

**Water Utility: Phnom Penh Water Supply Authority (PPWSA)**

Phnom Penh , Phnom Penh , Cambodia

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**Services Provided:** Piped water, , , ,

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

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

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

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

**Water Supply System description:**

Production capacity = 185,000 m3/day		Distribution network = 921 km		Storage capacity = 20,000 m3	
Area of Responsibility		Present Service Area			
Area (sq km)	375	326			
Population	1,200,000	1,000,000			
No. of Towns = 1		Population served = 1,000,000			
<u>No. of connections:</u>		Domestic (Households) = 89,400		Non Domestic = 16,600	
Typical service connection length = 8 m		Connections with operating meter = 106,000		Total Connections = 106,000	
System input volumes:	Produced by W.U. = 48.0 million m3/year		Bulk water imported = zero		
Water consumption:	Metered cons. = 40.1 million m3/year		% Unmetered cons. = N/A		Ave. meter inaccuracy = N/A
Water Sales:	Domestic = 24.8 million m3/year		Non Domestic = 15.3 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	
Chlorine Residuals:		Tests required = 2,550 / year		Tests carried out = 2,500 / year	
				Tests passed = 2,400 / year	

**Human Resources (Staff)**

<u>Type of employment:</u> Permanent staff: salaried Government employees, , , , Contracted out to outside company/agency,			
<u>No. of staff (FTE):</u>	Corporate Services = 115	Water Supply = 421	Other = zero
<u>Staff Training:</u>	No. Trained = 46 / year	Training days = 6,670 / year	Training costs = 3.10% of total operating budget
Total = 536			

**Customer information**

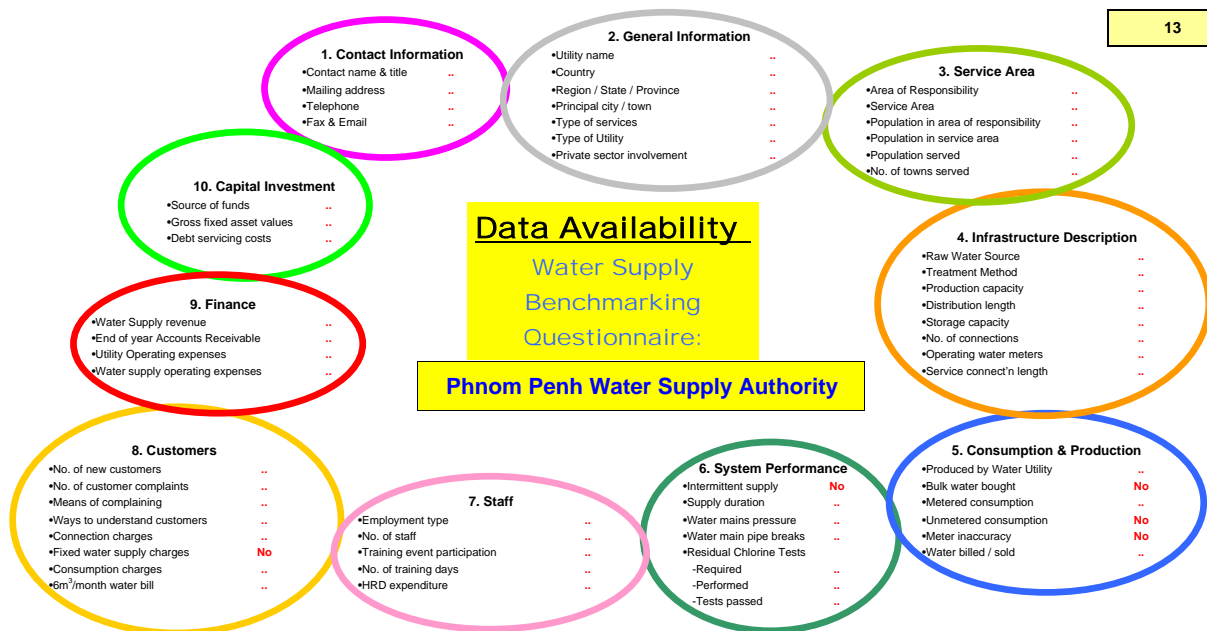
Customer interaction:	New connections = 17,142 / year	Customer complaints = 5,304 / year
Complaint method: In person, By telephone, , , Other method: by PPWSA's staff, mainly collectors		
Understanding customers by: Customer interactions, Responding to complaints, Surveys, questionnaires, etc., , Other method: Customer Education Program and Water for the Poor Program		

**Charges & Fees**

<u>Typical connection charge:</u>		Domestic = 338,400KHR / conn. (88 US\$ / conn.)		Non Domestic = 1,252,570KHR / conn. (325 US\$ / conn.)	
<u>Fixed water charge:</u>		Domestic = N/A		Non Domestic = N/A	
		N/A		N/A	
<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 <sup>3</sup> )	0 - 8	8 - 16	16 - 50	>50
	Price (KHR / m <sup>3</sup> )	550	770	1,010	1,270
	(US\$ / m <sup>3</sup> )	\$0.14	\$0.20	\$0.26	\$0.33
Non Domestic	From - To (m <sup>3</sup> )	0 - 100	100 - 200	200 - 500	>500
	Price (KHR / m <sup>3</sup> )	950	1,150	1,350	1,450
	(US\$ / m <sup>3</sup> )	\$0.25	\$0.30	\$0.35	\$0.38
Bulk Water	From - To (m <sup>3</sup> )				
	Price (KHR / m <sup>3</sup> )				
	(US\$ / m <sup>3</sup> )				
		Water bill for household consuming 6 m <sup>3</sup> /month =		3,630 KHR / month (0.94 US\$ / month)	

**Finances**

<u>Revenue:</u>	Water Sales	Other water related	Subsidies & grants	Total	Year end Accounts Receivable	
	KHR / year	47,615,000,000	9,107,000,000	zero	56,722,000,000	
	US\$ / year	\$12,367,532	\$2,365,455	zero	\$14,732,987	\$836,883
<u>Operating Expenses:</u>	Water supply	Other services	Company Overhead	Total		
	KHR / year	16,800,000,000	zero	656,000,000	17,456,000,000	
	US\$ / year	\$4,363,636	zero	\$170,390	\$4,534,026	
<u>Water Supply Operating breakup:</u>	Labor	Electricity	Chemicals & materials	Contracted out	Other expenses	
	KHR / year	3,226,000,000	5,918,000,000	827,000,000	5,753,000,000	1,076,000,000
	US\$ / year	\$837,922	\$1,537,143	\$214,805	\$1,494,286	\$279,481
<u>Investment funds source:</u> , , , Loan from ODA sources, , ,						
<u>Fixed Assets value:</u>	Water supply	Other services	Company Overhead	Total	Debt Servicing Costs	
	KHR	71,755,000,000	zero	2,800,000,000	74,555,000,000	40,009,000,000
	US\$	\$18,637,662	zero	\$727,273	\$19,364,935	\$10,391,948



## Calculation of Overall Performance Indicator (OPI)

Customer Indicators	Value	Rank
Service Coverage in existing service area (%)	100.0%	(3 / 45)
Meter coverage (% with operating water meter)	100.0%	(1 / 46)
Customer complaints / 1000 connections	50	(25 / 41)

Water Supply Systems O&M	Value	Rank
Supply Continuity (% of time water available)	100.0%	(1 / 47)
Residual Chlorine tests passed (%)	96.0%	(19 / 34)
Total Unmetered Consumption (% of metered cons.)		
Infrastructure Leakage Index [ILI]	#N/A	

**Phnom Penh  
Cambodia  
Water Supply**

Phnom Penh Water Supply Authority  
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**Overall Performance Indicator (OPI) = 1.01**  
Number of Standardized Indicators available = 11  
Overall Ranking = (1 / 47)

Human Resource Indicators	Value	Rank
Total water related staff / 1000 connections	5.1	(12 / 38)
Investment in staff training (days / staff)	12.4	(1 / 33)
Ave. cost of employment / staff (% of per capita GNI)	504%	(3 / 37)

Financial Indicators	Value	Rank
Operating Cost Coverage (water sales only)	2.73	(2 / 43)
Unit water cost (US\$ / m <sup>3</sup> of system input)	\$0.09	(14 / 43)
Water system asset value / Prod'n capacity (US\$ / m <sup>3</sup> /day)	\$101	(17 / 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)	2.73	Overhead expenses / Total Operating expenses ratio	0.04
Operating Cost Coverage (total revenue)	3.25	Labour costs / Water operating expenses	0.19
		Electricity costs / Water operating expenses	0.35
		Chemical & other materials costs / Water operating expenses	0.05
		Contracted out services costs / Water operating expenses	0.34
<u>Revenue</u>			
Water sales revenue / Total revenue ratio	0.84	Unit water cost (US\$ / m <sup>3</sup> of metered cons.)	0.11
Subsidies & Grants / Total revenue ratio	0.00	(US\$ / m <sup>3</sup> of system input)	0.09
Revenue Collection period (months)	0.81	Debt servicing ratio (% of total operating revenue)	70.5%
Unit water price - ave. (US\$ / m <sup>3</sup> of metered cons.)	0.31		

**Fixed Assets**

Corporate Fixed Assets / Total Fixed Assets	0.04
Water system asset values	
Asset value / Total water related assets	0.96
Asset value / Prod'n capacity (US\$ / m <sup>3</sup> /day)	101
Asset value / pipe length (US\$ / m. pipe)	20
Asset value / Customer (US\$ / conn.)	176

**System Input**

Production capacity utilization (%)	71%
Bulk water imported (% of total system input)	0%
System Input Rate (litres/person/day)	132
(m <sup>3</sup> /connection/month)	38.0
System Input / Distribution ratio (m <sup>3</sup> /day per km pipe)	143.0
System Input / Storage ratio (m <sup>3</sup> /day per m <sup>3</sup> storage)	6.6
Supply Continuity (% customers with continuous supply)	100%
Supply Continuity (% of time water available)	100%

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OPI Ranking = 1 / 47

**Human Resource Indicators**

<u>Human Resource Utilisation</u>		<u>Human Resource Development</u>	
Overhead staff ratio (% of total FTE staff)	22%	Staff Training participation rate (% staff)	9%
Water supply staff ratio (% of total FTE staff)	79%	Staff Training duration rate (days / staff)	12.4
Total water related staff / 1000 connections	5.10	Investment in staff training (% of direct labour costs)	16.14%
Direct water supply staff		Investment in staff training (% of total operating costs)	3.10%
Staff / 1000 connections	4.00		
Staff / 1000 m <sup>3</sup> /day system input	3.20	<u>Human Resources Costs</u>	
Staff / 100 km of pipework	45.70	Ave. cost of employment / staff (% of per capita GNI)	5.04
		Contracting out services / in-house Labour costs ratio	1.80

**Distribution**

Distribution / customer (m. pipe per connection)	8.7
Storage / customer (m <sup>3</sup> per connection)	0.20
Residual Chlorine	
Sampling compliance (%)	98%
Tests passed (%)	96%
Non Revenue Water (UFW)	
% of System Input	17%
m <sup>3</sup> / km / day	23.6
m <sup>3</sup> / connection / day	0.20
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.)	#N/A
Total Unmetered Consumption (% of metered cons.)	#N/A
Infrastructure Leakage Index [ILI]	#N/A
Mains failures ratio (breaks / km pipe / year)	0.80

**Water consumption**

Bulk water exported (% of total metered cons.)	0%
Average domestic water charges (% of per capita GNI)	3%
Metered consumption rate - Domestic (litres/person/day)	68
- Total Cons. (litres/person/day)	110
(m <sup>3</sup> /conn/month)	32
Total consumption - metered & unmetered (litres/person/day)	#N/A
(m <sup>3</sup> /conn/month)	#N/A
Domestic share of total metered consumption (%)	62%
Non Domestic share of total metered consumption (%)	38%

**Demography**

Average town / city size (persons / town)	1,200,000
Population density in area of responsibility (persons/sq.km)	3,200
Population density in existing service area (persons/sq.km)	3,067
Average Household size (persons / domestic connection)	11

**Customer Interactions**

Customer complaints / 1000 connections	50
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**Connections**

Service Coverage in area of responsibility (%)	83%
Service Coverage in existing service area (%)	100%
Domestic / Non-Domestic connections ratio	5.4
Domestic / Non-Domestic consumption rate ratio	1.6
New connection growth rate (% / year)	16%
New domestic connection cost (US\$ / connection)	88
New domestic connections (% of per capita GNI)	3%
Meter coverage (% with operating water meter)	100%
Billed unmetered consumption (% of metered cons.)	0%

# Water Sales & Production Information

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**Water Production**  
48,000,000 m3/year  
100% of Water Input

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

**Total Water Input**  
48,000,000 m3/year  
4,000,000 m3/mth

**Unaccounted for Water (UFW)**  
17% of Water Input

**Adjusted UFW for 24/7 supply**  
#N/A

**Metered Water Consumption**  
3,340,000 m3/mth

**Domestic**  
2,068,333 m3/mth

**Non Domestic**  
1,271,667 m3/mth

**Bulk Water Sales**  
0 m3/mth

Water Connections = 89,400  
X  
23.1 m3/mth/conn

Water Connections = 16,600  
X  
76.6 m3/mth/conn

**Unmetered Consumption**  
#N/A  
#N/A

**Unbilled Authorised & Unauthorized Consumption**  
#N/A

**Meter inaccuracy**  
#N/A

**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)**  
894,819 m3/year  
X

**Infrastructure Leakage Index (ILI)**  
#N/A

**Length of distribution mains**  
921 km

**Water Connections**  
106,000 x 8m.  
= 848 km

**Average Pressure**  
20 m