities - if followed up by companies and local authorities - may lead to greater awareness of several relevant issues, such as environmental conservation and proper use of water supply, wastewater and solid waste infrastructures, which can lower costs for the companies. The activities may also create support for higher tariffs. Other activities, as described in section 4.2, may have little, if any, additional long-term effects.

5. Conclusions and recommendations

This chapter briefly concludes on the findings of chapter 4 and makes recommendations for continued work.

5.1. Discussion and conclusion

The capacity building program in the water supply, wastewater and solid waste management sectors in Vietnam has likely improved the operation and maintenance of the mixed credit investment projects, contributed to these projects' compliance with the Norad and KfW requirements and facilitated the process towards increasing tariffs in the three sectors. As discussed, however, several activities of the capacity building program have only to a limited

extent contributed towards these outcomes, and the additionality of certain contributing activities is questionable. The program has also struggled under delays and unclear plan documents, e.g., inconsistent objectives across documents.

The decision to aggregate the capacity building grants of each mixed credit investment projects to one capacity building program, has been well-received by the interviewed stakeholders (see Box 4-3). A drawback is reduced flexibility to differentiate the content and timing of the activities. We believe the benefits exceed the drawback.

In our view, the better developed organizations and tariff systems in the water supply sector, relative to the wastewater and solid waste projects, is the main explanation for greater progress in the former sector. It is our view that a lot of this progress would have been made without the support from the capacity building program. In the latter sectors, the outcomes are further away from being achieved, but the situation would likely have been worse without the support from the program. Some activities were directed towards specific sectors, but by further adjusting the activities to each sector and by prioritizing the wastewater and solid waste companies that struggle the most, the additional impacts of the capacity building program could have been improved.

Assessing impacts on economic growth and poverty reduction requires a thorough evaluation of the mixed credits projects. Although the overall goal includes poverty reduction, the focus of the capacity building program is on achieving sustainable management and operations through cost recovery. This is of course essential to ensure continued and improved supply of water and sanitation facilities in the project towns. However, also keeping in mind issues related to affordability for the urban poor would have added to the likely fulfilment of the overall development goals of the program.

5.2. Recommendations

To ensure the sustainability and long-term impacts of the capacity building program, the wastewater and solid waste projects need continued support. Processes of tariff approval are underway for several of the projects in these sectors. Continued support in this process can be valuable in terms of providing leverage for political approval. In particular, we recommend that MABUTIP follows up the tariff processes for the wastewater and solid waste projects, both with the companies and with the PPCs. The close and frequent contact the main consultant has had with the provinces in the work with the tariff plans, testifies to the necessity of closely following up these processes.

Continued work on community awareness can increase the public support for, and therefore political acceptability of, wastewater and solid waste treatment tariffs. Community awareness is also important to ensure the sustainability of the new infrastructure. For instance, efficient solid waste treatment relies on the willingness of households to sort their waste before collection.

Considering the intended overall project impact of the program, the issue of affordability for the urban poor needs to be further examined. We recommend that Norad commissions an evaluation of the projects implemented under the mixed credit scheme. Such an evaluation should also consider to what extent the projects have benefitted the urban poor.

Lastly, although the water supply and wastewater sectors are treated separately in Vietnam and are at different development levels, there are potentially large synergy effects by combining the two. The government could for instance encourage that the same companies provide both services. The knowledge and capacity of the water supply companies have the potential to improve the effectiveness and efficiency of the related, but less developed, wastewater services.

Appendices

Appendix I: Evaluation matrix

Evaluation criterion 1: Relevance		
Evaluation question	**Data sources**	**Analytical approach**
1. Did the expected outcome, also in hindsight, have the correct focus? If relevant, justify what could/should have been done differently	All sources	Overall assessment based on conclusions from evaluation questions 2-10.
2. What is the relevance of the overall approach, methodology and work plan of the CB program, including the relevance of methods for needs assessment and for CB planning	Program documents Interview with MoC and five case study project sites	Assessment of approach and methodology based on available information in project documents, assessment of coherence between documents, information about case study project stakeholder's experience from needs assessment process This includes an assessment of the validity of the results chain – is the program design suited to achieving the objectives of the program? Assessment of relevance of risks and mitigation, communication with project organizations, monitoring framework and reporting and perception of Norad's involvement as a donor agency.
3. What is the relevance of the CB activities for the receiving project organizations, and their ability to receive the activities?	Program documents Interviews with five case study project sites Questionnaires	Assessment of the usefulness of the activity offered to the organization, including an assessment of the timing of activities for each of the 12 mixed credit projects, compared to the progress of the mixed credit project (e.g. whether support for PPMUs was supplied sufficiently early to have an impact on mixed credit project management).
Evaluation criterion 2: Effectiveness		
Evaluation question	**Data sources**	**Analytical approach**
4. Was the CB program outcome achieved as expected, intended and described in the agreement between Norad and the MoC?	Program documents Interviews with MoC and stakeholders at five case study project sites	Overall assessment based on results from evaluation questions 5 and 6, Assessment of outputs from each activity, comparing local consultant completion reports with our findings, where applicable. To assess whether outcomes were achieved, the evaluation of relevance must be taken into account, and additionality is assessed.
5. What are the short- and long-run impacts of the CB program on the work of the receiving organizations?		Assessment based on information from interviews, triangulated with information from project appraisal reports. Assessment of additionality.

6. Within a context of physically completed projects, and based on five case studies, did the project owners of the mixed credit projects manage to establish a relevant organization for sustainable management and O&M, and also create an enabling environment for benefitting from the CB program?	Questionnaires distributed to five case study project sites	Assessment of progress, status and organization of the mixed credit project, focusing on the project as the context of receiving the CB activities. Physical completion verified by project completion reports (technical and from the project owner).
Evaluation criterion 3: Efficiency		
Evaluation question	**Data sources**	**Analytical approach**
7. Was the effort required to carry out the CB activities appropriate (efficiency of production), and was the ration between input (costs) and output from the activities adequate (allocation efficiency)?	Program documents Interviews with MoC and stakeholders at five case study project sites Budgeted costs for each activity	Assessment of resources spent relative to effectiveness of each activity. This includes a discussion of project organization structure (including Norad's involvement), monitoring framework and reporting requirements.
Evaluation criterion 4: Impact		
8. Were the overall goals and impacts related to improved quality of life and health, as well as the long-term sustainability fulfilled? If too early to tell, are they likely to be fulfilled?	Project appraisal reports from mixed credit projects	Overall assessment based on evaluation of effectiveness and relevance – was the program designed in such a way that the overall goals would be achieved if the project outcomes were achieved? Were the project outcomes achieved? Assessment of additionality of investment projects based on the project appraisal reports for the mixed credit projects and our insights from the field visits – note that this is not an evaluation of the mixed credit project, and a good assessment of impact would probably require such an evaluation.
Evaluation criterion 5: Sustainability		
Evaluation question	**Data sources**	**Analytical approach**
9. Are the benefits of the CB program likely to continue after the program completion? 10. What are the long-term impacts on the receiving organizations?	Interviews with MoC and stakeholders at five case study project sites Program documents	Overall assessment based on results from evaluation of relevance and effectiveness, as well as information provided by stakeholders during interviews.

Appendix II: Activity table

Activity		Implemented by	Sector(s)	Implementation period	Participating stakeholders	Outputs achieved
Activities for Central and Local Authorities						
1.1	Support to Drafting of Policy for the Guidance of Principles and Methods Calculating Solid Waste Management Tariff	Main consultant[1]	Solid waste	07.2014 – 05.2015	Ministry of Construction	Draft circular submitted to MoC. Circular on valuation of domestic solid waste promulgated by MoC
1.2	Support 6 Provinces for Preparation of Orientation Plans for Drainage Development, Wastewater Treatment	VIWASE[2]	Wastewater	10.2015 – 11.2016	Local authorities: DoC, DoF and PPC in six wastewater project provinces.	Assistance with preparation of orientation plans for local authorities in 6 provinces. Draft orientation plans provided.
1.3	Support the Asset Owners and Drainage/Sewerage Systems Operators Signing Performance Contracts for Systems Management, Operation and Maintenance. And Development of local regulations for drainage management	VIWASE	Wastewater	10.2015 – 10.2016 and 12.2016 – 06.2017	Local authorities: DoC, DoF and PPC in six wastewater project provinces.	Draft performance contracts provided to local authorities in 6 provinces. Reports on status of management of drainage and wastewater treatment activities provided to local authorities in 5 provinces. Draft regulation provided to local authorities in five provinces.
Activities for O&M units						
2.1	Training Course on Calculating Annual O&M Costs, Setting Drainage/Sewerage, Wastewater Treatment Service Tariff and its Road Map Toward Full Cost Recovery	Main consultant	Wastewater	10.2014 – 11.2014	O&M units, local authorities (DoC, DoF)	25 participants from 6 wastewater project provinces, one water project province and one solid waste project province.
2.2	Training Course on Calculating Annual O&M Costs, Setting Solid Waste Management Tariff and its Road Map Toward Full Cost Recovery	Main consultant	Solid waste	11.2014 – 12.2014	O&M units, local authorities (DoC, DoF)	14 participants from 2 solid waste projects and 2 wastewater project provinces

2.3	Support Preparing Water Supply Tariff and Road Map Toward Full Cost Recovery	Main consultant	Water	12.2014 – 10.2016	O&M units, local authorities	Draft tariff plan prepared for 4 water project O&M units. Tariff plan including road map for one province.
2.4	Support Preparing Drainage/Sewerage Service Tariff and Road Map Toward Full Cost Recovery	Main consultant	Wastewater	12.2014 – 11.2017	O&M units, local authorities (DoF, PPC)	Draft tariff plan, including tariff road map to cover O&M costs and short-lived asset depreciation, prepared for 6 wastewater project O&M units
2.5	Support Preparing Solid Waste Management Service Tariff and Road Map Toward Full Cost Recovery	Main consultant	Solid waste	12.2017 – 11.2017	O&M units, local authorities (DoC, PPC)	Draft tariff plan, including tariff road map to cover O&M costs, prepared for 2 solid waste project O&M units
2.6	Support Developing Standard Operation Procedure (SOPs) for Each O&M Activities of Each Element of the Drainage/Sewerage System	VIWASE	Wastewater	11.2015 – 11.2016	O&M units	SOPs prepared for O&M units in six wastewater project provinces.
2.7	Support Development of Asset Management Tools and Operating System and Providing Additional Software for O&M units	HAWACO[3]	All	12.2015 – 07.2016	O&M units	**Customer management software:** 2 water-, 3 wastewater-, 2 solid waste projects. **Asset management software & hardware:** 2 water-, 2 wastewater-, 1 solid waste project. **SCADA monitoring software & equipment:** 1 water-, 1 wastewater project. **Water quality monitoring software & equipment:** 1 wastewater project
2.8	Training Module for NRW/UFW Management for Water Supply Companies	Training Center for Water and Environment Sector	Water	12.2016 – 06.2017	O&M units	20 participants from 4 water project provinces and 1 wastewater project.
2.9	Training Module for Operation and Maintenance of Solid Waste Management Systems for Urban Environment Companies	Training Center for Water and Environment Sector	Solid waste	12.2015 – 01.2016	O&M units	19 participants from 2 solid waste projects and 4 wastewater project provinces

2.10	Training Module for Customer Management for Water Supply and Sewerage Companies and URENCOs	Training Center for Water and Environment Sector	All	12.2015 – 01.2016	O&M units	16 participants from 4 water supply companies, 2 solid waste companies and 2 wastewater companies
2.12	Support Development of Enterprise Management Software for O&M Operators	HAWACO and BRAVO[4]	All	12.2015 – 05.2016	O&M units	**Accounting software:** 1 water -, 5 wastewater projects **HR software & hardware:** 3 water, 5 wastewater- and 2 solid waste projects
2.13	Support Establishing Business Plans for Water Supply, Sewerage and Solid Waste Management Companies	VIWASE	All	11.2015 – 11.2016	O&M units	Draft business plans prepared for all 12 projects
Activities for PPMUs						
4.1 and 4.2	Training Course on Risk Management of Investment Project and Training on Financial and Disbursement Management	Main consultant	All	11.2014 – 12.2014	PPMUs	27 participants from 10 project provinces attended, 1 solid waste and 1 wastewater project had no participants (Son La and Thuy Van).
5.1	Implementation of Information - Education - Communication (IEC) Activities on Water Supply and Sanitation	CEEN[5]	All	11.2015 – 10.2016	PPMUs, O&M units, local authorities (O&M unit) and local organizations (Women's Union)	IEC activities carried out in 12 project provinces
Activities involving all stakeholders						
	Study Tour in Binh Duong	Main consultant	All	04.2017 – 05.2017	O&M units	32 participants from 11 project provinces, no participant from 1 water supply project (Dien Bien)
	Study Tour in Korea and Japan	Main consultant	Water and solid waste (Korea), wastewater (Japan)	05.2017 – 06.2017	O&M units	**Korea:** 13 participants from 4 water projects and 1 solid waste project. **Japan:** 16 participants from 6 wastewater projects.

[1] *BKT Co., Ltd and KWWA (Korea), Watech Construction Consulting Ltd,*
[2] *Vietnam Water, Sanitation and Environment Joint Stock Company*
[3] *HAWACO Mechanical & Electrical Co. Ltd.*
[4] *BRAVO Software Joint Stock Company*
[5] *Construction and Environmental Engineering*

Appendix III: Annex I of the agreement Between Norad and MoC

Annex I: Agreed Project Summary (APS)

Identification of the Project

- **Project Title/Name:** Capacity Building Programme for Vietnam in the Water, Sanitation and Solid Waste Management Sector under the Norad/KfW Mixed Credit Scheme (SRV-2845 SRV-10/0012)
- **Agreement Partners:** The Ministry of Construction (MoC) of the Social Republic of Vietnam and the Norwegian Agency for Development Cooperation (Norad).
- **Implementing Ministry:** MoC
- **Executive Agency:** Administration of Technical Infrastructure through Management Board of Technical Infrastructure Development Projects (MABUTIP).
- **Day to day follow-up:** Central: Central Project Management Unit (CPMU) under MABUTIP. Local: Public Operation Enterprises (POE).
- **Consultant:** Main Consultants to be selected through International Competitive Bidding (ICB) based on QCBS. Local training consultants/institutions to be selected through National Competitive Bidding under supervision by the Main Consultant.

Overall Project Impact

Improved standard of living, sustained urban economic growth, and reduced poverty in Project towns through sustainable water supply, sewerage and solid waste improvements.

Project Goal

To improve the quality, reliability and sustainability of water supply, wastewater disposal and solid waste management services in up to 12 provincial towns in Vietnam, thereby fulfilling the accountability to their customers.

Project Specific Objectives

Capacity building for the key stakeholders of the Mixed Credit projects financed jointly by Norad and KfW, to secure investment effectiveness and efficiency during project implementation and ensure long-term financial and technical sustainability and operational benefits of the participating Water Supply and Sanitation Companies (WSSCs) and Urban Environmental Companies (URENCOs).

Specific Outcomes of the Project

To be achieved at the end of the Project implementation (i.e. start of operation) are:

a. A road map for increasing tariffs to cover 100% of the Operation and Maintenance (O&M) costs including, for water supply and wastewater-projects, depreciation costs of short-lived assets, e.g. electro-mechanical equipment,
b. The completed systems are properly operated and maintained,
c. The capacity building project will ensure that Norad's, KfW's and Government's technical and financial requirements will be complied with, thereby improving investment effectiveness and efficiency of the Projects.

Benefits

- The Project will assist the Provincial People's Committee (PPCs) and relevant agencies in achieving an understanding and overview of the sector performance though appropriate performance indicators, like e.g. water tariff and drainage/solid waste fees structures;

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- The Project will ensure that all relevant donors' and Government's technical and financial requirements will be complied with during and after the implementation and improve investment effectiveness and efficiency of the Projects;
- Projected provincial utility-wide progressive tariffs will meet the required financial objectives;
- Poor households will get improved access to the most essential water supply and sanitation services;
- The participating WSSCs/URENCOs are expected to earn positive net income and generate positive net cash flow each year during the forecast period, and through full cost recovery performance;
- The participating WSSCs/URENCOs will require less, and gradually no further subsidies and will be able to fund all O&M expenses and to service their debt.

Inputs

For the Main Contract, a total estimated number of 129 person-months of consulting services (31 international and 98 national specialists) will be required. Inputs for other Local Contracts will be determined subject to the training needs assessments to be conducted by the Main International Consultant.

Project Budget

Item	Total Cost (USD)
A. Norad Funds	
1. The Main Contract's costs[1]	1,761,000
2. Local Contracts' costs	939,000
–CB for PPMUs staff on Project Management	65,000
– CB for WSSCs/URENCOs on Company Management	507,500
– CB for Local Authorities on IEC, Community	262,500
– CB for WSSC/URENCOs staff on English	104,000
3. Auditing	30,000
4. Contingencies (10%)	270,000
Sub-total (A)	**3,000,000**
B. Government Funds (Vietnam)	
1. Remuneration and per diem for staff (5 persons)	130.000
2. Office running costs (42 months)	125.000
3. Travel costs	25.000
4. Custom and related fees for the imported car	20,000
Sub-total (B)	**300,000**
Total	**3,300,000**

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Note: [1] *Inclusive of USD60,000 to cover CPMU's vehicle and office equipment costs. The vehicle will be imported.*

Financing plan and expected disbursement.

Year/Source	2012	2013	2014	2015	Total
Norad funds (USD)	882,500	88,000	1,112,000	917,500	3,000,000
Government funds (USD)	30,000	90,000	90,000	90,000	300,000
Total (USD)	**912,500**	**178,000**	**1,202,000**	**1,007,500**	**3,300,000**
Norad funds in NOK	**5,000,000**	**500,000**	**6,300,000**	**5,200,000**	**17,000,000**

Main indicators
See Attachment 1 to this APS: Design and Monitoring Framework.

Main risks
Risks and challenges identified in terms of institutional, financial and project implementation:

(i) Tariff Adjustments:

a. Risk: ability and willingness of local authorities and service providers to perform tariff adjustments/full cost recovery and efforts towards greater transparency and accountability; lack of public support for annual tariff increases;

b. Mitigation:

- undertake policy dialogue involving the PPCs, and WSSCs/URENCOs on the benefits of a financially viable and responsive entity;
- propose a timetable for adjusting tariffs;
- awareness campaigns will be conducted in communities;

(ii) Local capacity:

a. Risk: inadequate capacity of people's committees and WSS service providers;

b. Mitigation: provide training in accounting, technical, and managerial skills, and in Government and donors' guidelines on procurement, disbursements, and project management for project staff;

(iii) Project Implementation:

a. Risk: front-end and other delays in implementation caused by a delay in development of project planning, management and administration capabilities;

b. Mitigation:

- the design of the Capacity Building program has been discussed in great detail and there is agreement between the Ministry of Construction, Norad and KfW on how it should be implemented;
- periodic progress reviews against the proposed training needs assessments may be conducted.

(iv) Macroeconomic fluctuations:

a. Risk: unforeseen macroeconomic fluctuations or change, which will raise project costs;

b. Mitigation: Provide contingencies to anticipate unforeseen, adverse economic fluctuations;

(v) Project familiarity:

a. Risk: the PPCs' and service providers' lack of familiarity with Norad, KfW and Government procurement and disbursement procedures, thus delaying project implementation;

b. Mitigation: conduct sensitization workshops on project objectives, scope, and activities;

(vi) Local support for the project:

a. Risk: resistance from the local authorities, communities and other key stakeholders to fulfilling the project development objectives;

b. Mitigation: undertake policy dialogue involving key stakeholders and the communities on the benefits of an improved capacity building program;

(vii) Active participation and sense of ownership from Project Beneficiaries:

a. Risk: lack of interest from beneficiaries to implement the project;

b. Mitigation: identify and discuss incentives and options for stakeholders to induce greater participation and sense of ownership;

These risks and their mitigation shall be reported upon in the semi-annual progress reporting.

Attachments to the APS:

1. Design and Monitoring Framework
2. Mixed Credit Portfolio – Project Location Map

Appendix IV: Terms of Reference for the End of Project Review

Tildelingsskjema ved avrop

Dokumentarkiv

Virksomhet	Arkivering av	Arkiv-/saksnr
Kunden	Avtale om tildeling av kontrakt	1100407
Norad	Rammeavtale Næringsvirksomhet	1600847-28

Dette skjemaet skal fylles ut ved hver tildeling av avrop i henhold til rammeavtalen og de bestemmelser som er gitt i den. Beskrivelse av hva som er objekt for kontrakt skjer enten ved henvisning i skjemaet til bilag til underliggende skjema, eller direkte i skjemaet.

Levering av tjenester i henhold til rammeavtale

Denne avtalen er inngått mellom:	Norad	(heretter kalt Kunden)
	KPMG	(heretter kalt Leverandøren)
Sted for ytelsen:	Norge og Vietnam	

1. Spesifikasjon av leveransen

Capacity Building Program for Vietnam in the Water, Sanitation and Solid Waste Management Sector under the Norad/KfW Mixed Credit Scheme.

Terms of Reference (TOR) for End of Project Review (EPR)

Purpose
The purpose of the end-review is twofold:

1. Evaluation: To evaluate the program according to OECD-DACs evaluation criteria (relevance, effectiveness, efficiency, impact and sustainability)
2. Results: To document and publicise the developmental results of the program

Background
In 2003, Norad and the Ministry of Planning and Investment (MPI) in Vietnam signed a Memorandum of Understanding (MOU) regarding Norwegian support to concessional mixed credits (MC), with a grant element (Concessionality) not exceeding 50%. The MOU had its basis in two previously signed MOUs (1996 and 1999), with a subsequent revision in 2004.

The MC MOU of 2003 resulted eventually in a portfolio of 12 projects; 6 wastewater, 4 water supply and 2 solid waste, spread from the Mekong in the South to the mountains in the North and with few exceptions predominantly in the poor provinces.

When the coverage areas are fully developed, close to one million people may be affected by the investment, which has a credit limit from the German Development Bank KfW of 78 million EUR and a Grant from Norway of 210 million NOK.

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The program implementation was initially delayed due to insufficient credit financing, but picked up speed around 2010, as the KfW was able to provide the required loan financing.

At time of writing these TORs, 10 projects have completed construction. The remaining two are expected to complete during the next few months.

Each project implementation is based on signed Individual Project Agreements (IPA) between Norad and MPI. All project goals are related to improving quality of people´s life and health conditions, via specific project-related outcomes, individually described for each project.

All project implementation has undergone international bidding. Additionally, also after international bidding, the German consultant Fichtner GmBH & Co. KG was hired to supervise all implementation in the field.

For more details, reference is made to the MOUs, the IPAs, Fichtner´s Technical/Economic Completion Reports and the Projects Owners´ Development Completion Reports. (Not all are ready yet.)

In order to secure a successful outcome and increased sustainability of the investment, Norad entered into a Capacity Building (CB) program with the Ministry of Construction (MOC) in Vietnam. MOC is a.o. the national regulatory authority for infrastructure development. The Agreement with MOC has a limit of NOK 17 million, plus a local component corresponding to 300,000 USD.

The Program consists of three major inter-related parts: (i) Capacity Building for Water Supply/Urban Environment Companies; (ii) Capacity Building for Central and Local Authorities; and (iii) Capacity Building/Training for Provincial Project Management Units (PPMU) Staff on Project Management (including financial and contract management).

The Program will assist the Provincial Peoples Committees (PPC) and relevant agencies in achieving an increased understanding and overview of the sector performance through sustainable water tariffs and drainage/solid waste fees structures. The Project will ensure that all relevant Donors' and Government's technical and financial requirements will be complied with during and after the implementation of the investment projects and improve investment effectiveness and efficiency of the Projects. The project impacts will indirectly include improved standard of living, sustained urban economic growth, and reduced poverty through sustainable water supply, sewerage and solid waste improvements.

To carry out the CB program an international consultant was hired through international bidding, plus a number of national consultants for limited components through direct procurement and execution under management of the main consultant.

For more details reference is made to relevant agreements and contracts, as well as inception reports and progress reports and, as needed, available topic-related documents and completion reports.

Scope of work
The purpose of this EPR is, based on a selected number of reference projects;

1. Relevance: To verify that the expected outcome, also in hindsight, had the correct focus or, if relevant, justify what could/should have been done differently
2. Effectiveness: To verify that the CB program outcome has been achieved as expected, intended and described in the agreement between Norad and MOC

3. Efficiency and sustainability: To verify that the projects have been carried out as described in the IPAs and that the project owners did manage to establish a relevant organisation for sustainable management and O&M and also to create an enabling environment for benefitting from the CB program;
4. Impact: To verify that the overall goals and impacts related to improved quality of life and health, as well as the long-term sustainability, are fulfilled or, if too early to tell, are likely to be fulfilled.
5. If the consultant is not able to verify some or several of the above, he shall provide justification and describe what seems to be the problem, with suggestions how to rectify the issue. Such an elaboration and conclusion shall be framed according to the OECD-DAC evaluation criteria (relevance, effectiveness, efficiency, impact and sustainability)

Assessment/evaluation

The consultant shall carry out his assessment of the CB Program according to, but not necessarily limited to, the following criteria:

1. The CB organisation: MOC – main consultant – local consultants:
   a. Organisation structure;
   b. Overall approach, methodology and work plan for the CB project.
2. The receiving project organisations:
   a. Relevance and ability to receive, and benefit from, the CB activities;
   b. The CB programs´ impact on the organisation´s work – short and long term.
3. Performance:
   a. Relevance of methods for needs assessment;
   b. Relevance of CB planning;
   c. Relevance of implementation;
   d. Relevance of risks and mitigation;
   e. Communication with project organisations;
   f. Monitoring framework and reporting;
   g. Are the completion reports presenting conclusions in conformity with the expected outcomes and the End Review´s findings?
   h. Cost efficiency and effectiveness;
   i. The recipients´ perception of Norad´s involvement as donor agency.
4. To the extent that certain actions or decisions preferably should have been different, which are the most significant lessons learned from the review?
5. Overall elaboration and conclusion with a view to the project´s fulfilment of overall goals, objectives, as well as short- and long-term physical and financial sustainability of the projects.

Results

The developmental results of the project need to be documented and publicised. These results should preferably be on an outcome (intermediate effect in people and systems) and impact (long-term change) level if possible. Output can be reported on in aggregate numbers. Of these levels, emphasis should be made to present output related results, particularly salient and important examples of results can be publicised in the text in boxes, and with accompanying illustrations.

One page should be used to document key results.

2. Fremdriftsplan med aktuelle aktiviteter, herunder starttidspunkt samt start av evt. godkjenningsperiode

Methodology

The review shall be carried out as a combination of desk study, one field visit to Vietnam to MOC and a selected number of projects, group and single interviews and, if found relevant, use of questionnaires.

Of 12 projects, the team shall visit 2 water, 2 sewage and one waste management related project.

The field work shall commence 15 November 2017

Personnel

Two consultants, one senior, covering the fields detailed below

- Sound knowledge of evaluation standards, methods and terminology
- Experience of evaluation of programs and projects in developing countries and at a global level
- Work experience in water/sewage/waste management sector for one consultant
- Academic qualifications relevant to the evaluation subject (e.g. social sciences, natural sciences, economics or engineering)

Reporting and time schedule

The assignment is to be delivered through a written report in English to Norad. The report shall be in Word format and include the major findings, assessments, conclusions and recommendations. The report should be no more than 25 pages long, including an executive summary, which contains the main findings, of no more than two pages and a key result page.

The draft report shall be sent to Norad electronically and be submitted by 20 December 2017. The final report shall be submitted 2 weeks after comments have been received from Norad.

The results of the assignment shall also be reported through a meeting, or telephone conference, with Norad staff, if Norad deems such a meeting useful, at a date agreed between Norad and the consultant.

3. Navn på aktuelt personell, nøkkelpersoner, med CV

Kristin Magnussen, partner Menon Economics

Sofie Waage Skjeflo, senior economist Menon Economics

Øyvind Nystad Handberg, senior economist Menon Economics

2. Fremdriftsplan med aktuelle aktiviteter, herunder starttidspunkt samt start av evt. godkjenningsperiode

Methodology

The review shall be carried out as a combination of desk study, one field visit to Vietnam to MOC and a selected number of projects, group and single interviews and, if found relevant, use of questionnaires.

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Kristin Magnussen, partner Menon Economics

Sofie Waage Skjeflo, senior economist Menon Economics

Øyvind Nystad Handberg, senior economist Menon Economics

Appendix V: List of reviewed documents

Program documents

- Project Document for: Capacity building program for Vietnam in the water, sanitation and solid waste management sectors. November 22, 2011.
- Memorandum of Understanding between Norad and the Ministry of planning and Investment, Vietnam regarding concessional credits (united mixed credits). October 22, 2003.
- Appraisal of programme document for financing from Norway. March 2012.
- Bilateral agreement Between Norad and the Ministry of Construction, Vietnam, concerning the capacity building project. December 7, 2012.
- Inception Report for the capacity building project from the main international consultant. January 2014.
- Needs assessment report from the main international consultant. March 2014.
- Main completion report from the main international consultant. October 2017.
- Financial statement. October 2, 2017.
- Annual reports and minutes from Annual meetings, 2014 – 2017
- Semi-annual reports, 2014-2016

Local consultant reports and products

- LC3 completion report: Building assets management tool and software for operating water supply drainage system. July 2016.
- LC4 completion report: Training on non- revenue/ unaccounted- for water management of water supply systems for water supply and sewerage companies. January 2016.
- LC5 completion report: Training on operation and maintenance of solid waste management systems for urban environmental companies (URENCO). January 2016.
- LC6 completion report: training on customer management for water supply and sewerage companies, urban environment companies (URENCO). January 2016.
- LC8 completion report: Consulting service for development enterprise management software for O&M operators. May 2016.
- LC9 final report: Consultant Service to implement Information – Education – Communication (IEC) activities on water and environmental sanitation. August 2016.
- LC1 inception report: preparation of orientation plans for drainage development, wastewater treatment and contracts for operation and maintenance of drainage and wastewater treatment systems. October 2015.
- Reports, orientation plans and regulation drafts for An Giang, Dong Thap, Ha Tinh, Phu Tho and Thai Binh; orientation plan for Quang Tri; and O&M draft contracts for Hong Linh, Chau Doc, Thuy Van, Quang Tri, Thai Binh and Cao Lanh, as prepared by LC1. 2016-2017.
- Business plans for Thai Nguyen, Lai Chau, Quang Nam, Dien Bien, Soc Trang, Son La, Quang Tri, Thuy Van, Hong Linh, Dong Thap, Thai Binh and An Giang, as prepared by LC2. 2016.
- Standard operation procedures for Hong Linh, Chau Doc, Quang Tri, Thai Binh, Thuy Van, Cao Lanh, Soc Trang and Son La, as prepared by LC2. 2016.
- Translated Circular No: 07 /2017/TT-BXD for Solid Waste

Documents for each project

- IPA completion reports for Dien Bien, Hoi An, Lai Chau, Quang Nam, Chau Doc, Hong Linh, Thai Nguyen and Son La. 2016-2017.
- Fichtner completion reports for Hoi An, Lai Chau, Quang Tri, Chau Doc, Hong Linh, Son La, Thai Nguyen, Thai Binh and Dien Bien. 2015-2017.

- Appropriation Documents for the mixed credit projects in Cao Lahn, Chau Doc, Dien Bien, Hoi An, Hong Linh, Lai Chau, Quang Tri, Soc Trang, Son La, Thai Nguyen, Thai Binh, Thuy Van. 2005-2008.
- Tariff plan reports and tariff calculations for Chau Doc, Dien Bien, Hoi An, Lai Chau, Thai Nguyen, Thai Binh, Thuy Van, as prepared by the Main international consultant. 2016-2017.
- Project appraisal reports for Cao Lahn, Chau Doc, Dien Bien, Hoi An, Hong Linh, Lai Chau, Quang Tri, Soc Trang, Son La, Song Cong, Thai Binh and Thuy Van.

Appendix VI: List of interviewees

During the field work we met with the following persons:

Thai Nguyen

1. Mr. Thục, Director of Thai Nguyen Water Supply Company
2. Mr. Quyết, Deputy director of Thai Nguyen Water Supply Company
3. Ms. Ngọc Anh, PPMU staff
4. Mr. Mạnh, Director of Thai Nguyen Water Supply Company
5. Mr. Phú, Chief of Planning Department
6. Ms. Ngân, Deputy director of PPMU
7. Mr. Vũ, Technician of Song Cong Water Enterprise
8. Mr. Hà, Chief of Sales Department under Thai Nguyen Water Supply Company
9. Mr. Hải, Director of Song Cong Water Enterprise
10. Ms. Hà, Staff of Song Cong Water Enterprise (IEC activities)

Thai Binh

1. Mr. Hải, Deputy director of PPMU
2. Mr. Tuấn, Technician of PPMU
3. Ms. Linh, Accountant of PPMU
4. Mr. Tuyến, Deputy director of Thai Binh URENCO
5. Mr. Tuấn, Chief accountant of Thai Binh URENCO

Lai Chau

1. Mr. Chung, Chairman of Water supply company and Director of PPMU
2. Mr. Hải, Deputy director of Water supply company
3. Mr. Công, Chief of Customer Management and Development Department
4. Mr. Trung, Chief of Technical Department
5. Mr. Hợp, Director of Lai Chau Water Supply Branch
6. Ms Anh, Accountant
7. Mr. Trường, Deputy Director of PPMU
8. Mr. Nam, Chief of Planning Department

Son La

1. Mr. Thanh, Director of Son La URENCO and PPMU
2. Mr. Quang, Deputy director of Son La URENCO and Manager of Solid waste treatment
3. Mr. Hưng, Deputy Manager of Solid waste treatment
4. Mr. Bình, Technician, Son La URENCO
5. Ms. Hue, PPMU staff
6. Mr. Đức, PPMU staff
7. Mr. Khương, Chief of Urban infrastructure management Department, DOC

Chau Doc

1. Mr. Khoi, Deputy director of the PPMU
2. Mr. Lạc, Deputy director of Chau Doc URENCO
3. Ms. Thảo, Environmental Engineer, O&M staff of Wastewater treatment plant
4. Mr. Hùng, O&M staff of Wastewater treatment plant, Chau Doc URENCO
5. Ms. Thu, Team Leader of Administrative Organization, Chau Doc URENCO

MABUTIP

1. Ms. Thanh, Deputy Director of MABUTIP
2. Ms. Houong, MABUTIP staff member
3. Mr. Luong, MABUTIP staff member

Main international consultant

1. Mr. Hung, Project Coordinator at the local sub-consultant, WATECH

Norad/Tranor International

1. Mr. Lunden, Senior Advisor in Norad
2. Mr. Skaiaa, Managing Director in Tranor International
3. Mr. Chinh, Tranor International staff member

In addition, the following persons have responded to specific questions via telephone or e-mail:

- Mr. Hanh, Director of Thai Binh URENCO
- Mr. Vinh, Chief of Urban Technical Infrastructure Department, Thai Binh Department of Construction
- Mr. Trung, Local Consultant at VIWASE