

**Water Utility: Da Nang Water Supply Company (DNWSC)**

Da Nang, Da Nang, Vietnam

**Contact Details:** Vice Director: Pham, Ngoc, Kiem

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**Services Provided:** Piped water, . . . Other: Design Consultancy, water facility installation & construction, material purchasing

**Utility Type:** . . . State Owned Enterprise, . . .

**Private Sector Involvement:** , Service Contract, . . . ,

**Source of Raw Water:** , Direct river abstraction, , Other: Stream Water

**Treatment Method:** , Disinfection, Filtration, Flocculation and sedimentation, . . .

**Water Supply System description:**

Production capacity = 80,000 m3/day		Distribution network = 382 km		Storage capacity = N/A
Area of Responsibility		Present Service Area		
Area (sq km)	230	200		
Population	662,000	558,000		
No. of Towns = 6		Population served = 359,000		
<u>No. of connections:</u>	Domestic (Households) = 52,700	Non Domestic = 1,700	Total Connections = 54,400	
Typical service connection length = 8 m		Connections with operating meter = 54,000		
System input volumes:	Produced by W.U. = 34.5 million m3/year	Bulk water imported = zero		
Water consumption:	Metered cons. = 17.2 million m3/year	% Unmetered cons. = 5% of metered cons.	Ave. meter inaccuracy = 4% of metered cons.	
Water Sales:	Domestic = 13.0 million m3/year	Non Domestic = 4.2 million m3/year	Bulk Water sales = zero	
<u>System Performance:</u>	No. of connections with intermittent supply = N/A		Typical duration of supply = 24.0 hours / day	
No. of pipe breaks in distribution system = 3,400 / year		Typical water pressure in mains = 5 m.		
Chlorine Residuals:	Tests required = 1,200 / year	Tests carried out = 1,200 / year	Tests passed = 1,000 / year	

**Human Resources (Staff)**

<u>Type of employment:</u>	Permanent staff: salaried Government employees, Permanent staff: with contract, Casual/part-time: contract staff, Casual/part-time: wages, . . .			
<u>No. of staff (FTE):</u>	Corporate Services = 116	Water Supply = 264	Other = zero	Total = 380
<u>Staff Training:</u>	No. Trained = 100 / year	Training days = 1,000 / year	Training costs = 2.50% of total operating budget	

**Customer information**

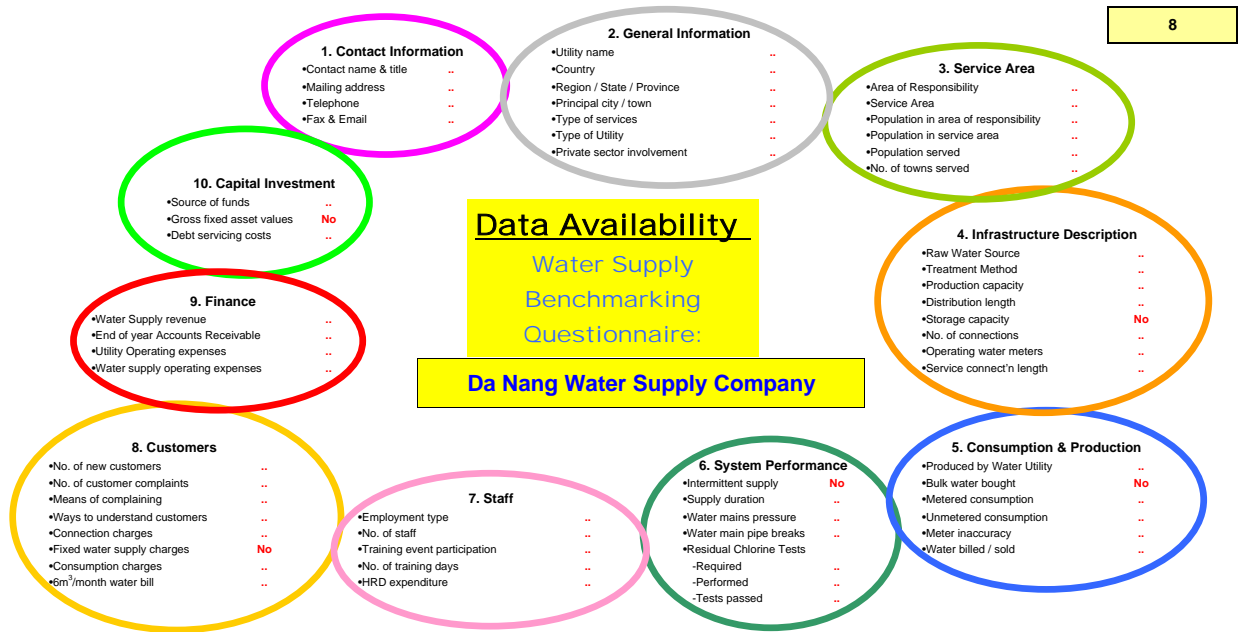
Customer interaction:	New connections = 7,000 / year	Customer complaints = 500 / year
Complaint method:	In person, By telephone, . . . By letter, Other method: Direct contact with Director	
Understanding customers by:	. . . Responding to complaints, . . .	

**Charges & Fees**

<u>Typical connection charge:</u>	Domestic = 850,000VND / conn. (54 US\$ / conn.)	Non Domestic = 1,500,000VND / conn. (95 US\$ / conn.)		
<u>Fixed water charge:</u>	Domestic = N/A	Non Domestic = N/A	Bulk water sales = N/A	
<u>Water consumption tariff</u> (typical of all towns and in each category):				
		Tariff Block 1	Tariff Block 2	Tariff Block 3
Domestic	From - To (m <sup>3</sup> )			
	Price (VND / m3) (US\$ / m <sup>3</sup> )	1,560 \$0.10		
Non Domestic	From - To (m <sup>3</sup> )			
	Price (VND / m3) (US\$ / m <sup>3</sup> )	3,660 \$0.23		
Bulk Water	From - To (m <sup>3</sup> )			
	Price (VND / m3) (US\$ / m <sup>3</sup> )			
		Water bill for household consuming 6 m <sup>3</sup> /month =	11,160 VND / month	(0.71 US\$ / month)

**Finances**

<u>Revenue:</u>	Water Sales	Other water related	Subsidies & grants	Total	Year end Accounts Receivable	
	VND / year	33,510,000,000	11,333,000,000	44,843,000,000	7,500,000,000	
	US\$ / year	\$2,125,055	\$718,689	\$2,843,744	\$475,617	
<u>Operating Expenses:</u>	Water supply	Other services	Company Overhead	Total		
	VND / year	28,000,000,000	zero	4,000,000,000	32,000,000,000	
	US\$ / year	\$1,775,636	zero	\$253,662	\$2,029,298	
<u>Water Supply Operating breakup:</u>	Labor	Electricity	Chemicals & materials	Contracted out	Other expenses	
	VND / year	6,098,000,000	6,859,000,000	2,084,000,000	73,000,000	203,000,000
	US\$ / year	\$386,708	\$434,967	\$132,158	\$4,629	\$12,873
<u>Investment funds source:</u> Own internal funds, Grant from Government or ODA project, Loan from Government Bank, Loan from ODA sources, Loan from Comm						
<u>Fixed Assets value:</u>	Water supply	Other services	Company Overhead	Total	Debt Servicing Costs	
	VND	331,007,000,000	zero	331,007,000,000	3,600,000,000	
	US\$	\$20,990,995	zero	\$20,990,995	\$228,296	



## Calculation of Overall Performance Indicator (OPI)

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Customer Indicators	Value	Rank
Service Coverage in existing service area (%)	64.3%	(28 / 45)
Meter coverage (% with operating water meter)	99.3%	(44 / 46)
Customer complaints / 1000 connections	9.2	(33 / 41)

Water Supply Systems O&M	Value	Rank
Supply Continuity (% of time water available)	100.0%	(1 / 47)
Residual Chlorine tests passed (%)	83.3%	(27 / 34)
Total Unmetered Consumption (% of metered cons.)		
Infrastructure Leakage Index [ILI]	147.6	(23 / 26)



Human Resource Indicators	Value	Rank
Total water related staff / 1000 connections	7	(21 / 38)
Investment in staff training (days / staff)	2.6	(7 / 33)
Ave. cost of employment / staff (% of per capita GNI)	212%	(20 / 37)

Financial Indicators	Value	Rank
Operating Cost Coverage (water sales only)	1.05	(27 / 43)
Unit water cost (US\$ / m <sup>3</sup> of system input)	\$0.06	(4 / 43)
Water system asset value / Prod'n capacity (US\$ / m <sup>3</sup> /day)	\$262	(30 / 35)
Debt servicing ratio (% of total operating revenue)		

**Financial Indicators: Annual expenses & revenue**

<u>Operating Cost Coverage</u>		<u>Expenses</u>	
Operating Cost Coverage (water sales only)	1.05	Overhead expenses / Total Operating expenses ratio	0.13
Operating Cost Coverage (total revenue)	1.4	Labour costs / Water operating expenses	0.22
		Electricity costs / Water operating expenses	0.25
		Chemical & other materials costs / Water operating expenses	0.07
		Contracted out services costs / Water operating expenses	0.00
<u>Revenue</u>		Unit water cost	(US\$ / m <sup>3</sup> of metered cons.) 0.12
Water sales revenue / Total revenue ratio	0.75		(US\$ / m <sup>3</sup> of system input) 0.06
Subsidies & Grants / Total revenue ratio	0.00		
Revenue Collection period (months)	2.69	Debt servicing ratio (% of total operating revenue)	8.0%
Unit water price - ave. (US\$ / m <sup>3</sup> of metered cons.)	0.12		

**Fixed Assets**

Corporate Fixed Assets / Total Fixed Assets	#N/A
Water system asset values	
Asset value / Total water related assets	#N/A
Asset value / Prod'n capacity (US\$ / m <sup>3</sup> /day)	262
Asset value / pipe length (US\$ / m. pipe)	55
Asset value / Customer (US\$ / conn.)	386

**System Input**

Production capacity utilization (%)	118%
Bulk water imported (% of total system input)	0%
System Input Rate (litres/person/day)	263
(m <sup>3</sup> /connection/month)	53.0
System Input / Distribution ratio (m <sup>3</sup> /day per km pipe)	247.0
System Input / Storage ratio (m <sup>3</sup> /day per m <sup>3</sup> storage)	#N/A
Supply Continuity (% customers with continuous supply)	100%
Supply Continuity (% of time water available)	100%

## Da Nang Vietnam Water Supply

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(DNWSC)

OPI Ranking = 28 / 47

**Human Resource Indicators**

<u>Human Resource Utilisation</u>		<u>Human Resource Development</u>	
Overhead staff ratio (% of total FTE staff)	31%	Staff Training participation rate (% staff)	26%
Water supply staff ratio (% of total FTE staff)	70%	Staff Training duration rate (days / staff)	2.6
Total water related staff / 1000 connections	7.00	Investment in staff training (% of direct labour costs)	11.48%
Direct water supply staff		Investment in staff training (% of total operating costs)	2.50%
Staff / 1000 connections	4.90	<u>Human Resources Costs</u>	
Staff / 1000 m <sup>3</sup> /day system input	2.80	Ave. cost of employment / staff (% of per capita GNI)	2.12
Staff / 100 km of pipework	69.10	Contracting out services / in-house Labour costs ratio	0.00

**Distribution**

Distribution / customer (m. pipe per connection)	7.0
Storage / customer (m <sup>3</sup> per connection)	#N/A
Residual Chlorine	
Sampling compliance (%)	100%
Tests passed (%)	83%
Non Revenue Water (UFW)	
% of System Input	50%
m <sup>3</sup> / km / day	124.1
m <sup>3</sup> / connection / day	0.87
NRW adjusted for continuous supply (% of System Input)	50%
Unbilled Authorized & Unauthorized Cons. (% of metered cons.)	1%
Unmetered cons. due to meter inaccuracies (% of metered cons.)	4%
Total Unmetered Consumption (% of metered cons.)	5%
Infrastructure Leakage Index [ILI]	147.60
Mains failures ratio (breaks / km pipe / year)	8.90

**Water consumption**

Bulk water exported (% of total metered cons.)	0%
Average domestic water charges (% of per capita GNI)	1%
Metered consumption rate	
- Domestic (litres/person/day)	99
- Total Cons. (litres/person/day)	131
	(m <sup>3</sup> /conn/month)
	26
Total consumption - metered & unmetered	
	(litres/person/day)
	137.00
	(m <sup>3</sup> /conn/month)
	28.00
Domestic share of total metered consumption (%)	76%
Non Domestic share of total metered consumption (%)	24%

**Demography**

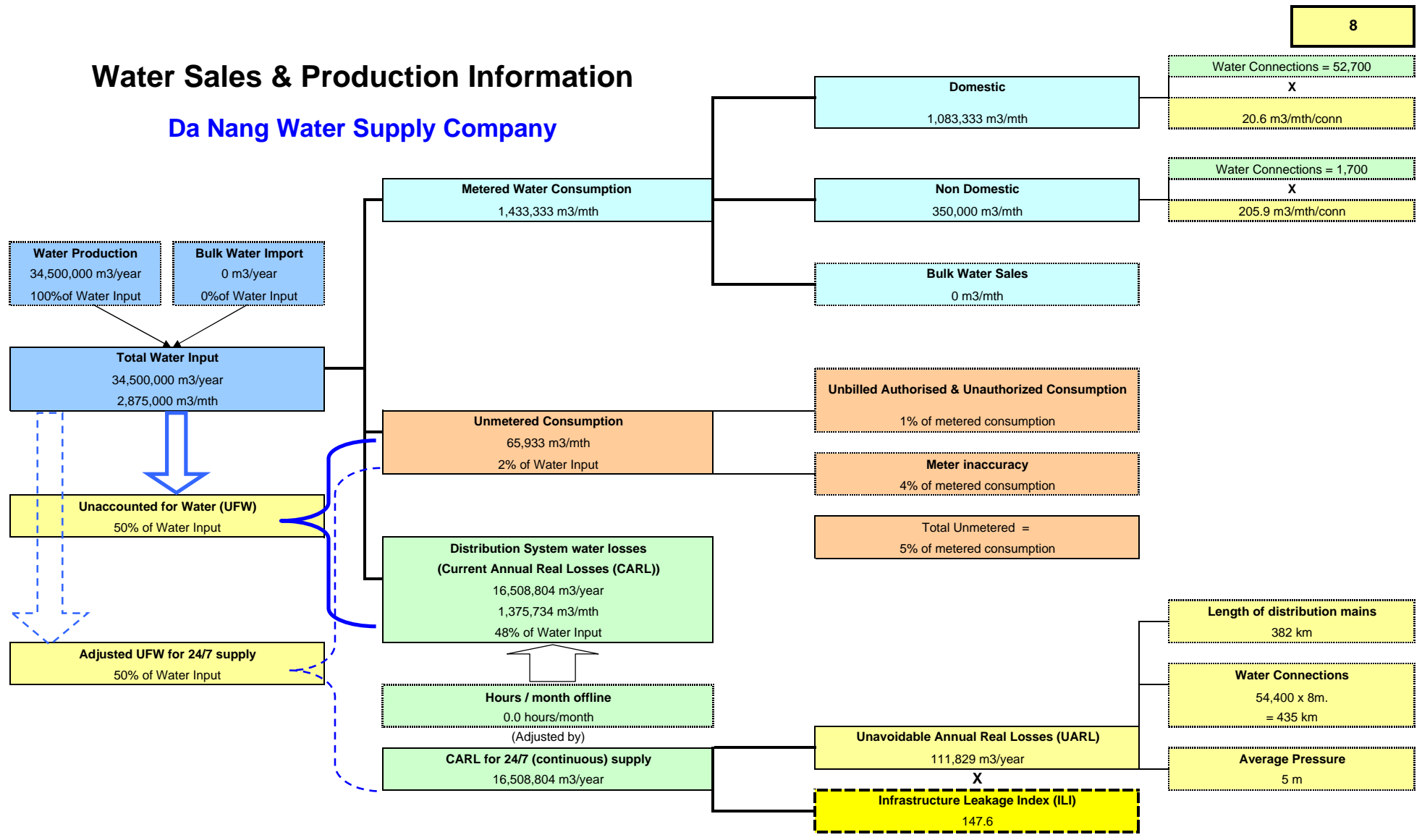
Average town / city size (persons / town)	110,333
Population density in area of responsibility (persons/sq.km)	2,878
Population density in existing service area (persons/sq.km)	2,790
Average Household size (persons / domestic connection)	7
<u>Customer Interactions</u>	
Customer complaints / 1000 connections	9

**Connections**

Service Coverage in area of responsibility (%)	54%
Service Coverage in existing service area (%)	64%
Domestic / Non-Domestic connections ratio	31.0
Domestic / Non-Domestic consumption rate ratio	3.1
New connection growth rate (% / year)	13%
New domestic connection cost (US\$ / connection)	54
New domestic connections (% of per capita GNI)	2%
Meter coverage (% with operating water meter)	99%
Billed unmetered consumption (% of metered cons.)	0%

# Water Sales & Production Information

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Water Connections = 52,700  
X  
20.6 m3/mth/conn

Water Connections = 1,700  
X  
205.9 m3/mth/conn

**Water Production**  
34,500,000 m3/year  
100% of Water Input

**Bulk Water Import**  
0 m3/year  
0% of Water Input

**Total Water Input**  
34,500,000 m3/year  
2,875,000 m3/mth

**Unaccounted for Water (UFW)**  
50% of Water Input

**Adjusted UFW for 24/7 supply**  
50% of Water Input

**Metered Water Consumption**  
1,433,333 m3/mth

**Domestic**  
1,083,333 m3/mth

**Non Domestic**  
350,000 m3/mth

**Bulk Water Sales**  
0 m3/mth

**Unmetered Consumption**  
65,933 m3/mth  
2% of Water Input

**Unbilled Authorised & Unauthorized Consumption**  
1% of metered consumption

**Meter inaccuracy**  
4% of metered consumption

**Total Unmetered =**  
5% of metered consumption

**Distribution System water losses  
(Current Annual Real Losses (CARL))**  
16,508,804 m3/year  
1,375,734 m3/mth  
48% of Water Input

**Hours / month offline**  
0.0 hours/month  
(Adjusted by)

**CARL for 24/7 (continuous) supply**  
16,508,804 m3/year

**Unavoidable Annual Real Losses (UARL)**  
111,829 m3/year

**Infrastructure Leakage Index (ILI)**  
147.6

**Length of distribution mains**  
382 km

**Water Connections**  
54,400 x 8m.  
= 435 km

**Average Pressure**  
5 m