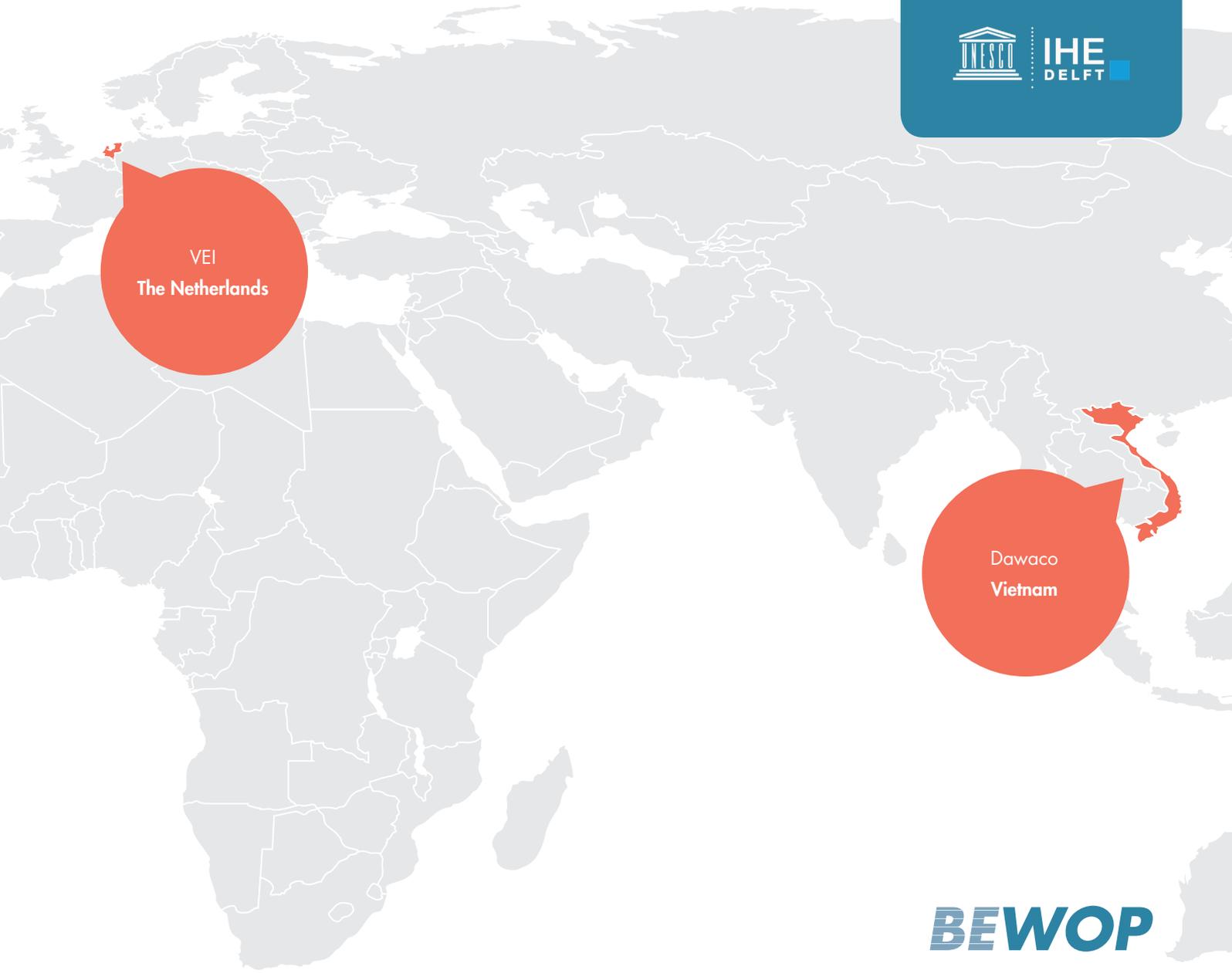


Water Operators' Partnership Case Study

GWOPA
Global Water Operators' Partnerships Alliance

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VEI
The Netherlands

Dawaco
Vietnam

BEWOP

VEI and Dawaco

Water Operators' Partnership Case Study



VEI The Netherlands ▶



Dawaco Vietnam ▶

Abbreviations

ADB	Asian Development Bank
CCU	Central Control Unit
CSR	Corporate Social Responsibility
CTM	Care-Taker Model
CKEZ	Central Key Economic Zone
CVKER	Central Vietnam Key Economic Region
Dawaco	Da Nang Water Supply Joint Stock Company
DGIS	Directorate-General for International Cooperation
DMA	District Metering Areas
DoC	Department of Construction
EMF	Electromagnetic field
GIS	Geographic Information System
KEZ	Key Economic Zone
KPI	Key Performance Indicator
LLC	Limited Liability Company
MoU	Memorandum of Understanding
NRW	Non-Revenue Water (unaccounted for water)
JICA	Japan International Cooperation Agency

JSC	Joint Stock Company
P&C	Planning and Control
PC	People’s Committee
PMU	Project Management Unit
PPTA	Project Preparatory Technical Assistance
RNE	Royal Netherlands Embassy
RPM	Resident Project Manager
SCADA	Supervisory Control and Data Acquisition
SCDP	Sustainable City Development Project
SDG	Sustainable Development Goal
SOE	State-Owned Enterprise
USD	United States dollar (currency)
USP	Utility Support Programme
VND	Vietnamese dong (currency)
WOP	Water Operators’ Partnership
WTP	Water Treatment Plant

Key Facts



Partners

Mentee: *Da Nang Water Supply Joint Stock Company (Dawaco)*

Water utility of Da Nang City. At the moment of the partnership the company was a State-Owned Enterprise (SOE), and since 2016 it has become a Joint Stock Company (JSC), owned 60% by the People's Committee of Da Nang, 35% by a strategic main holder and the remaining 5% of shares are owned by Dawaco staff and are distributed according to their performance and amount of invested time.

Mentor: *VEI - Dutch Water Operators (VEI)*

Not-for-profit, private company registered with the Dutch Chamber of Commerce. Its shares are divided equally between the two largest and publicly-owned water companies in the Netherlands. At the time of the WOP VEI-Dawaco between 2007-2010, VEI represented 3 Dutch water operators. These were Vitens, Evides Waterbedrijf, and WML (Waterleidingmaatschappij Limburg).



Duration

2007-2010



Cost

Total: USD 2.7 million

- USD 1.9 million from the Directorate-General for International Cooperation (DGIS) of the Netherland's Ministry of Foreign Affairs, Royal Netherlands Embassy (RNE).

- USD 550,000 from VEI.
- USD 282,500 from Dawaco (in-kind contribution).



Objectives

Main objectives for the VEI-Dawaco WOP:

1. the extension and improvement of water services in Da Nang,
2. the management autonomy and strengthening of Dawaco's financial position, and
3. the sustainable delivery of water services to the urban poor.



Aim

VEI

Increase Corporate Social Responsibility (CSR) and draw the interest of a workforce that supports VEI's mission.

Dawaco

Enhance the company's capacity and performance, and access parallel funds to improve service provision.

Facilitators

The WOP between VEI and Dawaco was facilitated by the Royal Netherlands Embassy (RNE) in Hanoi and the People's Committee of Da Nang (PC Da Nang). The main incentive for the RNE and the PC of Da Nang to facilitate the WOP between VEI and Dawaco was to deliver water to the poor.



Approach

The VEI-Dawaco WOP was carried out from 2007 until the end of 2010. The WOP focused on the extension and improvement of water services in Da Nang, while supporting Dawaco in achieving management autonomy and a stronger financial position. Besides the achieved operational, managerial, and financial water utility performance improvements, the WOP was successful in supporting water services for the urban poor. Through improved processes and pro-poor strategies, the WOP's approach allowed for Dawaco to build on its own capacity and contribute to the sustainability of results, including effective, long-term and inclusive water delivery.



Results

- Non-Revenue Water has gone down during the years since the start of the WOP from approximately 39% to 26% at the end of the partnership, and 15% by 2017.
- Nearly 49,000 new connections were made, averaging over 16,000 per year.
- Over 7,800 connections for the poor were made, averaging around 2,600 per year and amounting to 16% of the total new connections.
- Water quantity and quality meters were installed at two water treatment plants. With this, 99% of total production was metered. Based on the data collected from these meters the operational processes were improved.
- A Central Control Unit was officially implemented and metering equipment was installed in the network.
- A new tariff structure was approved which made low consumption costs accessible to the poor who generally use a limited amount of water.

- Sustained progress of performance improvements even after the WOP ended, as shown with the increased connectivity rates, current NRW values, and improved creditworthiness of the company evaluated from 1996 to 2017.
- Operational, managerial, and financial water utility performance improvements paved the road for access to other funding opportunities (ADB, JICA, and the World Bank) which further supported the objectives of the WOP.



Success factors

- the expertise of VEI's team, combining a good foundation of Dutch water infrastructure and knowledge management,
- the openness of the VEI team to teach Dawaco everything they know,
- the willingness of Dawaco's management level to change and commit to implement changes,
- the strong motivation by staff at all levels during the WOP, and
- the availability of funds for investments.



Challenges

- Building cultural bridges and overcoming language barriers.



Figure 1: Cau Do Water Treatment Plant

Introduction

This report analyzes the sustainability of Dawaco's improved performance derived from the Water Operators' Partnership (WOP) with the Dutch company VEI from 2007–2010.¹ The initial contact was facilitated by Mr. Gerhardus Nicolaas Albertus Soppe, from the World Bank's Global Water Practice, to formally introduce the key informants to be interviewed for the present case study analysis. The visit took place in Dawaco's headquarters, at 57, Xô Viết Nghệ Tĩnh, Hòa Cường Nam, in Da Nang, Vietnam, from August 4 to August 10, 2017.

The Boosting Effectiveness in Water Operators' Partnerships (BEWOP) analysis framework was applied to understand the operational, managerial, and financial water utility performance improvements achieved during the WOP which contributed to water services for the urban poor. A total of 7 interviews with relevant parties involved in the VEI-Dawaco WOP were carried out.² Finally, a visit to the Cau Do water treatment plant proved to be highly valuable, thanks to the exchange with the director, the vice-director, staff, and local engineers.

The following sections will walk the reader through the different phases of the WOP, from the matchmaking process to the inception phase, partnership building phase, and implementation phase, as well as the evidence of progress towards impact and effectiveness of the project, and a final evaluation. The main objective of this report is to understand the success factors of the VEI-Dawaco WOP and assess the sustainability of the improved performance of Dawaco after the partnership.

1 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International.

2 Interviews included: former VEI-Dawaco Resident Project Manager, former VEI-Dawaco Project Assistant, Dawaco's General Director at the time of the WOP (now Chairman of Management Board), Dawaco's current General Director, Dawaco's Head of Strategic Planning Department, Dawaco's Head of Technical Department, and Dawaco's Chief Accountant. Communication with staff members from Dawaco's Planning Department, Control Center and Network Management, and Project Management Unit was also key for the elaboration of this report.

Partnership scoping

Contextual Factors

Political factors

Da Nang is a city located in the Southern-central coast of Vietnam, covering 1,285.4 square kilometers, with a population of just over 1 million inhabitants and a population density of 800 people per square kilometer.³ Throughout the implementation of the national-level *doi moi* reforms, like the country's capital, Hanoi, the city transitioned to a market oriented economy in 1986, leading to rapid industrialization and urbanization.⁴ Da Nang is one of 5 provinces, including Thua Thien-Hue, Quang Nam, Quang Ngai, Binh Dinh Province, which form part of the Central Vietnam Key Economic Region (CVKER).⁵ Through central government implementation, the CVKER intends to become Vietnam's "growth" nucleus, and boost the dynamic development of Central Vietnam and the West Highlands, while attracting investments from sectors including oil and gas, shipbuilding, logistics, coastal tourism development, and high-tech industries.⁶

3 GSO, General Statistics Office (2015). *Area, population and population density by province*. <https://tinyurl.com/ybxrrhlc>. Updated: 2015. Accessed: May 10, 2017.

4 Nguyen, H. K. L. (2013). *Detecting and Modeling the Changes of Land Use/Cover for Land Use Planning in Da Nang City, Viet Nam* (Dissertation). Georg-August-Universität Göttingen, Göttingen.

5 Vietnam Trade Promotion Agency (2012a). *The Central Vietnam Key Economic Region (CVKER)*. <https://tinyurl.com/ybwc57rl>. Updated: 2011. Accessed: May 11, 2017.

6 Jones, S. and Gu, J. (2012). *Vietnam's Regions and Key Economic Zones*. <https://tinyurl.com/ybk5zdqq>. Updated: May 29, 2012. Accessed: May 11, 2017.

Socio-economic factors

Based on Decisions No. 145, No. 146, and No. 148/2004/QĐ-TTg from former Prime Minister Phan Van Khin, the economic development plan which specifies the Key Economic Zones (KEZs) was launched in 2004.⁷ Compared to the other two KEZs, the Northern KEZ and the Southern KEZ, the strengths of the areas which constitute the Central KEZ (CKEZ) can be summarized into five points. The first strength is the strategic location of the provinces, which easily provide access to the Central Highlands of Vietnam, the South of Laos, the North of Cambodia, and the key provinces of Thailand and Myanmar, which play an important economic role in the region. The second strength corresponds to the richness in resources found in the region, including the perceived potential for tourism development areas. Third, this area provides a maritime connection to North Asian countries and allows for deep-water seaport construction linked to the national seaport system, and connected to new developments. Fourth, the development of industrial parks and tourist destinations is expected to merge with cross-sectoral economic development zones, boosting the growth of coastal municipalities in Vietnam. Fifth, CKEZ envisions a population with a high capacity of integrating into the market economy, through industry - and technology-oriented livelihoods. Despite the overall positive outlook portrayed in the regional economic development plans, several soft points exist within the region including: “weak socioeconomic foundation, inclement weather, and frequent floods.”⁸

7 Jones, S. and Gu, J. (2012). *Vietnam's Regions and Key Economic Zones*. <https://tinyurl.com/ybk5zdqq>. Updated: May 29, 2012. Accessed: May 11, 2017.

8 Vietnam Trade Promotion Agency (2012a). *The Central Vietnam Key Economic Region (CVKER)*. <https://tinyurl.com/yd3ojqxu>. Updated: 2011. Accessed: May 11, 2017.

Water sector characteristics and developments

Technological development of water infrastructures

Before the mid-twentieth century when a formal water supply system in Da Nang was built, the city had relied on wells and small technological networks. However, saltwater intrusion and limited availability of groundwater are some of the main factors that continue to challenge urban water supply. Since the capacity of groundwater exploitation in the central areas of the city cannot exceed 15,000 m³/day, in the '60s, under the management of the Da Nang Water Bureau, two surface water supply stations were established in Cầu Đỏ and Sân Bay; the first serving the users in the inner city, and the second supplying military zones of the old regime. After the end of the war in Vietnam in 1975, a new water management unit was established supplying about 12,000 m³/day, later amounting to 22,000 m³/day through the renovation and expansion of water supply stations. From 1985 until 2005, the capacities of both Cầu Đỏ water treatment plant and Sân Bay water treatment plant were increased to 50,000 m³/day and 30,000 m³/day, respectively, and two new water supply stations were built: the Sơn Trà water supply station and the An Trạch saltwater pumping station. Cầu Đỏ water treatment plant would be later renovated through Official Development Assistance (ODA) from the French government in 2002. Da Nang's water supply company improved the management of water provision by establishing water supply branches throughout the city's districts. In 2004, Dawaco was established under the national government Decision No. 01/2004/QĐ-CTCN and now has a supply capacity of 205,000 m³/day distributed throughout four units: Cầu Đỏ water treatment plant, Sân Bay water treatment plant, Sơn Trà water supply station, and An Trạch salt water pumping station.⁹

⁹ Dawaco (2017). *Dawaco, Danang Water Supply Joint Stock Company* [original in Vietnamese: Công ty cổ phần cấp thoát nước đà nẵng]. <http://dawaco.com.vn/>. Updated: 2017. Accessed: May 10, 2017.

Institutional: Legislation and policies

Formally, at the start of the partnership, the production and management of drinking water was regulated by the People's Committee of Da Nang (PC Da Nang). However, Dawaco actually reported directly to the Department of Construction (DoC) and PC Da Nang acted only as asset owner and regulator. The organizational structure of the company was managed by a Director, overlooking eight departments: Administration, Planning and Technology, Finance and Accounting, Business and Materials, Commercial Affairs, Project Management Board, Water Supply Services Consultancy Center, Monitoring Team; and the following enterprises and water supply branches were, in turn, managed by the Vice-director: Water Production Enterprise, Construction Enterprise, Water Supply Branch Hải Châu, Water Supply Branch Thanh Khê, Water Supply Branch - CNCN Sơn Trà, Water Supply Branch Ngũ Hành Sơn, Water Supply Branch Liên Chiểu, Water Supply Branch Liên Chiểu, Mechanic & Electricity Workshop.¹⁰ Since January of 2016, Dawaco is a Joint Stock Company run by a General Meeting of Shareholders, a Board of Directors, a General manager, a Control Board, and three Deputy General Managers.¹¹

10 Dawaco, VEI, RNE, & PC Da Nang (2008, March 19). *Inception Report, Utility Support Programme Dawaco. Public-Private-Partnership (PPP), Da Nang Water Supply Company (Dawaco), Vitens-Evides International (VEI), the Royal Netherlands Embassy/Government of The Netherlands (RNE), and the People's Committee (PC) of Da Nang City*. Hanoi, Vietnam: Dawaco, VEI, RNE, PC Da Nang.

11 Dawaco (2017). *Dawaco, Danang Water Supply Joint Stock Company* [original in Vietnamese: Công ty cổ phần cấp thoát nước đà nẵng]. <http://dawaco.com.vn/>. Updated: 2017. Accessed: May 10, 2017.

As a Public Interest Company and Joint Stock Company,¹² Dawaco abides to the following laws: Investment Law No. 67/2014 /QH13; Enterprise Law No. 68/2014 /QH13; Law on Securities and the Stock Market No. 70/2006/QH11; Environmental Protection Law No. 55/2014/QH13. The general rules on planning water supply, water supply development investments, connection points, service contracts, clean water price, rights and obligations of water supply units and customers, and safety and management, are provided in Decree No. 117/2007/ND-CP, whereas concrete objectives and goals targeted to the years 2015, 2020, 2025 and the vision of 2050 are established in Decision No. 1929/QD-TTG

Financial aid and parallel investments

With the economic boost since the *doi moi* reforms in 1986 and the expected development of the area, the infrastructural water supply networks in Da Nang have been under constant expansion.¹³ The city's water supply system has been improved and developed with the assistance of foreign expertise which has facilitated technological support and know-how, helping Dawaco increase its capacity of water production and improve water quality, billing, customer relationship management, financial information management, strategic management and overall planning.¹⁴

12 For specific definition on Public Interest Companies and Joint Stock Companies refer to: SRV, Socialist Republic of Vietnam (2017). *Decree No. 71/2017/ND-CP Guidelines on Corporate Governance Applicable to Public Interest Companies*. <https://tinyurl.com/ydydhmxx>. Updated: May 6, 2017. Accessed: November 1, 2017.

13 Vietnam Trade Promotion Agency (2012b). *Overview of Danang City - Part 1, 2 and 3*. <https://tinyurl.com/yd3ojqxu>. Updated: 2012. Accessed: May 11, 2017.

14 Dawaco (2017). *Dawaco, Danang Water Supply Joint Stock Company* [original in Vietnamese: Công ty cổ phần cấp thoát nước đà nẵng]. <http://dawaco.com.vn/>. Updated: 2017. Accessed: May 10, 2017.

From 2008 to 2013, ADB contributed to a project for the expansion of the water distribution network.¹⁵ And since 2013, the Japanese International Cooperation Agency (JICA) has supported Dawaco with the construction of a water treatment plant in Hòa Liên.¹⁶ Also in 2013, the World Bank provided the Vietnamese government a USD 272.2 million loan to carry out the “Da Nang Sustainable City Development Project” (SCDP), implemented by the City People’s Committee of Da Nang. These investments have contributed to the objectives set in the partnership with VEI.¹⁷

Bio-physical factors

The freshwater sources used mainly for household consumption and industrial use in Da Nang come from the Hàn River and the Cu Đê River, two major rivers which cross the province to reach the Da Nang Gulf. They comprise a basin bed surface area of 5,180 and 472 square kilometers, respectively.¹⁸ The Hàn River flows from the following river branches: Cầu Đỏ River, Tuý Loan River, Yên River, and Vu Gia River, while Cu Đê River flows into Đà Nẵng Bay, Nam River and Bắc River (see Figure 2).¹⁹ From this basin, 95%

15 ADB, Asian Development Bank (2008). *Da Nang Water Supply Project*. <https://www.adb.org/projects/41456-012/main#project-pds>. Updated: October 1, 2008. Accessed: May 15, 2018.

16 JICA, Japan International Cooperation Agency (2018). *Da Nang City Hoa Lien Water Supply Project*. https://www.jica.go.jp/english/our_work/social_environmental/id/asia/southeast/vietnam/c8h0vm0000b1q0ar.html. Updated: 2018. Accessed: May 28, 2018.

17 World Bank (2017). *Projects & Operations: Danang Sustainable City Development Project (SCDP)*. <https://tinyurl.com/yc94olve>. Updated: 2017. Accessed: May 11, 2017.

18 Vietnam Trade Promotion Agency (2012b). *Overview of Danang City - Part 1, 2 and 3*. <https://tinyurl.com/yd3ojqxu>. Updated: 2012. Accessed: May 11, 2017.

19 Da Nang CCCO, Da Nang Climate Change Coordination Office (2014). *The river network of Danang city*. http://ccco.danang.gov.vn/106_121_1203/The_river_network_of_Danang_city.aspx. Updated: August 12, 2014. Accessed: March 29, 2018.

Partnership creation

The WOP between VEI and Da Nang Water Company was facilitated by the Royal Netherlands Embassy (RNE) in Hanoi and the People's Committee of Da Nang (PC Da Nang) from 2007 to 2010.²¹ In order to increase DAWACO's performance, the project focused on the following objectives: a) reducing non-revenue water, b) improving tap water quality, c) improving the consistency of the production operation management, d) creating a financial management system, e) developing a client registration system, f) developing a professional billing and collection system, and g) introducing a programme to provide house connections to the urban poor.²²

History of collaboration and first contact

At that time, VEI supported Dawaco by transferring its expertise and knowledge to improve the performance of the water utility and contribute to the Millennium Development Goal number 7 on water supply and sanitation. The contact with Dawaco was driven by an opportunity of funding provided by RNE in Hanoi. To find the appropriate partner in Vietnam, former director of VEI, Mr. Jan Hoffer, established communication with a former VEI employee based in Vietnam, Mr. Ngo Xuan Truong, who in turn facilitated the communication with Mr. Nguyen Anh, Dawaco's General

21 Dawaco, VEI, RNE, & PC Da Nang (2007, October 19). *Memorandum of Understanding for Public-Private-Partnership (PPP) between the Da Nang Water Supply Company (DWSC) and Vitens-Evides International BV (VEI) and The Royal Netherlands Embassy Embassy (RNE) and The People's Committee (PC) of Da Nang City*. Ho Chi Minh City, Vietnam: PC Da Nang, DWSC, VEI, RNE-Hanoi.

22 VEI (2014). *Da Nang, Vietnam*. <https://tinyurl.com/y7l2rbkr>. Updated: 2014. Accessed: May 10, 2017.

Director, and Mr. Bui Tho Ninh, Director of the Planning and Technology Department in 2006.²³

Enabling factors

At the time the partnership was initiated, the Chairman of the People's Committee of Da Nang, Mr. Van Huu Chien, was an active supporter of the cooperation with VEI.²⁴ This type of support from PC Da Nang, together with the willingness of key people within Dawaco, were both important enabling factors for the start of the partnership.²⁵

23 Interview with former VEI-Dawaco Resident Project Manager Gerard Soppe. August, 2017.

24 Interview with Dawaco's Chairman of Management Board, Nguyen Truong Anh. August, 2017.

25 Interview with former VEI-Dawaco Resident Project Manager Gerard Soppe. August, 2017.

Partnership formalization

On October 19, 2007, a Memorandum of Understanding (MoU) was signed by the four parties: VEI, Dawaco, RNE, and PC Da Nang.²⁶

Following the MoU, the WOP was carried out in three phases:

1. Inception Phase. Planned: November 2007 to January 2008;²⁷ reported duration: six months in *End Project Report*.²⁸ VEI and Dawaco carried out a baseline survey, agreed on the improvements to be implemented during the WOP, and produced a work plan for 2008 which served as the basis to carry out the partnership building phase. The baseline survey reported on water production, distribution network, management accounting, billing and collection, Non-Revenue Water (NRW), and financial performance of the company. For implementation, the operational processes were subdivided into: improvement of operational tasks and skills related to organization, implementation of effective monitoring of the processes; implementation of maintenance programmes with related budgeting and planning and control (P&C) methodologies, and capacity building and training, to be

26 Dawaco, VEI, RNE, & PC Da Nang (2007, October 19). *Memorandum of Understanding for Public-Private-Partnership (PPP) between the Da Nang Water Supply Company (DWSC) and Vitens-Evides International BV (VEI) and The Royal Netherlands Embassy Embassy (RNE) and The People's Committee (PC) of Da Nang City*. Ho Chi Minh City, Vietnam: PC Da Nang, DWSC, VEI, RNE-Hanoi.

27 Dawaco, VEI, RNE, & PC Da Nang (2008, March 19). *Inception Report, Utility Support Programme Dawaco. Public-Private-Partnership (PPP), Da Nang Water Supply Company (Dawaco), Vitens-Evides International (VEI), the Royal Netherlands Embassy/Government of The Netherlands (RNE), and the People's Committee (PC) of Da Nang City*. Hanoi, Vietnam: Dawaco, VEI, RNE, PC Da Nang; p. 12.

28 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; p. 5.

integrated into abovementioned categories of activities.²⁹ The Inception Report was prepared in February 2008 and concluded in March 2008.³⁰

2. Partnership Building Phase. The guiding documents for this phase are the Strategic Plan, which describes the Utility Support Programme (USP) Action Plan, detailed until October of 2010, and a multi-year investment plan, until 2015. As a comprehensive strategy, the plans guided the company's development and support water supply to the urban poor.³¹
3. Implementation phase. Approval of project by PC Da Nang: July 25, 2008. The implementation of the WOP was led through decisions resulting from a close collaboration between the General Director of Dawaco and a Resident Project Manager (RPM) from VEI, together with a Steering Committee formed by RNE, PC Da Nang, VEI, and Dawaco. Working teams were established and led by a Project Management Unit (PMU) manager, covering the following areas: Production Process, Distribution Process and NRW Reduction, Customer Relation Management, Financial and Management Information System, and Master Planning Human Resource Management. Each team leader from Dawaco reported on a regular basis to the General Director of Dawaco and the RPM of VEI.³²

29 Dawaco, VEI, RNE, & PC Da Nang (2008, March 19). *Inception Report, Utility Support Programme Dawaco. Public-Private-Partnership (PPP), Da Nang Water Supply Company (Dawaco), Vitens-Evides International (VEI), the Royal Netherlands Embassy/Government of The Netherlands (RNE), and the People's Committee (PC) of Da Nang City*. Hanoi, Vietnam: Dawaco, VEI, RNE, PC Da Nang.

30 Soppe, G. (2008b, October 2). *Strategic Plan 2008-2015, Partnership Building Phase Dawaco*. Hanoi, Vietnam: Vitens-Evides International; p. 8.

31 Soppe, G. (2008b, October 2). *Strategic Plan 2008-2015, Partnership Building Phase Dawaco*. Hanoi, Vietnam: Vitens-Evides International; pp. 8-9.

32 Soppe, G. (2008b, October 2). *Strategic Plan 2008-2015, Partnership Building Phase Dawaco*. Hanoi, Vietnam: Vitens-Evides International; p. 10.

The parties: mentor, mentee, facilitators

Mentor (VEI)

VEI is a not-for-profit, private company registered with the Dutch Chamber of Commerce. Its shares are divided equally between the two largest publicly-owned water companies in the Netherlands. At the time of the WOP between VEI and Dawaco from 2007 to 2010, VEI represented 3 Dutch water operators. These were Vitens, Evides Waterbedrijf and WML (Waterleidingmaatschappij Limburg).³³ In line with the mandate outlined in the United National Sustainable Goal 6, VEI's primary commitment is to help ensure access to water and sanitation for all. Through VEI's main expertise areas: Non-Revenue Water, Customer Relations, Operations and Maintenance, Network Design, and Selection of Commercial Systems and Surveys, the organization provides support to water operators in Africa, Asia and South America.

33 VEI (2015a). "Governance." <http://www.vitensevidesinternational.com/about-vitens-evides-international/governance/>. Updated: 2015. Accessed: October 15, 2017.

Table 1: Size and service indicators of VEI (2016)

Size and Service Indicators	VEI ³⁴
Population served (in millions)	11 million customers
Number of households (in millions)	6.5
Water supply (millions of m ³)	887
Number of employees	3,602
Number of water treatment plants	n/a
Length of network (in kilometers)	102,000
Unaccounted for water (percent of total)	n/a
Staff per 1000 connections (water supply)	0.55
Staff per 1000 population served (water supply)	18.01
VEI turnover (in millions EUR)	1,000
Average drinking water price per m ³ (EUR)	0.63 (e.g. Vitens) ³⁵

34 VEI (2017). *Annual Report 2016, Unlocking the Strengths of Dutch Water Companies*. Utrecht, Netherlands: VEI.

35 Vitens (2017). *Vitens makes a difference, Annual Report 2016*. Zwolle, Netherlands: Vitens.

Motivations, interests, opportunities

The underlying motivation behind VEI's interest to form a partnership with Da Nang was mainly driven by Corporate Social Responsibility (CSR) and the will to increase the interest of a younger workforce supportive of VEI's mission. The opportunity, however, was facilitated through the local contacts in Vietnam and their relationship to the local government in Da Nang and Dawaco's staff.³⁶

Mentee (Dawaco)

At the time of starting the partnership the company was a State-Owned Enterprise (SOE), and since 2016 it has become a Joint Stock Company (JSC), owned 60% by the People's Committee of Da Nang, 35% by a strategic main holder, the construction and investment Joint Stock Company, Da Nang Mien Trung company (DMT; original in Vietnamese, Cty cổ phần đầu tư xây dựng, Đà Nẵng Miền Trung) of which Mr. Dang Thanh Binh is Chairman. The remaining 5% of shares are owned by Dawaco staff and are distributed according to their performance and amount of invested time.³⁷

36 Interview with former VEI-Dawaco Resident Project Manager Gerard Soppe. August, 2017.

37 Interview with Dawaco's Chairman of Management Board, Nguyen Truong Anh. August, 2017.

Table 2: Size and service indicators of Dawaco (from 2007 to 2011); (1)³⁸, (2)³⁹, (3)⁴⁰

Size and Service Indicators	2007 (Start WOP)	2011 (End WOP)
Population served	421,480 ⁽³⁾	585,595 ⁽²⁾
Number of households	91,000 ⁽¹⁾	140,000 ⁽²⁾
Water supply (m ³)	40,504,000 ⁽³⁾	53,478 ⁽³⁾
Number of employees	466 ⁽¹⁾	528 ⁽³⁾
Number of water treatment plants	3 ⁽¹⁾	4 ⁽¹⁾
Length of network (in kilometers)	2,567 ⁽³⁾	2,755 ⁽³⁾
Unaccounted for water (percent of total)	39 ⁽¹⁾	26 ⁽²⁾
Staff per 1000 connections (water supply)	4.7 ⁽²⁾	3.6 ⁽²⁾
Service coverage of water supply (percent)	52% ⁽²⁾	66% ⁽²⁾
Net Revenue (x1 million VND)	104,617 ⁽³⁾	238,090 ⁽³⁾
Domestic average drinking water price per m ³	VND 2,744 EUR 0.12 ⁽¹⁾	VND 3,700 – 5,400 / EUR 0.14-0.2 ⁽²⁾

38 Dawaco, VEI, RNE, & PC Da Nang (2008, March 19). *Inception Report, Utility Support Programme Dawaco. Public-Private-Partnership (PPP), Da Nang Water Supply Company (Dawaco), Vitens-Evides International (VEI), the Royal Netherlands Embassy/Government of The Netherlands (RNE), and the People’s Committee (PC) of Da Nang City.* Hanoi, Vietnam: Dawaco, VEI, RNE, PC Da Nang.

39 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang.* Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International.

40 See Table 8. Information received from Dawaco from August 2017 to June 2018.

Financing

The major financial investments in water infrastructure which Dawaco has executed in the past decade have been provided by the Da Nang Investment Development Fund of PC Da Nang (in Vietnamese, *Quỹ Đầu Tư phát triển Đà Nẵng*). This fund financed the building of the Cau Do Water Treatment Plant (WTP) in 2008, which totaled VND 450 billion. The investment was put into the expansion of the piped-network and the purchasing of management software.⁴¹

Thanks to Dawaco's financial strengthening derived from the improved utility performance since the partnership, the company now has sufficient resources to self-finance the maintenance and improvement of the network. Projects planned for the near future are:

1. Increase capacity of Cau Do WTP for VND 202 billion;
2. Construction of Hoa Trung WTP of 10,000 m³ for VND 79 billion; and
3. Construction of Hoa Lien WTP of 120,000 m³ for VND 1,243 billion.⁴²

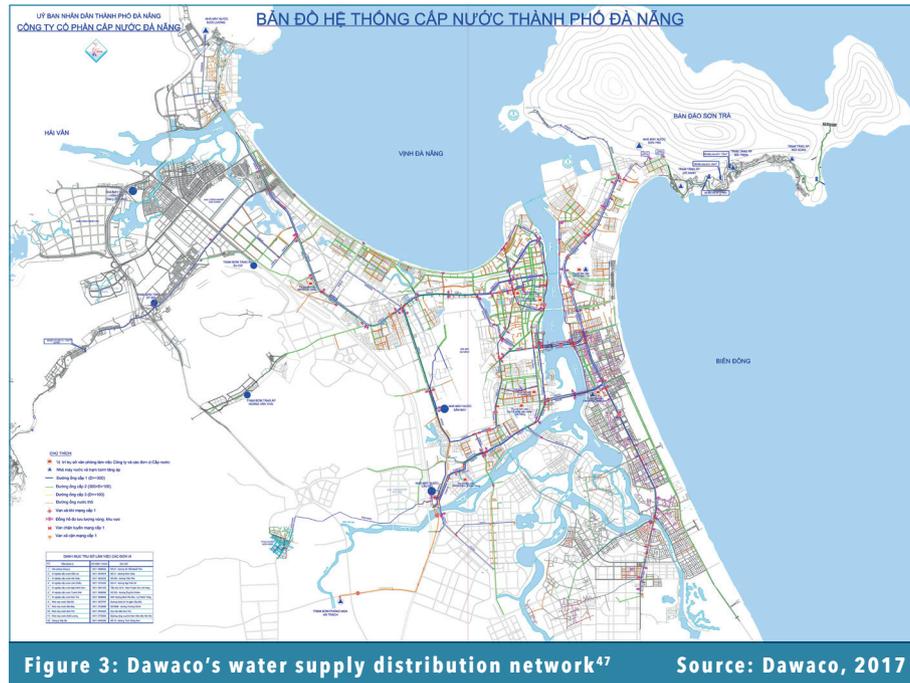
Motivations, interests, opportunities

The reasons for Dawaco to engage in a partnership with VEI can be described as primarily instrumental and networking motives. As a precedent, the strengthening of Hai Phong Water Supply Company with the support of Finland served as positive example.

41 Interview with Dawaco's Chief Accountant Phan Tinh. August, 2017.

42 Interview with Dawaco's Chief Accountant Phan Tinh. August, 2017.

In a similar manner, Dawaco was interested in enhancing its capacity, while reaching out to the Dutch water experts.⁴³ The opportunity was grasped and guided by key people in the management which had the willingness to incubate change in the company. As financial motives, parallel projects financed by country loans and through ODA were also welcomed by Dawaco.⁴⁴



43 Interview with Dawaco's Chairman of Management Board, Nguyen Trung Anh. August, 2017.

44 Interview with former VEI-Dawaco Project Assistant Duc Hanh Nguyen. August, 2017.

45 Received from Dawaco. Da Nang, August, 2017 (see Figure 3).

Facilitators

The Royal Netherlands Embassy (RNE) in Hanoi and the People's Committee of Da Nang (PC Da Nang) both had roles as facilitators in the WOP between VEI and Dawaco. RNE provided financial support on behalf of the Directorate-General for International Cooperation (DGIS) of the Netherlands' Ministry of Foreign Affairs, and PC Da Nang acted as a third party to approve policies and regulations.

Motivations, interests, opportunities

The main incentive for the RNE and the PC of Da Nang to facilitate the WOP between VEI and Dawaco was to deliver water to the poor. Providing connections to the peri-urban areas would only prove useful upon the strengthening of the water utility. With a financially viable company, for instance, the connection fees to the poor are no longer charged.⁴⁶

Financing of the WOP

The total amount of the WOP grant was USD 2.7 million. Through DGIS, RNE provided USD 1.9 million and VEI provided USD 550,000. Dawaco, in turn, contributed with human resources and working space equivalent to USD 282,500. Additionally, Dawaco contributed USD 500,000 through investments in the company which contributed to the WOP, such as: installation and improvement of pipelines, network rehabilitation, and installation of quality meters.⁴⁷

46 Interview with former VEI-Dawaco Project Assistant Duc Hanh Nguyen. August, 2017.

47 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; p. 25.

Table 3: Total budget allocation of WOP VEI-Dawaco⁴⁸

Description	Subtotals			Total
	Dawaco	DGIS	VEI	
VEI		1,087,580	541,621	1,629,201
Contribution from Dawaco	282,500			282,500
Contribution to Dawaco		810,000		810,000
Total	282,500	1,897,580	541,621	2,721,701

Diagnosis of needs and agreement characteristics

Both VEI and Dawaco carried out the diagnosis of needs and together decided which improvement tracks to prioritize.⁴⁹ Mr. Ngo Xuan Truong, who was mentioned in the history of collaboration and first contact for the initiation of the WOP, served as a local consultant and mediator between the two parties.⁵⁰ The partnership started with the grant decision number 16635, and was originally planned for implementation between September 2007 and August 2010, but was later extended to December

48 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; p. 25.

49 Interview with Dawaco's Chairman of Management Board, Nguyen Truong Anh. August, 2017.

50 Interview with former VEI-Dawaco Resident Project Manager Gerard Soppe. August, 2017.

2010. This change did not affect the planned budget and the project was successfully completed and reported through the End Project Report in March of 2011.⁵¹

The expected outcomes of the WOP are described in the *Inception Report* and focus on the improvement of operational processes to enhancing the efficiency and consistency of:

1. the production of drinking water;
2. the management of the transport and distribution network;
3. the management accounting and financial information; and,
4. the billing and collection.

The implementation of the above-mentioned improvements of the operational processes were subdivided in four categories:

- a. improvement of operational tasks and skills and related organization;
- b. implementation of effective control and monitoring of the processes;
- c. implementation of maintenance programmes with related budgeting and planning and control methodologies; as well as,
- d. capacity building and training.⁵²

51 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; p. 25.

52 Dawaco, VEI, RNE, & PC Da Nang (2008, March 19). *Inception Report, Utility Support Programme Dawaco. Public-Private-Partnership (PPP), Da Nang Water Supply Company (Dawaco), Vitens-Evides International (VEI), the Royal Netherlands Embassy/Government of The Netherlands (RNE), and the People's Committee (PC) of Da Nang City*. Hanoi, Vietnam: Dawaco, VEI, RNE, PC Da Nang; p. 41.

Timeline

2007-2010 DURATION OF THE WOP VEI-DAWACO

- First contact between VEI and Dawaco

2006

- Mou signed between VEI, Dawaco, RNE, and PC Da Nang

2007

- VEI and Dawaco carried out a baseline survey and produced a work plan for 2008

- Approval of project by PC Da Nang
- Tariff study

2008

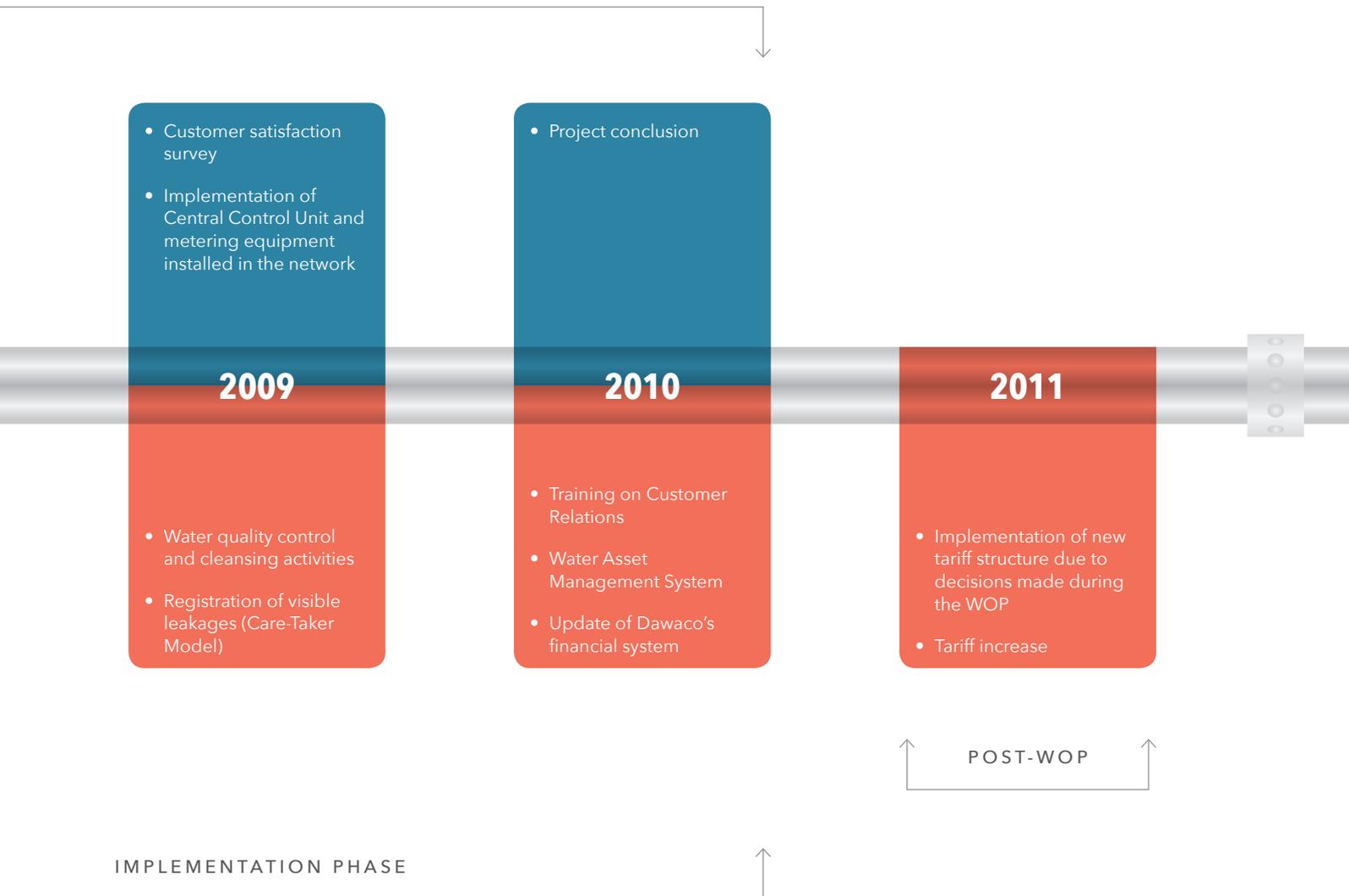
- Inception Report
- Strategic Plan
- Utility Support Programme Action Plan and multi-year investment plan

PARTNER BUILDING PHASE

MATCHMAKING

INCEPTION PHASE

This timeline is not exhaustive, but highlights some key events in the WOP.



Project implementation

Management of the partnership and inter-organizational dynamics

The management of the partnership project was led by the General Director of Dawaco, Mr. Nguyen Truong Anh, and the Resident Project Manager (RPM) from VEI, Mr. Gerard Soppe. Working teams reported at least once a month to the Management (General Director of Dawaco and RPM of VEI) and discussed the progress of the project. The responsibilities and interactions of the partners at management and operational level was as follows: all the major decisions were made by the Steering Committee (RNE, PC Da Nang, VEI, and Dawaco); all important decisions were made by the General Director of Dawaco and the RPM of VEI); operational decisions were made by the Project Management Unit (PMU) manager and the RPM; and the working team leaders established and led by the PMU managers would come to an agreement within their teams and make suggestions to the PMU.⁵³ The PMU consisted of a head, a vice-head, a chief accountant, and team leaders of the five working teams (Production Process, Distribution Process and NRW Reduction, Customer Relation Management, Financial and Management Information System, and Master Planning Human Resource Management).

53 Soppe, G. (2008b, October 2). *Strategic Plan 2008-2015, Partnership Building Phase Dawaco*. Hanoi, Vietnam: Vitens-Evides International; p. 10.

Furthermore, all interviewees agreed that there were no conflicts throughout the WOP. The General Director at that time, now Chairman of Management Board, Mr. Nguyen Truong Anh, expressed that, thanks to the flexibility of the interaction between the partners at management and operational level, Dawaco would share their opinions and difficulties and VEI would support with problem-solving.⁵⁴



In Vietnam, you know, usually people don't want to say what are the bad things to another. But when we worked with VEI, we told them about all the bad things of our company. So they could choose the things that they could support us in. For example, the water loss was very high, nearly 40%. The network was not good. The quality was not stable. And the human resources were not good. So we told VEI everything.

– Chairman of Management Board, Mr. Nguyen Truong Anh



Improvement tracks

The main objectives for the VEI-Dawaco WOP were: 1) the extension and improvement of water services in Da Nang, 2) the management autonomy and strengthening of Dawaco's financial position, and 3) the sustainable delivery of water services to the urban poor.

54 Interview with Dawaco's Chairman of Management Board, Nguyen Truong Anh. August, 2017.

Table 4: Main objectives, outputs and mid-term outcomes for VEI-Dawaco WOP⁵⁵

I. Extension and better water services in Da Nang City

1. The targets for the long term are to have 80% of the population connected and to reduce NRW to 20% in 2020.
2. To protect the mid to long-term interest of drinking water supply to the city of Da Nang the PC and Dawaco will have to compile a plan to reduce the risks of water shortage. An integrated water resources plan is required, in which the selection of different raw water sources, reservoirs for drinking water supply and supply to other sectors are determined.
3. The water treatment plants will deliver 24 hrs per day, 7 days per week within the quality standards.
4. The network covers 80% of the supply area against the minimal required pressure.
5. Maintenance will have a high priority within the company, resulting in an average lifetime of assets according to at least the design specifications.
6. Dawaco will draft an information plan to give more information to other parties and make the company well known within Da Nang.

II. Management autonomy and stronger financial position

7. Dawaco will become a Joint Stock or Asset Holding Company with the PC of Da Nang as sole share holder. The PC will start to implement this.
8. Dawaco and the People's Committee of Da Nang will draft a performance contract in which the standards, authority and means are clear for all parties concerned.
9. Tariff for full cost recovery will be implemented by 2015 and is the objective of all parties.

55 Soppe, G. (2008a, July 15). *Policy Paper 2008-2020, Partnership Building Phase Dawaco*. Hanoi, Vietnam: Vitens-Evides International; pp. 3-4.

10. The design of a progressive tariff structure, which takes into account the minimum requirements for facilitating programs for urban poor.

11. NRW will be reduced to 20% in 2020. Dawaco is responsible for implementing programs and modifying its organization to achieve and manage the NRW-reduction targets.

12. The PC will support Dawaco through allocating funds for investments to reduce the NRW.

III. Sustainable water services to urban poor

1. In 2015 at least 50% of the urban poor will be supplied with drinking water.

2. The program for the urban poor will be closely conducted with other programs and projects of Da Nang City for this specific group.

3. The provision for the urban poor will be covered in the water tariffs from the time the water tariffs are based on full cost recovery. Until then the PC will supply funding.

4. The financial means of ongoing projects for the urban poor will also be used to improve the water supply.

On behalf of VEI, the inputs used to achieve the objectives of the improvement tracks are both material and non-material. Table 5 and Table 6 show VEI's budgeted contributions and actual investments in time according to each expert, as well as the initial budget for human resources (HR), investments, operational costs, training, and audit in respect to the actual amount spent per year. The breakdown of VEI's input throughout the VEI-Dawaco WOP can be read as follows:

Table 5: VEI's time input for the VEI-Dawaco WOP⁵⁶

	Budgetted days	Actual	2007	2008	2009	2010
Project Director	90	77	6	41	12	18
Resident Project Manager	1,095	1,048	90	229	364	365
Local Advisor	150	136	21	29	46	40
Process engineer	63	153	24	25	50	54
Production Expert	140	252	0	117	112	23
Transport and distribution Expert	119	524	26	125	204	169
Hydraulic Engineer	35	61	0	23	16	22
LIS/GIS Expert	49	23	0	23	0	0
CRM/B&C Expert	77	152	22	40	44	46
Financial Expert	63	100	22	33	20	25
IT Advisor	112	17	0	17	0	0
Strategic Advisor	21	0	0	0	0	0
Water Engineer	28	0	0	0	0	0
Total	2,042	2,543	211	702	868	762

56 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; p. 9.

Table 6: VEI's input in HR, investments, operational costs, training, and audit for the VEI-Dawaco WOP⁵⁷

	Budget	Remaining	2007	2008	2009	2010
HR	889,660	-131,829	83,641	285,343	348,440	304,065
Investments	625,000	19,982	0	64,282	268,942	271,794
Operational costs	179,920	46,388	11,039	52,512	30,222	39,760
Training	185,000	60,904	0	18,170	64,634	41,292
Technical audit	18,000	18,000	0	0	0	0
Total	1,897,580	13,445				

The Key Performance Indicators (KPIs) that supported each of VEI-Dawaco's WOP improvement tracks were: I) increased coverage, raw water protection, consistent production, improved supply conditions in network, water quality, asset management; II) corporatization of the company, full-cost recovery, NRW reduction, financial information, financing of investments; III) water supply for the urban poor, urban poor program, and funding for the urban poor. Table 7 provides the partners and description for each KPI and in the next section, Table 7a, 7b, and 7c will provide an assessment on each of the KPIs at the time the WOP was completed in 2010.

57 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; p. 28.

Table 7: Key Performance Indicators⁵⁸

KPI	Partners	Description
I. Extension and better water services		
Increased coverage	Dawaco, PC	Dawaco will target the number of new connections on 16,000 per year of which 2,000 will be for the urban poor. This includes extension of the network.
Raw water protection	PC, Dawaco, VEI	To protect the supply of water to the city of Da Nang a plan for raw water resources will be made.
Consistent production	Dawaco, VEI	Process metering equipment will be installed in 2008. The operational procedures and organization will be reviewed and adjusted.
Improved supply conditions in network	Dawaco, VEI	Implementation of a unit for flow and pressure management in the network. The unit will annually review the investment plan for distribution and transportation.
Water quality	Dawaco, VEI	Plan for quality control and cleansing activities for the transport and distribution network.
Asset management	Dawaco, VEI	A system for asset management is introduced and implemented together with a GIS system.

58 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; p. 6.

KPI	Partners	Description
II. Management autonomy and finances		
Corporatization of Dawaco	PC, Dawaco, VEI	In 2009 steps will be taken to equitize Dawaco. A performance contract will be drafted.
Full cost recovery	PC, Dawaco	Tariff proposal will be drafted in 2008 and be presented to the PC in 2009.
NRW reduction	VEI, Dawaco	A program for the reduction of NRW will be made in 2008, and the organization will be rearranged to the care-taker model.
Financial information	VEI, Dawaco	Functional design for a Management Information System is made and implemented.
Financing of investments	PC, Dawaco	In 2009 Dawaco, supported by the PC, secures funds for financing the planned investments.
III. Sustainable services to the urban poor		
Water supply for urban poor	Dawaco, PC	Annually 2,000 connections will be made for the urban poor. The tariff structure covers the cost for water supply to the urban poor.
Urban poor program	PC, Dawaco, VEI	The partners have in close cooperation made an urban poor program to secure the most effective use of means.
Funding urban poor	PC	The costs for the urban poor are covered by the PC.

Evidence of progress towards impact and effectiveness of the project

Changes in performance and capacity of the mentee (KPIs)

Regarding the extension and improvement of water services, firstly, increased coverage was expected to be reached by establishing 16,000 new connections per year, of which 12.5% would correspond to the urban poor. By the end of the partnership, a total of 48,933 new connections were made, averaging over 16,311 per year, of which 16% were for the urban poor. Secondly, a raw water production assessment was conducted by an ADB consultant with a plan until 2020. Thirdly, the meters installed at both the San Bay and Cau Do water treatment plants served to collect data, monitor, and improve operations of 99% of the total production. Fourthly, the management of flow and pressure in the network through a Central Control Unit was implemented successfully in the third year of the partnership. Next, also in 2009, flushing activities to increase water quality were initiated, however, a recommendation to increase the frequency of this activity is suggested in order to assure the reliability of the water quality. In the final year of the WOP, a GIS/Water Asset Management System was incorporated with the aim of collecting all the network's data in one system. Follow-up on the management of this system is recommended.

Table 7A: KPIs for extension and better water services⁵⁹

KPI	Description	Outputs in 2010
Increased coverage	Dawaco will target the number of new connections on 16,000 per year of which 2,000 will be for the urban poor. This includes extension of the network.	During the three years a total of 48,933 new connections were made. This is 16,311 per year. A total of 7,856 connections for the poor were made. An average of 2,618 per year.
Raw water protection	To protect the supply of water to the city of Da Nang a plan for raw water resources will be made.	The consultant of the ADB has made a plan for water resources as part of their study of how to supply Danang with water in the long term. In that plan an overview until 2020 has been made.
Consistent production	Process metering equipment will be installed in 2008. The operational procedures and organization will be reviewed and adjusted.	Water quantity and quality meters have been installed at both San Bay and Cau Do. With this, 99% of total production is metered. Based on the data collected from these meters the operational processes have been improved.

59 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; pp. 17-18.

KPI	Description	Outputs in 2010
Improved supply conditions in network	Implementation of a unit for flow and pressure management in the network. The unit will review the investment plan for distribution and transportation annually.	The central control unit was officially implemented on May 15 of 2009. To assist the Control Unit metering equipment was installed in the network. At different locations an EMF meter with cello was installed so that data can be transferred to head office real time. Also, an <i>Epanet</i> model was built with the information of the network included. This has taken a lot of effort since data had to be checked and then imported in the model.
Water quality	Plan for quality control and cleansing activities for the transport and distribution network.	At the end of 2009 a start was made with flushing activities. However, the total amount of flushing activities should be increased to end up with a network that delivers completely reliable water to the customers.
Asset management	A system for asset management is introduced and implemented together with a GIS system.	The Water Asset Management System has been implemented. This system has a GIS incorporated and in 2010 a start was made to input all data from the network into the system. This will require several years to complete.

Concerning the management autonomy and finances improvement track, the most outstanding indicator has been the reduction of Non-Revenue Water (NRW) which went from nearly 39% at the start of the project to 26% by the end of the partnership. Since then, water loss has continued to decrease. The latest report now shows NRW at 14.79%.⁶⁰ The other indicators were achieved in a timely manner. A financial system describing business processes was implemented in the last year of the WOP, as of January of 2010; the full-cost recovery plan with tariff proposals drafted in 2008 were adapted at the end of the WOP in January of 2011; the corporatization of Dawaco advanced with Dawaco becoming a Limited Liability Company in 2010 (and a Joint Stock Company since January of 2016); and as a result of the new tariff structures, Dawaco's finances were significantly strengthened, allowing the company to make bigger investments on its own.

60 See Table 8. Information received from Dawaco between August 2017 and June 2018.

Table 7b: KPIs for management autonomy and finances⁶¹

KPI	Description	Outputs in 2010
Corporatization of Dawaco	In 2009 steps will be taken to equitize Dawaco. A performance contract will be drafted.	Steps were taken to equitize Dawaco. The company was equitized in June 2010. It has become a limited liability company with the PC of Da Nang as sole share holder. The actual effect of this equitization is still limited as it is not a far reaching change. For that more has to be done.
Full cost recovery	Tariff proposal will be drafted in 2008 and be presented to the PC in 2009.	In 2008, a tariff study was executed to see the effects of the investment plans on the tariff. The objective of the partnership is to achieve full cost recovery in 2015. During the project several tariff proposals were submitted to the PC. End of 2010 the tariff proposal has been approved. From January 1 of 2011 the new tariffs are implemented.
NRW reduction	A program for the reduction of NRW will be made in 2008, and the organization rearranged to the care-taker model.	In 2008 several pilot projects were carried out. With Dawaco several steps have been made to rearrange the organization according to the care-taker model and was put into place in 2009. The NRW has gone down during the years of the project from 38.9% to 26.1%.

61 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; pp. 21-22.

KPI	Description	Outputs in 2010
Financial information	Functional design for a Management Information System is made and implemented.	The financial system has been tendered, business processes were described and the system was built. It went live in January 1st 2010.
Financing of investments	In 2009 Dawaco, supported by the PC, secured funds for financing the planned investments.	Within the annual budget of Dawaco there is room for small investments. There is not much room for bigger investments. The ADB has had a consultant working on a PPTA for a larger investment in a new treatment plant and work in the network. With the new tariffs implemented there will be more possibilities for Dawaco to make investments.

The third improvement track for water supply for the urban poor was well achieved. Altogether, 30% more connections than planned for reaching the urban poor, together with the implementation of VEI's 'Water for Life' program, with the support of the PC, helped to distribute and track the resources in the areas that needed them most. Finally, with the financial strengthening of the company, Dawaco gained the capacity to cover the connections to the piped-network for the urban poor.

Table 7c: KPIs for the urban poor⁶²

KPI	Description	Outputs in 2010
Water supply for urban poor	Annually 2,000 connections are made for the urban poor. The tariff structure covers the cost for water supply to the urban poor.	During the project a total of 7,856 connections were made for the rural poor. The tariff structure approved in 2010 makes the low consumption below costs. This will benefit the poor who generally use a limited amount of water. The rich use more, and in that sense will compensate the poorer communities' consumption.
Urban poor program	The partners made an urban poor program in close cooperation in order to secure the most effective use of resources.	For the different programs for Water for Life close cooperation with the local PCs has been established. With the PC the income and location of different poor households is being recorded. That way the money is spent on the areas that need it most.
Funding urban poor	The costs for the urban poor are covered by the PC.	The costs for the urban poor are now covered by Dawaco themselves. Indirectly it is funded by the PC since at the end of the year Dawaco will request the PC for assistance to be able to meet financial obligations.

62 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; pp. 23-24.



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BIÊN BẢN KIỂM TRA CLO ĐU

Thời gian	Chỉ số mẫu	Chỉ số online	Chỉ số	Chú ý
15/5/19 8:00	Vết sữa 18 cm	0,87	0,5	Thao
15/5/19 8:00	g 00	0,5	0,5	Thao
15/5/19 8:00	g 00	0,55	0,5	Vĩnhburg#19
15/5/19 8:00	g 00	0,5	0,5	Thao
15/5/19 8:00	Vết sữa 18 cm	0,87	0,5	Thao
15/5/19 8:00	g 00	0,5	0,5	Thao
15/5/19 8:00	g 00	0,5	0,5	Thao
15/5/19 8:00	g 00	0,5	0,5	Thao
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15/5/19 8:00	g 00	0,5	0,5	Thao
15/5/19 8:00	g 00	0,5	0,5	Thao
15/5/19 8:00	g 00	0,5	0,5	Thao
15/5/19 8:00	g 00	0,5	0,5	Thao

Figure 4: Turbidity Meter at Cau Do Water Treatment Plant

Table 8: Size and service indicators of Dawaco (from 1996 to 2017)⁶³

Indicators	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Population served	233,205	240,541	250,292	260,573	276,041	299,078	326,372	358,794	366,794	375,201
Service coverage of water supply (%)	no data	no data	no data	37.09%	38.54%	41.04%	44.03%	47.68%	47.98%	48.16%
Number of water supply connections	22,224	26,466	28,909	31,520	35,029	38,337	44,324	50,726	57,642	66,336
Water supply (m ³) (x1000)	19,093	19,772	18,816	24,369	26,453	27,449	28,127	30,532	32,099	32,931
Number of Employees	195	210	230	250	275	300	315	345	390	410
Number of Water Treatment Plants	3	3	3	3	3	3	3	3	3	3
Length of network (in kilometers)	no data	3,057	3,173							
Unaccounted for water (NRW) (percent of total)	31.86%	31.69%	29.72%	46.65%	50.50%	50.48%	45.28%	43.83%	41.30%	38.18%
Staff per 1000 connections (water supply)	8.8	7.9	8.0	7.9	7.9	7.8	7.1	6.8	6.8	6.2

63 Information received from Dawaco between August 2017 and June 2018.

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
383,405	421,480	454,392	523,748	585,595	704,709	732,662	776,121	879,124	915,697	954,262	992,049
48.40%	52.20%	55.30%	63.70%	66.00%	74.10%	75.30%	78.45%	87.26%	89.17%	91.28%	92.98%
78,653	94,044	110,072	30,588	148,028	181,185	198,248	210,667	221,571	234,355	250,396	267,623
37,689	40,554	44,202	48,373	53,478	54,697	60,288	63,802	67,520	73,884	81,173	87,573
442	463	472	496	528	559	696	586	613	703	616	662
3	3	3	3	3	3	4	4	4	4	4	5
3,288	2,567	2,649	2,710	2,755	2,817	2,025	2,138	2,301	2,610	2,746	2,825
40.24%	38.86%	35.53%	31.74%	25.92%	21.18%	19.39%	17.96%	16.82%	16.92%	16.73%	14.79%
5.6	4.9	4.3	3.8	3.6	3.1	3.5	2.8	2.8	3.0	2.5	2.5

Table 8: Size and service indicators of Dawaco (from 1996 to 2017) - continued

Indicators	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Owner's equity (x1 million VND)	18,569	20,212	21,709	81,976	84,169	84,765	87,829	92,316	92,963	101,671
Net revenue from sales and service provision (x1 million VND)	22,910	24,394	25,823	25,328	28,566	29,649	39,889	44,672	48,237	69,271
Operating profit (x1 million VND)	2,668	2,901	3,047	3,240	2,306	1,157	2,288	2,554	942	1,950
Profit after tax (x1 million VND)	1,970	2,174	2,283	2,288	1,653	868	1,556	1,736	678	1,404

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
132,236	191,572	272,829	322,151	373,209	395,140	418,029	437,149	472,832	359,029	601,291	695,775
84,472	104,617	130,719	143,766	150,310	238,090	264,911	289,504	331,976	361,732	397,723	450,560
1,970	2,174	2,501	2,637	3,272	17,059	29,402	24,727	42,983	48,584	94,140	137,832
1,440	1,618	1,896	1,883	2,427	12,161	21,904	17,796	31,343	35,282	72,758	107,092

Results derived from the project targeted improvement tracks

To achieve the main objectives of the WOP, the most relevant strategy for the extension and improvement of water services in Da Nang was the implementation of the Care-Taker Model. **Care-Taker Model (CTM)** (in Vietnamese, *Nhóm nhân viên chăm sóc*) means group of care workers. Da Nang was the first in implementing the Care-Taker Model for a water network management in Vietnam.⁶⁴ The CTM is the configuration of the piped-network system by areas called District Metering Areas (DMAs), monitored by a specific team of workers.⁶⁵ Water loss is better monitored, and leakages can be fixed. The results are easier to keep track of since each care-taker is responsible for the DMA they're accountable for.⁶⁶ Figure 5 shows Dawaco's water distribution network and the current DMAs.



Before in our company there was a group of people who took care of all the network. But the Care-Taker Model created a small group to take care of small areas so that they knew everything about the customers, about the network.

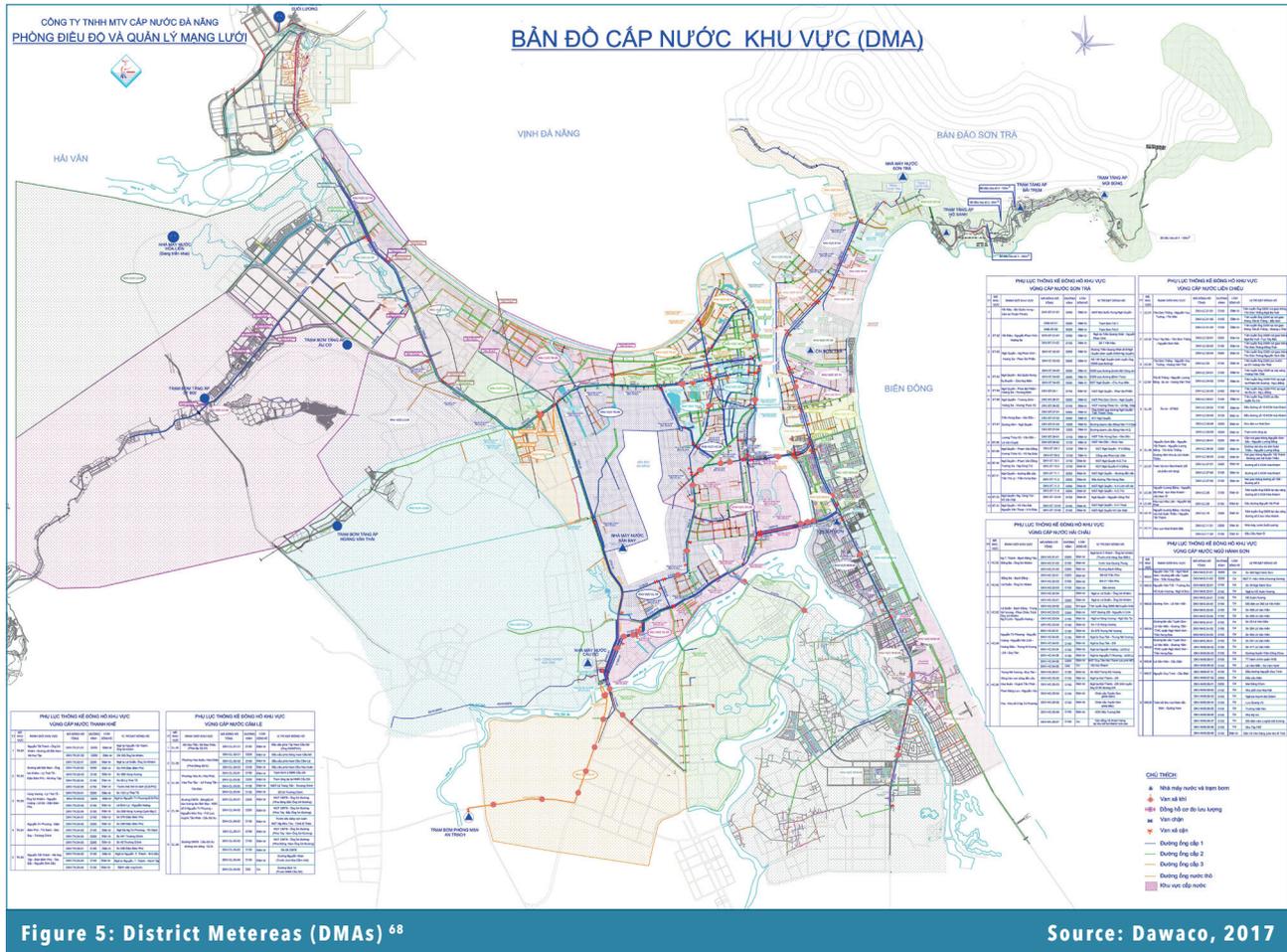
– Chairman of Dawaco Management Board, Mr. Nguyen Truong Anh



64 Interview with Dawaco's Chairman of Management Board Nguyen Truong Anh. August, 2017; VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; p. 15.

65 Interview with Dawaco's Head of Strategic Planning Department Bui Tho Ninh. August, 2017.

66 Interview with former VEI-Dawaco Resident Project Manager Gerard Soppe. August, 2017.



67 Received from Dawaco. Da Nang, August, 2017.

Another important procedure was the creation of a **Central Control Unit (CCU)**, specifically accountable for monitoring the pressure and flow of water in the transmission network. Before the CCU, the responsibilities of the head office and the branch offices were not clear. The equipment and information systems used by the CCU are the **GIS/Water Asset Management System** and the **SCADA System**. The GIS/Water Asset Management System is based on data of the transmission and distribution networks, together with geographical information. This system prioritizes the efficient management of the network by measuring the investment, operational, maintenance, refurbishment, and replacement costs of an infrastructural asset during its life cycle. The SCADA System collects data on pressure and flow through water meters installed throughout the network. With hourly updates and online access, this system allows for the directives of Dawaco to receive notifications of the network status and address issues with the CCU.⁶⁸

Both the CTM and the CCU procedures favored the extension and improvement of water services in Da Nang and worked towards the management autonomy of the company. On one hand, the planned activities which influenced the measurable outputs of the management and operational strategies are described in Tables 7a, 7b, and 7c. All resources invested during the WOP contributed towards: increased coverage, water resources extension planning, consistent production, improved supply conditions in the network, water quality monitoring, collection of data; NRW reduction, full-cost recovery through a new tariff program, the strengthening of the company; and improved water supply for the urban poor through an urban poor program. The planned activities, which

68 VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International; pp. 15-16.

supported the sustainable delivery of water services to the urban poor, was the linkage to VEI's foundation: **Water for Life**. Water for Life exists since 2004 and is funded through voluntary contributions from customers in the Netherlands, willing to donate money for improving drinking water for the urban poor in the areas where VEI is working.⁶⁹ Water for Life supported the WOP between VEI and Dawaco by sponsoring the installation of 6,632 water meters for the poor, throughout five projects as follows: 486 meters for Tho Quang Ward in Son Tra District; 500 meters for Khue My Ward in Ngu Hanh Son District; 1,450 meters for Hoa Hiep Nam Ward in Lien Chieu District; 2,710 meters for An Khe Ward, Hoa Khe, in Thanh Khe District; and 1,486 meters for Hoa An Ward in Hoa Phat district and Cam Le district.⁷⁰ The total amount invested through these five projects was approximately EUR 1,000,000.⁷¹



The poor are really the ones that deserve the connections. But the near-poor are not always able to afford the connection. To be able to take the near-poor into consideration, we chose the wards which had 80% near-poor. This way we would connect everybody.

– Former VEI-Dawaco Resident Project Manager, Mr. Gerard Soppe



69 VEI (2015b). *Water for life*. <https://tinyurl.com/ybbujwxc>. Updated: 2015. Accessed: October 15, 2017.

70 Received from Dawaco. Da Nang, August, 2017.

71 Interview with former VEI-Dawaco Resident Project Manager Gerard Soppe. August, 2017.

Project evaluation

Impact in terms of sector targets

To meet the requirements of the city, the *Policy Paper 2008-2020* suggested a step-by-step process to improve drinking water production at a reasonable cost by: 1) supplying clean water to most areas, 2) continuously supplying water to most areas, 3) continuously supplying water to all areas, 4) continuously supplying sufficient, clean water to all areas, and 5) continuously supplying sufficient good quality water to all.⁷² As Dawaco was at stage 1 (supplying clean water to most areas) at the time of the document's publication (in 2017), the company may be between step 3 and 4 (continuously supplying water to all areas and continuously supplying sufficient clean water to all areas), with special attention to the improvement of the water quality and reaching all rural districts (including Hoa Vang). Partners showed optimism about reaching step number 5 by 2020.



Dawaco already supplies water to the center areas for the districts, and only one rural district is covered only by 75%. The aim for 2020 is to cover the whole city including that rural area. That's the vision. And for the continuous supply, it is almost 24/7, but in case of power cuts or accidents it might not be completely 24/7.

– Dawaco General Director, Mr. Ho Huong



72 Soppe, G. (2008a, July 15). *Policy Paper 2008-2020, Partnership Building Phase Dawaco*. Hanoi, Vietnam: Vitens-Evides International; p. 8.

Replicability

Dawaco gained visibility due to their improved performance after the WOP with VEI. Soon after, Dawaco became a mentor itself through twinning programs with companies from other provinces.⁷³



An unplanned activity for Dawaco was being a peer to neighboring utilities. People that visited the company to witness the SCADA system were impressed by the results. Dawaco got visibility and went to two provinces to train on Non-Revenue Water. That really made them proud of the changes they'd made.

– Former VEI-Dawaco Resident Project Manager, Mr. Gerard Soppe



Furthermore, other water utilities in the Southeast Asian region approached Dawaco to understand the key to their improvement. Amongst them: Mandalay and Yangon in Myanmar, Davao in Philippines, and Soc Trang in South Vietnam. Dawaco showed and explained the results of the partnership to the interested parties and has facilitated the communication with VEI.⁷⁴

73 Interview with former VEI-Dawaco Resident Project Manager Gerard Soppe. August, 2017.

74 Interview with Dawaco's Chairman of Management Board, Nguyen Truong Anh. August, 2017.

Relational capital and satisfaction of partners

Both the mentor and the mentee have agreed that the quality of the relationship between the partners was very good. Not only because there were no conflicts, but due also to the implementation's flexibility and the communication between management and operational levels during the WOP, the KPIs were successfully achieved. While the cultural understanding within the Management team created an enabling atmosphere for both parties to work well together, the connection between the short-term experts and Dawaco's staff created a strong basis for building a good relationship between the partners.⁷⁵

Since the completion of the WOP, VEI has occasionally followed up with Dawaco while carrying out other projects in the country. The last visit VEI paid Dawaco was in early 2017. The unofficial visits show VEI's interest in following up the company's progress, while giving the opportunity to Dawaco to openly discuss the present challenges.⁷⁶

75 Interview with former VEI-Dawaco Resident Project Manager Gerard Soppe. August, 2017.

76 Interview with Dawaco's Chairman of Management Board, Nguyen Truong Anh. August, 2017.

Effectiveness

The main objectives for the VEI-Dawaco WOP were achieved: 1) the extension and improvement of water services in Da Nang, 2) the management autonomy and strengthening of Dawaco's financial position, and 3) the sustainable delivery of water services to the urban poor. For the first improvement track, the KPIs which were exceeded were increased coverage, rising from 52% to 66% during the 2007 to 2010 period, and reaching 93% in 2017. The rest of the targets such as raw water production assessment, current status of the installed water meters, effectiveness of the Central Control Unit (CCU) and its GIS/Water Asset Management and SCADA systems, and water quality, were reached during the WOP. Concerning the second improvement track, the KPI which was exceeded was a reduced Non-Revenue Water (NRW) from 39% in 2007 to 26% in 2010, and 15% in 2017. Dawaco's assets in November 2016 were valued at approximately VND 575 billion or USD 25 million. Including long-term assets and investment properties, the company's assets amount to over VND 1,000 billion or USD 45 million. Dawaco's net cash provided by operating activities between January and October of 2016 was approximately VND 350 billion or USD 15 million. From this amount, roughly 10% was used for investment.⁷⁷ Finally, the third improvement track for water supply for the urban poor was also exceeded, surpassing the target of 2,000 connections by 30% with an average of 2,618 connections per year during the partnership.

⁷⁷ Dawaco (2016). *Da Nang Water Supply Co., LTD. Financial Statements for the period from 01/01/2016 to 31/10/2016*. Hanoi, Vietnam: Dawaco; pp. 6, 9.

Number of water supply connections (including % in change)

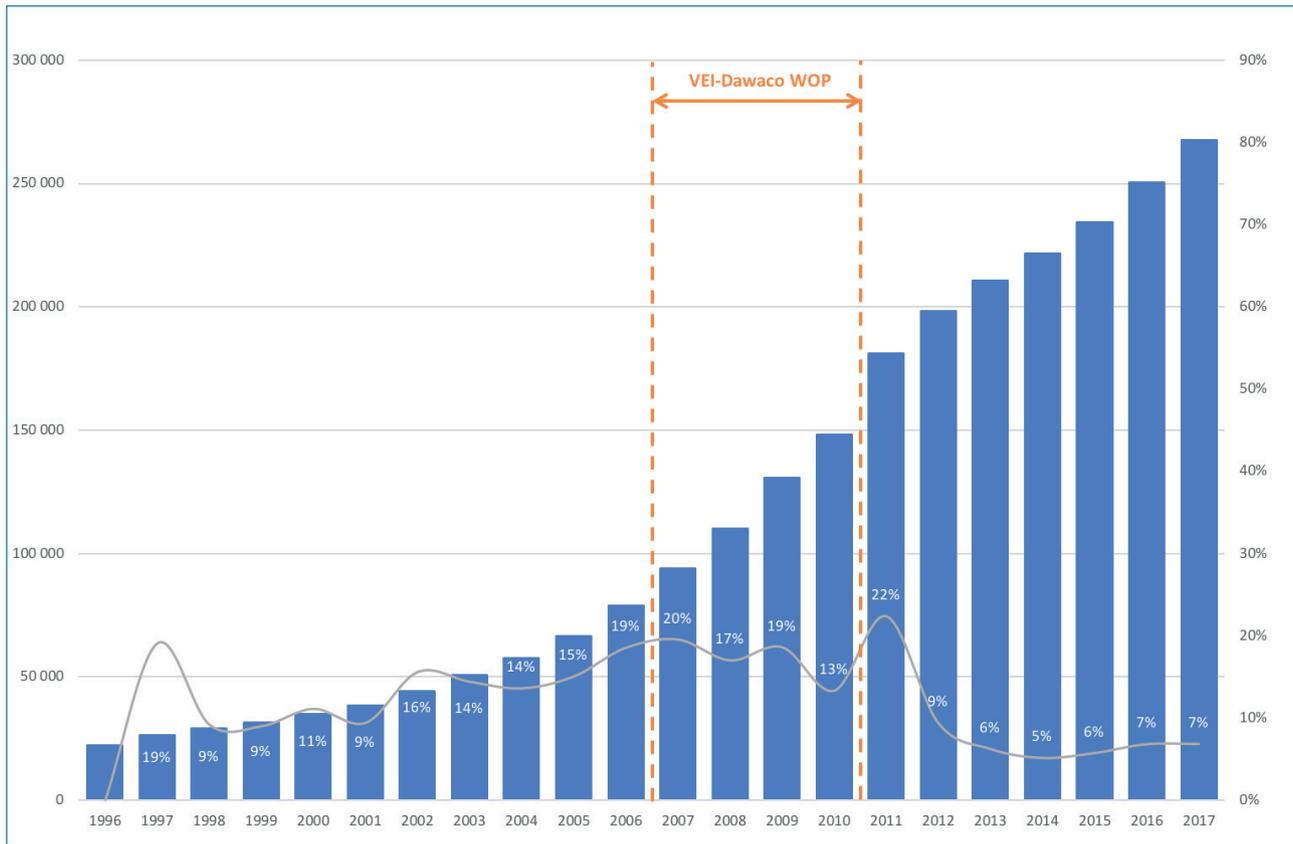


Figure 6: Number of water supply connections (including % in change)

Source: Table 8

Service coverage of water supply (including % in change)

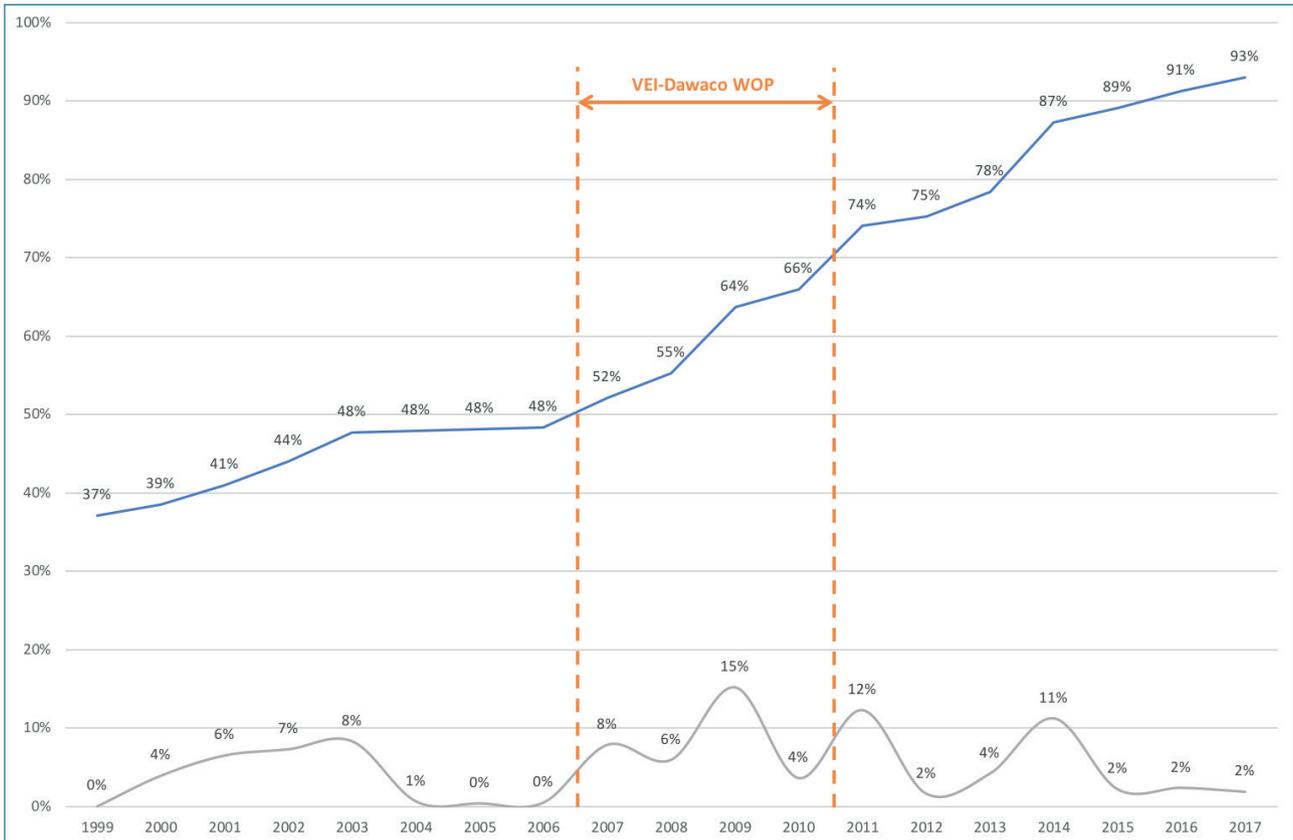


Figure 7: Service coverage of water supply (including % in change)

Source: Table 8

Unaccounted for water (NRW) (% of total)

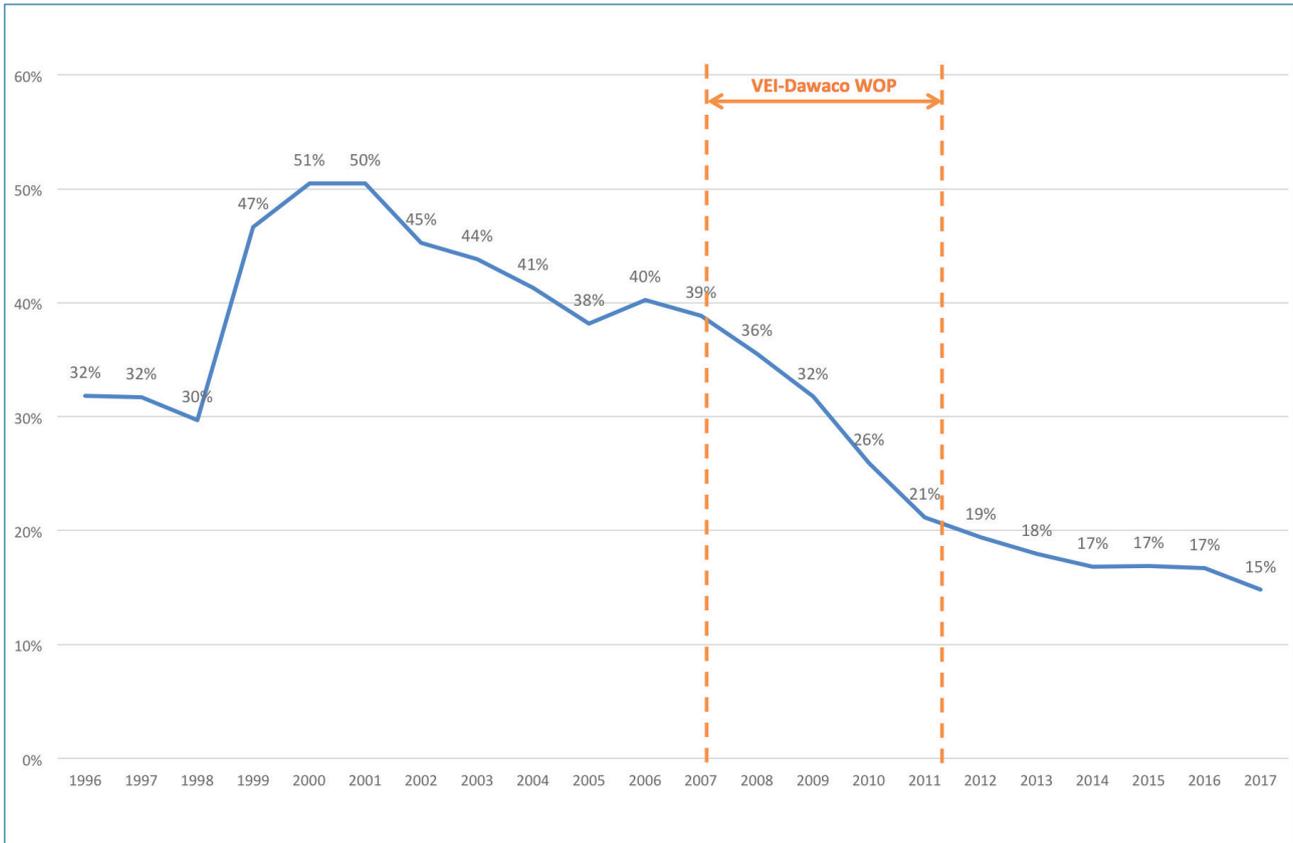


Figure 8: Unaccounted for water (NRW) (% of total)

Source: Table 8

Net revenue from sales and service provision (x1 million VND)

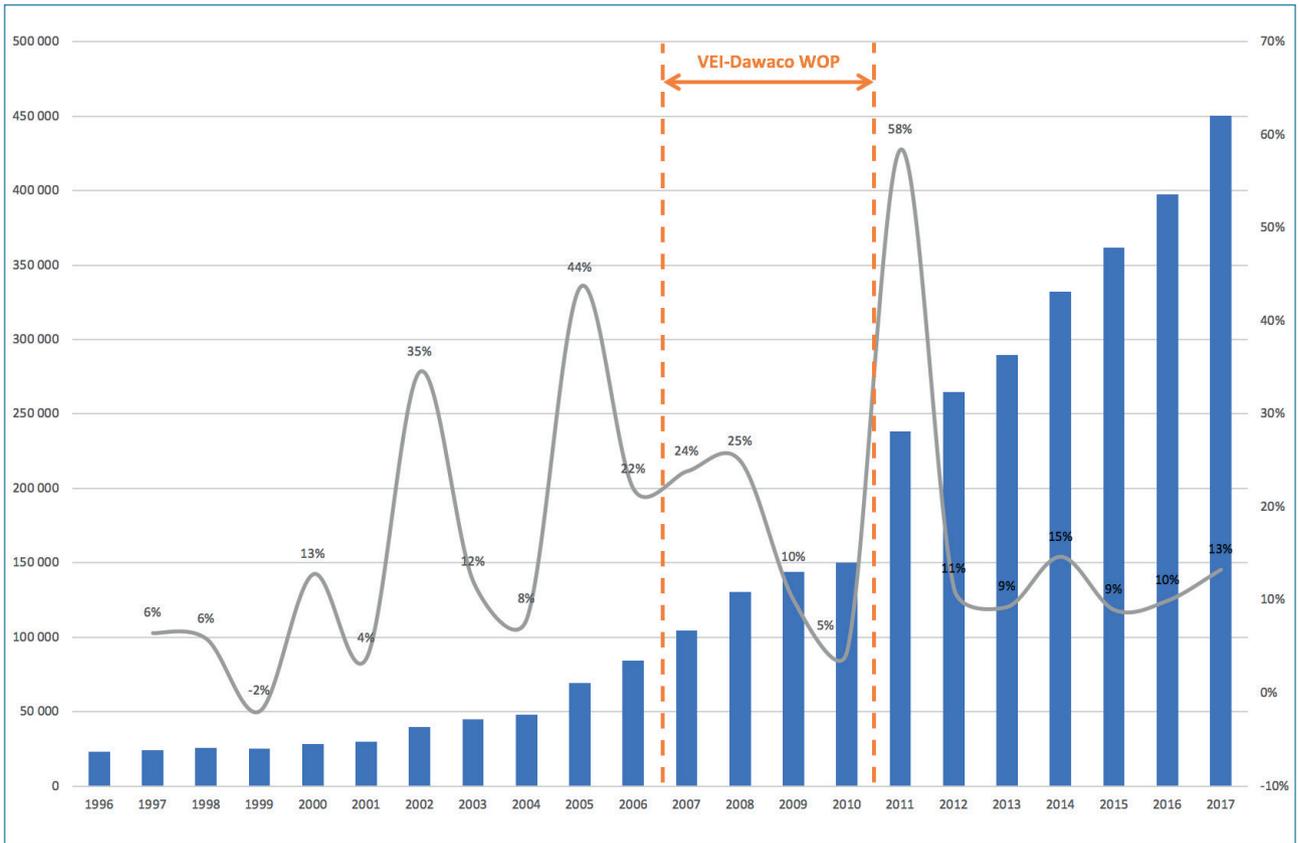


Figure 9: Net revenue from sales and service provision (x1 million VND)

Source: Table 8

“

It was building relation, it was building results, and this way Dawaco really had a feeling of accomplishment as well. We did this together. It was not, we were telling them what to do, it was really about how can you achieve a result together. If I were a consultant, it would have been much shorter, and it would have been much more directive. And this was really about building a relationship.

– Former VEI-Dawaco Resident Project Manager, Mr. Gerard Soppe

”

Efficiency

All the interviewees involved in the WOP between VEI and Dawaco agreed that the partnership was executed efficiently. Important factors that influenced the efficiency of the partnership were the internal support, through the cooperation between the VEI team and the Dawaco staff, as well as external support from the RNE and PC Da Nang. The combination of the two directions of support allowed for the strategies which were put in place to be carried out efficiently and demonstrate results through the measurement of the KPIs. The improvement of the performance of Dawaco can still be seen today.

“

– The Head of Dawaco’s Strategic Planning Department also shared that the WOP model is mutually beneficial:

It’s not just about teaching each other, it’s about talking; how to manage well and how to build new technologies. It’s not just about mentoring, it’s about working together.

”

Success factors and challenges

The success factors which were critical to achieving the KPIs for each improvement track are those which had the strongest impact during the partnership formation. The start of a good cooperation was cultivated through the first contact facilitated by a bi-cultural mediator (Mr. Ngo Xuan Truong) familiar with the Dutch expertise and language, as well as with the local Vietnamese culture. Hiring a bi-cultural mediator at the start of the partnership and for subsequent follow-ups was highly valuable for informing about the mentee's progress. This role was essential for relaying information about the local culture and about how activities can be carried out most effectively. Another factor that supported the formalization of the partnership between VEI and Dawaco was the support of the Chairman People's Committee of Da Nang (Mr. Van Huu Chien). During the implementation of the WOP, the successes were mostly dependent on the continual receptiveness of the Dawaco's staff as well as the openness of VEI's Management team and short-term experts in transferring their expertise. Practical interventions and changes in routine, such as timely payments to contractors by the RPM can be understood as strategies which increased the efficiency of the activities developed during the WOP. Relying on effective communication between the partners was essential in building and maintaining cultural bridges, which allowed for successful results. Finally, with the completion of the WOP, the sustainability of its results depended on maintaining the activities inherited from the mentor.



Figure 10: Cau Do Water Treatment Plant engineer

What the partners say

"I think that the management of the company now is very good. But if I could learn how the management is done in other companies and realize what can be improved, then I would learn from this and change the management here. The same with new technology. I don't have an idea on which specific technologies can be improved, but if a foreign company has a better proposal I am willing to adopt it."

– Dawaco's General Director, Mr. Ho Huong

People keep talking about the achievements or the results of the KPIs, such as NRW or something that can be easy to measure, talking by figures. But for myself, I think the most important, or the most valuable result is the behaviour and the awareness of the staff of Dawaco; that they could learn from the Dutch and from the experts of the WOP.

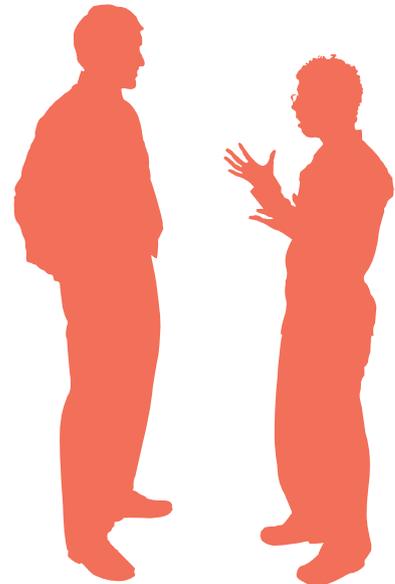
– Former VEI-Dawaco Project Assistant, Ms. Duc Hanh Nguyen

"1 Now we cannot supply for 100% of the population, so we want to be able to supply to the whole population.

2 Now there are not enough water treatment plants performing at their maximum capacity, so in the future, we want to have more water treatment plants.

3 Lastly, I want the company to perform the best in order to decrease the water tariff that people have to pay, i.e. to have the appropriate price for the people."

– Dawaco General Director, Mr. Ho Huong



Conclusion

Sustainability of Dawaco's improved performance

The WOP provided Dawaco with the knowledge and capacity to extend and improve water service delivery in Da Nang, secure the company's management autonomy and strengthen its financial position, while developing sustainable water supply strategies for the urban poor. As the company has increasingly been able to build on its own assets, there is a clear continuity of the performance improvements. The knowledge and expertise gained by Dawaco through the WOP has proven to have sustained the progress and results of the KPIs, as shown with the increased connectivity rates, current NRW values, and improved creditworthiness of the company.

According to the key informants, factors that contributed to this success were:

- Dawaco management's commitment to change,
- the expertise of VEI's team, combining a good foundation of Dutch water infrastructure and knowledge management,
- the openness of the VEI team to teach Dawaco everything they know,
- the strong motivation by staff at all levels during the WOP, and
- the availability of funds for investments.

Moreover, the VEI-Dawaco WOP paved the road for access to other funding opportunities, starting by supporting the involvement of ADB to create a sustainable water resource management plan at the start of the partnership. This prepared Dawaco for receiving further financial support after the WOP, such as an ADB loan for the design, construction, supervision and management assistance for the extension of the water

supply network, and the investment from JICA in the construction of a water treatment plant in Hòa Liên. These funds, and other foreign direct investments have aided the maintenance and up-keep of water infrastructures in Da Nang, thus, being instrumental in keeping up with performance improvements.



Figure 11: Cau Do Water Treatment Plant staff and visiting GWOPA consultant

References

- ADB (2008). *Da Nang Water Supply Project*. <https://tinyurl.com/y74rg4wp>. Updated: October 1, 2008. Accessed: May 15, 2018.
- Da Nang CCCO [Climate Change Coordination Office] (2014). *The river network of Danang city*. <https://tinyurl.com/y8c9yaya>. Updated: August 12, 2014. Accessed: March 29, 2018.
- Dawaco (2017). *Dawaco, Danang Water Supply Joint Stock Company* [original in Vietnamese: Công ty cổ phần cấp thoát nước đà nẵng]. <http://dawaco.com.vn/>. Updated: 2017. Accessed: May 10, 2017.
- Dawaco, VEI, RNE, & PC Da Nang (2007, October 19). *Memorandum of Understanding for Public-Private-Partnership (PPP) between the Da Nang Water Supply Company (DWSC) and Vitens-Evides International BV (VEI) and The Royal Netherlands Embassy (RNE) and The People's Committee (PC) of Da Nang City*. Ho Chi Minh City, Vietnam: PC Da Nang, DWSC, VEI, RNE-Hanoi.
- Dawaco, VEI, RNE, & PC Da Nang (2008, March 19). *Inception Report, Utility Support Programme Dawaco. Public-Private-Partnership (PPP), Da Nang Water Supply Company (Dawaco), Vitens-Evides International (VEI), the Royal Netherlands Embassy/Government of The Netherlands (RNE), and the People's Committee (PC) of Da Nang City*. Hanoi, Vietnam: Dawaco, VEI, RNE, PC Da Nang.
- Dawaco (2016). *Da Nang Water Supply Co., LTD. Financial Statements for the period from 01/01/2016 to 31/10/2016*. Hanoi, Vietnam: Dawaco.
- Evides Waterbedrijf (2016). *Annual Report 2015*. Rotterdam: Evides.
- GSO, General Statistics Office (2015). *Area, population and population density by province*. <https://tinyurl.com/ybxxrhlc>. Updated: 2015. Accessed: May 10, 2017.
- Global Water Operators' Partnerships Alliance. *Operator Profiles*. (Wright-Contreras, L. reconstruction of database). <http://www.gwopa.org/en/operator-profiles>. Updated: 2017. Accessed: May 15, 2017.
- JICA, Japan International Cooperation Agency (2018). *Da Nang City Hoa Lien Water Supply Project*. <https://tinyurl.com/yaewndym>. Updated: 2018. Accessed: May 28, 2018.
- Jones, S. and Gu, J. (2012). *Vietnam's Regions and Key Economic Zones*. <https://tinyurl.com/ybk5zdqq>. Updated: May 29, 2012. Accessed: May 11, 2017.
- Nguyen, H. K. L. (2013). *Detecting and Modeling the Changes of Land Use/Cover for Land Use Planning in Da Nang City, Viet Nam* (Dissertation). Georg-August-Universität Göttingen, Göttingen.
- Soppe, G. (2008a, July 15). *Policy Paper 2008-2020, Partnership Building Phase Dawaco*. Hanoi, Vietnam: Vitens-Evides International.
- Soppe, G. (2008b, October 2). *Strategic Plan 2008-2015, Partnership Building Phase Dawaco*. Hanoi, Vietnam: Vitens-Evides International.
- SRV, Socialist Republic of Vietnam (2017). *Decree No. 71/2017/ND-CP Guidelines on Corporate Governance Applicable to Public Interest Companies*. <https://tinyurl.com/ydydhmxh>. Updated: May 6, 2017. Accessed: November 1, 2017.
- Vietnam Trade Promotion Agency (2012a). *The Central Vietnam Key Economic Region (CVKER)*. <https://tinyurl.com/ybwc57rl>. Updated: 2011. Accessed: May 11, 2017.
- Vietnam Trade Promotion Agency (2012b). *Overview of Danang City - Part 1, 2 and 3*. <https://tinyurl.com/yd3ojqxu>. Updated: 2012. Accessed: May 11, 2017.

Vitens (2017). *Vitens makes a difference, Annual Report 2016*. Zwolle, Netherlands: Vitens.

VEI (2011, March 11). *End Project Report, Public Private Partnership Dawaco, Da Nang*. Compiled and written by: G. N. A. Soppe. Hanoi, Vietnam: Vitens-Evides International.

VEI. (2014). *Vitens-Evides International (VEI) Vietnam – Da Nang (Project objectives)*. Zwolle, Netherlands: VEI.

Governance. <https://tinyurl.com/y988keh7>. Updated: 2015. Accessed: October 15, 2017.

VEI (2015b). *Water for life*. <https://tinyurl.com/ybbujwcx>. Updated: 2015. Accessed: October 15, 2017.

VEI (2017). *Annual Report 2016, Unlocking the Strengths of Dutch Water Companies*. Utrecht, Netherlands: VEI.

World Bank (2017). *Projects & Operations: Danang Sustainable City Development Project (SCDP)*. <https://tinyurl.com/yc94olve>. Updated: 2017. Accessed: May 11, 2017.



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