

Water Utility: Provincial Waterworks Authority (PWA)

73 Provinces , Bangkok, Thailand

Contact Details: Assistant Governor (Corporate Affairs): Udomratanasilpa , Vichian
 Provincial Waterworks Authority; 72 Changwattana Road; Laksi , Bangkok 10210, Thailand
 Tel 1: (662) 521-3756 Tel 2: (662) 551-8404-5
 Fax: (662) 973-4808 Email: Vichianu@pwa.co.th

Services Provided: Piped water, , , ,

Utility Type: , , , State Owned Enterprise, , ,

Private Sector Involvement: , Service Contract, Management Contract, Lease Contract, , BOOT, BOT Contract,

Source of Raw Water: Bulk water from other utility, Storage reservoir/impoundment, Direct river abstraction, Groundwater,

Treatment Method: , Disinfection, Filtration, Flocculation and sedimentation, Aeration, Desalination,

Water Supply System description:

Production capacity = 2,983,000 m3/day		Distribution network = 40,000 km		Storage capacity = 1,845,800 m3	
Area (sq km)		Area of Responsibility		Present Service Area	
Population		12,000,000		12,000,000	
No. of Towns = 73		Population served = 11,000,000			
<u>No. of connections:</u>		Domestic (Households) = 1,511,667		Non Domestic = 455,625	
Typical service connection length = 15 m		Total Connections = 1,967,292		Connections with operating meter = 1,967,292	
System input volumes: Produced by W.U. = 657.0 million m3/year		Bulk water imported = 93.0 million m3/year			
Water consumption: Metered cons. = 550.0 million m3/year		% Unmetered cons. = N/A		Ave. meter inaccuracy = 0% of metered cons.	
Water Sales: Domestic = 250.0 million m3/year		Non Domestic = 298.0 million m3/year		Bulk Water sales = 2.0 million m3/year	
<u>System Performance:</u>		No. of connections with intermittent supply = N/A		Typical duration of supply = 24.0 hours / day	
Chlorine Residuals: Tests required = 109,920 / year		Tests carried out = 107,499 / year		Tests passed = 107,033 / year	
		No. of pipe breaks in distribution system = N/A		Typical water pressure in mains = 5 m.	

Human Resources (Staff)

<u>Type of employment:</u> Permanent staff: salaried Government employees, Permanent staff: with contract, , , ,			
<u>No. of staff (FTE):</u> Corporate Services = 1,677		Water Supply = 4,178	
Other = zero		Total = 5,855	
<u>Staff Training:</u> No. Trained = 3,413 / year		Training days = 12,906 / year	
		Training costs = 0.20% of total operating budget	

Customer information

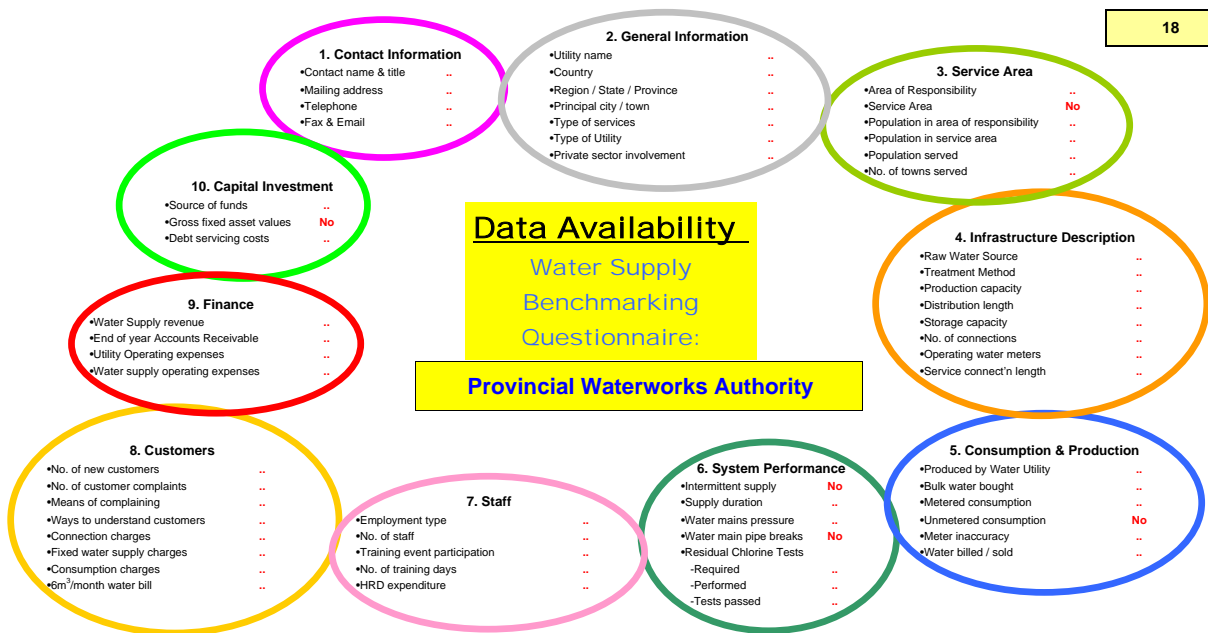
Customer interaction: New connections = 113,825 / year		Customer complaints = 70,000 / year	
Complaint method: In person, By telephone, By email, By letter,			
Understanding customers by: Customer interactions, Responding to complaints, Surveys, questionnaires, etc., Market research, Other method:			

Charges & Fees

<u>Typical connection charge:</u>		Domestic = 3,000THB / conn.		Non Domestic = N/A	
		(77 US\$ / conn.)		N/A	
<u>Fixed water charge:</u>		Domestic = 30THB / month		Non Domestic = 75THB / month	
		(1 US\$ / conn.)		(2 US\$ / conn.)	
<u>Water consumption tariff</u> (typical of all towns and in each category):		Tariff Block 1		Tariff Block 2	
		Tariff Block 3		Tariff Block 4	
Domestic	From - To (m ³)	0 - 10	10 - 20	20 - 30	>30
	Price (THB / m3)	8	9	11	14
	(US\$ / m ³)	\$0.20	\$0.22	\$0.28	\$0.36
Non Domestic	From - To (m ³)	0 - 10	10 - 20	20 - 30	>30
	Price (THB / m3)	10	12	15	17
	(US\$ / m ³)	\$0.25	\$0.32	\$0.37	\$0.45
Bulk Water	From - To (m ³)				
	Price (THB / m3)				
	(US\$ / m ³)				
		Water bill for household consuming 6 m ³ /month =		47 THB / month (1.20 US\$ / month)	

Finances

<u>Revenue:</u>					Year end Accounts
					Receivable
THB / year	Water Sales	Other water related	Subsidies & grants	Total	254,000,000
US\$ / year	\$198,948,533	\$10,494,045	zero	\$209,442,578	\$6,549,109
<u>Operating Expenses:</u>					
THB / year	Water supply	Other services	Company Overhead	Total	
US\$ / year	\$179,584,828	zero	\$20,059,870	\$199,644,698	
<u>Water Supply Operating breakup:</u>					
THB / year	Labor	Electricity	Chemicals & materials	Contracted out	Other expenses
US\$ / year	\$2,029,000,000	\$602,000,000	\$1,345,000,000	\$321,000,000	\$2,668,000,000
	\$52,315,523	\$15,521,905	\$34,679,339	\$8,276,630	\$68,791,431
<u>Investment funds source:</u> Own internal funds, Grant from Government or ODA project, , , , Private sector investment, Other method: PWA's Bond					
<u>Fixed Assets value:</u>					Debt Servicing Costs
THB	Water supply	Other services	Company Overhead	Total	6,350,000,000
US\$	\$38,776,000,000	zero	zero	\$38,776,000,000	\$163,727,732



Calculation of Overall Performance Indicator (OPI)

Customer Indicators	Value	Rank
Service Coverage in existing service area (%)	91.7%	(14 / 45)
Meter coverage (% with operating water meter)	100.0%	(1 / 46)
Customer complaints / 1000 connections	35.6	(27 / 41)

Water Supply Systems O&M	Value	Rank
Supply Continuity (% of time water available)	100.0%	(1 / 47)
Residual Chlorine tests passed (%)	99.6%	(12 / 34)
Total Unmetered Consumption (% of metered cons.)		
Infrastructure Leakage Index [ILI]	#N/A	

73 Provinces
Thailand
Water Supply
 Provincial Waterworks Authority
(PWA)
Overall Performance Indicator (OPI) = 0.18
 Number of Standardized Indicators available = 11
 Overall Ranking = (14 / 47)

Human Resource Indicators	Value	Rank
Total water related staff / 1000 connections	3	(5 / 38)
Investment in staff training (days / staff)	2.2	(8 / 33)
Ave. cost of employment / staff (% of per capita GNI)	408%	(6 / 37)

Financial Indicators	Value	Rank
Operating Cost Coverage (water sales only)	1	(31 / 43)
Unit water cost (US\$ / m ³ of system input)	\$0.27	(42 / 43)
Water system asset value / Prod'n capacity (US\$ / m ³ /day)	\$335	(31 / 35)
Debt servicing ratio (% of total operating revenue)		

Financial Indicators: Annual expenses & revenue

Operating Cost Coverage		Expenses	
Operating Cost Coverage (water sales only)	1	Overhead expenses / Total Operating expenses ratio	0.10
Operating Cost Coverage (total revenue)	1.05	Labour costs / Water operating expenses	0.29
		Electricity costs / Water operating expenses	0.09
		Chemical & other materials costs / Water operating expenses	0.19
		Contracted out services costs / Water operating expenses	0.05
Revenue		Unit water cost	(US\$ / m ³ of metered cons.) 0.36
Water sales revenue / Total revenue ratio	0.95		(US\$ / m ³ of system input) 0.27
Subsidies & Grants / Total revenue ratio	0.00		
Revenue Collection period (months)	0.40	Debt servicing ratio (% of total operating revenue)	78.2%
Unit water price - ave. (US\$ / m ³ of metered cons.)	0.36		

Fixed Assets

Corporate Fixed Assets / Total Fixed Assets	0.00
Water system asset values	
Asset value / Total water related assets	1.00
Asset value / Prod'n capacity (US\$ / m ³ /day)	335
Asset value / pipe length (US\$ / m. pipe)	25
Asset value / Customer (US\$ / conn.)	508

System Input

Production capacity utilization (%)	60%
Bulk water imported (% of total system input)	12%
System Input Rate (litres/person/day)	186
(m ³ /connection/month)	32.0
System Input / Distribution ratio (m ³ /day per km pipe)	51.0
System Input / Storage ratio (m ³ /day per m ³ storage)	1.1
Supply Continuity (% customers with continuous supply)	#N/A
Supply Continuity (% of time water available)	100%

73 Provinces Thailand Water Supply

Provincial Waterworks Authority

(PWA)

OPI Ranking = 14 / 47

Human Resource Indicators

Human Resource Utilisation		Human Resource Development	
Overhead staff ratio (% of total FTE staff)	29%	Staff Training participation rate (% staff)	58%
Water supply staff ratio (% of total FTE staff)	71%	Staff Training duration rate (days / staff)	2.2
Total water related staff / 1000 connections	3.00	Investment in staff training (% of direct labour costs)	0.69%
Direct water supply staff		Investment in staff training (% of total operating costs)	0.20%
Staff / 1000 connections	2.10	Human Resources Costs	
Staff / 1000 m ³ /day system input	2.00	Ave. cost of employment / staff (% of per capita GNI)	4.08
Staff / 100 km of pipework	10.40	Contracting out services / in-house Labour costs ratio	0.20

Distribution

Distribution / customer (m. pipe per connection)	20.3
Storage / customer (m ³ per connection)	0.90
Residual Chlorine	
Sampling compliance (%)	98%
Tests passed (%)	100%
Non Revenue Water (UFW)	
% of System Input	27%
m ³ / km / day	13.7
m ³ / connection / day	0.28
NRW adjusted for continuous supply (% of System Input)	#N/A
Unbilled Authorized & Unauthorized Cons. (% of metered cons.)	#N/A
Unmetered cons. due to meter inaccuracies (% of metered cons.)	0%
Total Unmetered Consumption (% of metered cons.)	#N/A
Infrastructure Leakage Index [ILI]	#N/A
Mains failures ratio (breaks / km pipe / year)	#N/A

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)	62
- Total Cons. (litres/person/day)	136
(m ³ /conn/month)	23
Total consumption - metered & unmetered	
(litres/person/day)	#N/A
(m ³ /conn/month)	#N/A
Domestic share of total metered consumption (%)	46%
Non Domestic share of total metered consumption (%)	54%

Demography

Average town / city size (persons / town)	164,384
Population density in area of responsibility (persons/sq.km)	24
Population density in existing service area (persons/sq.km)	#N/A
Average Household size (persons / domestic connection)	7
Customer Interactions	
Customer complaints / 1000 connections	36

Connections

Service Coverage in area of responsibility (%)	92%
Service Coverage in existing service area (%)	92%
Domestic / Non-Domestic connections ratio	3.3
Domestic / Non-Domestic consumption rate ratio	0.8
New connection growth rate (% / year)	6%
New domestic connection cost (US\$ / connection)	77
New domestic connections (% of per capita GNI)	1%
Meter coverage (% with operating water meter)	100%
Billed unmetered consumption (% of metered cons.)	0%

Water Sales & Production Information

Provincial Waterworks Authority

18

Water Production
657,000,000 m3/year
88% of Water Input

Bulk Water Import
93,000,000 m3/year
12% of Water Input

Total Water Input
750,000,000 m3/year
62,500,000 m3/mth

Unaccounted for Water (UFW)
27% of Water Input

Adjusted UFW for 24/7 supply
#N/A

Metered Water Consumption
45,833,333 m3/mth

Domestic
20,833,333 m3/mth

Non Domestic
24,833,333 m3/mth

Bulk Water Sales
166,667 m3/mth

Water Connections = 1,511,667
X
13.8 m3/mth/conn

Water Connections = 455,625
X
54.5 m3/mth/conn

Unmetered Consumption
#N/A
#N/A

Unbilled Authorised & Unauthorized Consumption
#N/A

Meter inaccuracy
0% of metered consumption

Total Unmetered =
#N/A

Distribution System water losses (Current Annual Real Losses (CARL))
#N/A
#N/A
#N/A

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

CARL for 24/7 (continuous) supply
#N/A

Unavoidable Annual Real Losses (UARL)
5,532,612 m3/year
X

Infrastructure Leakage Index (ILI)
#N/A

Length of distribution mains
40,000 km

Water Connections
1,967,292 x 15m.
= 29,509 km

Average Pressure
5 m