DATA BOOK OF
SOUTHEAST ASIAN WATER UTILITIES 2005

A partnership between
The Southeast Asian Water Utilities Network
and
Asian Development Bank

November 2007
FOREWORD

The Data Book for Southeast Asian Water Utilities 2005 follows the earlier data book with 2003 data published by the Southeast Asian Water Utilities Network (SEAWUN) with support from the Asian Development Bank. It is part of their common objectives of helping water utilities in the region to assess their performance that could lead to efforts in improving their level of performance. The indicators derived from data provided by the participating utilities when analyzed are useful tools for setting performance improvement goals and for monitoring the attainment of these goals.

The Data Book for Southeast Asian Water Utilities 2005 is a comprehensive compilation of information on the performance 40 water utilities in the Southeast Asia region. It is presented in a user friendly format to make it easier for the reader to look for information and to compare performance indicators. The book is patterned after the earlier publication of ADB’s two Water Utilities Data Books for the Asian and Pacific Region published in 1993 and 1997, and the more recent Water in Asian Cities in 2004, which were all well received by stakeholders and have served as useful reference documents. It comprises three parts. Part I is a summary of findings and brief comments thereon. Part II consists of comparison charts and tables of a number of important performance parameters. Part III gives the utility and city profiles.

Information for the Data Book was derived from questionnaires designed by ADB, adopted by SEAWUN and agreed upon and completed by the participating utilities. Much effort has gone into confirming the accuracy and consistency of information provided by the utilities. Many clarifications were sought by the project team and much data is presented with footnotes which suggest explanations for apparent discrepancies.

Funding for the preparation of the Data Book was provided through technical assistance by ADB under RETA 6325: Promoting Effective Water Management Policies and Practices (Phase 5) and implemented by SEAWUN as part of their benchmarking program. However, it may be noted that the views and analysis expressed herein do not necessarily reflect those of ADB and SEAWUN.

The Data Book was prepared in ADB’s Energy, Transport, and Water Division, Regional and Sustainable Development Department, under the overall guidance of the Water Team. The Project was executed and managed through a Project Team headed by Mr. Vu Kim Quyen, SEAWUN Executive Director, and supported by Cesar E. Yñiguez, Benchmarking Consultant, Doan Ngoc Thien, Benchmarking Coordinator, and Pham Hong Son, Computer Expert.

The challenge of achieving the Millennium Development Goal target for water supply is in providing adequate, safe, and reliable water supplies in the context of an increasing and rapid urban growth in one of the most dynamic parts of the Asian and Pacific region. We hope that this Data Book will contribute in understanding the challenge better, and in helping the stakeholders define the best ways of meeting it for Southeast Asia.

Woochong Um
Director
Energy, Transport, and Water Division
Regional and Sustainable Development Department
Asian Development Bank
ACKNOWLEDGEMENTS

The Asian Development Bank and Southeast Asian Water Utilities Network wish to thank the following water utilities for their cooperation in providing the information that made the publication of this data book possible.

<table>
<thead>
<tr>
<th>City</th>
<th>Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binh Duong</td>
<td>Binh Duong Water Supply, Sewerage &amp; Environment Limited Company</td>
</tr>
<tr>
<td>Binh Thuan</td>
<td>Binh Thuan Water Supply &amp; Sewerage Company</td>
</tr>
<tr>
<td>Can Tho</td>
<td>Can Tho Urban Water Supply &amp; Sewerage Limited Company</td>
</tr>
<tr>
<td>Dong Nai</td>
<td>Dong Nai Consultancy-Construction-Water Supply Limited Company</td>
</tr>
<tr>
<td>Dong Thap</td>
<td>Dong Thap Urban Water Supply, Sewerage &amp; Environment Limited Company</td>
</tr>
<tr>
<td>Hai Duong</td>
<td>Hai Duong Water Supply Limited Company</td>
</tr>
<tr>
<td>Hai Phong</td>
<td>Hai Phong Water Supply Company</td>
</tr>
<tr>
<td>Ho Chi Minh</td>
<td>Saigon Water Supply Corporation</td>
</tr>
<tr>
<td>Hue</td>
<td>Thua Thien Hue Water Supply &amp; Sewerage Company</td>
</tr>
<tr>
<td>Kien Giang</td>
<td>Kien Giang Urban Water Supply &amp; Sewerage Company</td>
</tr>
<tr>
<td>Ninh Thuan</td>
<td>Ninh Thuan Water Supply Company</td>
</tr>
<tr>
<td>Son La</td>
<td>Son La Water Supply Limited Company</td>
</tr>
<tr>
<td>Thanh Hoa</td>
<td>Thanh Hoa Water Supply Limited Company</td>
</tr>
<tr>
<td>Tien Giang</td>
<td>Tien Giang Urban Water Supply &amp; Sewerage Company</td>
</tr>
<tr>
<td>Tra Vinh</td>
<td>Tra Vinh Urban Water Supply &amp; Sewerage Company</td>
</tr>
<tr>
<td>Vinh Long</td>
<td>Vinh Long Water Supply Company</td>
</tr>
<tr>
<td>Vung Tau</td>
<td>Ba Ria-Vung Tau Water Supply Limited Company</td>
</tr>
<tr>
<td>Vientiane</td>
<td>Vientiane Capital Water Supply Company</td>
</tr>
<tr>
<td>Johor</td>
<td>SAJ Holdings Sdn. Bhd.</td>
</tr>
<tr>
<td>Labuan</td>
<td>Labuan Water Supply Department</td>
</tr>
<tr>
<td>Sarawak</td>
<td>JKR Water Supply Authority Sarawak</td>
</tr>
<tr>
<td>Sibu</td>
<td>Sibu Water Board</td>
</tr>
<tr>
<td>Terengganu</td>
<td>Syarikat Air Terengganu Sdn. Bhd.</td>
</tr>
<tr>
<td>Bacolod</td>
<td>Bacolod City Water District</td>
</tr>
<tr>
<td>Baliwag</td>
<td>Baliwag Water District</td>
</tr>
<tr>
<td>Location</td>
<td>District Name</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Bansalan</td>
<td>Bansalan Water District</td>
</tr>
<tr>
<td>Cabanatuan</td>
<td>Cabanatuan City Water District</td>
</tr>
<tr>
<td>Camarines</td>
<td>Camarines Norte Water District</td>
</tr>
<tr>
<td>Metro Cebu</td>
<td>Metro Cebu Water District</td>
</tr>
<tr>
<td>Dasmariñas</td>
<td>Dasmariñas Water District</td>
</tr>
<tr>
<td>Davao</td>
<td>Davao City Water District</td>
</tr>
<tr>
<td>Dipolog</td>
<td>Dipolog City Water District</td>
</tr>
<tr>
<td>Guimba</td>
<td>Guimba Water District</td>
</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>Muñoz Water District</td>
</tr>
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</tr>
<tr>
<td>Santa Rosa</td>
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</tr>
<tr>
<td>Silay</td>
<td>Silay City Water District</td>
</tr>
<tr>
<td>Tandag</td>
<td>Tandag Water District</td>
</tr>
</tbody>
</table>

Special acknowledgement is due to the following country benchmarking coordinators who collected the data from the water utilities from their countries, namely, Le Anh Dao, Pham Xuan Dung, Nguyen Thi Xuan Tho and Nguyen Dang Ninh for Vietnam; Phiangkham Srisouraj for Lao PDR; Thomas Joseph Thomas for Malaysia; and Pablito S.Paluca for the Philippines.
### Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>BACIWA</td>
<td>Bacolod City Water District</td>
</tr>
<tr>
<td>BIWASE</td>
<td>Binh Duong Water Supply, Sewerage &amp; Environment Limited Company</td>
</tr>
<tr>
<td>BOT</td>
<td>build-operate-transfer</td>
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<tr>
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</tr>
<tr>
<td>BWACO</td>
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</tr>
<tr>
<td>BWD</td>
<td>Baliwag Water District</td>
</tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>Muñoz Water District</td>
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<tr>
<td>MYR</td>
<td>Malaysian ringgit</td>
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<tr>
<td>NRW</td>
<td>non revenue water</td>
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<tr>
<td>O&amp;M</td>
<td>operation and maintenance</td>
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<tr>
<td>O&amp;M</td>
<td>operation and maintenance</td>
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<td>PHP</td>
<td>Philippine peso</td>
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</tbody>
</table>
TTHWSC  Thua Thien Hue Water Supply & Sewerage Company
TVWSC  Tra Vinh Water Supply & Sewerage Company
TWD  Tandag Water District
VLWSC  Vinh Long Water Supply Company
VND  Vietnamese dong
WSA  Water Supply Authority
WSC  Water Supply Company

**Measurement Units and Symbols**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Symbol</th>
<th>Definition</th>
</tr>
</thead>
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<td>km</td>
<td>km</td>
<td>kilometer</td>
</tr>
<tr>
<td>km²</td>
<td>km²</td>
<td>square kilometer</td>
</tr>
<tr>
<td>l/c/d or lpcd</td>
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<td>liters per capita per day</td>
</tr>
<tr>
<td>m</td>
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<td>meter</td>
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<td>m³</td>
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<td>cubic meter</td>
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<td>&quot;</td>
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<td>inch</td>
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**Currency Conversions**

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</thead>
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<td>Vietnamese dong</td>
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METHODOLOGY

The Southeast Asian Water Utilities Network (SEAWUN) Benchmarking Phase 2 Project examined the performance of water utilities in 40 urban areas in Southeast Asia with service areas ranging from one city to several towns and cities. Country benchmarking coordinators provided the necessary support for collecting the data from the utilities.

The water utilities that provided data included 36 state owned enterprises, a private corporation, a state statutory organization and 2 government departments. Of the 40 utilities that participated in the project 17 were from Vietnam, 17 from the Philippines, 5 from Malaysia and 1 from Lao PDR. Indonesian water utilities were in the midst of their own benchmarking exercise through the Indonesian Water Supply Association, PERPAMSI, and were not able to participate. Data collected through a water utility questionnaire were for the year 2005. For purposes of presentation and discussions, the name of the main city or town served by the utility is used instead of the utility name, like Johor instead SAJ Holdings Sdn. Bhd., Vung Tau instead of Ba Ria-Vung Tau Water Supply Limited Company, or Kidapawan instead of Metro Kidapawan Water District.

Performance indicators were derived using basic data provided by the utilities and following various computations using the formulas in the following sections below. Almost all the data used in comparing the indicators in the tables, graphs, charts and figures are found in each of the utility and area profiles, hence, exact values can be extracted.

Many clarifications were sought on the data provided especially for consistency between the data and indicators, so that the data finally presented is the best that could be obtained in the circumstances. Nevertheless, ADB and SEAWUN are conscious that not all the data is 100 percent reliable. There were some instances where estimates were given in the absence of available measures like cases where there are no total metering of production and consumption. This makes non revenue water or daily per capita consumption data estimates at best. If there are doubts on the reliability of some of the data presented, the reader is advised to verify the information from the utility whose contact details are provided in the utility profile.

The information presented in this book was either taken from the water utility questionnaire or was based on computations using data from the questionnaire. The formulas used for the computations are shown below.

1. Water supply coverage (%) = [population served] x 100 / [total population in the present service area]

2. Per capita consumption (l/c/d) = [total annual domestic consumption (m³) x 1,000/365] / [number of people served]

3. Production/population (m³/d/c) = [annual production volume (m³) /365] / [number of people served]

4. Non revenue water (%) = [total annual production (m³) - total billed consumption (m³)] x 100/[total annual production (m³)]

5. Average tariff (US$/m³) = [total annual billing (US$)] / [total annual consumption (m³)]

6. Unit production cost (US$/m³) = [annual O&M cost (US$)] / [total annual production (m³)]

7. Operating ratio = [annual O&M cost (US$)] / [annual revenue (US$)]

8. Collection efficiency (%) = [total annual collections (US$) / total annual billings (US$)] x 100
9. Accounts receivable (months equivalent)  
   = [accounts receivable at end of the fiscal year] / [total annual billings/12]

10. Staff/1,000 connections ratio  
    = [number of utility staff] / [number of utility connections/1,000]

11. Capital expenditure/connection (US$)  
    = [total capital expenditure over the last 5 years (US$) / 5] / [number of utility connections]

Some utilities may have a collection efficiency higher than 100%. This may indicate that total collections for the period included payment of bills for the previous period.
(Reserved for Map of Southeast Asia)
DATA BOOK of SOUTHEAST ASIAN WATER UTILITIES 2005

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>iv</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>vi</td>
</tr>
<tr>
<td>Methodology</td>
<td>viii</td>
</tr>
<tr>
<td>Map</td>
<td>x</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>xi</td>
</tr>
<tr>
<td>List of Tables and Figures</td>
<td>xiv</td>
</tr>
<tr>
<td><strong>PART I – SUMMARY OF FINDINGS</strong></td>
<td>1</td>
</tr>
<tr>
<td>Summary of Results for 40 Utilities</td>
<td>2</td>
</tr>
<tr>
<td>Comment and Analysis by Utility</td>
<td>4</td>
</tr>
<tr>
<td>Comment and Analysis by Indicator</td>
<td>11</td>
</tr>
<tr>
<td>General Conclusions</td>
<td>12</td>
</tr>
<tr>
<td><strong>PART II – UTILITIES COMPARISONS (Figures and Tables)</strong></td>
<td>15</td>
</tr>
<tr>
<td><strong>Institutions</strong></td>
<td></td>
</tr>
<tr>
<td>Names and Locations of Utilities</td>
<td>17</td>
</tr>
<tr>
<td>Size of Utility</td>
<td>18</td>
</tr>
<tr>
<td>Type of Water Utility</td>
<td>19</td>
</tr>
<tr>
<td>Capital Expenditure per Connection</td>
<td>20</td>
</tr>
<tr>
<td><strong>Production</strong></td>
<td></td>
</tr>
<tr>
<td>Production Volume</td>
<td>21</td>
</tr>
<tr>
<td>Storage Capacity</td>
<td>22</td>
</tr>
<tr>
<td>Production Metering</td>
<td>23</td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td></td>
</tr>
<tr>
<td>Water Coverage</td>
<td>24</td>
</tr>
<tr>
<td>Water Availability</td>
<td>25</td>
</tr>
<tr>
<td>Water Use</td>
<td>26</td>
</tr>
<tr>
<td>Per Capita Consumption</td>
<td>27</td>
</tr>
<tr>
<td>Household Monthly Consumption</td>
<td>28</td>
</tr>
<tr>
<td>Household Monthly Bill</td>
<td>29</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td></td>
</tr>
<tr>
<td>Non Revenue Water</td>
<td>30</td>
</tr>
<tr>
<td>Consumer Metering</td>
<td>31</td>
</tr>
<tr>
<td>Staff per 1,000 Connections</td>
<td>32</td>
</tr>
<tr>
<td>Average Tariff</td>
<td>33</td>
</tr>
<tr>
<td>Unit Production Cost</td>
<td>34</td>
</tr>
<tr>
<td>Management Salaries</td>
<td>35</td>
</tr>
<tr>
<td>Connection Fee for House Connection</td>
<td>36</td>
</tr>
<tr>
<td>Priority Needs of Utility</td>
<td>37</td>
</tr>
</tbody>
</table>
Tariffs

Domestic Tariff Structures - Group 1 (Ho Chi Minh, Dong Nai, Ninh Thuan, Dong Thap) 38
Domestic Tariff Structures - Group 2 (Hai Duong, Hue, Kien Giang, Thanh Hoa) 38
Domestic Tariff Structures - Group 3 (Hai Phong, Tien Giang, Vinh Long, Binh Duong) 39
Domestic Tariff Structures - Group 4 (Can Tho, Tra Vinh, Son La, Vientiane) 39
Domestic Tariff Structures - Group 5 (Binh Thuan, Vung Tau, Labuan, Sarawak) 40
Domestic Tariff Structures - Group 6 (Mabalacat, Johor, Sibu, Terengganu) 40
Domestic Tariff Structures - Group 7 (Metro Cebu, Silay, Dipolog, San Jose DM) 41
Domestic Tariff Structures - Group 8 (Kidapawan, Santa Rosa, Camarines, Dasmariñas) 41
Domestic Tariff Structures - Group 9 (Bansalan, Tandag, Bacolod, Guimba) 42
Domestic Tariff Structures - Group 10 (Muñoz, Davao, Baliwag, Cabanatuan) 42
Operating Ratio 43
Accounts Receivable 44
Collection Efficiency 45

Operation and Maintenance

Annual Operation and Maintenance Costs 46
O&M Cost Components 47
Leaks Repaired 48
Meters Replaced 49
Water Quality Sampling 50
Complaints Received 51
New Connections 52

PART III - WATER UTILITY AND AREA PROFILES 53

Binh Duong
Binh Duong Water Supply, Sewerage & Environment Limited Company 54

Binh Thuan
Binh Thuan Water Supply & Sewerage Company 56

Can Tho
Can Tho Urban Water Supply & Sewerage Limited Company 58

Dong Nai
Dong Nai Consultancy-Construction-Water Supply Limited Company 60

Dong Thap
Dong Thap Urban Water Supply, Sewerage & Environment Limited Company 62

Hai Duong
Hai Duong Water Supply Limited Company 64

Hai Phong
Hai Phong Water Supply Company 66

Ho Chi Minh
Saigon Water Supply Corporation 68

Hue
Thua Thien Hue Water Supply & Sewerage Company 70
Kien Giang
  Kien Giang Urban Water Supply & Sewerage Company 72

Ninh Thuan
  Ninh Thuan Water Supply Company 74

Son La
  Son La Water Supply Limited Company 76

Thanh Hoa
  Thanh Hoa Water Supply Limited Company 78

Tien Giang
  Tien Giang Urban Water Supply & Sewerage Company 80

Tra Vinh
  Tra Vinh Urban Water Supply & Sewerage Company 82

Vinh Long
  Vinh Long Water Supply Company 84

Vung Tau
  Ba Ria-Vung Tau Water Supply Limited Company 86

Vientiane
  Vientiane Capital Water Supply Company 88

Johor
  SAJ Holdings Sdn. Bhd. 90

Labuan
  Labuan Water Supply Department 92

Sarawak
  JKR Water Supply Authority Sarawak 94

Sibu
  Sibu Water Board 96

Terengganu
  Syarikat Air Terengganu Sdn. Bhd. 98

Bacolod
  Bacolod City Water District 100

Baliwag
  Baliwag Water District 102

Bansalan
  Bansalan Water District 104

Cabanatuan
  Cabanatuan City Water District 106
Camarines
    Camarines Norte Water District 108

Metro Cebu
    Metro Cebu Water District 110

Dasmariñas
    Dasmariñas Water District 112

Davao
    Davao City Water District 114

Dipolog
    Dipolog City Water District 116

Guimba
    Guimba Water District 118

Kidapawan
    Metro Kidapawan Water District 120

Mabalacat
    Mabalacat Water District 122

Muñoz
    Muñoz Water District 124

San Jose del Monte
    San Jose del Monte City Water District 126

Santa Rosa
    Santa Rosa (NE) Water District 128

Silay
    Silay City Water District 130

Tandag
    Tandag Water District 132

TABLES

<table>
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<tr>
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<tbody>
<tr>
<td>1</td>
<td>Summary of Results</td>
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<tr>
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<td>Size of Utility</td>
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</tr>
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<td>Type of Water Utility</td>
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<td>Water Coverage</td>
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<tr>
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PART I

SUMMARY OF FINDINGS
### TABLE 1a: SUMMARY OF RESULTS FOR 40 UTILITIES

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<th>Binh Tuan</th>
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<th>Hai Phong</th>
<th>Ho Chi Minh</th>
<th>Hue</th>
<th>Kien Giang</th>
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### TABLE 1b - SUMMARY OF RESULTS FOR 40 UTILITIES

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<th>Tien Giang</th>
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<th>Vinh Long</th>
<th>Vung Tau</th>
<th>Vientiane</th>
<th>Johor</th>
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### TABLE 1c: SUMMARY OF RESULTS FOR 40 UTILITIES

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<th>Cabanaian</th>
<th>Camarines</th>
<th>Cebu</th>
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<td>8.0</td>
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<td>7.2</td>
</tr>
</tbody>
</table>

### TABLE 1d - SUMMARY OF RESULTS FOR 40 UTILITIES

<table>
<thead>
<tr>
<th>Utilities</th>
<th>Davao</th>
<th>Dipolog</th>
<th>Guimba</th>
<th>Kidapawan</th>
<th>Mabala cat</th>
<th>Munoz</th>
<th>San Jose DM</th>
<th>Santa Rosa</th>
<th>Silay</th>
<th>Tandag</th>
<th>Average (40 WUs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Coverage (%)</td>
<td>73.7</td>
<td>46.6</td>
<td>45.3</td>
<td>54.9</td>
<td>58.8</td>
<td>100.0</td>
<td>100.0</td>
<td>82.4</td>
<td>100.0</td>
<td>78.9</td>
<td>74.9</td>
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<tr>
<td>Water Availability (hours)</td>
<td>24.0</td>
<td>24.0</td>
<td>24.0</td>
<td>24.0</td>
<td>24.0</td>
<td>24.0</td>
<td>24.0</td>
<td>24.0</td>
<td>24.0</td>
<td>24.0</td>
<td>22.9</td>
</tr>
<tr>
<td>Consumption/Capita (l/c/d)</td>
<td>161</td>
<td>94</td>
<td>81</td>
<td>97</td>
<td>115</td>
<td>101</td>
<td>86</td>
<td>100</td>
<td>78</td>
<td>52</td>
<td>106.5</td>
</tr>
<tr>
<td>Production/Population (m³/d/c)</td>
<td>0.226</td>
<td>0.235</td>
<td>0.239</td>
<td>0.244</td>
<td>0.245</td>
<td>0.252</td>
<td>0.255</td>
<td>0.256</td>
<td>0.252</td>
<td>0.242</td>
<td>0.224</td>
</tr>
<tr>
<td>Non Revenue Water (%)</td>
<td>31.8</td>
<td>21.2</td>
<td>19.4</td>
<td>28.3</td>
<td>18.1</td>
<td>15.7</td>
<td>27.9</td>
<td>10.2</td>
<td>41.2</td>
<td>19.7</td>
<td>27.8</td>
</tr>
<tr>
<td>Connections Metered (%)</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>99.4</td>
</tr>
<tr>
<td>Operating Ratio</td>
<td>0.87</td>
<td>0.66</td>
<td>1.13</td>
<td>1.02</td>
<td>0.81</td>
<td>0.83</td>
<td>0.67</td>
<td>0.69</td>
<td>0.65</td>
<td>0.69</td>
<td>0.84</td>
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<tr>
<td>Accounts Receivable (months)</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.3</td>
<td>2.6</td>
<td>0.8</td>
<td>1.5</td>
<td>0.4</td>
<td>1.3</td>
<td>1.2</td>
<td>0.9</td>
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<tr>
<td>Revenue Collection Efficiency (%)</td>
<td>109</td>
<td>97</td>
<td>110</td>
<td>98</td>
<td>106</td>
<td>105</td>
<td>108</td>
<td>109</td>
<td>105</td>
<td>123</td>
<td>118.1</td>
</tr>
<tr>
<td>Average Tariff (US$/m³)</td>
<td>0.27</td>
<td>0.50</td>
<td>0.53</td>
<td>0.51</td>
<td>0.34</td>
<td>0.41</td>
<td>0.51</td>
<td>0.35</td>
<td>0.56</td>
<td>0.48</td>
<td>0.31</td>
</tr>
<tr>
<td>New Connection Fee (US$)</td>
<td>33.33</td>
<td>38.89</td>
<td>53.33</td>
<td>33.33</td>
<td>55.56</td>
<td>47.78</td>
<td>77.78</td>
<td>26.56</td>
<td>63.33</td>
<td>55.56</td>
<td>59.99</td>
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<tr>
<td>Capital Expenditure/Connection (US$)</td>
<td>15.99</td>
<td>14.29</td>
<td>106.38</td>
<td>8.92</td>
<td>20.66</td>
<td>13.93</td>
<td>9.10</td>
<td>35.88</td>
<td>53.71</td>
<td>44.39</td>
<td>44.39</td>
</tr>
<tr>
<td>Staff/1000 Connections (ratio)</td>
<td>6.5</td>
<td>3.4</td>
<td>10.2</td>
<td>5.7</td>
<td>5.9</td>
<td>7.6</td>
<td>4.7</td>
<td>8.4</td>
<td>10.4</td>
<td>5.9</td>
<td>7.2</td>
</tr>
</tbody>
</table>

Summary of Results for 40 Utilities
COMMENT AND ANALYSIS BY UTILITY

Binh Duong

*Binh Duong Water Supply, Sewerage & Environment Limited Company* provides water at 63 lpcd to its consumers at an average of 24 hours per day. It provides piped supply to only 55.2% of the population in its service area. NRW is good at 19.9%, better than the average. Production and all service connections are fully metered. While operating ratio looks very good at 0.18 the operating cost items obviously is incomplete. Accounts receivable was given as nil giving the impression that bill payments are all collected in time. Average tariff at VND3,709/m³ (US$0.23/m³) is lower than the average of US$0.31. Staff/1000 connections ratio is very good at 2.3, the second lowest among the utilities. BIWASE rates low in customer satisfaction and will need to increase coverage and provide more water to its consumers. Financial figures will have to be taken with caution with the seemingly incomplete information on O&M costs.

Binh Thuan

*Binh Thuan Water Supply & Sewerage Company* provides water at 57 lpcd to its consumers at an average of 23 hours per day. It provides services to only 66.7% of the population in its service area. NRW at 26.3% is better than the average among the utilities. While production is fully metered, only 98.9% of service connections have functioning meters. Operating ratio of 0.9 is acceptable but could still be lowered. Accounts receivable was given as nil indicating that all payments are collected in time. Average tariff is reasonable at VND3,528/m³ (US$0.22/m³) but barely enough to cover operating costs. BTWASECO has to improve on customer satisfaction by increasing the amount of water supplied to its customers and expanding its customer base. It also needs to meter all service connections to have a better assessment of its total consumption, losses and billing.

Can Tho

*Can Tho Urban Water Supply & Sewerage Limited Company* provides water at 157 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 90.1% of the population in its service area. NRW is high at 44.4%, the second highest after Tien Giang. Production and all service connections are fully metered. Financial management is good with an operating ratio of 0.34 despite a very low average tariff. Accounts receivable is reported as nil indicating that bill payments are all made in time. Average tariff at VND2,636/m³ (US$0.16/m³) is the third lowest. Staff/1000 connections ratio is just above average at 7.5. While the CTWSSC is doing well in customer satisfaction and financial management, it has to reduce NRW to further expand its coverage. It also needs to enhance staff productivity.

Dong Nai

*Dong Nai Consultancy-Construction-Water Supply Limited Company* provides water at 62 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to only 59.6% of the population in its service area. NRW is above the average at 29.1%. Both production and all service connections are fully metered. Operating ratio is good at 0.63, the fifth lowest. Accounts receivable is 1.1 months, just above the average but still reasonable. Average tariff at VND3,884/m³ (US$0.24/m³) is lower than average and enough to cover operating expenses well. While the DNCCWSC is doing well in financial management, it has to provide more water to its customers and expand coverage to unserved households. Another area for improvement is further reduction of its NRW.

Dong Thap

*Dong Thap Urban Water Supply, Sewerage & Environment Limited Company* provides water at 99 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to only 73% of the population in its service area. NRW is above the average among the utilities at 29.8%. Production and all service connections are fully metered. Operating ratio is reasonable at 0.87 although a bit higher than the average. Accounts receivable equivalent is 0.8 month, just below the average and still reasonable. Average tariff at VND2,718/m³ (US$0.17/m³) is the fourth lowest but it is enough to cover operating expenses. Staff/1000 connections ratio is second highest at 11.5. While the DOWASEA is doing quite well it has to improve on its staff productivity. It may also need to provide more water to its customers and expand coverage to unserved households. NRW could also be further reduced as well as improve operating ratio to about 0.75 or lower.

Hai Duong

*Hai Duong Water Supply Limited Company* provides water at 75 lpcd to its consumers at an average of only 16 hours per day. It provides piped water supply to 84.1% of the population in its service area. NRW is just about the average at 27.3%. Production and all service connections are fully metered. Operating ratio is still acceptable at 0.99 although much higher than the average. Accounts receivable is nil indicating that bill payments are being
Hai Phong

Hai Phong Water Supply Company provides water at 99 lpcd to its consumers at an average of only 22 hours per day. It provides piped water supply to 94.6% of the population in its service area. NRW is reasonable at 22% but can still be lowered. Production is fully metered but no data was available on consumption metering. Operating ratio is the seventh highest at 1.01. Accounts receivable data was not available. Average tariff at VND3,232/m³ (US$0.20/m³) is lower than average and is not enough to cover operating expenses. Staff/1000 connections ratio is lower than average at 5.2. HPWSCO needs to improve on water availability and the amount available to the consumers. It has to improve on its revenues and collection to cover operating expenses.

Ho Chi Minh

Saigon Water Supply Corporation provides water at 113 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 72.9% of the population in its service area. NRW is third highest at 42.8%. Production and all service connections are fully metered. Operating ratio is acceptable at 0.97. Accounts receivable equivalent is good at 0.5 month. Average tariff at VND4,529/m³ (US$0.28/m³) is lower than average but is not enough to cover operating expenses. Staff/1000 connections ratio is lower than average at 5.3. SAWACO needs to reduce its high NRW. Other areas for improvement are reduction of NRW and operating ratio to about 0.75.

Hue

Thua Thien Hue Water Supply & Sewerage Company provides water at 64 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to only 52% of the population in its service area. NRW is good at 15% being the second lowest. Production and all service connections are fully metered. Operating ratio is very good at 0.47. Accounts receivable equivalent is above average at 1.2 months. Average tariff at VND3,165/m³ (US$0.20/m³) is ninth lowest but is enough to cover operating expenses with its low NRW. Staff/1000 connections ratio is higher than average at 8.2. TTHWSC needs to provide more water to its consumers and expand coverage to unserved households. Staff productivity can also be improved as well as its collection efforts by getting consumers to pay on time.

Kien Giang

Kien Giang Urban Water Supply & Sewerage Company provides water at 97 lpcd to its consumers at an average of only 20 hours per day. It provides piped water supply to only 72.5% of the population in its service area. NRW is just about average at 27.4%. While production is fully metered, only 98% of service connections are metered. Operating ratio is acceptable at 0.83. Accounts receivable equivalent is eighth highest at 1.6 months. Average tariff at VND3,327/m³ (US$0.21/m³) is low but it is still enough to cover operating expenses. Staff/1000 connections ratio is eighth highest at 10.3. KGWSC needs to improve on staff productivity and on collecting bill payments on time. It should also improve water availability to 24 hours and expand service to unserved households. Other areas for improvement are reduction of NRW and operating ratio to about 0.75.

Ninh Thuan

Ninh Thuan Water Supply Company provides water at only 37 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 80% of the population in its service area. NRW is lower than average at 24.6%. Production and all service connections are fully metered. Operating ratio is still acceptable at 0.95. Accounts receivable equivalent is nil. Average tariff at VND3,821/m³ (US$0.24/m³) is low but it is still enough to cover operating expenses. Staff/1000 connections ratio is third highest at 11.1. NTWSC needs to increase the amount of water available to its consumers and to expand its coverage. Staff productivity is a major area of concern needing improvement. Other areas for improvement are further reduction of NRW and operating ratio.

Son La

Son La Water Supply Limited Company provides water at only 98 lpcd to its consumers at an average of only 18 hours per day. It provides piped water supply to 92.7% of the population in its service area. NRW is fifth lowest at 17.7%. Production and all service connections are fully metered. Operating ratio at 0.99 is just enough for revenues to cover operating expenses. Accounts receivable equivalent is nil with bill payments paid on time. Average tariff is fourth lowest at VND2,830/m³ (US$0.17/m³) but it is still enough to cover operating expenses with its low NRW. Staff/1000 connections ratio is reasonable at 10.4. HDWSC needs to improve water availability in terms of hours and the amount available to the consumers. It also needs to improve staff productivity. Other areas for improvement are reduction of NRW and operating ratio to about 0.75 or lower.
connections ratio at 8.3 is higher than average. SOWA needs to improve on water availability in terms of hours per day and amount of water delivered per capita. Possible tariff increase may be considered to improve its finances and to bring down operating ratio to about 0.75. Staff productivity may also need some improvement.

Thanh Hoa

Thanh Hoa Water Supply Company provides water at only 76 lpcd to its consumers at an average of 20 hours per day. It provides piped water supply to 62% of the population in its service area. NRW is above average at 31.1%. Production and all service connections are fully metered. Operating ratio at 1.31 is third highest. Accounts receivable equivalent is almost nil with most bill payments paid on time. Average tariff is quite low at VND2,867/m³ (US$0.18/m³) and is not enough to cover operating expenses. Staff/1000 connections ratio at 10.6 is fifth highest. THWSC needs to improve on water availability in terms of hours per day, amount of water delivered per capita and increase in coverage. Staff productivity also needs to be improved. Tariff adjustment may be considered to improve its finances and bring down operating ratio to about 0.75 or lower.

Tien Giang

Tien Giang Urban Water Supply & Sewerage Company provides water at only 76 lpcd to its consumers at an average of 20 hours per day. It provides piped water supply to 40.7% of the population in its service area, the second lowest. NRW is the highest at 48.8%. Production and all service connections are fully metered. Operating ratio at 0.63 is good and fifth lowest. Accounts receivable equivalent is nil with bill payments paid on time. Average tariff is fourth lowest at VND2,867/m³ (US$0.18/m³) but is still enough to cover its low operating expenses well. Staff/1000 connections ratio at 5.8 is lower than average. TGWSC needs to increase its coverage to unserved households in its service area as well as increase the amount of water provided per capita. Tariff adjustment can be considered to help finance expansion of the distribution system.

Tra Vinh

Tra Vinh Water Supply & Sewerage Company provides water at only 49 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to only 64.5% of the population in its service area. NRW is eighth highest at 38.1%. Production and all service connections are fully metered. Operating ratio at 0.91 is still acceptable. Accounts receivable equivalent is nil with bill payments paid on time. Average tariff is second lowest at VND2,315/m³ (US$0.14/m³) but is still enough to cover its operating expenses. Staff/1000 connections ratio at 9.7 is above average and quite high. TVWSC needs to address the very low per capita consumption and low coverage. It needs to develop new sources and reduce NRW. Tariff adjustment can be considered to help finance capital development costs and to improve its operating ratio to about 0.75 or lower. Staff productivity may also need some improvement.

Vinh Long

Vinh Long Water Supply Company provides water at 94 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 89.7% of the population in its service area. NRW is just about average at 27.5%. Production and all service connections are fully metered. Operating ratio at 0.85 is acceptable. Accounts receivable equivalent is good at 0.6 month. Average tariff is seventh lowest at VND2,924/m³ (US$0.18/m³) but is still enough to cover its operating expenses. Staff/1000 connections ratio at 11.0 is fourth highest. VLWSC is doing quite well except for its staff ratio requiring staff productivity enhancement. NRW may also be reduced. Other areas that may be further improved are reduction of operating ratio to about 0.75 and getting more water available to consumers and further expansion to unserved areas.

Vung Tau

Ba Ria-Vung Tau Water Supply Limited Company provides water at 138 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 84.9% of the population in its service area. NRW is good at 15.4%, the third lowest. Production is fully metered but service connections are only 90% metered. Operating ratio at 0.46 is very good and the third lowest. Accounts receivable equivalent is nil. Average tariff at VND3,721/m³ (US$0.23/m³) is more than enough to cover its operating expenses. Staff/1000 connections ratio at 4.2 is sixth lowest. BWACO is doing very well in financial management, human and water resources management as well. However, it needs full metering of its service connections to properly determine consumption and NRW. It also needs to extend water supply services to the unserved households in its service area.

Vientiane

Vientiane Capital Water Supply Company provides water at 197 lpcd to its consumers at an average of 24 hours per day. However, coverage is only 56.3% of the population in
its service area. NRW is just about the average among the utilities at 27.7%. Production and all service connections are fully metered. Operating ratio of 0.93 shows that O&M costs are barely covered by revenues. Accounts receivable information was not provided though. Average tariff is the lowest at LAK890/m³ (US$0.09/m³). Staff/1000 connections ratio is higher than average at 8.0. While the utility is able to deliver water 24 hours per day, the utility needs to increase its coverage with the development of new sources and reduction of NRW. The very low tariff needs to be reviewed to improve financial management. Consumers also tend to unnecessarily consume more water because of cheap water.

**Johor**

**Saj Holdings Sdn. Bhd.** provides water at 191 lpcd to its consumers at an average of 24 hours per day. It is able to deliver to all of the population in its service area. NRW is quite high at 37.4%, much higher than the average of 27.8%. Production and all service connections are fully metered. Operating ratio is good at 0.71 but accounts receivable equivalent of 1.3 months needs to be addressed. Average tariff is high at MYR1.54/m³ (US$0.45/m³) and revenues cover O&M expenses. SAJH has the most productive staff with the lowest staff/1000 connections ratio of 2.1. While the utility is doing well, it has to address its high NRW and improve collection efficiency. It may also be useful to promote more prudent use of water among its consumers.

**Labuan**

**Labuan Water Supply Department** provides water at 230 lpcd to its consumers at an average of 24 hours per day. It is able to deliver piped water to all of the population in its service area. NRW is reasonable at 24.1%, better than the average of 27.8%. Production and all service connections are fully metered. Financial management needs improvement with its operating ratio of 1.97, the highest among the utilities. The utility also has the fourth longest collection period with an accounts receivable equivalent of 2.0 months. Average tariff is quite low at MYR0.89/m³ (US$0.26/m³) which may be one reason why consumption per capita is the highest in the region. JBA Labuan also has the highest staff/1000 connections ratio at 12.6 which requires staff productivity improvement. The utility may have to review its expenses especially the cost of raw water. The high per capita consumption is also an area for concern so as to conserve water among the consumers. It also has to improve its collections to get payments in time.

**Sarawak**

**JKR Water Supply Authority Sarawak** provides water at 123 lpcd to its consumers at an average of 24 hours per day. It is able to deliver piped water to all of the urban population in its service area. The utility has the fourth highest NRW at 42%. Production and all service connections are fully metered. It is second to Labuan with its high operating ratio of 1.32. Accounts receivable information was not provided though. There are difficulties in getting information from all the 89 water supply authorities under the department. Average tariff is seventh lowest at MYR0.61/m³ (US$0.18). Staff/1000 connections ratio is higher than the average at 8.4. JKR WSA Sarawak will need to reduce its NRW, improve its finances by being more cost effective and consider increasing its tariff, and improving staff productivity.

**Sibu**

**Sibu Water Board** provides water at 178 lpcd to its consumers at an average of 24 hours per day. It is able to provide piped water supply to all of the population in its service area. NRW is about a little lower than average at 27.1%. Production and all service connections are fully metered. Financial management needs improvement with an operating ratio of 1.03, the fifth highest, and accounts receivable equivalent of 2.2 months, the second longest. Average tariff is lower than the average at MYR0.81/m³ (US$0.23). Staff/1000 connections ratio is good at 4.1, the fifth lowest. SWB is doing well except for financial management. Its lower than average tariff, however, allows consumers to use more water than probably is necessary. NRW management is another area for improvement.

**Terengganu**

**Syarikat Air Terengganu Sdn. Bhd.** provides water at 187 lpcd to its consumers at an average of 24 hours per day. It covers all of the population in its service area. NRW is quite high at 39.3%. Production and all service connections are fully metered. Operating ratio of 0.99 indicates that revenues are just enough to cover operating expenses. Accounts receivable equivalent of 1.9 months is fifth highest. Average tariff of MYR0.80/m³ (US$0.23) is lower than the average of US$0.31. Staff/1000 connections ratio is very good at 2.4, the third lowest. SATU needs to reduce its high NRW and promote prudent use of water among its consumers. It should reduce its operating ratio to about 0.75 or lower and improve on its collection by collecting payments on time.
**Bacolod**

*Bacolod City Water District* provides water at 133 lpcd to its consumers at an average of only 10 hours per day. Only 46% of the population in its service area are served. NRW of 40% is sixth highest among the utilities. Production is not fully metered and only 91% of service connections are metered. Operating ratio of 0.86 is about average while accounts receivable equivalent of 1.2 months is reasonable. Average tariff is third highest at PHP23.17/m³ (US$0.51/m³) which allows the utility to cover all its operating expenses. Staff/1000 connections ratio at 9.1 is higher than the average. The utility needs to reduce its NRW which can help improve water availability and increase coverage. Production and consumption should be fully metered. Staff productivity is another area improvement.

**Baliwag**

*Baliwag Water District* provides water at 86 lpcd to its consumers at an average of 24 hours per day. It covers 99% of the population in its service area. NRW at 24% is better than average. Production and consumption are fully metered. Financial management is very good with an operating ratio of 0.72 and a good collection system where all consumers pay on time. Average tariff is lower than average at PHP13.10/m³ (US$0.29/m³) but still allows the utility to cover all its operating expenses well. Staff/1000 connections ratio is good at 4.3 which is seventh lowest in the region. BWD is a well run utility but it can still improve by providing more water to its consumers. The utility needs to develop additional water sources and production facilities coupled with further NRW reduction.

**Bansalan**

*Bansalan Water District* provides water at 79 lpcd to its consumers at an average of 24 hours per day. It covers only 63.7% of the population in its service area. NRW at 33.1% is the tenth highest. While all service connections are metered, production is not metered at all. Operating ratio of 0.92 is above average and it takes about 1.9 months to collect bill payments which is sixth longest. Average tariff at PHP20.80/m³ (US$0.46/m³) is ninth highest. It allows the utility to cover all its operating expenses. Staff/1000 connections ratio of 7.0 is just about average among the utilities. BWD needs to provide more water to its consumers, increase coverage by developing additional sources and reducing its NRW, meter its production, and improve collection.

**Cabanatuan**

*Cabanatuan City Water District* provides water at 157 lpcd to its consumers at an average of 24 hours per day. It covers 72.7% of the population in its service area. NRW is seventh lowest at 19.2%. Production and service connections are fully metered. Financial management is mixed with an operating ratio of 0.63, the sixth lowest, and an average collection period of 1.9 months for bill payments, the fifth longest. Average tariff is just above average at PHP16.13/m³ (US$0.36/m³) but it still allows the utility to cover all its operating expenses well. Staff/1000 connections ratio is average and the median value at 7.1. CCWD is doing well in managing its NRW and finances except collection. It needs to improve coverage in its service area by developing new sources and advocating for prudent use of water among its consumers. It can still improve on staff productivity.

**Camarines Norte**

*Camarines Norte Water District* provides water at 89 lpcd to its consumers at an average of 24 hours per day. It covers only 35.9% of the population in its service area, the lowest among the utilities. NRW is lower than average at 24.9%. Production and all service connections are fully metered. Financial management is good with an operating ratio of 0.73 and an average collection period of 0.8 month for bill payments. Average tariff is PHP19.24/m³ (US$0.43/m³) that allows the utility to cover all its operating expenses. Staff/1000 connections ratio is good at 4.8 which is the tenth lowest. CNWD manages its financial and human resources well. However, it needs to improve its coverage and increase the amount it provides to customers by developing new water sources.

**Metro Cebu**

*Metro Cebu Water District* provides water at 98 lpcd to its consumers at an average of only 20 hours per day. It covers only 55.1% of the population in its service area, the eighth lowest among the utilities. NRW is just about average at 27.4% with production and all service connections fully metered. While operating ratio of 0.76 is good, accounts receivable equivalent of 2.2 months is the second longest collection period. Staff/1000 connections ratio is higher than average at 8.0. Average tariff is PHP21.78/m³ (US$0.48/m³), the seventh highest and enough to cover production costs. MCWD needs to expand coverage, increase water availability, provide more water to consumers, improve collection and staff productivity.
Dasmarinas

Dasmarinas Water District provides water at 91 lpcd to its consumers at an average of 23.5 hours per day. It covers 90% of the population in its service area. NRW is lower than average at 25.1% with production and service connections fully metered. Financial management is good with an operating ratio of 0.87 and an average collection period of half a month for bill payments. Average tariff is next to average at Php15.28/m³ (US$0.34/m³) which still allows the utility to cover all its operating expenses. Staff/1000 connections ratio is good at 4.7 which is eighth lowest. DCWD, while already a well-run utility, can still improve by increasing its coverage and availability, and the amount distributed to its customers by developing new water sources.

Davao

Davao City Water District provides water at 161 lpcd to its consumers at an average of 24 hours per day. It covers 73.7% of the population in its service area. NRW is higher than average at 31.8%. Production and all service connections are fully metered. Financial management is just average for both operating ratio at 0.87 and accounts receivable equivalent of 1.1 months. Average tariff is lower than average at PHP12.36/m³ (US$0.27/m³) but still allows the utility to cover all its operating expenses. Staff/1000 connections ratio is better than average at 6.5. DCWD needs to reduce its NRW to cover the unserved households in its service area. It may also have to encourage its consumers to reduce consumption to more prudent levels by increasing tariffs which will also improve its operating ratio.

Dipolog

Dipolog City Water District provides water at 94 lpcd to its consumers at an average of 24 hours per day. It covers only 46.6% of the population in its service area, the fifth lowest among the utilities. NRW is reasonable at 21.2%, almost at the lowest quartile. Production and consumption are fully metered. Financial management is good with an operating ratio of 0.66 and an accounts receivable equivalent of 1.0 month for bill payments. Average tariff is sixth highest at PHP22.38/m³ (US$0.53/m³) which may be a reason for low coverage. DipCWD needs to improve its low coverage which may be due to its high tariff rates. It may also have to develop new sources as current level of consumption shows resource constraints as well.

Guimba

Guimba Water District provides water at 81 lpcd to its consumers at an average of 24 hours per day. It covers only 45.3% of the population in its service area, the third lowest coverage. The utility has the eighth lowest NRW at 19.4%. However, production is not metered although all service connections have operating meters. Financial management is not good with an operating ratio of 1.13 which is the fourth highest. Collection period of 1.0 month is about average. Average tariff is fourth highest at PHP23.97/m³ (US$0.53/m³) which may be a reason for low coverage. It is also an area where groundwater is found at shallow depths. Staff/1000 connections ratio of 10.2 is quite high. GWD will have to address its low coverage with new sources and review of its tariffs. Amount of water provided per capita should also be increased. Operating ratio will also have to be improved by reducing its O&M costs. Staff productivity should be improved as well.

Kidapawan

Metro Kidapawan Water District provides water at 97 lpcd to its consumers at an average of 24 hours per day. However, it only covers 54.9% of the population in its service area, seventh lowest among the utilities. NRW at 28.3% is higher than the average. Production and all service connections are fully metered. Financial management is mixed with an operating ratio of 1.02 while accounts receivable equivalent is good at 0.3 month. Average tariff is fourth highest at PHP22.98/m³ (US$0.51/m³) which may contribute to low coverage. Staff/1000 connections ratio is good at 5.7 which is lower than the average among the utilities. While the utility is doing well with 24-hour supply with reasonable consumption, it should increase its coverage and reduce its NRW further. It can increase its revenues with more consumers and reduce costs to improve its operating ratio.

Mabalacat

Mabalacat Water District provides water at 115 lpcd to its consumers at an average of 24 hours per day. However, it covers only 54.9% of the population in its service area, NRW is good at 18.1% which is sixth lowest. Production and all service connections are fully metered. Operating ratio is reasonable at 0.81 but collection needs to be improved from its accounts receivable equivalent of 2.6 months, the longest among the utilities. Average tariff is above average at PHP15.24/m³ (US$0.34/m³), and enough to cover operating expenses. Staff/1000 connections ratio is good at 5.9 which is lower than the average. While the utility is doing well with 24-hour supply and adequate water, it should increase its
coverage and improve on its collection efforts to get bills paid on time.

Muñoz

Muñoz Water District provides water at 101 lpcd to its consumers at an average of 24 hours per day. It is among the few participating Philippine utilities that cover 100% of the population in its service area. It has the fourth lowest NRW among the utilities at 15.7%. Production and consumption are fully metered. Financial management is good with an operating ratio of 0.83 and an accounts receivable equivalent of 0.8 month. Average tariff is above average at PHP18.35/m³ (US$0.41). Staff/1000 connections ratio is also just above average at 7.6. MWD is one of the best run small utilities with high customer satisfaction rating on availability, amount and coverage, and good financial management. It can still further improve on staff productivity.

San Jose del Monte

San Jose del Monte City Water District provides water at 86 lpcd to its consumers at an average of 24 hours per day. It covers all of the population in its service area. NRW is almost the average for the utilities at 27.9%. Production and all service connections are fully metered. While operating ratio is good at 0.67, accounts receivable equivalent of 1.5 months can still be improved. Average tariff is among the third highest at PHP22.97/m³ (US$0.51/m³) but this allows the utility to cover all its operating expenses and expansion costs. Staff/1000 connections ratio is good at 4.7 which is eighth lowest. SJDMCWD is a well run utility but can still improve by reducing NRW further and increasing the amount of water provided to its customers.

Santa Rosa

Santa Rosa (NE) Water District provides water at 100 lpcd to its consumers at an average of 24 hours per day. It covers 82.4% of the population in its service area. It has the lowest NRW at 10.2% with its strict implementation of leak management and disconnection policy. Production and all service connections are fully metered. Financial management is very good with an operating ratio of 0.69 and a good collection system where accounts receivable equivalent is only 0.4 month. Average tariff is not high at PHP15.91/m³ (US$0.35) but it still allows the utility to cover all its operating expenses also because of its low NRW. Staff/1000 connections ratio is higher than average at 8.4. SRWD may be the best run small utility but it can still improve by increasing its coverage and improving staff productivity.

Silay

Silay City Water District provides water at 78 lpcd to its consumers at an average of 24 hours per day. It is able to provide water to all of the residents in its service area. It has the fifth highest NRW at 41.2% which may be a reason for the low consumption per capita. Production and all service connections are fully metered. Financial management is mixed with very good operating ratio of 0.65 but an accounts receivable equivalent of 1.3 months. Average tariff is the highest at PHP25.26/m³ (US$0.56/m³) which allows the utility to cover all its operating expenses despite the high NRW. The high average tariff may also be a major reason for the low per capita consumption suppressing demand. Staff/1000 connections ratio is the sixth highest at 10.4. SICIWA will have to reduce its NRW, improve collection and increase staff productivity. It may also need to review its high tariff rates.

Tandag

Tandag Water District provides water at only 52 lpcd to its consumers at an average of 24 hours per day. It covers only 78.9% of the population in its service area. NRW is reasonable at 19.7% being the ninth lowest. Production and consumption are fully metered. Financial management is mixed with very good operating ratio of 0.69 but with an accounts receivable equivalent of 1.2 months, longer than the average of 0.9 months. Average tariff is the seventh highest at PHP21.45/m³ (US$0.48/m³). This allows the utility to cover all its operating expenses well but may be suppressing demand also. Staff/1000 connections ratio is good at 5.9 which is lower than the average among the utilities of 7.2. TWD will need to increase the amount of water made available to its consumers, expand its coverage and improve its collection efficiency.
COMMENT AND ANALYSIS BY INDICATOR

Water Supply Coverage (Average – 74.9%)
Eight of the 40 utilities have 100% coverage led by all 5 Malaysian utilities and 3 from the Philippines, Muñoz, San Jose DM and Silay. Four others have more than 90%, namely, Baliwag (99.0%), Hai Phong (94.6%), Son La (92.7%), and Can Tho (90.1%). Camarines (35.9%) has the lowest followed by Tien Giang (40.7%), Guimba (45.3%), Bacolod (46.3%) and Dipolog (46.6%). It is noted that these utilities with low coverage are among those with the highest tariffs indicating that residents in the area are possibly using their own deep wells and other alternative sources of supply. The Malaysian utilities on the other hand are able to expand services as shown by their high capital expenditure per capita.

Water Availability (Average – 22.9 hours/day)
About 75% of the 40 utilities provide 24-hour supply while 6 utilities can provide only up to 20 hours of daily supply. The low water availability areas are Bacolod (10 hours), Hai Duong (16 hours), Son La (18 hours) and Cebu, Thanh Hoa and Kien Giang with 20 hours each. Supplies of less than 24-hours pose not only a risk to health, but also affects metering and the ability to reduce NRW levels. The urban poor are the most affected as they often are the last in terms of coverage areas and hours of availability resulting in more expensive alternative supplies from vendors and small scale service providers.

Consumption (Average – 106.5 l/c/d)
Consumption of around 100 - 120 lpcd seems reasonable. It is high enough to provide for health and hygiene requirements and low enough to help conserve resources. The high consumption areas are Labuan (230 lpcd), Vientiane (197 lpcd), Johor (191 lpcd), Terengganu (187 lpcd) and Sibu (178 lpcd). By contrast, there are a number of low consumption areas, such as Ninh Thuan (37 lpcd), Tra Vinh (49 lpcd), Tandag (52 lpcd), Binh Thuan (57 lpcd) and Dong Nai (62 lpcd). Ninh Thuan, Tra Vinh and Binh Thuan have source constraints.

Production per Person (Average – 0.224 m³/d/person)
This indicator measures overall efficiency of water resource use. The low figures of Ninh Thuan (0.060 m³/d/c), Hue (0.099 m³/d/c), Tra Vinh (0.102 m³/d/c), Binh Thuan (0.117 m³/d/c) and Thanh Hoa (0.145 m³/d/c) reflect a shortage of water resources. The high figures are in Labuan (0.467 m³/d/c), Johor (0.445 m³/d/c), Can Tho (0.352 m³/d/c), Vientiane (0.337 m³/d/c), Dong Nai (0.273 m³/d/c) and Ho Chi Minh (0.263 m³/d/c). Dong Nai and Labuan have high demand for non domestic water while Can Tho and Ho Chi Minh both have high NRW.

Non Revenue Water (Average – 27.8%)
The best performers in terms of low NRW are Santa Rosa (10.2%), Hue (15.0%), Vung Tau (15.4%), Muñoz (15.7%) and Son La (17.7%). The worst performers are Tien Giang (48.8%), Can Tho (44.4%), Ho Chi Minh (42.8%), Sarawak (42%) and Silay (41.2%). Metering is a critical component for determining NRW. Most of the utilities have a high level of metering with 37 out of 40 utilities having their production fully metered while 4 utilities have less than 100% metering of service connections but still in the 90-99% range. Only Bacolod has both unmetered production and less than 100% service connections metered at 91%. Guimba and Bansalan also do not have production meters. NRW and consumption figures from these utilities should be interpreted with caution. Given low coverage and low water availability in some utilities, more must be done to reduce NRW levels. This includes 100% metering of production and consumption, repair of visible leaks, elimination of illegal connections, and detection and repair of invisible leaks.

Connections Metered (Average – 99.4%)
Metering is important to fully account for water production and consumption in reducing NRW. Consumption metering is also important for consumers to pay for what they are using that could help in promoting prudent use of water. Almost all the utilities have 100% metering of service connections with the exception of Vung Tau (90.0%), Bacolod (91.0%), Kien Giang (98.3%), Binh Thuan (98.9%) and Tien Giang (99.8%). Regular monitoring of meter functioning, calibration and replacement of defective meters are part of best practices to improve a utility’s performance.

Operating Ratio (Average – 0.84)
A low operating ratio means revenues from tariffs cover the operation and maintenance costs comfortably. If we include debt service and depreciation, it will show whether the utility also has the capacity to expand coverage through tariffs without the grants given by most state, provincial and local governments. A ratio above one means they do not cover these costs. While about 83% of the utilities can cover their costs through tariffs, 7 utilities can not. These are Labuan (1.97), Sarawak (1.32), Thanh Hoa (1.31), Guimba (1.13), Sibu (1.03), Kidapawan (1.02) and Hai Phong (1.01). The better performers are Can Tho (0.34), Vung Tau (0.46),
Hue (0.47), Dong Nai, Cabanatuan and Tien Giang, all with 0.63. Eight others have operating ratios of 0.75 or lower. Binh Duong, with the lowest operating ratio of 0.18, may have submitted incomplete O&M costs data.

Accounts Receivable (Average – 0.9 months)

This indicator is a good measure of the effectiveness of a utility in collecting its receivables or bills. In this case, the receivables are expressed in equivalent of the utility’s average monthly billing. For small utilities, accounts receivable that represents less than 2 months of its average billing is manageable and could be 3 months for larger utilities. Overall, the utilities surveyed are doing quite well with an average of less than a month. Only 4 utilities have accounts receivable of 2 months or more and these are Mabalacat (2.6 months), Cebu (2.2 months), Sibu (2.2 months), and Labuan (2.0 months). It is surprising that 8 utilities from Vietnam (Binh Duong, Binh Thuan, Can Tho, Hai Duong, Ninh Thuan, Son La, Tra Vinh, and Vung Tau) all showed identical nil figures implying consumers are paying on time with no accounts receivable at the end of the year. However, collection efficiencies for 6 of them showed much higher revenues than billed amounts indicating that some of the collections came from past dues or arrears. Figures from these utilities may need further clarification.

Collection Efficiency (Average – 118%)

This indicator, along with average tariff, operating ratio, and accounts receivable, impacts on the financial health of a utility. About 33 of the utilities have collection efficiencies of more than 100% suggesting the collection of arrears from the previous years of operation. Those with high collection efficiency include Dong Thap (253%), Son La (166%), Vientiane (165%), Binh Duong (149%), Can Tho (140%) and Tra Vinh (136%). Vung Tau has the lowest collection efficiency of 88% followed by Dipolog (97%), Cebu (98%), Kidapawan and Labuan (99%).

Average Tariff (Average – US$0.31/m³)

The average tariff is a good measure of the financial discipline of a utility and its ability to cover operational costs with revenues from tariffs. The water utilities with high average tariffs are Silay (US$0.56/m³), Guimba (US$0.53/m³), Bacolod, Kidapawan and San Jose DM (US$0.51/m³), Dipolog (US$0.50/m³), and Metro Cebu and Tandag (US$0.48/m³). Those who charge the lowest tariffs are Vientiane (US$0.09/m³), Tra Vinh (US$0.14/m³), Can Tho (US$0.16/m³), Son La, Dong Thap and Tien Giang (US$0.17/m³), and Sarawak, Vinh Long and Thanh Hoa (US$0.18/m³). It is not surprising then that Sarawak and Thanh Hoa are not able to cover their O&M costs from tariffs.

New Connection Fee (Average – US$59.99)

Apart from reasonable connection fee, allowing payments by installment can assist lower-income households to gain access to direct connection to their homes with significant benefits to their welfare. Among those with low connection fees are Can Tho (US$21.63), Johor (US$21.77), Santa Rosa (US$26.56), Kidapawan and Davao (US$33.33), and Son La (US$33.99). The highest connection fees are paid by consumers in Sibu (US$132.09), Vientiane (US$124.83), Cebu (US$95.56), Tien Giang (US$92.71), Cabanatuan (US$91.11) and Sarawak (US$87.10).

Average Capital Expenditure/Connection (Average – US$44.39)

Among the utilities with the highest average annual expenditure per connection for capital development in the last 5 years are Sarawak (US$303.39), Labuan (US$223.60), Guimba (US$106.38), Johor (US$93.18), Son La (US$88.29) and Sibu (US$81.40). The large amount spent on capital development among the Malaysian utilities may correlate well with the 100% coverage among all of them although Terengganu has the second lowest per connection expenditure at US$34.5. This may indicate much earlier capital expenditure than the previous 5 years. The low capital expenditures are in Tien Giang (US$1.46), Terengganu, Hai Duong (US$4.68), Hai Phong (US$5.95), Bacolod (US$7.61), Dong Thap (US$8.65) and Kidapawan (US$8.92).

Staff/1,000 Connections Ratio (Average – 7.2)

This indicator is generally used to measure the efficient use of human resources in a utility as manifested by low staff/1000 connection ratio. However, a growing number of utilities are contracting out some of its operations so that an analysis of this indicator should include factoring in the contracted out services. Those with high staff/1000 connections ratio are Labuan (12.6), Dong Thap (11.5), Ninh Thuan (11.1), Vinh Long (11.0), Thanh Hoa (10.6), Silay and Hai Duong (10.4). The utilities with the lowest ratio are Johor (2.1), Binh Duong (2.3), Terengganu (2.4), Dipolog (3.4), Sibu (4.1), Vung Tau (4.2) and Baliwag (4.3). Terengganu, Sibu Baliwag have some contracted out services.

GENERAL CONCLUSIONS

The performance indicators presented in this data book were derived from information provided by the 40 participating utilities from the Southeast Asian region. Indonesian and Thai water utilities would have been a good
addition to present a better picture of the performance of water utilities in this part of Asia.

Overall, the utilities in the countries are doing well in financial performance with an average operating ratio of 0.84, accounts receivable of 0.9 month and collection efficiency of 118%. Water resources management could stand improvement by lowering NRW with an overall average of 27.8% of production in water losses. Some utilities will need to fully meter all service connections as well as all production entering the distribution systems. Domestic consumption at 106 lpcd is adequate for daily use without being wasteful. However, only ¾ of the total population are enjoying access to water supply services and the remaining quarter of the population still unserved needs to be attended to. Almost a quarter of the utilities still needs to be supplied with 24 hour service. Staff/1000 connections as a measure of staff productivity can still be improved.

Among countries, Malaysia rates high in customer satisfaction with an average coverage of 100%, 24 hour supply and 182 lpcd supplied to its consumers. While they have high water production, they have the highest NRW average at 34%. Financial management also needs to be improved by addressing their high operating ratio of 1.2 and reducing their collection period of 1.9 months. However, they have the most productive staff with an average staff/1000 connection ratio of 5.9.

The 17 Vietnamese utilities rates high in financial management with an average operating ratio of 0.8 and an average collection period or accounts receivable equivalent of just half a month although there seems to be inconsistencies between accounts receivable and collection efficiency in a number of utilities. They need to address the needs of their consumers by increasing their coverage of 77.7%, water availability of 22.5 hours per day and consumption of 85 lpcd. Average non revenue water stands at 28.7% which can be reduced and they also have to complete metering of service connections in about 4 utilities. Staff/1000 connection ratio is highest at 8.1 among the three groups.

The 17 utilities from the Philippines have similar performance on customer satisfaction as their Vietnamese counterparts with average coverage of 72.3%, water availability of 23.7 hours per day and average domestic consumption of 97.8 lpcd. NRW average is the lowest at 24.2% with total service connection metering although 3 of their utilities need to fully meter production. Operating ratio average is good at 0.8 with an average accounts receivable equivalent of 1.2 months. Average tariffs are the highest among the utilities averaging US$0.43/m³ compared to US$0.27/m³ for the Malaysians and US$0.20/m³ for the Vietnamese counterparts.

The lone utility from Lao PDR provides more than enough water at 197 lpcd and for 24 hours per day but only to 56.3% of the population in its service area. NRW is just about the regional average at 27.7%. Average tariff is very low at US$0.09/m³, barely enough to cover O&M expenses with an operating ratio of 0.93. Staff/1000 connection is about the same level as the Vietnamese utilities at 8.0 which can be further improved.

Given the overall performance of the participating utilities in these countries, further improvement of performance will require the following:

i) Advocacy for more investment for the sector and greater coverage

ii) 24-hour supply

iii) 100% metering of both production and consumption

iv) Management of water losses by keeping NRW in check

v) Improving billing and collection

vi) Appropriate tariffs to cover O&M costs and expansion capital

vii) Investment in capacity building for staff and management to increase staff productivity

viii) Regular monitoring of performance through appropriate management information systems

ix) Support for services to the urban poor through lifeline rates and installment payment of connection fees.
PART II

UTILITIES COMPARISONS
(Figures and Tables)
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<tr>
<th>Utility Code</th>
<th>Country</th>
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<td>207,374</td>
<td>Hai Phong</td>
<td>155,900</td>
</tr>
<tr>
<td>Sarawak</td>
<td>195,684</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Davao</td>
<td>147,618</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metro Cebu</td>
<td>145,260</td>
<td>Sarawak</td>
<td>121,813</td>
</tr>
<tr>
<td>Dong Nai</td>
<td>135,342</td>
<td>Metro Cebu</td>
<td>105,532</td>
</tr>
<tr>
<td>Hai Phong</td>
<td>121,918</td>
<td>Dasmarnias</td>
<td>86,078</td>
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<tr>
<td>Vientiane</td>
<td>119,403</td>
<td>Vung Tau</td>
<td>85,933</td>
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<tr>
<td>Can Tho</td>
<td>108,493</td>
<td>Can Tho</td>
<td>72,000</td>
</tr>
<tr>
<td>Sibu</td>
<td>89,041</td>
<td>Vientiane</td>
<td>63,488</td>
</tr>
<tr>
<td>Vung Tau</td>
<td>84,987</td>
<td>Dong Nai</td>
<td>57,736</td>
</tr>
<tr>
<td>Dasmarnias</td>
<td>74,954</td>
<td>Tien Giang</td>
<td>55,205</td>
</tr>
<tr>
<td>Tien Giang</td>
<td>68,493</td>
<td>Vientiane</td>
<td>52,170</td>
</tr>
<tr>
<td>Hue</td>
<td>58,691</td>
<td>Sibu</td>
<td>46,903</td>
</tr>
<tr>
<td>Binh Duong</td>
<td>49,589</td>
<td>San Jose DM</td>
<td>46,673</td>
</tr>
<tr>
<td>Bacolod</td>
<td>42,932</td>
<td>Thanh Hoa</td>
<td>41,430</td>
</tr>
<tr>
<td>Labuan</td>
<td>37,321</td>
<td>Hai Duong</td>
<td>39,620</td>
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<tr>
<td>San Jose DM</td>
<td>37,178</td>
<td>Dong Thap</td>
<td>34,096</td>
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<tr>
<td>Dong Thap</td>
<td>33,151</td>
<td>Binh Thuan</td>
<td>33,257</td>
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<tr>
<td>Binh Thuan</td>
<td>31,233</td>
<td>Bacolod</td>
<td>28,263</td>
</tr>
<tr>
<td>Cabanatuan</td>
<td>30,706</td>
<td>Kien Giang</td>
<td>28,165</td>
</tr>
<tr>
<td>Kien Giang</td>
<td>29,041</td>
<td>Son La</td>
<td>25,200</td>
</tr>
<tr>
<td>Thanh Hoa</td>
<td>27,945</td>
<td>Ninh Thuan</td>
<td>24,710</td>
</tr>
<tr>
<td>Hai Duong</td>
<td>27,123</td>
<td>Cabanatuan</td>
<td>24,363</td>
</tr>
<tr>
<td>Vinh Long</td>
<td>24,932</td>
<td>Vinh Long</td>
<td>21,894</td>
</tr>
<tr>
<td>Mabalacat</td>
<td>20,111</td>
<td>Mabalacat</td>
<td>21,513</td>
</tr>
<tr>
<td>Tra Vinh</td>
<td>19,178</td>
<td>Tra Vinh</td>
<td>19,076</td>
</tr>
<tr>
<td>Son La</td>
<td>16,986</td>
<td>Camarines</td>
<td>18,596</td>
</tr>
<tr>
<td>Camarines</td>
<td>15,192</td>
<td>Binh Duong</td>
<td>17,587</td>
</tr>
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<td>Ninh Thuan</td>
<td>14,904</td>
<td>Kidapawan</td>
<td>17,430</td>
</tr>
<tr>
<td>Kidapawan</td>
<td>14,521</td>
<td>Baliwag</td>
<td>14,947</td>
</tr>
<tr>
<td>Baliwag</td>
<td>12,190</td>
<td>Labuan</td>
<td>12,436</td>
</tr>
<tr>
<td>Dipolog</td>
<td>6,301</td>
<td>Dipolog</td>
<td>10,674</td>
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<tr>
<td>Silay</td>
<td>4,196</td>
<td>Tandag</td>
<td>4,420</td>
</tr>
<tr>
<td>Bansalan</td>
<td>2,916</td>
<td>Silay</td>
<td>3,942</td>
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<td>Tandag</td>
<td>2,417</td>
<td>Bansalan</td>
<td>3,876</td>
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<tr>
<td>Santa Rosa</td>
<td>2,333</td>
<td>Santa Rosa</td>
<td>2,960</td>
</tr>
<tr>
<td>Munoz</td>
<td>2,298</td>
<td>Munoz</td>
<td>2,643</td>
</tr>
<tr>
<td>Guimba</td>
<td>1,832</td>
<td>Guimba</td>
<td>2,440</td>
</tr>
</tbody>
</table>

Table 3: SIZE OF UTILITIES
Figure 1: TYPE OF WATER UTILITY

No. of Utilities

0 5 10 15 20

Private company Government Department State Owned Enterprise Statutory Organization

[Chart showing the distribution of water utilities by type across different locations.]
Figure 2: CAPITAL EXPENDITURE PER CONNECTION

Utilities>30,000 connections

Utilities<30,000 connections

Data Book of Southeast Asian Water Utilities 2005
Figure 3: PRODUCTION VOLUME

Utilities>30,000 connections

Utilities<30,000 connections
Figure 4: STORAGE CAPACITY

Utilities>30,000 connections

Utilities<30,000 connections

Storage Capacity (1,000 cubic meters)
Figure 5: PRODUCTION METERING

No. of Utilities

Binh Duong
Binh Thuan
Can Tho
Dong Nai
Dong Thap
Hai Duong
Hai Phong
Ho Chi Minh
Hue
Kien Giang
Ninh Thuan
Son La
Thanh Hoa
Tien Giang
Tra Vinh
Vinh Long
Vung Tau
Vientiane
Johor
Labuan
Sarawak
Sibu
Terengganu
Baliwag
Cabanatuan
Camarines
Metro Cebu
Dasmariñas
Davao
Dipolog
Kidapawan
Mabalacat
Muñoz
San Jose DM
Santa Rosa
Silay
Tandag

No metering

100% metered

Bacolod
Bansalan
Guimba

Percentage of production metered

Utilities Comparison - Production
Figure 6: WATER COVERAGE

Utilities>30,000 connections

Utilities<30,000 connections

Data Book of Southeast Asian Water Utilities 2005
Figure 7: WATER AVAILABILITY

Utilities > 30,000 connections

Utilities < 30,000 connections
Figure 9: PER CAPITA CONSUMPTION

Utilities > 30,000 connections

Utilities < 30,000 connections

Utilities Comparison - Service
Figure 10: HOUSEHOLD MONTHLY CONSUMPTION

Utilities>30,000 connections

Utilities<30,000 connections
Figure 12: NON REVENUE WATER

Utilities>30,000 connections

Utilities<30,000 connections

Data Book of Southeast Asian Water Utilities 2005
Figure 14: STAFF PER 1,000 CONNECTIONS

Utilities>30,000 connections
- Johor
- Terengganu
- Sibu
- Vung Tau
- San Jose DM
- Dasmarinas
- Hai Phong
- Ho Chi Minh
- Tien Giang
- Davao
- Can Tho
- Vientiane
- Metro Cebu
- Hue
- Sarawak
- Hai Duong
- Thanh Hoa
- Dong Thap

Utilities<30,000 connections
- Binh Duong
- Dipolog
- Baliwag
- Camarines
- Kidapawan
- Tandag
- Mabalacat
- Bansalan
- Cabanatuan
- Munoz
- Son La
- Santa Rosa
- Bacolod
- Tra Vinh
- Guimba
- Kien Giang
- Silay
- Vinh Long
- Ninh Thuan
- Labuan
Figure 15: AVERAGE TARIFF

Utilities > 30,000 connections

Utilities < 30,000 connections
Figure 17: MANAGEMENT SALARIES

Utilities>30,000 connections

Utilities<30,000 connections

Utilities Comparison - Management
Figure 18: CONNECTION FEE FOR HOUSE CONNECTION

Utilities>30,000 connections

Utilities<30,000 connections
Table 4a: PRIORITY NEEDS OF UTILITY

<table>
<thead>
<tr>
<th>PRIORITY NEEDS OF UTILITIES</th>
<th>Number of Utilities Expressing Need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of new sources</td>
<td>17</td>
</tr>
<tr>
<td>Expansion of distribution network</td>
<td>15</td>
</tr>
<tr>
<td>Reduction of water losses</td>
<td>10</td>
</tr>
<tr>
<td>Management improvement</td>
<td>10</td>
</tr>
<tr>
<td>Financing for capital development</td>
<td>8</td>
</tr>
<tr>
<td>Training and human resources development</td>
<td>8</td>
</tr>
<tr>
<td>Rehabilitation and network improvement</td>
<td>8</td>
</tr>
<tr>
<td>Storage reservoirs</td>
<td>6</td>
</tr>
<tr>
<td>Improved customer service</td>
<td>6</td>
</tr>
<tr>
<td>Use of automation and improved technology</td>
<td>4</td>
</tr>
<tr>
<td>Additional system capacity</td>
<td>4</td>
</tr>
<tr>
<td>Water tariff</td>
<td>3</td>
</tr>
<tr>
<td>Water quality</td>
<td>3</td>
</tr>
<tr>
<td>New building &amp; offices</td>
<td>3</td>
</tr>
<tr>
<td>Asset management</td>
<td>2</td>
</tr>
<tr>
<td>Operational efficiency</td>
<td>2</td>
</tr>
<tr>
<td>Watershed management</td>
<td>2</td>
</tr>
<tr>
<td><strong>OTHER NEEDS</strong>: Pipe network maintenance, employees’ welfare, equipment quality, compliance with regulations and concession agreements, high cost of raw water, adequate pressure, collection efficiency, renewable energy source and marketing strategy</td>
<td>9</td>
</tr>
</tbody>
</table>
Figure 19e: DOMESTIC TARIFF STRUCTURES

<table>
<thead>
<tr>
<th>Group</th>
<th>Binh Thuan</th>
<th>Vung Tau</th>
<th>Labuan</th>
<th>Sarawak</th>
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<tbody>
<tr>
<td>1</td>
<td>0.10</td>
<td>0.15</td>
<td>0.20</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Monthly Household Consumption (Cubic Meters)

Figure 19f: DOMESTIC TARIFF STRUCTURES

<table>
<thead>
<tr>
<th>Group</th>
<th>Mabalacat</th>
<th>Johor</th>
<th>Sibu</th>
<th>Terengganu</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>0.10</td>
<td>0.20</td>
<td>0.30</td>
<td>0.40</td>
</tr>
</tbody>
</table>

Monthly Household Consumption (Cubic Meters)
Figure 19g: DOMESTIC TARIFF STRUCTURES

Group 7

<table>
<thead>
<tr>
<th>Tariff Rate in US$ per Cubic Meter</th>
<th>Metro Cebu</th>
<th>Silay</th>
<th>Dipolog</th>
<th>San Jose DM</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.80</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Monthly Household Consumption (Cubic Meters)

Figure 19h: DOMESTIC TARIFF STRUCTURES

Group 8

<table>
<thead>
<tr>
<th>Tariff Rate in US$ per Cubic Meter</th>
<th>Kidapawan</th>
<th>Santa Rosa</th>
<th>Camarines</th>
<th>Dasmarinas</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Monthly Household Consumption (Cubic Meters)
Figure 21: ACCOUNTS RECEIVABLE

Utilities > 30,000 connections

Utilities < 30,000 connections
Figure 22: COLLECTION EFFICIENCY

Utilities>30,000 connections

Utilities<30,000 connections
Figure 23: ANNUAL OPERATION AND MAINTENANCE COSTS

Utilities>30,000 connections

Utilities<30,000 connections
Fig. 24: O&M COST COMPONENTS

Utilities Comparison - Operation and Maintenance

Other refers to chemicals, transport, repairs and maintenance, contracted out services, depreciation, interest payments, etc.

Utilities

- Metro Cebu
- Camarines
- Baliwag
- San Jose DM
- Dipolog
- Dasmarinas
- Johor
- Vientiane
- Sibu
- Son La
- Davao
- Bacolod
- Ninh Thuan
- Dong Thap
- Bansalan
- Ho Chi Minh
- Hai Phong
- Guimba
- Binh Thuan
- Cabanatuan
- Labuan
- Mabalacat
- Tandag
- Tra Vinh
- Terengganu
- Santa Rosa
- Kidapawan
- Tien Giang
- Hai Duong
- Dong Nai
- Thanh Hoa
- Ken Giang
- Vung Tau
- Vinh Long
- Silay
- Hue
- Can Tho
- Munoz
- Binh Duong

* Percent

Utilities

- Personnel
- Power/Fuel
- Other
Figure 25: LEAKS REPAIRED ANNUALLY

Utilities>30,000 connections

Utilities<30,000 connections
Figure 26: METERS REPLACED ANNUALLY

Utilities>30,000 connections

Utilities<30,000 connections
Fig. 27: Water Quality Sampling

Utilities>30,000 connections

Utilities<30,000 connections
Figure 28: COMPLAINTS RECEIVED ANNUALLY

Utilities>30,000 connections

Utilities<30,000 connections

Utilities Comparison - Operation and Maintenance
Figure 29: NEW CONNECTIONS ANNUALLY

Utilities>30,000 connections

Utilities<30,000 connections
PART III

WATER UTILITY AND AREA PROFILES
**Utility Profile**

**BINH DUONG WATER SUPPLY, SEWERAGE & ENVIRONMENT LIMITED COMPANY**

Address: 11 Ngo Van Tri Street, Phu Loi Ward, Thu Dau Mot, Binh Duong, Vietnam
Telephone: (84-650) 827789
Fax: (84-650) 827738
E-mail: ctyctnbd@hcm.vnn.vn
Head: Nguyen Van Thien, Director

Binh Duong Water Supply, Sewerage & Environment, Ltd., Co. (BIWASE) is a state owned enterprise established in 1975 which is responsible for water supply, waste water and solid waste services in Binh Duong Province. It covers the capital town of Thu Dau Mot and 5 other towns in the province which has a total population of 620,000 people. The present service area of BIWASE has a population density of 2,483 persons/km². The utility draws water from both surface water and groundwater sources. The private sector is involved in the operation of BIWASE through service and lease contracts. It publishes an annual report that is available to the public.

### General Data

| Connections | 17,587 |
| Staff | 40 |
| Annual O&M Costs | VND14,183 million, US$ 876,580 |
| Annual Collections | VND80,054 million, US$4,947,730 |
| Annual Billings | VND53,777 million, US$3,323,640 |

Total Capital Expenditure: no data
Average capital expenditure/connection/year: no data

Source of Investment Funds: no data

### Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>VND</td>
<td>US$</td>
</tr>
<tr>
<td>7,000</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>VND/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>2,400</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>7,000</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>3,850</td>
<td>0.24</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 3,962 new connections in 2005. Price of new connection is VND800,000 (US$49.44).
3. Monthly water bill for a household consuming 6 m³ of water per month is VND25,000 (US$1.55).

### Priority Needs of Utility

1. Additional pipe network and capacity
2. Established asset management system (maintenance)
3. Improved customer service

### Consumer Service

Average monthly consumption is about 23.3 m³ per domestic connection. The water bill averages VND68,450 (US$4.23) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 30 meters. Water quality is good with all 8,760 water samples taken during the year passing the residual chlorine tests. There were only 12 consumers complaints recorded and 147 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter or by going to the utility office.

### Performance Highlights

BIWASE provides water at 63 lpcd to its consumers at an average of 24 hours per day. It provides piped supply to only 55.2% of the population in its service area. NRW is good at 19.9%, better than the average. Production and all service connections are fully metered. While operating ratio looks very good at 0.18 the operating cost items obviously is incomplete. Accounts receivable was given as nil giving the impression that bill payments are all collected in time. Average tariff at VND3,709/m³ (US$0.23/m³) is lower than the average of US$0.31. Staff/1000 connections ratio is very good at 2.3, the second lowest among the utilities. BIWASE rates low in customer satisfaction and will need to increase coverage and provide more water to its consumers. Financial figures will have to be taken with caution with the seemingly incomplete information on O&M costs.
BINH DUONG WATER SUPPLY

Population: 360,000

Production/Distribution

- Average Daily Production: 49,589 m³
- Production capacity/day: 80,000 m³
- Treatment Type: Conventional
- Storage: 23,000 m³
- Service Area: 145 sq km
- Distribution pipes: 478 km
- Service pipe length: 4 m

Service Connections

- Domestic: 16,458
- Non domestic: 1,126
- Bulk: 3
  Total: 17,587

Service Indicators

- Service Coverage: 55.2%
- Water Availability: 24 hours/day
- Per Capita Consumption: 63 l/c/d
- Average Tariff: US$0.23/m³

Efficiency Indicators

- Non-Revenue Water: 19.9%
- Unit Production Cost: US$0.05/m³
- Operating Ratio: 0.18
- Accounts Receivable: Nil
- Staff/1,000 Connections: 2.3

Notes:
1. The population is for the present area served by the utility.
2. All of 8,760 samples taken during the year passed the residual chlorine test.
3. The total area of responsibility is 289 sq km.
4. About 3,962 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 30 meters.
7. In 2005, about 147 pipe breaks were repaired and only 20 meters were either replaced or repaired.
8. O&M costs data is incomplete.
9. About 15 staff members attended training; total training days was 280 days.

Data as of 2005.
BINH THUAN Water Supply & Sewerage Company (BTWASECO) is a state-owned enterprise established in 1980 which is responsible for water supply and waste water services in the Binh Thuan Province. It covers 25 towns and cities in the province including Phan Thiet which has a total population of 430,876 people. The present service area of BTWASECO has a population density of 1,156 persons/km². The utility draws water from surface water sources. The private sector is involved in the operation of BTWASECO through a build, operate and transfer (BOT) contract. It publishes an annual report but it is not available to the public.

General Data About Water Utility

- Connections: 33,257
- Staff: No data
- Annual O&M Costs: VND31,938 million, US$1,973,950
- Annual Collections: VND35,527 million, US$2,195,740
- Annual Billings: VND29,639 million, US$1,831,800
- Total Capital Expenditure: VND143,550 million, US$8,872,060
- Average capital expenditure/connection/year: US$53.35
- Source of Investment Funds: Internal funds and loans from ODA sources

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>VND</td>
<td>US$</td>
</tr>
<tr>
<td>Nil</td>
<td>Nil</td>
<td></td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>VND/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>0 – 15 m³</td>
<td>2,900</td>
<td>0.18</td>
</tr>
<tr>
<td>15 - 35 m³</td>
<td>3,600</td>
<td>0.22</td>
</tr>
<tr>
<td>Over 35 m³</td>
<td>4,000</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 3,146 new connections in 2005. Price of new connection is VND1,200,000 (US$74.17) for domestic and VND2,000,000 (US$123.61) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND17,400 (US$1.08).

Priority Needs of Utility

1. Mechanism and policy for business
2. Additional water sources
3. Expansion of service to other areas

Consumer Service

Average monthly consumption is about 14.2 m³ per domestic connection. The water bill averages VND41,730 (US$2.58) per month per domestic connection. Water is available 23 hours a day to users at an average pressure of 15 meters. Water quality is good with 99.6% of 2,928 water samples taken during the year passing the residual chlorine tests. There were 424 consumers complaints recorded and 600 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter or by going to the utility office.

Performance Highlights

BTWASECO provides water at 57 lpcd to its consumers at an average of 23 hours per day. It provides services to only 66.7% of the population in its service area. NRW at 26.3% is better than the average among the utilities. While production is fully metered, only 98.9% of service connections have functioning meters. Operating ratio of 0.9 is acceptable but could still be lowered. Accounts receivable was given as nil indicating that all payments are collected in time. Average tariff is reasonable at VND3,528/m³ (US$0.22/m³) but barely enough to cover operating costs. BTWASECO has to improve on customer satisfaction by increasing the amount of water supplied to its customers and expanding its customer base. It also needs to meter all service connections to have a better assessment of its total consumption, losses and billing.
BINH THUAN WATER SUPPLY

Population: 398,808

Production/Distribution

- Average Daily Production: 31,233 m³
- Production capacity/day: 34,000 m³
- Treatment Type: Conventional
- Storage: 7,446 m³
- Service Area: 345 sq km
- Distribution pipes: 328 km
- Service pipe length: 5 m

Service Connections

- Domestic: 32,310
- Non domestic: 946
- Bulk: 1
  - Total: 33,257

Service Indicators

- Service Coverage: 66.7%
- Water Availability: 23 hours/day
- Per Capita Consumption: 57 l/c/d
- Average Tariff: US$0.22/m³

Efficiency Indicators

- Non-Revenue Water: 26.3%
- Unit Production Cost: US$0.17/m³
- Operating Ratio: 0.9
- Accounts Receivable: Nil
- Staff/1,000 Connections: no data

Notes:
1 The population is for the present area served by the utility.
2 About 99.6% of 2,928 samples taken passed the residual chlorine test.
3 The total area of responsibility 2,214 sq km.
4 About 3,146 new customers were connected during the year.
5 This is the population coverage in the present service area.
6 Average mains water pressure is 15 meters.
7 In 2005, about 600 pipe breaks were repaired and 1,226 meters were either replaced or repaired.
8 About 30 staff members attended training; total training days was 210 days.
   Budget for training and HRD is about 10% of operating expenses.

Data as of 2005.
CAN THO URBAN WATER SUPPLY & SEWERAGE LIMITED COMPANY

Address : 2A-Nguyen Trai Street, Ninh Kieu District, Can Tho City, Vietnam
Telephone : (84-71) 221069
Fax : (84-71) 824092
E-mail : cnct@hmc.vnn.vn
Head : La Quoc Nghia, Board Chairman

Can Tho Urban Water Supply & Sewerage Limited Company (CTWSSC) is a state owned enterprise established in 2004 which is responsible for water supply, waste water and drainage services in Can Tho Province. It covers 7 towns and cities in the province including the capital city of Can Tho. Its area of responsibility has a total population of 562,079 people. The present service area of the utility has a population density of 2,165 persons/km². The utility draws water from surface water and groundwater sources. The private sector is involved in its operations through management and services contracts. It publishes an annual report but it is not available to the public.

### General Data About Water Utility

- **Connections**: 72,000
- **Staff**: 540
- **Annual O&M Costs**: VND27,300 million, US$1,687,270
- **Annual Collections**: VND81,000 million, US$5,006,180
- **Annual Billings**: VND58,000 million, US$3,584,670
- **Total Capital Expenditure**: No data
- **Average capital expenditure/connection/year**: No data
- **Source of Investment Funds**: No data

### Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIXED MONTHLY CHARGE</strong></td>
<td>VND 4,000</td>
<td>US$ 0.25</td>
</tr>
<tr>
<td></td>
<td>VND 5,000</td>
<td>US$ 0.31</td>
</tr>
<tr>
<td><strong>CONSUMPTION CHARGE</strong></td>
<td>VND/m³ 3,000</td>
<td>US$/m³ 0.19</td>
</tr>
<tr>
<td></td>
<td>VND/m³ 4,000</td>
<td>US$/m³ 0.25</td>
</tr>
</tbody>
</table>

**Notes:**

1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 6,000 new connections in 2005. Price of new connection is VND350,000 (US$21.63) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND25,000 (US$1.55).

### Consumer Service

Average monthly consumption is about 23.9 m³ per domestic connection. The water bill averages VND59,050 (US$3.65) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 8 meters. Water quality is good with 95% of 7,300 water samples taken during the year passing the residual chlorine tests. There were 250 consumers complaints recorded and 5,425 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, e-mail, letter or by going to the utility office.

**Performance Highlights**

CTWSSC provides water at 157 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 90.1% of the population in its service area. NRW is high at 44.4%, the second highest after Tien Giang. Production and all service connections are fully metered. Financial management is good with an operating ratio of 0.34 despite a very low average tariff. Accounts receivable is reported as nil indicating that bill payments are all made in time. Average tariff at VND2,636/m³ (US$0.16/m³) is the third lowest. Staff/1000 connections ratio is just above average at 7.5. While the CTWSSC is doing well in customer satisfaction and financial management, it has to reduce NRW to further expand its coverage. It also needs to enhance staff productivity.
**CAN THO WATER SUPPLY**

Population: 342,000

### Production/Distribution

- Average Daily Production: 108,493 m³
- Production capacity/day: 110,000 m³
- Treatment Type: Conventional
- Storage: 80,000 m³
- Service Area: 158 sq km
- Distribution pipes: 460 km
- Service pipe length: 4 m

### Service Connections

- Domestic: 61,394
- Non domestic: 10,606
- Bulk: Nil
- Total: 72,000

### Service Indicators

- Service Coverage: 90.1%
- Water Availability: 24 hours/day
- Per Capita Consumption: 157 l/c/d
- Average Tariff: US$0.16/m³

### Efficiency Indicators

- Non-Revenue Water: 44.4%
- Unit Production Cost: US$0.04/m³
- Operating Ratio: 0.34
- Accounts Receivable: Nil
- Staff/1,000 Connections: 7.5

**Notes:**

1. The population is for the present area served by the utility.
2. About 95% of 7,300 samples taken during the year passed the residual chlorine test.
3. The total area of responsibility is 1,390 sq km.
4. About 6,000 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 8 meters.
7. In 2005, about 5,425 pipe breaks were repaired.
8. About 23 staff members attended training; total training days was 3,174 days.

**Data as of 2005.**
DONG NAI CONSULTANCY-CONSTRUCTION-WATER SUPPLY LIMITED COMPANY

Address: 48-Cach Mang Thang Tam Street, Quyet Thang Ward, Bien Hoa City, Dong Nai, Vietnam
Telephone: (84-61) 384 3316
Fax: (84-61) 384 7149
E-mail: none
Head: Dang Trong Thanh, Director

Dong Nai Consultancy-Construction-Water Supply Limited Company (DNCCWSC) is a state owned enterprise established in 1992 which is responsible for water supply services in Dong Nai Province. The utility covers 7 towns and cities in the province including the city of Bien Hoa. Its area of responsibility has a total population of 2,218,900 people. The present service area of the utility has a population density of 213 persons/km². The utility draws water from surface water and groundwater sources. The private sector is not involved in any of utility’s operations. It publishes an annual report but it is not available to the public.

General Data About Water Utility

Connections: 57,736
Staff: no data
Annual O&M Costs: VND 85,234 million US$5,267,860
Annual Collections: VND136,074 million US$8,410,010
Annual Billings: VND136,074 million US$8,410,010
Total Capital Expenditure: VND180,000 million US$11,124,840
Average capital expenditure/connection/year: US$38.54
Source of Investment Funds: Internal funds, grants and loans from government and ODA sources, loans from commercial bank.

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>US$</th>
<th>Non domestic</th>
<th>US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>VND</td>
<td>US$</td>
<td>VND</td>
<td>US$</td>
</tr>
<tr>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>VND/m³</td>
<td>US$/m³</td>
<td>VND/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>0-15 m³</td>
<td>2,400</td>
<td>0.15</td>
<td>4,550</td>
<td>0.28</td>
</tr>
<tr>
<td>15-25 m³</td>
<td>3,950</td>
<td>0.24</td>
<td>4,550</td>
<td>0.28</td>
</tr>
<tr>
<td>25-35 m³</td>
<td>4,700</td>
<td>0.29</td>
<td>4,550</td>
<td>0.28</td>
</tr>
<tr>
<td>Over 35 m³</td>
<td>7,800</td>
<td>0.48</td>
<td>4,550</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 10,037 new connections in 2005. Price of new domestic connection is VND1,200,000 (US$74.17).
3. Monthly water bill for a household consuming 6 m³ of water per month is VND14,400 (US$0.89)

Priority Needs of Utility

1. Expansion of coverage to unserved areas
2. Reduction of NRW
3. Development of new sources

Consumer Service

Average monthly consumption is about 16.6 m³ per domestic connection. The water bill averages VND59,300 (US$3.67) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 30 meters. There were only 24 consumers complaints recorded and 1,278 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter or by going to the utility office.

Performance Highlights

DNCCWSC provides water at 62 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to only 59.6% of the population in its service area. NRW is above the average at 29.1%. Both production and all service connections are fully metered. Operating ratio is good at 0.63, the fifth lowest. Accounts receivable is 1.1 months, just above the average but still reasonable. Average tariff at VND3,884/m³ (US$0.24/m³) is lower than average and enough to cover operating expenses well. While the DNCCWSC is doing well in financial management, it has to provide more water to its customers and expand coverage to unserved households. Another area for improvement is further reduction of its NRW.
**Area Profile**

**DONG NAI WATER SUPPLY**

Population: 830,725

**Production/Distribution**

- Average Daily Production: 135,342 m³
- Production capacity/day: 197,800 m³
- Treatment Type: Conventional
- Storage: 23,625 m³
- Service Area: 3,907 sq km
- Distribution pipes: 483 km
- Service pipe length: 4 m

**Service Connections**

- Domestic: 56,339
- Non domestic: 1,397
- Bulk: Nil
- Total: 57,736

**Service Indicators**

- Service Coverage: 59.6%
- Water Availability: 24 hours/day
- Per Capita Consumption: 62 l/c/d
- Average Tariff: US$0.24/m³

**Efficiency Indicators**

- Non-Revenue Water: 29.1%
- Unit Production Cost: US$0.11/m³
- Operating Ratio: 0.63
- Accounts Receivable: 1.1 months
- Staff/1,000 Connections: no data

Notes:
1. The population is for the present area served by the utility.
2. About 496 samples were taken for the residual chlorine test.
3. The total area of responsibility is 5,895 sq km.
4. About 10,037 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 30 meters.
7. In 2005, about 1,278 pipe breaks were repaired and 652 meters were either replaced or repaired.
8. About 142 staff members attended training; total training days was 426 days.

Data as of 2005.
DONG THAP

Utility Profile

DONG THAP URBAN WATER SUPPLY, SEWERAGE & ENVIRONMENT LIMITED COMPANY

Address : 01-Ton Duc Thang Street, 1st Ward, Cao Lanh City, Dong Thap, Vietnam
Telephone : (84-67) 859 699
Fax : (84-67) 852 825
E-mail : capthoatnuocdt@vnn.vn
Head : Ly Khoi Van, Board Chairman

Dong Thap Urban Water Supply, Sewerage & Environment Limited Company (DOWASEA) is a state owned enterprise established in 1989 and is responsible for water supply, wastewater and drainage services in Dong Thap Province. The utility covers 11 towns and cities in the province including the capital city of Cao Lanh. Its area of responsibility has a total population of 384,567 people. The present service area of the utility has a population density of 1,258 persons/km². The utility draws water from surface water and groundwater sources. The private sector is involved in its operations through service, lease and BOT contracts. DOWASEA publishes an annual report that is available to the public.

General Data About Water Utility

Connections : 34,096
Staff : 391
Annual O&M Costs : VND50,682 million US$3,132,390
Annual Collections : VND58,418 million US$3,610,500
Annual Billings : VND23,105 million US$1,427,970
Total Capital Expenditure : VND23,849 million US$1,473,970
Source of Investment Funds : Internal funds, grants and loans from government and ODA sources

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>VND</td>
<td>US$</td>
</tr>
<tr>
<td></td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>VND/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td></td>
<td>2,800</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>3,500</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 3,142 new connections in 2005. Price of new connection is VND940,439 (US$58.12) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND16,800 (US$1.04).

Priority Needs of Utility

1. Additional system capacity   2. Human resources development   3. Enhance management by using IT

Consumer Service

Average monthly consumption is about 19.2 m³ per domestic connection. The water bill averages VND40,770 (US$2.52) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 20 meters. Water quality is fair with 94% of 216 water samples taken during the year passing the residual chlorine tests. There were 348 consumers complaints recorded and 2,064 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, e-mail, letter or by going to the utility office.

Performance Highlights

DOWASEA provides water at 99 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to only 73% of the population in its service area. NRW is above the average among the utilities at 29.8%. Production and all service connections are fully metered. Operating ratio is reasonable at 0.87 although a bit higher than the average. Accounts receivable equivalent is 0.8 month, just below the average and still reasonable. Average tariff at VND2,718/m³ (US$0.17/m³) is the fourth lowest but it is enough to cover operating expenses. Staff/1000 connections ratio is second highest at 11.5. While the DOWASEA is doing quite well it has to improve on its staff productivity. It may also need to provide more water to its customers and expand coverage to unserved households. NRW could also be further reduced as well as improve operating ratio to about 0.75 or lower.
## Area Profile

**DONG THAP WATER SUPPLY**

Population: 285,506

### Production/Distribution

- **Average Daily Production**: 33,151 m³
- **Production capacity/day**: 34,500 m³
- **Treatment Type**: Conventional
- **Storage**: 3,876 m³
- **Service Area**: 227 sq km
- **Distribution pipes**: 257 km
- **Service pipe length**: 4 m

### Service Connections

<table>
<thead>
<tr>
<th>Type</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>32,576</td>
</tr>
<tr>
<td>Non domestic</td>
<td>1,520</td>
</tr>
<tr>
<td>Bulk</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>34,096</td>
</tr>
</tbody>
</table>

### Service Indicators

- **Service Coverage**: 73.0%
- **Water Availability**: 24 hours/day
- **Per Capita Consumption**: 99 l/c/d
- **Average Tariff**: US$0.17/m³

### Efficiency Indicators

- **Non-Revenue Water**: 29.8%
- **Unit Production Cost**: US$0.26/m³
- **Operating Ratio**: 0.87
- **Accounts Receivable**: 0.8 month
- **Staff/1,000 Connections**: 11.5

### Notes:

1. The population is for the present area served by the utility.
2. About 94% of 216 samples taken during the year passed the residual chlorine test.
3. The total area of responsibility 227 sq km.
4. About 3,142 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 20 meters.
7. In 2005, about 2,064 pipe breaks were repaired and 1,456 meters were either replaced or repaired.
8. About 100 staff members attended training; total training days was 1,020 days.

- **Budget for training and HRD is about 1.0% of operating expenses.**

### Data as of 2005.
HAI DUONG WATER SUPPLY LIMITED COMPANY

Address: No. 8, Hong Quang Road, Quang Trung Ward, Hai Duong City, Vietnam
Telephone: (84-320) 841 517
Fax: (84-320) 841 517
E-mail: ctycn@vnn.vn
Head: Vu Xuan Te, Director

Hai Duong Water Supply Limited Company (HDWSC) is a government department with separate financial reporting for water supply. It was established in 1992 and is responsible for water supply services in Hai Duong Province. The utility covers 8 towns and cities in the province including the capital city of Hai Duong. Its area of responsibility has a total population of 266,435 people. The present service area of the utility has a population density of 3,092 persons/km². The utility draws water from surface water and groundwater sources. The private sector is not involved in any of utility’s operations. It publishes an annual report that is available to the public.

<table>
<thead>
<tr>
<th>General Data About Water Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connections: 39,620</td>
</tr>
<tr>
<td>Staff: 412</td>
</tr>
<tr>
<td>Annual O&amp;M Costs: VND28,709 million US$1,774,370</td>
</tr>
<tr>
<td>Annual Collections: VND28,978 million US$1,791,000</td>
</tr>
<tr>
<td>Annual Billings: VND28,978 million US$1,791,000</td>
</tr>
<tr>
<td>Total Capital Expenditure: VND15,000 million US$927,070</td>
</tr>
<tr>
<td>(Over the last 5 years) Average capital expenditure/connection/year: US$2.39</td>
</tr>
<tr>
<td>Source of Investment Funds: Internal funds, grants and loans from government and ODA sources, and loans from a commercial bank</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tariff Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>FIXED MONTHLY CHARGE</td>
</tr>
<tr>
<td>Nil</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
</tr>
<tr>
<td>3,325</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 2,736 new connections in 2005. Price of new connection is VND700,000 (US$43.26) for domestic and VND1,500,000 (US$92.71) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND21,000 (US$1.30).

<table>
<thead>
<tr>
<th>Priority Needs of Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Capital for investment</td>
</tr>
<tr>
<td>2. Human resources development</td>
</tr>
<tr>
<td>3. Technological innovation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consumer Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average monthly consumption is about 10.7 m³ per domestic connection. The water bill averages VND38,710 (US$2.39) per month per domestic connection. Water is available for only 16 hours a day to users at an average pressure of 30 meters. Water quality is good with all of 250 water samples taken during the year passing the residual chlorine tests. There were only 15 consumers complaints recorded and 10 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter or by going to the utility office.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDWSC provides water at 75 lpcd to its consumers at an average of only 16 hours per day. It provides piped water supply to 84.1% of the population in its service area. NRW is just about the average at 27.3%. Production and all service connections are fully metered. Operating ratio is still acceptable at 0.99 although much higher than the average. Accounts receivable is nil indicating that bill payments are being collected on time. Average tariff at VND4,025/m³ (US$0.25/m³) is lower than average but barely enough to cover operating expenses. Staff/1000 connections ratio is sixth highest at 10.4. HDWSC needs to improve water availability in terms of hours and the amount available to the consumers. It also needs to improve staff productivity. Other areas for improvement are reduction of NRW and operating ratio to about 0.75 or lower.</td>
</tr>
</tbody>
</table>
# HAI DUONG WATER SUPPLY

Population: 216,435

## Production/Distribution

- Average Daily Production: 27,123 m³
- Production capacity/day: 45,500 m³
- Treatment Type: Conventional
- Storage: 7,780 m³
- Service Area: 70 sq km
- Distribution pipes: 142 km
- Service pipe length: no data

## Service Connections

<table>
<thead>
<tr>
<th>Type</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>38,839</td>
</tr>
<tr>
<td>Non domestic</td>
<td>781</td>
</tr>
<tr>
<td>Bulk</td>
<td>Nil</td>
</tr>
<tr>
<td>Total</td>
<td>39,620</td>
</tr>
</tbody>
</table>

## Service Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Coverage</td>
<td>84.1%</td>
</tr>
<tr>
<td>Water Availability</td>
<td>16 hours/day</td>
</tr>
<tr>
<td>Per Capita Consumption</td>
<td>75 l/c/d</td>
</tr>
<tr>
<td>Average Tariff</td>
<td>US$0.25/m³</td>
</tr>
</tbody>
</table>

## Efficiency Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Revenue Water</td>
<td>27.3%</td>
</tr>
<tr>
<td>Unit Production Cost</td>
<td>US$0.18/m³</td>
</tr>
<tr>
<td>Operating Ratio</td>
<td>0.99</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>Nil</td>
</tr>
<tr>
<td>Staff/1,000 Connections</td>
<td>10.4</td>
</tr>
</tbody>
</table>

**Notes:**

1. The population is for the present area served by the utility.
2. All 250 samples taken during the year passed the residual chlorine test.
3. The total area of responsibility is 102 sq km.
4. About 2,736 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 30 meters.
7. In 2005, about 10 pipe breaks were repaired and 4,000 meters were either replaced or repaired.
8. About 78 staff members attended training; total training days was 78 days.

**Data as of 2005.**
HAI PHONG WATER SUPPLY COMPANY

Address: No 54 – Dinh Tien Hoang Street, Hai Phong, Vietnam
Telephone: (84-31) 745 947
Fax: (84-31) 823 748
E-mail: dangning202@yahoo.com
Head: Vu Phong, Director

Hai Phong Water Supply Company (HPWSCO) is a state owned enterprise operating under commercial law. It was established in 1905 and is responsible for water supply services in Hai Phong Province. The utility covers 8 towns and cities in the province including the capital city of Hai Phong. Its area of responsibility has a total population of 845,000 people. The present service area of the utility has a population density of 12,186 persons/km². The utility draws water from surface water sources through direct river abstraction. The private sector is not involved in any of utility’s operations. It publishes an annual report that is available to the public.

**General Data About Water Utility**
- Connections: 155,900
- Staff: 808
- Annual O&M Costs: VND120,259 million, US$7,432,580
- Annual Collections: VND119,084 million, US$7,359,970
- Annual Billings: VND112,155 million, US$6,931,700
- Total Capital Expenditure: VND 75,000 million, US $4,635,350
  (Over the last 5 years) Average capital expenditure/connection/year: US$5.95
- Source of Investment Funds: Internal funds and loan from a government bank

**Tariff Structure**

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th></th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td></td>
<td>VND</td>
<td>US$</td>
</tr>
<tr>
<td></td>
<td>9,000</td>
<td>0.56</td>
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<tr>
<td>CONSUMPTION CHARGE</td>
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<td>VND/m³</td>
<td>US$/m³</td>
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<tr>
<td>0-15 m³</td>
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</tr>
<tr>
<td>Over 15 m³</td>
<td>4,600</td>
<td>0.28</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 9,230 new connections in 2005. Price of new connection is VND900,000 (US$55.62) for domestic and VND3,000,000 (US$185.41) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND18,000 (US$1.11)

**Priority Needs of Utility**
1. Management improvement
2. Water tariff
3. Water losses

**Consumer Service**
Average monthly consumption is about 13.5 m³ per domestic connection. The water bill averages VND36,350 (US$2.25) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 25 meters. About 32,000 water samples were tested for residual chlorine in 2005. There were 400 consumers complaints recorded and 1,000 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter, or by going to the utility office.

**Performance Highlights**
HPWSCO provides water at 99 lpcd to its consumers at an average of only 22 hours per day. It provides piped water supply to 94.6% of the population in its service area. NRW is reasonable at 22% but can still be lowered. Production is fully metered but no data was available on consumption metering. Operating ratio is the seventh highest at 1.01. Accounts receivable data was not available. Average tariff at VND3,232/m³ (US$0.20/m³) is lower than average and is not enough to cover operating expenses. Staff/1000 connections ratio is lower than average at 5.2. HPWSCO needs to improve on water availability and the amount available to the consumers. It has to improve on its revenues and collection to cover operating expenses.
### HAI PHONG WATER SUPPLY

**Population:** 719,000

#### Production/Distribution

- **Average Daily Production:** 121,918 m³
- **Production capacity/day:** 176,000 m³
- **Treatment Type:** Filtration
- **Storage:** 25,000 m³
- **Service Area:** 58.8 sq km
- **Distribution pipes:** 1500 km
- **Service pipe length:** 4 m

#### Service Connections

- **Domestic:** 152,300
- **Non domestic:** 3,600
- **Bulk:** Nil
- **Total:** 155,900

#### Service Indicators

- **Service Coverage:** 94.6%
- **Water Availability:** 22 hours/day
- **Per Capita Consumption:** 99 l/c/d
- **Average Tariff:** US$0.20/m³

#### Efficiency Indicators

- **Non-Revenue Water:** 22.0%
- **Unit Production Cost:** US$0.17/m³
- **Operating Ratio:** 1.01
- **Accounts Receivable:** no data
- **Staff/1,000 Connections:** 5.2

#### Notes:

1. The population is for the present area served by the utility.
2. About 32,000 water samples were tested in 2005 for residual chlorine.
3. The total area of responsibility is 79 sq km.
4. About 9,230 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 25 meters.
7. In 2005, about 1,000 pipe breaks were repaired and 4,490 meters were either replaced or repaired.
8. About 250 staff members attended training; total training days was 1,100 days
   
   **Budget for training and HRD is about 0.3% of operating expenses.**

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**Data as of 2005.**
HO CHI MINH

SAIGON WATER SUPPLY CORPORATION
Address: 1 Cong Truong Quoc Te, District 3, Ho Chi Minh City, Vietnam
Telephone: (84-8) 829 1777
Fax: (84-8) 824 1644
E-mail: hcmcwater@hmc.vnn.vn
Head: Tran Dinh Phu, Director

Saigon Water Supply Corporation (SAWACO) is a state owned enterprise operating under commercial law. It was established in 2005 and is responsible for water supply services in Ho Chi Minh City. The utility covers 17 urban and 5 rural districts of the city. Its area of responsibility has a total population of 5,692,094 people. The present service area of the utility has a population density of 8,907 persons/km². The utility draws water from surface water and groundwater sources including bulk supply from outside sources. The private sector is involved in the utility’s operations through service, lease and BOT contracts. It publishes an annual report but it is not available to the public.

General Data About Water Utility
Connections: 530,561
Staff: 2,836
Annual O&M Costs: VND1,020,517 million  US$ 63,072,720
Annual Collections: VND1,046,848 million  US$ 64,700,130
Annual Billings: VND 960,199 million  US$ 59,344,800
Total Capital Expenditure: VND1,775,679 million  US$109,745,330
(Over the last 5 years) Average capital expenditure/connection/year: US$41.37
Source of Investment Funds: Internal funds and grants from government and ODA projects

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
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<td>US$</td>
</tr>
<tr>
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<td>Nil</td>
<td>Nil</td>
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<tr>
<td>CONSUMPTION CHARGE</td>
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</tr>
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<td>0-5 m³</td>
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<tr>
<td>5-6 m³</td>
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</tr>
<tr>
<td>Over 6 m³</td>
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</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 83,310 new connections in 2005. Price of new connection is VND1,000,000 (US$61.80) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND21,600 (US$1.33).

Priority Needs of Utility
1. Capital for expansion
2. Enhanced management capacity
3. Improvement and use of automatic control system

Consumer Service
Average monthly consumption is about 25.6 m³ per domestic connection. The water bill averages VND108,840 (US$6.73) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 8 meters. Water quality is good with 97% of 3,319 water samples taken during the year passing the residual chlorine tests. There were 249 consumers complaints recorded and 21,070 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter, or by going to the utility office.

Performance Highlights
SAWACO provides water at 113 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 72.9% of the population in its service area. NRW is third highest at 42.8%. Production and all service connections are fully metered. Operating ratio is acceptable at 0.97. Accounts receivable equivalent is good at 0.5 month. Average tariff at VND4,529/m³ (US$0.28/m³) is lower than average but is just enough to cover operating expenses. Staff/1000 connections ratio is lower than average at 5.3. SAWACO needs to reduce its high NRW. Other areas for improvement are expansion of coverage and further reduction of operating ratio to about 0.75.
## Area Profile

### HO CHI MINH WATER SUPPLY

#### Population:
5,290,740

#### Production/Distribution

- **Average Daily Production**: 1,016,403 m³
- **Production capacity/day**: 1,236,000 m³
- **Treatment Type**: Conventional
- **Storage**: 300,000 m³
- **Service Area**: 594 sq km
- **Distribution pipes**: 3,011 km
- **Service pipe length**: 5 m

#### Service Connections

- **Domestic**: 519,733
- **Non domestic**: 10,828
- **Bulk**: Nil
- **Total**: 530,561

#### Service Indicators

- **Service Coverage**: 72.9%
- **Water Availability**: 24 hours/day
- **Per Capita Consumption**: 113 l/c/d
- **Average Tariff**: US$0.28/m³

#### Efficiency Indicators

- **Non-Revenue Water**: 42.8%
- **Unit Production Cost**: US$0.17/m³
- **Operating Ratio**: 0.97
- **Accounts Receivable**: 0.5 month
- **Staff/1,000 Connections**: 5.3

### Notes:

1. The population is for the present area served by the utility.
2. About 97% of 3,319 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 1,492 sq km.
4. About 83,310 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 8 meters.
7. In 2005, about 21,070 pipe breaks were repaired and 104,036 meters were either replaced or repaired.
8. About 2,900 staff members attended training; total training days was 6,500 days

**Budget for training and HRD is about 0.015 % of operating expenses.**

### Data as of 2005.

#### Annual Water Use
370,987,100 m³

#### Annual Water Billings
US$63,072,700

#### Annual O&M Costs
US$59,344,800

**Vietnam**
THUA THIEN HUE WATER SUPPLY & SEWERAGE COMPANY

Address : 103 Bui Thi Xuan, Hue City, Thua Thien Hue Province, Vietnam
Telephone : (84-54) 833 710
Fax : (84-54) 826 580
E-mail : ctntth@dng.vnn.vn
Head : Truong Cong Nam, Director

Thua Thien Hue Water Supply & Sewerage Company (TTHWSC) is a state owned enterprise operating under commercial law. It was established in 1909 and is responsible for water supply services in Thua Thien Hue Province. The utility covers 9 towns and cities including the city of Hue. Its area of responsibility has a total population of 1,136,200 people. The present service area of the utility has a population density of 225 persons/km². The utility draws water from surface water sources. The private sector is not involved in any of the utility’s operations. It publishes an annual report but it is not available to the public.

General Data About Water Utility

Connections : 63,488
Staff : 523
Annual O&M Costs : VND33,482 million US$2,069,350
Annual Collections : VND71,665 million US$4,429,230
Annual Billings : VND57,611 million US$3,560,620
Total Capital Expenditure : no data
(Over the last 5 years) Average capital expenditure/connection/year: no data
Source of Investment Funds : no data

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
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<tr>
<td>CONSUMPTION CHARGE</td>
<td>VND/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td></td>
<td>2,750</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>4,500</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 10,928 new connections in 2005. Price of new domestic connection is VND1,000,832 (US$61.86).
3. Monthly water bill for a household consuming 6 m³ of water per month is VND16,500 (US$1.02).

Priority Needs of Utility

1. Training and human resources development
2. Enhancement of water quality for safe water
3. Enhancement of customer service quality

Consumer Service

Average monthly consumption is about 19.6 m³ per domestic connection. The water bill averages VND53,890 (US$3.33) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 12 meters. Water quality is good with 96% of 98,742 water samples taken during the year passing the residual chlorine tests. There were 254 consumers complaints recorded and 2,070 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter, e-mail, or by going to the utility office.

Performance Highlights

TTHWSC provides water at 64 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to only 52% of the population in its service area. NRW is good at 15% being the second lowest. Production and all service connections are fully metered. Operating ratio is very good at 0.47. Accounts receivable equivalent is above average at 1.2 months. Average tariff at VND3,165/m³ (US$0.20/m³) is ninth lowest but is enough to cover operating expenses with its low NRW. Staff/1000 connections ratio is higher than average at 8.2. TTHWSC needs to provide more water to its consumers and expand coverage to unserved households. Staff productivity can also be improved as well as its collection efforts by getting consumers to pay on time.
**HUE WATER SUPPLY**

Population: 1,136,200

**Production/Distribution**

- Average Daily Production: 58,691 m³
- Production capacity/day: 100,100 m³
- Treatment Type: Conventional
- Storage: 11,250 m³
- Service Area: 5,054 sq km
- Distribution pipes: 1,079 km
- Service pipe length: 16.8 m

**Service Connections**

- Domestic: 59,063
- Non domestic: 4,425
- Bulk: Nil
- Total: 63,488

**Service Indicators**

- Service Coverage: 52.0%
- Water Availability: 24 hours/day
- Per Capita Consumption: 64 l/c/d
- Average Tariff: US$0.20/m³

**Efficiency Indicators**

- Non-Revenue Water: 15.0%
- Unit Production Cost: US$0.10/m³
- Operating Ratio: 0.47
- Accounts Receivable: 1.2 months
- Staff/1,000 Connections: 8.2

Notes:

1. The population is for the present area served by the utility.
2. About 96% of 98,742 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 5,054 sq km.
4. About 10,928 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 12 meters.
7. In 2005, about 2,070 pipe breaks were repaired and 8,593 meters were either replaced or repaired.
8. About 290 staff members attended training; total training days was 5,352 days

Budget for training and HRD is about 0.51 % of operating expenses.

Data as of 2005.

Vietnam
Kien Giang Urban Water Supply & Sewerage Company (KGWSC) is a state owned enterprise operating under commercial law. It was established in 1963 and is responsible for water supply services in Kien Giang Province. The utility covers 8 towns and cities including Rach Gia City. Its area of responsibility has a total population of 350,419 people. The present service area of the utility has a population density of 62 persons/km². The utility draws water from surface water and groundwater sources. The private sector is not involved in any of the utility’s operations. It publishes an annual report and it is available to the public.

### General Data About Water Utility

- **Connections**: 28,165
- **Staff**: 289
- **Annual O&M Costs**: VND24,701 million, US$1,526,640
- **Annual Collections**: VND29,929 million, US$1,849,750
- **Annual Billings**: VND25,619 million, US$1,583,380
- **Total Capital Expenditure**: VND94,448 million, US$5,837,330
  - (Over the last 5 years) Average capital expenditure/connection/year: US$41.45
- **Source of Investment Funds**: Internal funds, grants and loans from government and ODA sources, private sector investment/equity

### Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIXED MONTHLY CHARGE</strong></td>
<td>VND 5,000</td>
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<td>US$ 0.31</td>
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<tr>
<td></td>
<td>US$ 0.19/m³</td>
<td>US$ 0.25/m³</td>
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</tbody>
</table>

**Notes:**
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 2,830 new connections in 2005. Price of new connection is VND1,000,000 (US$61.80) for domestic and VND2,480,000 (US$153.28) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND19,390 (US$1.20).

### Priority Needs of Utility

1. Human resources development
2. Capital budget for water supply system
3. Governing laws and policies

### Consumer Service

Average monthly consumption is about 19.9 m³ per domestic connection. The water bill averages VND58,750 (US$3.63) per month per domestic connection. Water is available for only 20 hours a day to users at an average pressure of 4 meters. Water quality is good with all of 12 water samples taken during the year passing the residual chlorine tests though the number of samples is limited. There were 60 consumers complaints recorded and 720 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter, or by going to the utility office.

### Performance Highlights

KGWSC provides water at 97 lpcd to its consumers at an average of only 20 hours per day. It provides piped water supply to only 72.5% of the population in its service area. NRW is just about average at 27.4%. While production is fully metered, only 98% of service connections are metered. Operating ratio is acceptable at 83%. Accounts receivable equivalent is eighth highest at 1.6 months. Average tariff at VND3,327/m³ (US$0.21/m³) is low but it is still enough to cover operating expenses. Staff/1000 connections ratio is eighth highest at 10.3. KGWSC needs to improve on staff productivity and on collecting bill payments on time. It should also improve water availability to 24 hours and expand service to unserved households. Other areas for improvement are reduction of NRW and operating ratio to about 0.75.
KIEN GIANG WATER SUPPLY

Population: 252,536

Production/Distribution

Average Daily Production: 29,041 m³
Production capacity/day: 37,200 m³
Treatment Type: Conventional
Storage: 37,200 m³
Service Area: 4,041 sq km
Distribution pipes: 275 km
Service pipe length: 4 m

Service Connections

Domestic: 27,164
Non domestic: 1,001
Bulk: Nil
Total: 28,165

Service Indicators

Service Coverage: 72.5%
Water Availability: 20 hours/day
Per Capita Consumption: 97 l/c/d
Average Tariff: US$0.21/m³

Efficiency Indicators

Non-Revenue Water: 27.4%
Unit Production Cost: US$0.14/m³
Operating Ratio: 0.83
Accounts Receivable: 1.6 months
Staff/1,000 Connections: 10.3

Notes:
1 The population is for the present area served by the utility.
2 All of only 12 samples taken during the year passed the residual chlorine test.
3 The total area of responsibility is 6,299 sq km.
4 About 2,830 new customers were connected during the year.
5 This is the population coverage in the present service area.
6 Average mains water pressure is 4 meters.
7 In 2005, about 720 pipe breaks were repaired and 5,169 meters were either replaced or repaired.
8 About 132 staff members attended training; total training days was 705 days.

Data as of 2005.
NINH THUAN

NINH THUAN WATER SUPPLY COMPANY

Address: 23-Nguyen Trai Street, Phan Rang, Ninh Thuan Province, Vietnam
Telephone: (84-68) 831 892
Fax: (84-68) 820 035
E-mail: bqldant@hcm.vnn.vn
Head: Nguyen The Duong, Director

Ninh Thuan Water Supply Company (NTWSC) is a state owned enterprise operating under commercial law. It was established in 1992 and is responsible for water supply services in Ninh Thuan Province. The utility covers 4 towns including the town of Phan Rang. Its area of responsibility has a total population of 356,000 people. The present service area of the utility has a population density of 1,339 persons/km². The utility draws water from surface water and groundwater sources. The private sector is not involved in any of the utility's operations. It publishes an annual report and it is available to the public.

General Data About Water Utility

| Connections | 24,710 |
| Staff | 275 |
| Annual O&M Costs | VND17,854 million US$1,103,440 |
| Annual Collections | VND18,867 million US$1,166,100 |
| Annual Billings | VND15,667 million US$968,320 |
| Total Capital Expenditure | no data |
| Source of Investment Funds | no data |

Tariff Structure

| Category                  | Domestic |  | Non domestic |  |
|---------------------------|----------|-------------------|-------------------|
| FIXED MONTHLY CHARGE      | VND      | US$    | VND      | US$    |
|                          | 2,800    | 0.17   | 6,400    | 0.40   |
| CONSUMPTION CHARGE       | VND/m³   | US$/m³ | VND/m³   | US$/m³ |
| 0-10 m³                  | 2,800    | 0.17   | 6,400    | 0.40   |
| 10-20 m³                 | 4,200    | 0.26   | 6,400    | 0.40   |
| 20-30 m³                 | 5,000    | 0.31   | 6,400    | 0.40   |
| Over 30 m³               | 7,000    | 0.43   | 6,400    | 0.40   |

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 1,222 new connections in 2005. Price of new connection is VND1,000,000 (US$61.80) for domestic and VND1,500,000 (US$92.71) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND16,800 (US$1.04).

Priority Needs of Utility

1. Additional system capacity
2. Piping network maintenance
3. Employees' standard of living enhancement

Consumer Service

Average monthly consumption is about 11.3 m³ per domestic connection. The water bill averages VND35,775 (US$2.21) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 20 meters. Water quality is good with all of 28 water samples taken during the year passing the residual chlorine tests though the number of samples is limited. There were only 3 consumers complaints recorded and 205 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone or by going to the utility office.

Performance Highlights

NTWSC provides water at only 37 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 80% of the population in its service area. NRW is lower than average at 24.6%. Production and all service connections are fully metered. Operating ratio is still acceptable at 0.95. Accounts receivable equivalent is nil. Average tariff at VND3,821/m³ (US$0.24/m³) is low but it is still enough to cover operating expenses. Staff/1000 connections ratio is third highest at 11.1. NTWSC needs to increase the amount of water available to its consumers and to expand its coverage. Staff productivity is a major area of concern needing improvement. Other areas for improvement are further reduction of NRW and operating ratio.
**NINH THUAN WATER SUPPLY**

Population: 308,000 ¹

**Production/Distribution**

- Average Daily Production: 14,904 m³
- Production capacity/day: 14,000 m³
- Treatment Type: Conventional
- Storage: 13,300 m³
- Service Area: 230 sq km
- Distribution pipes: 192 km
- Service pipe length: 4 m

**Service Connections**

- Domestic: 24,330
- Non domestic: 380
- Bulk: Nil
- Total: 24,710 ⁴

**Service Indicators**

- Service Coverage: 80.0%
- Water Availability: 24 hours/day
- Per Capita Consumption: 37 l/c/d
- Average Tariff: US$0.24/m³

**Efficiency Indicators**

- Non-Revenue Water: 24.6%
- Unit Production Cost: US$0.20/m³
- Operating Ratio: 0.95
- Accounts Receivable: Nil
- Staff/1,000 Connections: 11.1

Notes:

¹ The population is for the present area served by the utility.
² All of 28 samples taken passed the residual chlorine test.
³ The total area of responsibility 407 sq km.
⁴ About 1,222 new customers were connected during the year.
⁵ This is the population coverage in the present service area.
⁶ Average mains water pressure is 20 meters.
⁷ In 2005, about 205 pipe breaks were repaired and 520 meters were either replaced or repaired.
⁸ About 82 staff members attended training; total training days was 102 days.

Budget for training and HRD is about 5% of operating expenses.

Data as of 2005.
SON LA WATER SUPPLY LIMITED COMPANY

Address: 55-To Hieu Street, Son La Town, Son La Province, Vietnam
Telephone: (84-22) 852 616
Fax: (84-22) 854 539
E-mail: ctncsla@hn.vnn.vn
Head: Nguyen Duc Thuan, Chief Executive Officer

Son La Water Supply Limited Company (SOWA) is a jointly-owned government and private company operating under commercial law. It was established in 1963 and is responsible for water supply services in Son La Province. The utility covers 9 towns including the capital town of Son La. Its area of responsibility has a total population of 124,000 people. The present service area of the utility has a population density of 1,240 persons/km². The utility draws water from surface water and groundwater sources. The private sector is not involved in any of the utility’s operations. It publishes an annual report and it is available to the public.

General Data About Water Utility

Connections: 25,200
Staff: 210
Annual O&M Costs: VND 23,737 million US$ 1,467,060
Annual Collections: VND 23,968 million US$ 1,481,340
Annual Billings: VND 14,433 million US$ 892,030
Total Capital Expenditure: VND180,000 million US$11,124,850
(Over the last 5 years) Average capital expenditure/connection/year: US$88.29

Source of Investment Funds: Internal funds, grants and loans from government and ODA sources

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
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<td>VND 2,000 US$0.12</td>
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<tr>
<td>CONSUMPTION CHARGE</td>
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<td>VND/m³ 4,000 US$/m³ 0.25</td>
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</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 2,000 new connections in 2005. Price of new connection is VND550,000 (US$33.99) for domestic connections and VND700,000 (US$43.26) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND17,000 (US$1.05).

Priority Needs of Utility

1. Enhance quality of water supply service
2. Increase production and improve quality
3. Reduction of water loss

Consumer Service

Average monthly consumption is about 15.2 m³ per domestic connection. The water bill averages VND35,285 (US$2.18) per month per domestic connection. Water is available for only 18 hours a day to users at an average pressure of 50 meters. Water quality is fair with 87% of 150 water samples taken during the year passing the residual chlorine tests though the number of samples is limited. There were 150 consumers complaints recorded and 50 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter or by going to the utility office.

Performance Highlights

SOWA provides water at only 98 lpcd to its consumers at an average of only 18 hours per day. It provides piped water supply to 92.7% of the population in its service area. NRW is fifth lowest at 17.7%. Production and all service connections are fully metered. Operating ratio at 0.99 is just enough for revenues to cover operating expenses. Accounts receivable equivalent is nil with bill payments paid on time. Average tariff is fourth lowest at VND2,830/m³ (US$0.17/m³) but it is still enough to cover operating expenses with its low NRW. Staff/1000 connections ratio at 8.3 is higher than average. SOWA needs to improve on water availability in terms of hours per day and amount of water delivered per capita. Possible tariff increase may be considered to improve its finances and to bring down operating ratio to about 0.75. Staff productivity may also need some improvement.
SON LA WATER SUPPLY

Population: 124,000

Production/Distribution

- Average Daily Production: 16,986 m³
- Production capacity/day: 34,000 m³
- Treatment Type: Conventional
- Storage: 2,500 m³
- Service Area: 100 sq km
- Distribution pipes: 230 km
- Service pipe length: 7 m

Service Connections

- Domestic: 22,500
- Non domestic: 2,700
- Bulk: Nil
- Total: 25,200

Service Indicators

- Service Coverage: 92.7%
- Water Availability: 18 hours/day
- Per Capita Consumption: 98 l/c/d
- Average Tariff: US$0.17/m³

Efficiency Indicators

- Non-Revenue Water: 17.7%
- Unit Production Cost: US$0.24/m³
- Operating Ratio: 0.99
- Accounts Receivable: Nil
- Staff/1,000 Connections: 8.3

Notes:

1. The population is for the present area served by the utility.
2. About 87% of 150 samples taken passed the residual chlorine test.
3. The total area of responsibility 100 sq km.
4. About 2,000 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 50 meters.
7. In 2005, about 50 pipe breaks were repaired and 500 meters were either replaced or repaired.
8. About 10 staff members attended training; total training days was 1,200 days.

Budget for training and HRD is about 0.5% of operating expenses.

Annual Water Use

- 6,200,000 m³

Annual Water Billings

- US$892,000

Annual O&M Costs

- US$1,467,100

Data as of 2005.
THANH HOA Utility Profile

Thanh Hoa Water Supply Limited Company (THWSC) is a state owned enterprise operating under commercial law. It was established in 1931 and is responsible for water supply services in the capital town of Thanh Hoa. Its area of responsibility has a total population of 310,000 people. The utility draws water from surface water and groundwater sources. The private sector is involved in the utility’s operations through service and lease contracts. It publishes an annual report but it is not available to the public.

<table>
<thead>
<tr>
<th>General Data About Water Utility</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Connections</td>
<td>41,430</td>
</tr>
<tr>
<td>Staff</td>
<td>439</td>
</tr>
<tr>
<td>Annual O&amp;M Costs</td>
<td>VND29,037 million / US$1,794,600</td>
</tr>
<tr>
<td>Annual Collections</td>
<td>VND22,220 million / US$1,373,320</td>
</tr>
<tr>
<td>Annual Billings</td>
<td>VND20,159 million / US$1,245,900</td>
</tr>
<tr>
<td>Total Capital Expenditure (Over the last 5 years)</td>
<td>no data</td>
</tr>
<tr>
<td>Source of Investment Funds</td>
<td>no data</td>
</tr>
</tbody>
</table>

| Tariff Structure |
|------------------|------------------|
| Category         | Domestic         | Non domestic |
| FIXED MONTHLY CHARGE | VND  | US$  | VND  | US$  |
|                   | 4,600 | 0.28 | 12,300 | 0.76 |
| CONSUMPTION CHARGE | VND/m³ | US$/m³ | VND/m³ | US$/m³ |
| 0-15 m³           | 2,100 | 0.13 | 5,800 | 0.36 |
| 15-25 m³          | 2,500 | 0.15 | 5,800 | 0.36 |
| Over 25 m³        | 3,000 | 0.19 | 5,800 | 0.36 |

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 4,128 new connections in 2005. Price of new connection is VND784,000 (US$48.45) for domestic and VND1,500,000 (US$92.71) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND17,200 (US$1.06).

<table>
<thead>
<tr>
<th>Priority Needs of Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Development of new water sources</td>
</tr>
<tr>
<td>2. Upgrade and expansion of water supply system</td>
</tr>
<tr>
<td>3. Reduction of NRW</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consumer Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average monthly consumption is about 10.9 m³ per domestic connection. The water bill averages VND30,810 (US$1.90) per month per domestic connection. Water is available for only 20 hours a day to users at an average pressure of 12 meters. Water quality is good with all of 365 water samples taken during the year passing the residual chlorine tests. There were 6,000 consumers complaints recorded and 52 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone or letter.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>THWSC provides water at only 76 lpcd to its consumers at an average of 20 hours per day. It provides piped water supply to 62% of the population in its service area. NRW is above average at 31.1%. Production and all service connections are fully metered. Operating ratio at 1.31 is third highest. Accounts receivable equivalent is almost nil with most bill payments paid on time. Average tariff is quite low at VND2,867/m³ (US$0.18/m³) and is not enough to cover operating expenses. Staff/1000 connections ratio at 10.6 is fifth highest. THWSC needs to improve on water availability in terms of hours per day, amount of water delivered per capita and increase in coverage. Staff productivity also needs to be improved. Tariff adjustment may be considered to improve its finances and bring down operating ratio to about 0.75 or lower.</td>
</tr>
</tbody>
</table>
THANH HOA WATER SUPPLY

Population: 310,000

Production/Distribution

- Average Daily Production: 27,945 m³
- Production capacity/day: 50,750 m³
- Treatment Type: Conventional
- Storage: 50,750 m³
- Service Area: no data
- Distribution pipes: 300 km
- Service pipe length: no data

Service Connections

- Domestic: 40,620
- Non domestic: 810
- Bulk: Nil
- Total: 41,430

Service Indicators

- Service Coverage: 62.0%
- Water Availability: 20 hours/day
- Per Capita Consumption: 76 l/c/d
- Average Tariff: US$0.18/m³

Efficiency Indicators

- Non-Revenue Water: 31.1%
- Unit Production Cost: US$0.18/m³
- Operating Ratio: 1.31
- Accounts Receivable: 0.1 month
- Staff/1,000 Connections: 10.6

Notes:
1. The population is for the present area served by the utility.
2. All of 365 samples taken passed the test for residual chlorine.
3. The total area of responsibility was not given.
4. About 4,128 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 12 meters.
7. In 2005, about 52 pipe breaks were repaired and 556 meters were either replaced or repaired.
8. About 21 staff members attended training; total training days was 210 days

Data as of 2005.

Annual Water Use
10,200,000 m³

Annual Water Billings
US$1,245,900

Annual O&M Costs
US$1,794,600
TIEN GIANG URBAN WATER SUPPLY & SEWERAGE COMPANY

Address: 4A-30/4 Street, Ward 1, My Tho City, Tien Giang Province, Vietnam
Telephone: (84-73) 876 491
Fax: (84-73) 872 871
E-mail: ctntg@bdvn.vnd.net
Head: Truong Van Hieu, Director

Tien Giang Urban Water Supply & Sewerage Company (TGWSC) is a state owned enterprise operating under commercial law. It was established in 1992 and is responsible for water supply services in Tien Giang Province. The utility covers 8 towns and cities including My Tho City. Its area of responsibility has a total population of 1,698,851 people. The utility draws water from surface water and groundwater sources. The private sector is involved in the utility’s operations through a build, operate and transfer contract. It publishes an annual report and it is available to the public.

<table>
<thead>
<tr>
<th>General Data About Water Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connections: 55,205</td>
</tr>
<tr>
<td>Staff: 320</td>
</tr>
<tr>
<td>Annual O&amp;M Costs: VND28,250 million US$1,746,000</td>
</tr>
<tr>
<td>Annual Collections: VND44,688 million US$2,761,920</td>
</tr>
<tr>
<td>Annual Billings: VND36,644 million US$2,141,180</td>
</tr>
<tr>
<td>Total Capital Expenditure: VND 6,518 million US$402,860</td>
</tr>
<tr>
<td>Source of Investment Funds: Internal funds, grants and loans from government and ODA sources</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tariff Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>FIXED MONTHLY CHARGE</td>
</tr>
<tr>
<td>3,000</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
</tr>
<tr>
<td>3,000</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 3,719 new connections in 2005. Price of new connection is VND1,500,000 (US$92.71) for domestic connections and VND20,000,000 (US$1,236.09) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND18,000 (US$1.11).

<table>
<thead>
<tr>
<th>Priority Needs of Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Upgrade and expansion of water supply system</td>
</tr>
<tr>
<td>2. Additional water supply for new industrial parks</td>
</tr>
<tr>
<td>3. Reduction of water losses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consumer Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average monthly consumption is about 16.5 m³ per domestic connection. The water bill averages VND44,050 (US$2.72) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 10 meters. Water quality is good with all of 365 water samples taken during the year passing the residual chlorine tests though the number of samples is limited. There were 24 consumers complaints recorded and 2,622 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone or by going to the utility office.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGWSC provides water at only 76 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to only 40.7% of the population in its service area, the second lowest. NRW is the highest at 48.8%. Production and all service connections are fully metered. Operating ratio at 0.63 is good and fifth lowest. Accounts receivable equivalent is nil with bill payments paid on time. Average tariff is fourth lowest at VND2,706/m³ (US$0.17/m³) but is still enough to cover its low operating expenses well. Staff/1000 connections ratio at 5.8 is lower than average. TGWSC needs to reduce its high NRW to provide additional supply for expansion. It also needs to increase its coverage to unserved households in its service area as well as increase the amount of water provided per capita. Tariff adjustment can be considered to help finance expansion of the distribution system.</td>
</tr>
</tbody>
</table>
TIEN GIANG WATER SUPPLY

Population: 800,000

Production/Distribution

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Production</td>
<td>68,493 m³</td>
</tr>
<tr>
<td>Production capacity/day</td>
<td>110,000 m³</td>
</tr>
<tr>
<td>Treatment Type</td>
<td>Conventional</td>
</tr>
<tr>
<td>Storage</td>
<td>3,500 m³</td>
</tr>
<tr>
<td>Service Area</td>
<td>438 sq km</td>
</tr>
<tr>
<td>Distribution pipes</td>
<td>190 km</td>
</tr>
<tr>
<td>Service pipe length</td>
<td>3 m</td>
</tr>
</tbody>
</table>

Service Connections

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>45,876</td>
</tr>
<tr>
<td>Non domestic</td>
<td>9,329</td>
</tr>
<tr>
<td>Bulk</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55,205</strong></td>
</tr>
</tbody>
</table>

Service Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Coverage</td>
<td>40.7%</td>
</tr>
<tr>
<td>Water Availability</td>
<td>24 hours/day</td>
</tr>
<tr>
<td>Per Capita Consumption</td>
<td>76 l/c/d</td>
</tr>
<tr>
<td>Average Tariff</td>
<td>US$0.17/m³</td>
</tr>
</tbody>
</table>

Efficiency Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Revenue Water</td>
<td>48.8%</td>
</tr>
<tr>
<td>Unit Production Cost</td>
<td>US$0.07/m³</td>
</tr>
<tr>
<td>Operating Ratio</td>
<td>0.63</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>Nil</td>
</tr>
<tr>
<td>Staff/1,000 Connections</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Notes:
1. The population is for the present area served by the utility.
2. All of 365 samples taken during the year passed the residual chlorine test.
3. The total area of responsibility 2,481 sq km.
4. About 3,719 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 10 meters.
7. In 2005, about 2,622 pipe breaks were repaired and 1,849 meters were either replaced or repaired.
8. About 50 staff members attended training; total training days was 200 days.

Data as of 2005.

Annual Water Use

25,000,000 m³

Annual Water Billings

US$2,141,200

Annual O&M Costs

US$1,746,000
TRA VINH

TRA VINH URBAN WATER SUPPLY & SEWERAGE COMPANY

Address: 521B-Dien Bien Phu, Ward 6, Tra Vinh Town, Tra Vinh Province, Vietnam
Telephone: (84-74) 840 215
Fax: (84-74) 850 656
E-mail: none
Head: Vu Trong Thanh, Director

TRA Vinh Urban Water Supply & Sewerage Company (TVWSC) is a state owned enterprise operating under commercial law. It was established in 1995 and is responsible for water supply services in Tra Vinh Province. The utility covers 7 towns and cities including the capital town of Tra Vinh. Its area of responsibility has a total population of 358,620 people. The utility draws water from surface water sources. The private sector is not involved in any of the utility’s operations. It publishes an annual report and it is available to the public.

General Data About Water Utility

| Connections | 19,076 |
| Staff | 185 |
| Annual O&M Costs | VND12,339 million | US$ 762,580 |
| Annual Collections | VND13,633 million | US$ 842,600 |
| Annual Billings | VND10,032 million | US$ 620,020 |
| Total Capital Expenditure | VND49,177 million | US$3,039,360 |

Source of Investment Funds: Internal funds and loans from government and ODA sources

| Category | Domestic | Non domestic |
| FIXED MONTHLY CHARGE | VND | US$ | VND | US$ |
| 3,000 | 0.19 | 4,500 | 0.28 |
| CONSUMPTION CHARGE | VND/m³ | US$/m³ | VND/m³ | US$/m³ |
| 2,300 | 0.14 | 3,727 | 0.23 |

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 1,743 new connections in 2005. Price of new connection is VND1,200,000 (US$74.17) for domestic and VND1,450,000 (US$89.62) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND13,800 (US$0.85)

Priority Needs of Utility

1. Reduction of water loss
2. Additional water supply sources
3. Low tariff for adjustment

Consumer Service

Average monthly consumption is about 14.9 m³ per domestic connection. The water bill averages VND32,765 (US$2.03) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 30 meters. Water quality needs to be monitored as only 74% of 564 water samples taken during the year passed the residual chlorine tests. There were 316 consumers complaints recorded and 610 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter or by going to the utility office.

Performance Highlights

TVWSC provides water at only 49 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to only 64.5% of the population in its service area. NRW is eighth highest at 38.1%. Production and all service connections are fully metered. Operating ratio at 0.91 is still acceptable. Accounts receivable equivalent is nil with bill payments paid on time. Average tariff is second lowest at VND2,315/m³ (US$0.14/m³) but is still enough to cover its operating expenses. Staff/1000 connections ratio at 9.7 is above average and quite high. TVWSC needs to address the very low per capita consumption and low coverage. It needs to develop new sources and reduce NRW. Tariff adjustment can be considered to help finance capital development costs and to improve its operating ratio to about 0.75 or lower. Staff productivity may also need some improvement.
TRA VINH WATER SUPPLY

Population: 291,110

Production/Distribution

- Average Daily Production: 19,178 m³
- Production capacity/day: 25,100 m³
- Treatment Type: Filtration
- Storage: no data
- Service Area: no data
- Distribution pipes: 250 km
- Service pipe length: 10 m

Service Connections

- Domestic: 18,714
- Non domestic: 362
- Bulk: Nil
- Total: 19,076

Service Indicators

- Service Coverage: 64.5%
- Water Availability: 24 hours/day
- Per Capita Consumption: 49 l/c/d
- Average Tariff: US$0.14/m³

Efficiency Indicators

- Non-Revenue Water: 38.1%
- Unit Production Cost: US$0.11/m³
- Operating Ratio: 0.91
- Accounts Receivable: Nil
- Staff/1,000 Connections: 9.7

Notes:
1. The population is for the present area served by the utility.
2. Only 74% of 564 samples taken during the year passed the residual chlorine test.
3. No data were given for total area of responsibility as well.
4. About 1,743 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 30 meters.
7. In 2005, about 610 pipe breaks were repaired and 765 meters were either replaced or repaired.
8. About 26 staff members attended training; total training days was 96 days.

Data as of 2005.

Annual Water Use
7,000,000 m³

Annual Water Billings
US$620,000

Annual O&M Costs
US$762,600

Vietnam
VINH LONG WATER SUPPLY COMPANY

Address: 02 Hung Dao Vuong Street, Ward 1, Vinh Long Town, Vinh Long Province, Vietnam
Telephone: (84-70) 832 975
Fax: (84-70) 832 975
E-mail: thiencnvl@hotmail.com
Head: Do Phuong Binh, Director

Vinh Long Water Supply Company (VLWSC) is a state owned enterprise operating under commercial law. It was established in 1963 and is responsible for water supply services in Vinh Long Province. The utility covers 5 towns and cities including the capital town of Vinh Long. Its area of responsibility has a total population of 149,650 people. The present service area of VLWSC has a population density of 2,440 persons/km². The utility draws water from surface water sources. The private sector is involved in the utility’s operations through service and build-operate-transfer contracts. It publishes an annual report and it is available to the public.

**General Data About Water Utility**

| Connections | 21,894 |
| Staff | 240 |
| Annual O&M Costs | VND20,663 million / US$1,277,080 |
| Annual Collections | VND24,221 million / US$1,496,980 |
| Annual Billings | VND19,301 million / US$1,192,910 |
| Total Capital Expenditure | VND34,776 million / US$2,149,320 |
| (Over the last 5 years) Average capital expenditure/connection/year | US$19.63 |
| Source of Investment Funds | Internal funds and grants from government and ODA project sources |

**Tariff Structure**

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>VND</td>
<td>US$</td>
</tr>
<tr>
<td></td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>VND/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td></td>
<td>2,700</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>3,900</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 1,650 new connections in 2005. Price of new connection is VND1,000,000 (US$61.80) for domestic and VND1,500,000 (US$92.71) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND16,200 (US$1.00)

**Priority Needs of Utility**

1. Customer service
2. Management by using IT
3. Reduction of water loss

**Consumer Service**

Average monthly consumption is about 24.9 m³ per domestic connection. The water bill averages VND67,880 (US$4.20) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 2 meters. Water quality is good with 97% of 1,080 water samples taken during the year passing the residual chlorine tests. There were 84 consumers complaints recorded and 608 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone or by going to the utility office.

**Performance Highlights**

VLWSC provides water at 94 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 89.7% of the population in its service area. NRW is just about average at 27.5%. Production and all service connections are fully metered. Operating ratio at 0.85 is acceptable. Accounts receivable equivalent is good at 0.6 month. Average tariff is seventh lowest at VND2,924/m³ (US$0.18/m³) but is still enough to cover its operating expenses. Staff/1000 connections ratio at 11.0 is fourth highest. VLWSC is doing quite well except for its staff ratio requiring staff productivity enhancement. NRW may also be reduced. Other areas that may be further improved are reduction of operating ratio to about 0.75 and getting more water available to consumers and further expansion to unserved areas.
VINH LONG WATER SUPPLY
Population: 143,500

Production/Distribution

- Average Daily Production: 24,932 m³
- Production capacity/day: 27,300 m³
- Treatment Type: Conventional
- Storage: 25,000 m³
- Service Area: 58.8 sq km
- Distribution pipes: 258 km
- Service pipe length: 7 m

Service Connections

- Domestic: 14,735
- Non domestic: 7,159
- Bulk: Nil
- Total: 21,894

Service Indicators

- Service Coverage: 89.7%
- Water Availability: 24 hours/day
- Per Capita Consumption: 94 l/c/d
- Average Tariff: US$0.18/m³

Efficiency Indicators

- Non-Revenue Water: 27.5%
- Unit Production Cost: US$0.14/m³
- Operating Ratio: 0.85
- Accounts Receivable: 0.6 month
- Staff/1,000 Connections: 11.0

Notes:
1 The population is for the present area served by the utility.
2 About 97% of 1,080 water samples tested in 2005 for residual chlorine passed.
3 The total area of responsibility is 67.5 sq km.
4 About 1,650 new customers connected during the year.
5 This is the population coverage in the present service area.
6 Average mains water pressure is 2 meters.
7 In 2005, about 608 pipe breaks were repaired and 4,653 meters were either replaced or repaired.
8 About 162 staff members attended training; total training days was 250 days.

Budget for training and HRD is about 0.65% of operating expenses.

Data as of 2005.
Ba Ria-Vung Tau Water Supply Limited Company (BWACO) is a state owned enterprise operating under commercial law. It was established in 1982 and is responsible for water supply services in Ba Rai-Vung Tau Province. The utility covers 7 towns and cities including the capital town of Vung Tau. Its area of responsibility has a total population of 407,700 people. The present service area of BWACO has a population density of 4,581 persons/km². The utility draws water from surface water and groundwater sources. The private sector is not involved in any of the utility’s operations. It publishes an annual report and it is available to the public.

### General Data About Water Utility

| Connections   | 85,933 |
| Staff        | 360    |
| Annual O&M Costs | VND40,006 million | US$2,472,530 |
| Annual Collections | VND86,068 million | US$5,319,390 |
| Annual Billings | VND97,685 million | US$6,037,370 |
| Total Capital Expenditure | VND388,000 million | US$23,980,220 |
| Source of Investment Funds | Internal funds and loan from a commercial bank |

### Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>VND</td>
<td>US$</td>
</tr>
<tr>
<td></td>
<td>2,200</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>4,200</td>
<td>0.26</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>VND/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>0-10 m³</td>
<td>2,200</td>
<td>0.14</td>
</tr>
<tr>
<td>10-20 m³</td>
<td>2,800</td>
<td>0.17</td>
</tr>
<tr>
<td>20-30 m³</td>
<td>3,200</td>
<td>0.20</td>
</tr>
<tr>
<td>Over 30 m³</td>
<td>3,600</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 7,259 new connections in 2005. Price of new connection is VND1,000,000 (US$61.80) for both domestic connections and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is VND15,180 (US$0.94).

### Priority Needs of Utility

1. Human resources and management skills
2. High quality production equipment
3. Management using IT

### Consumer Service

Average monthly consumption is about 20.0 m³ per domestic connection. The water bill averages VND59,230 (US$3.66) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 25 meters. Water quality is good with all of 26,616 water samples taken during the year passing the residual chlorine tests. There were 1,549 consumers complaints recorded and 289 water pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone or by going to the utility office.

### Performance Highlights

BWACO provides water at 138 lpcd to its consumers at an average of 24 hours per day. It provides piped water supply to 84.9% of the population in its service area. NRW is good at 15.4%, the third lowest. Production is fully metered but service connections are only 90% metered. Operating ratio at 0.46 is very good and the third lowest. Accounts receivable equivalent is nil. Average tariff at VND3,721/m³ (US$0.23/m³) is more than enough to cover its operating expenses. Staff/1000 connections ratio at 4.2 is sixth lowest. BWACO is doing very well in financial management, human and water resources management as well. However, it needs full metering of its service connections to properly determine consumption and NRW. It also needs to extend water supply services to the unserved households in its service area.
**Area Profile**

**BA RIA - VUNG TAU WATER SUPPLY**

Population: 407,700

**Production/Distribution**

- Average Daily Production: 84,987 m³
- Production capacity/day: 118,800 m³
- Storage: 22,730 m³
- Service Area: 89 sq km
- Distribution pipes: 1,006 km
- Service pipe length: 3 m

**Service Connections**

- Domestic: 72,593
- Non domestic: 13,340
- Bulk: Nil
- Total: 85,933

**Service Indicators**

- Service Coverage: 84.9%
- Water Availability: 24 hours/day
- Per Capita Consumption: 138 l/c/d
- Average Tariff: US$0.23/m³

**Efficiency Indicators**

- Non-Revenue Water: 15.4%
- Unit Production Cost: US$0.08/m³
- Operating Ratio: 0.46
- Accounts Receivable: Nil
- Staff/1,000 Connections: 4.2

**Notes:**

1. The population is for the present area served by the utility.
2. All of 26,616 samples taken passed the test for residual chlorine.
3. The present service area covers the total area of responsibility.
4. About 7,259 new customers were connected during the year.
5. Non-Revenue Water is a proportion of the total water sold.
6. Average mains water pressure is 25 meters.
7. In 2005, about 289 pipe breaks were repaired and 6,879 meters were either replaced or repaired.
8. About 152 staff members attended training; total training days was 1,075 days.

**Data as of 2005.**
VIENTIANE

VIENTAINE CAPITAL WATER SUPPLY COMPANY

Address: P.O. Box 2571, Kayson Road, Vientiane, Lao PDR
Telephone: (856-21) 416 8646
Fax: (856-21) 414 378
E-mail: daophet@laotel.com
Head: Daophet Bouapha, General Manager

Vientiane Capital Water Supply Company (Vientiane WSC) is a state owned enterprise operating under commercial law. It was established in 1963 and is responsible for water supply services in Vientiane Prefecture. The utility covers 7 towns including the capital city of Vientiane. Its area of responsibility has a total population of 698,318 people. The present service area of Nampapa Vientiane has a population density of 237 persons/km². The utility draws water from surface water sources through direct river abstraction. The private sector is not involved in any of the utility’s operations. It publishes an annual report but it is not available to the public.

General Data About Water Utility

| Connections | : 52,170 |
| Staff | : 416 |
| Annual O&M Costs | : LAK43,049 million US$4,478,170 |
| Annual Collections | : LAK46,200 million US$4,805,950 |
| Annual Billings | : LAK28,038 million US$2,913,600 |
| Total Capital Expenditure | : LAK58,624 million US$6,098,460 |
| (Over the last 5 years) | Average capital expenditure/connection/year: US$23.38 |
| Source of Investment Funds | : Loan from government from ODA sources |

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAK</td>
<td>US$</td>
<td>LAK</td>
</tr>
<tr>
<td>1,750</td>
<td>0.18</td>
<td>12,100</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE (Domestic/Non domestic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAK/m³</td>
<td>US$/m³</td>
<td>LAK/m³</td>
</tr>
<tr>
<td>0-5 m³ / 0-10 m³</td>
<td>350</td>
<td>0.04</td>
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<tr>
<td>5-30 m³ / 10-30 m³</td>
<td>526</td>
<td>0.05</td>
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<tr>
<td>30-50 m³</td>
<td>706</td>
<td>0.07</td>
</tr>
<tr>
<td>Over 50 m³</td>
<td>706</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 4,092 new connections in 2005. Price of new connection is LAK1,200,000 (US$124.83) for domestic connections and LAK1,400,000 (US$145.64) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is LAK2,276 (US$0.24).

Priority Needs of Utility

1. New water treatment plant for additional capacity
2. Expansion of pipe network
3. Enhance management by using IT

Consumer Service

Average monthly consumption is about 44.7 m³ per domestic connection. The water bill averages LAK25,760 (US$2.68) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 50 meters. There were 750 consumers complaints recorded during the year. Customers can complain and interact with the utility by telephone or by going to the utility office.

Performance Highlights

The Vientiane WSC provides water at 197 lpcd to its consumers at an average of 24 hours per day. However, coverage is only 56.3% of the population in its service area. NRW is just about the average among the utilities at 27.7%. Production and all service connections are fully metered. Operating ratio of 0.93 shows that O&M costs are barely covered by revenues. Accounts receivable information was not provided though. Average tariff is the lowest at LAK890/m³ (US$0.09/m³). Staff/1000 connections ratio is higher than average at 8.0. While the utility is able to deliver water 24 hours per day, the utility needs to increase its coverage with the development of new sources and reduction of NRW. The very low tariff needs to be reviewed to improve financial management. Consumers also tend to unnecessarily consume more water because of cheap water.
VIENSTIANE WATER SUPPLY
Population: 629,620

### Production/Distribution
- Average Daily Production: 119,403 m$^3$
- Production capacity/day: 101,100 m$^3$
- Treatment Type: Conventional
- Storage: 11,360 m$^3$
- Service Area: 2,652 sq km
- Distribution pipes: 620 km
- Service pipe length: 20 m

### Service Connections
- Domestic: 47,511
- Non domestic: 4,659
- Bulk: Nil
- Total: 52,170

### Service Indicators
- Service Coverage: 56.3%
- Water Availability: 24 hours/day
- Per Capita Consumption: 197 l/c/d
- Average Tariff: US$0.09/m$^3$

### Efficiency Indicators
- Non-Revenue Water: 27.7%
- Unit Production Cost: US$0.10/m$^3$
- Operating Ratio: 0.93
- Accounts Receivable: no data
- Staff/1,000 Connections: 8.0

### Data as of 2005.

Notes:
1. The population is for the present area served by the utility.
2. No data was provided for residual choline tests.
3. The total area of responsibility is 3,920 sq km.
4. About 4,092 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 50 meters.
7. No data were provided for pipe breaks and meter replacement or repair.
8. About 227 staff members attended training; total training days was 1,387 days
   Budget for training and HRD is about 0.95 % of operating expenses.
JOHOR

SAJ HOLDINGS SDN BHD

Address: SAJ Holdings Building, Jalan Garuda, Larkin, Johor Bahru, Johor, Malaysia
Telephone: (60-7) 224 4040
Fax: (60-7) 224 0033
E-mail: azahdi@saj.com.my
Head: Ahmad Zahdi Jamil, Chief Executive Officer

SAJ Holdings Sdn Bhd (SAJH) is a privately owned company operating under commercial law. It was established in 1999 and is responsible for water supply services in the State of Johor. The utility covers 8 towns and cities including the capital city of Johor Bahru. Its area of responsibility has a total population of 3,100,000 people. The present service area of SAJH has a population density of 163 persons/km². The utility draws water from surface water sources through direct river abstraction. It is operating under a concession contract with the government. It publishes an annual report that is available to the public.

General Data About Water Utility

| Connections | 811,874 |
| Staff | 1,685 |
| Annual O&M Costs | MYR366,663,300, US$106,448,920 |
| Annual Collections | MYR516,065,000, US$149,822,910 |
| Annual Billings | MYR479,648,540, US$139,250,560 |
| Total Capital Expenditure | MYR1,302,834,500, US$378,236,170 |
| (Over the last 5 years) | Average capital expenditure/connection/year: US$93.18 |

Source of Investment Funds: Internal funds, capital market, private equity, commercial bank loans

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>MYR</td>
<td>US$</td>
</tr>
<tr>
<td>Domestic</td>
<td>4.00</td>
<td>1.16</td>
</tr>
<tr>
<td>Non domestic</td>
<td>18.00</td>
<td>5.23</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>MYR/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>Domestic/Non domestic</td>
<td>MYR/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>0-15 m³/0-20 m³</td>
<td>0.38</td>
<td>0.11</td>
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<tr>
<td>15-30 m³/20-40 m³</td>
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<tr>
<td>30-45 m³/40-45 m³</td>
<td>1.64</td>
<td>0.48</td>
</tr>
<tr>
<td>Over 45 m³</td>
<td>1.98</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 35,308 new connections in 2005. Price of new connection is MYR75 (US$21.77) for domestic connections and MYR550 (US$159.67) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is MYR4.00 (US$1.16).

Priority Needs of Utility

1. Compliance to concession agreement and regulatory requirement
2. Further enhance operational efficiency
3. Continuous refurbishment and development of water supply system

Consumer Service

Average monthly consumption is about 24.9 m³ per domestic connection. The water bill averages MYR23.87 (US$6.93) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 25 meters. Water quality is good with 95% of 20,156 water samples taken during the year passing the residual chlorine test. There were 67,538 consumers complaints recorded during the year. Customers can complain and interact with the utility by telephone, e-mail, and letter or by going to the utility office.

Performance Highlights

SAJH provides water at 191 lpcd to its consumers at an average of 24 hours per day. It is able to deliver to all of the population in its service area. NRW is quite high at 37.4%, much higher than the average of 27.8%. Production and all service connections are fully metered. Operating ratio is good at 0.71 but accounts receivable equivalent of 1.3 months needs to be addressed. Average tariff is high at MYR1.54/m³ (US$0.45/m³) and revenues cover O&M expenses. SAJH has the most productive staff with the lowest staff/1000 connections ratio of 2.1. While the utility is doing well, it has to address its high NRW and improve collection efficiency. It may also be useful to promote more prudent use of water among its consumers.
JOHOR WATER SUPPLY
Population: 3,069,000

Production/Distribution

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Production</td>
<td>1,366,027 m³</td>
</tr>
<tr>
<td>Production capacity/day</td>
<td>1,502,100 m³</td>
</tr>
<tr>
<td>Treatment Type</td>
<td>Conventional</td>
</tr>
<tr>
<td>Storage</td>
<td>1,728,198 m³</td>
</tr>
<tr>
<td>Service Area</td>
<td>18,796 sq km</td>
</tr>
<tr>
<td>Distribution pipes</td>
<td>15,409 km</td>
</tr>
<tr>
<td>Service pipe length</td>
<td>6 m</td>
</tr>
</tbody>
</table>

Service Connections

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>714,897</td>
</tr>
<tr>
<td>Non domestic</td>
<td>96,977</td>
</tr>
<tr>
<td>Bulk</td>
<td>Nil</td>
</tr>
<tr>
<td>Total</td>
<td>811,874</td>
</tr>
</tbody>
</table>

Service Indicators

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Coverage</td>
<td>100.0%</td>
</tr>
<tr>
<td>Water Availability</td>
<td>24 hours/day</td>
</tr>
<tr>
<td>Per Capita Consumption</td>
<td>191 l/c/d</td>
</tr>
<tr>
<td>Average Tariff</td>
<td>US$0.45/m³</td>
</tr>
</tbody>
</table>

Efficiency Indicators

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Revenue Water</td>
<td>37.4%</td>
</tr>
<tr>
<td>Unit Production Cost</td>
<td>US$0.21/m³</td>
</tr>
<tr>
<td>Operating Ratio</td>
<td>0.71</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>1.3 months</td>
</tr>
<tr>
<td>Staff/1,000 Connections</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Notes:
1. The population is for the present area served by the utility.
2. Production capacity is 518,000 m³/day; about 984,100 m³/day was purchased.
3. About 95% of 20,516 samples taken during the year passed the residual chlorine test.
4. The total area of responsibility is 18,986 sq km.
5. About 35,308 new customers were connected during the year.
6. This is the population coverage in the present service area.
7. Average mains water pressure is 25 meters.
8. In 2005, about 7,821 pipe breaks were repaired and 51,505 meters were either replaced or repaired.
9. About 1,285 staff members attended training; total training days was 3,924 days.

Data as of 2005.

Annual Water Use
498,600,000 m³

Annual Water Billings
US$139,250,600

Annual O&M Costs
US$106,449,000
LABUAN WATER SUPPLY DEPARTMENT

Address: JBA W. P. Labuan, Peti Surat 80934, Labuan 87019, Malaysia
Telephone: (60-87) 410 300
Fax: (60-87) 410 200
E-mail: jkrlbn@tm.net.my
Head: Sulaiman Bin Kamisan, Director

Labuan Water Supply Department (JBA Labuan) is a government department with separate financial reporting for water supply. It is responsible for water supply services in the Federal Territory of Labuan. Its area of responsibility has a total population of 80,000 people. The present service area of JBA Labuan has a population density of 870 persons/km². The utility buys bulk raw water from Encorp Utilities sourced from the Padas River in Beaufort Sabah which is pumped by submarine pipeline to the island territory. It has 21 tube wells which are currently being refurbished. The private sector is involved in delivering water for distribution. The utility does not publish an annual report for the public.

<table>
<thead>
<tr>
<th>General Data About Water Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connections</td>
</tr>
<tr>
<td>Staff</td>
</tr>
<tr>
<td>Annual O&amp;M Costs</td>
</tr>
<tr>
<td>Annual Collections</td>
</tr>
<tr>
<td>Annual Billings</td>
</tr>
<tr>
<td>Total Capital Expenditure</td>
</tr>
<tr>
<td>(Over the last 5 years) Average capital expenditure/connection/year: US$223.60</td>
</tr>
<tr>
<td>Source of Investment Funds</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tariff Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td><strong>FIXED MONTHLY CHARGE</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>CONSUMPTION CHARGE</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 390 new connections in 2005. Price of new connection is MYR125 (US$36.29) for domestic connections and MYR3,000 (US$870.95) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is MYR5.40 (US$1.57).

Priority Needs of Utility
1. To reduce cost of raw water from bulk supplier
2. Improve water quality
3. Increase supply of water

Consumer Service
Average monthly consumption is about 52.3 m³ per domestic connection. The water bill averages MYR30.08 (US$8.73) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 15 meters. Water quality is good with 95% of 1,124 water samples taken during the year passing the residual chlorine test. There were 2,096 consumers complaints recorded during the year. Customers can complain and interact with the utility by telephone, e-mail, letter or by going to the utility office.

Performance Highlights
JBA Labuan provides water at 230 lpcd to its consumers at an average of 24 hours per day. It is able to deliver piped water to all of the population in its service area. NRW is reasonable at 24.1%, better than the average of 27.8%. Production and all service connections are fully metered. Financial management needs improvement with its operating ratio of 1.97, the highest among the utilities. The utility also has the fourth longest collection period with an accounts receivable equivalent of 2.0 months. Average tariff is quite low at MYR0.89/m³ (US$0.26/m³) which may be one reason why consumption per capita is the highest in the region. JBA Labuan also has the highest staff/1000 connections ratio at 12.6 which requires staff productivity improvement. The utility may have to review its expenses especially the cost of raw water. The high per capita consumption is also an area for concern so as to conserve water among the consumers. It also has to improve its collections to get payments in time.
LABUAN WATER SUPPLY

Population: 80,000

**Production/Distribution**

- Average Daily Production: 37,321 m³
- Production capacity/day: 60,454 m³
- Treatment Type: Conventional
- Storage: 85,568 m³
- Service Area: 92 sq km
- Distribution pipes: 456 km
- Service pipe length: 3 m

**Service Connections**

- Domestic: 10,705
- Non domestic: 1,731
- Bulk: Nil
- Total: 12,436

**Service Indicators**

- Service Coverage: 100.0%
- Water Availability: 24 hours/day
- Per Capita Consumption: 230 l/c/d
- Average Tariff: US$0.26/m³

**Efficiency Indicators**

- Non-Revenue Water: 24.1%
- Unit Production Cost: US$0.38/m³
- Operating Ratio: 1.97
- Accounts Receivable: 2.0 months
- Staff/1,000 Connections: 12.6

Notes:

1. The population is for the present area served by the utility.
2. About 90% of production was from a private company, Encorp, through a service contract.
3. About 95% of 1,124 samples taken during the year passed the residual chlorine test.
4. The total area of responsibility is also 92 sq km.
5. Only 390 new customers were connected during the year.
6. This is the population coverage in the present service area.
7. Average mains water pressure is 15 meters.
8. In 2005, about 1,169 pipe breaks were repaired and 1,315 meters were either replaced or repaired.
9. Note large cost of contracted services. Operating ration without this cost is 0.95.
10. About 15 staff members attended training; total training days was 44 days.

**Data as of 2005.**
SARAWAK

Utility Profile

JKR WATER SUPPLY AUTHORITY SARAWAK
Address: 16th Floor, Wisma Saberkas, Jalan Tun Haji Openg, 93582 Kuching, Sarawak, Malaysia
Telephone: (60-82) 203 110
Fax: (60-82) 424 544
E-mail: tankc@sarawaknet.gov.my
Head: Tan Kok Chang, Assistant Director (Water Supply)

JKR Water Supply Authority Sarawak (J KR WSA Sarawak) is a government department with no separate financial reporting for water supply. It is responsible for water supply services in the State of Sarawak. Its area of responsibility has a total population of 2,312,000 people. The total service area of JKR WSA Sarawak is covered by 89 water supply authorities. The utility draws water from surface water and groundwater sources. The private sector is involved in the utility’s operations mostly through service contracts. The utility’s annual report is part of the JKR Sarawak Annual Report which is available to the public. All data provided are for operations excluding those covered by Kuching, Sibu and LAKU water authorities except for total and service area populations.

General Data About Water Utility

| Connections | 121,813 |
| Staff | 1,021 |
| Annual O&M Costs | MYR36,649,900 US$10,640,120 |
| Annual Collections | MYR27,677,190 US$8,035,180 |
| Annual Billings | MYR25,353,640 US$7,360,620 |
| Total Capital Expenditure | MYR636,489,000 US$184,784,150 |
| (Over the last 5 years) Average capital expenditure/connection/year: US$303.39 |
| Source of Investment Funds | Grant from the state government |

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>MYR</td>
<td>US$</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>1.16</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>MYR/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>0-15 m³</td>
<td>0.44</td>
<td>0.13</td>
</tr>
<tr>
<td>Over 15 m³</td>
<td>0.65</td>
<td>0.19</td>
</tr>
<tr>
<td></td>
<td>0.88</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 8,225 new connections in 2005. Price of new connection is MYR300 (US$87.10) for domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is MYR4.00 (US$1.16).

Priority Needs of Utility

1. Expansion of coverage 2. Upgrade of treatment facilities 3. Improving service delivery and reliability

Consumer Service

Average monthly consumption is about 22.3 m³ per domestic connection. The water bill averages MYR21.68 (US$6.29) per month per connection. Water is available for 24 hours a day to users at an average pressure of 30 meters. Water quality is good with 99% of 130,000 water samples taken during the year passing the residual chlorine test. There were 550 consumers complaints recorded during the year. Customers can complain and interact with the utility by telephone, letter or by going to the utility office.

Performance Highlights

JKR WSA Sarawak provides water at 123 lpcd to its consumers at an average of 24 hours per day. It is able to deliver piped water to all of the urban population in its service area. The utility has the fourth highest NRW at 42%. Production and all service connections are fully metered. It is second to Labuan with its high operating ratio of 1.32. Accounts receivable information was not provided though. There are difficulties in getting information from all the 89 water supply authorities under the department. Average tariff is seventh lowest at MYR0.61/m³ (US$0.18). Staff/1000 connections ratio is higher than the average at 8.4. JKR WSA Sarawak will need to reduce its NRW, improve its finances by being more cost effective and consider increasing its tariff, and improving staff productivity.
SARAWAK WATER SUPPLY

Population: 2,200,000

Production/Distribution

- Average Daily Production: 195,684 m³
- Production capacity/day: 260,000 m³
- Treatment Type: Conventional & membrane filter
- Storage: 141,748 m³
- Service Area: 114,100 sq km
- Distribution pipes: 4,420 km
- Service pipe length: 10 m

Service Connections

- Domestic: 97,450
- Non domestic: 24,363
- Bulk: Nil
- Total: 121,813

Service Indicators

- Service Coverage: 100.0%
- Water Availability: 24 hours/day
- Per Capita Consumption: 123 l/c/d
- Average Tariff: US$0.18/m³

Efficiency Indicators

- Non-Revenue Water: 42.0%
- Unit Production Cost: US$0.15/m³
- Operating Ratio: 1.32
- Accounts Receivable: no data
- Staff/1,000 Connections: 8.4

Notes:
1. The population is for the present area served by 89 water authorities in the whole of Sarawak.
2. 20,100 m³/day was purchased from bulk supplier.
3. About 99% of 130,000 samples taken during the year passed the residual chlorine test.
4. The total area of responsibility is 123,520 sq km.
5. About 8,225 new customers were connected during the year.
6. This is for the urban areas of the whole state of Sarawak but only 26.5% for the total population.
7. Average mains water pressure is 30 meters.
8. In 2005, about 445 pipe breaks were repaired and 10,000 meters were either replaced or repaired.
9. About 40 staff members attended training; total training days was 120 days.
10. Personnel cost is part of department budget.

Annual Water Use

71,424,800 m³

Annual Water Billings

US$7,325,500

Annual O&M Costs

US$10,640,100

Data as of 2005.
SIBU

Utility Profile

SIBU WATER BOARD

Address : Km.5, Jalan Salim, 96000 Sibu, Sarawak, Malaysia
Telephone : (60-84) 211 001
Fax : (60-84) 211 543
E-mail : swbs@swb.gov.my
Head : Daniel Wong Park, General Manager

Sibu Water Board (SWB) is a statutory organization in the State of Sarawak. It is responsible for water supply services only in the town of Sibu. Its area of responsibility has a total population of 320,000 people. The present service area of the utility has a population density of 301 persons/km². The utility draws water from surface water through direct river abstraction from the Rejang River. The private sector is involved in the utility’s operations mostly through service contracts for a number of services. The utility publishes an annual report which is also available to the public.

General Data About Water Utility

| Connections | 46,903 |
| Staff | 191 |
| Annual O&M Costs | MYR23,953,000, US$6,953,990 |
| Annual Collections | MYR23,367,000, US$6,783,860 |
| Annual Billings | MYR19,163,000, US$5,563,360 |
| Total Capital Expenditure | MYR65,752,000, US$19,088,980 |
| (Over the last 5 years) | Average capital expenditure/connection/year: US$81.40 |
| Source of Investment Funds | Internal funds, grant from government and loan from commercial bank |

Tariff Structure

<p>| Category | Domestic | Non domestic |</p>
<table>
<thead>
<tr>
<th>FIXED MONTHLY CHARGE</th>
<th>MYR</th>
<th>US$</th>
<th>MYR</th>
<th>US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.95</td>
<td>1.44</td>
<td>22.55</td>
<td>6.55</td>
<td></td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>MYR/m³</td>
<td>US$/m³</td>
<td>MYR/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>0-15 m³/ 0-25 m³</td>
<td>0.48</td>
<td>0.14</td>
<td>0.97</td>
<td>0.28</td>
</tr>
<tr>
<td>15-50 m³/ 25-50 m³</td>
<td>0.72</td>
<td>0.21</td>
<td>1.06</td>
<td>0.31</td>
</tr>
<tr>
<td>Over 50 m³</td>
<td>0.76</td>
<td>0.22</td>
<td>1.06</td>
<td>0.31</td>
</tr>
</tbody>
</table>

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 2,325 new connections in 2005. Price of new connection is MYR455 (US$132.09) for domestic connections and US$755 (US$219.19) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is MYR4.95 (US$1.44).

Priority Needs of Utility

1. Adequate water pressure in rural areas
2. Capital budget for project implementation
3. NRW management

Consumer Service

Average monthly consumption is about 31.3 m³ per domestic connection. The water bill averages MYR19.76 (US$5.74) per month per connection. Water is available for 24 hours a day to users at an average pressure of 25 meters. Water quality is good with 99% of 2,579 water samples taken during the year passing the residual chlorine test. There were 3,745 consumers complaints recorded and 314 pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter, fax, e-mail or by going to the utility office.

Performance Highlights

SWB provides water at 178 lpcd to its consumers at an average of 24 hours per day. It is able to provide piped water supply to all of the population in its service area. NRW is about a little lower than average at 27.1%. Production and all service connections are fully metered. Financial management needs improvement with an operating ratio of 1.03, the fifth highest, and accounts receivable equivalent of 2.2 months, the second longest. Average tariff is lower than the average at MYR0.81/m³ (US$0.23). Staff/1000 connections ratio is good at 4.1, the fifth lowest. SWB is doing well except for financial management. Its lower than average tariff, however, allows consumers to use more water than probably is necessary. NRW management is another area for improvement.
SIBU WATER SUPPLY

Population: 234,835

**Production/Distribution**

- Average Daily Production: 89,041 m³
- Production capacity/day: 120,500 m³
- Treatment Type: Conventional
- Storage: 17,218 m³
- Service Area: 781 sq km
- Distribution pipes: 912 km
- Service pipe length: 6 m

**Service Connections**

- Domestic: 40,703
- Non domestic: 6,200
- Bulk: Nil
- Total: 46,903

**Service Indicators**

- Service Coverage: 100.0%
- Water Availability: 24 hours/day
- Per Capita Consumption: 178 l/c/d
- Average Tariff: US$0.23/m³

**Efficiency Indicators**

- Non-Revenue Water: 27.1%
- Unit Production Cost: US$0.21/m³
- Operating Ratio: 1.03
- Accounts Receivable: 2.2 months
- Staff/1,000 Connections: 4.1

Notes:

1. The population is for the present area served by the utility.
2. About 99.3% of 2,579 samples taken during the year passed the residual chlorine test.
3. The total area of responsibility is 1,953 sq km.
4. About 2,325 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. About 191 staff members attended training; total training days was 514 days.
7. In 2005, about 314 pipe breaks were repaired and 1,277 meters were either replaced or repaired.
8. Budget for training and HRD is less than 0.1% of operating expenses.

Data as of 2005.
SYARIKAT AIR TERENGGANU SDN. BHD.

Address: SATU, Jalan Sultan Ismail, 20200 Kuala Terengganu, Terengganu, Malaysia
Telephone: (60-9) 620 1105
Fax: (60-9) 620 1104
E-mail: pok@satuwater.com.my
Head: Wan Ngah bin Wan Ali, Chief Executive Officer

Syarikat Air Terengganu Sdn. Bhd. (SATU) is a state owned enterprise operating under commercial law. It is responsible for water supply services in 7 towns in the State of Terengganu including the capital of Kuala Terengganu. Its area of responsibility has a total population of 1,041,760 people. The present service area of the utility has a population density of 80 persons/km². The utility draws water from surface water and groundwater sources. The private sector is involved in the utility’s operations mostly through service contracts for a number of services. The utility does not publish an annual report.

General Data About Water Utility

| Connections | 207,780 |
| Staff | 499 |
| Annual O&M Costs | MYR81,780,960 US$23,742,480 |
| Annual Collections | MYR82,994,580 US$24,094,810 |
| Annual Billings | MYR81,448,490 US$23,645,960 |
| Total Capital Expenditure | MYR12,332,520 US$3,580,350 |
| (Over the last 5 years) Average capital expenditure/connection/year: US$3.45 |
| Source of Investment Funds | Internal funds and grants from government |

Tariff Structure

| Category | Domestic | Non domestic |
| FIXED MONTHLY CHARGE | MYR | US$ | MYR | US$ |
| 4.00 | 1.16 |

| CONSUMPTION CHARGE (Domestic/Non domestic) | MYR/m³ | US$/m³ | MYR/m³ | US$/m³ |
| 0-20 m³/ 0-70 m³ | 0.42 | 0.12 | 0.95 | 0.28 |
| 20-40 m³/ Over 70 m³ | 0.65 | 0.19 | 1.15 | 0.33 |
| 40-60 m³/ | 0.90 | 0.26 | 1.15 | 0.33 |
| Over 60 m³/ | 1.00 | 0.29 | 1.15 | 0.33 |

Notes:
1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 11,099 new connections in 2005. Price of new connection is MYR130 (US$37.74) for domestic connections and US$230 (US$66.77) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is MYR4.00 (US$1.16).

Priority Needs of Utility

1. Water tariff review
2. Improve water supply system
3. NRW reduction

Consumer Service

Average monthly consumption is about 28.6 m³ per domestic connection. The water bill averages MYR15.40 (US$4.47) per month per connection. Water is available for 24 hours a day to users. Water quality is good with 99% of 7,936 water samples taken during the year passing the residual chlorine test. There were 16,657 consumers complaints recorded and 1,696 pipe breaks repaired during the year. Customers can complain and interact with the utility by telephone, letter, e-mail or by going to the utility office.

Performance Highlights

SATU provides water at 187 lpcd to its consumers at an average of 24 hours per day. It covers all of the population in its service area. NRW is quite high at 39.3%. Production and all service connections are fully metered. Operating ratio of 0.99 indicates that revenues are just enough to cover operating expenses. Accounts receivable equivalent of 1.9 months is fifth highest. Average tariff of MYR0.80/m³ (US$0.23) is lower than the average of US$0.31. Staff/1000 connections ratio is very good at 2.4, the third lowest. SATU needs to reduce its high NRW and promote prudent use of water among its consumers. It should reduce its operating ratio to about 0.75 or lower and improve on its collection by collecting payments on time.
TERENGGANU WATER SUPPLY

Population: 920,708

Production/Distribution

Average Daily Production: 456,822 m³
Production capacity/day: 641,405 m³
Treatment Type: Conventional
Storage: 574,917 m³
Service Area: 11,530 sq km
Distribution pipes: 4,745 km
Service pipe length: 20 m

Service Connections

Domestic: 182,738
Non domestic: 25,042
Bulk: Nil
Total: 207,780

Service Indicators

Service Coverage: 100.0%
Water Availability: 24 hours/day
Per Capita Consumption: 187 l/c/d
Average Tariff: US$0.23/m³

Efficiency Indicators

Non-Revenue Water: 39.3%
Unit Production Cost: US$0.14/m³
Operating Ratio: 0.99
Accounts Receivable: 1.9 months
Staff/1,000 Connections: 2.4

Notes:

1. The population is for the present area served by the utility.
2. About 99% of 7,936 samples taken during the year passed the residual chlorine test.
3. The total area of responsibility is 12,955 sq km.
4. About 11,099 new customers were connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure was not given.
7. In 2005, about 1,696 pipe breaks were repaired.
8. About 499 staff members attended training; total training days was 1,497 days.
   Budget for training and HRD is about 0.1% of operating expenses.

Annual Water Use

166,740,000 m³

Annual Water Billings

US$23,646,000

Annual O&M Costs

US$23,742,500

Data as of 2005.
**Utility Profile**

**BACOLOD CITY WATER DISTRICT**

Address: Corner Galo-San Juan Streets, Bacolod City, Negros Occidental, Philippines  
Telephone: (63-34) 433 2141  
Fax: (63-34) 433 2141  
E-mail: baciwa@hotmail.com

Head: Juliana A. Carbon, Assistant General Manager/Officer-in-charge

Bacolod City Water District (BACIWA) is a state owned enterprise established in 1929. It is responsible for water supply services in Bacolod City which has a total population of 457,701 people. The present service area of BWD has a population density of 2,953 persons/km². The utility draws water from 32 deep wells. Security, legal and health care services are contracted out to the private sector through service agreements. BACIWA publishes an annual report but it is not available to the public.

### General Data About Water Utility

- **Connections**: 28,263  
- **Staff**: 257  
- **Annual O&M Costs**: PHP192,753,290, US$4,283,410  
- **Annual Revenues**: PHP225,378,490, US$5,008,410  
- **Annual Billings**: PHP217,796,070, US$4,839,910  
- **Total Capital Expenditure**: PHP 48,377,800, US$1,075,060  
  - (Over the last 5 years)  
  - Average capital expenditure/connection/year: US$7.61  
- **Source of Investment Funds**: Internally generated funds.

### Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIXED MONTHLY CHARGE</strong></td>
<td>PHP 173.00</td>
<td>US$3.84</td>
</tr>
<tr>
<td><strong>CONSUMPTION CHARGE</strong></td>
<td>PHP/m³ 17.80</td>
<td>US$/m³ 0.40</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>17.80</td>
<td>0.40</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>18.90</td>
<td>0.42</td>
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<tr>
<td>21 – 30 m³</td>
<td>21.45</td>
<td>0.48</td>
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<tr>
<td>31 - 50 m³</td>
<td>25.00</td>
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<td>51 – 70 m³</td>
<td>29.50</td>
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<td>71 - 100 m³</td>
<td>35.50</td>
<td>0.79</td>
</tr>
<tr>
<td>Over 100 m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 2,292 new connections in 2005. Price of new connection is PHP2,900 (US$64.44) for domestic connections and PHP3,100 (US$68.89) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP173.00 (US$3.84).

### Priority Needs of Utility

1. Reduction of NRW  
2. Hydraulically efficient distribution system  
3. Establish asset management system

### Consumer Service

Average monthly consumption is about 26.5 m³ per domestic connection. The water bill averages PHP518.47 (US$11.52) per month per domestic connection. Water is available for only 10 hours a day to users at an average pressure of 5 meters. Water quality is good with all 9,523 water samples taken during the year passing the residual chlorine test. There were 10,140 consumers complaints recorded and 2,274 pipe breaks repaired during the year. Customers can make complaints as well as express their concerns in person at the utility office or by telephone, e-mail or letter.

### Performance Highlights

BACIWA provides water at 133 lpcd to its consumers at an average of only 10 hours per day. Only 46% of the population in its service area are served. NRW of 40% is sixth highest among the utilities. Production is not fully metered and only 91% of service connections are metered. Operating ratio of 0.86 is about average while accounts receivable equivalent of 1.2 months is reasonable. Average tariff is third highest at PHP23.17/m³ (US$0.51/m³) which allows the utility to cover all its operating expenses. Staff/1000 connections ratio at 9.1 is higher than the average. The utility needs to reduce its NRW which can help improve water availability and increase coverage. Production and consumption should be fully metered. Staff productivity is another area improvement.
**BACOLOD WATER SUPPLY**

Population: 366,160  

**Production/Distribution**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Production</td>
<td>42,932 m³</td>
</tr>
<tr>
<td>Production capacity/day</td>
<td>42,937 m³</td>
</tr>
<tr>
<td>Treatment Type</td>
<td>Disinfection</td>
</tr>
<tr>
<td>Storage</td>
<td>16,860 m³</td>
</tr>
<tr>
<td>Service Area</td>
<td>124 sq km</td>
</tr>
<tr>
<td>Distribution pipes</td>
<td>446 km</td>
</tr>
<tr>
<td>Service pipe length</td>
<td>15 m</td>
</tr>
</tbody>
</table>

**Service Connections**

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>25,799</td>
</tr>
<tr>
<td>Non domestic</td>
<td>2,464</td>
</tr>
<tr>
<td>Bulk</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>28,263</td>
</tr>
</tbody>
</table>

**Service Indicators**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Coverage</td>
<td>46.3%</td>
</tr>
<tr>
<td>Water Availability</td>
<td>10 hours/day</td>
</tr>
<tr>
<td>Per Capita Consumption</td>
<td>133 l/c/d</td>
</tr>
<tr>
<td>Average Tariff</td>
<td>US$0.51/m³</td>
</tr>
</tbody>
</table>

**Efficiency Indicators**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Revenue Water</td>
<td>40.0%</td>
</tr>
<tr>
<td>Unit Production Cost</td>
<td>US$0.27/m³</td>
</tr>
<tr>
<td>Operating Ratio</td>
<td>0.86</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>1.2 months</td>
</tr>
<tr>
<td>Staff/1,000 Connections</td>
<td>9.1</td>
</tr>
</tbody>
</table>

**Notes:**

1. The population is for the present area served by the utility.
2. All of 9,523 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 156 sq km.
4. About 2,292 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 5 meters.
7. In 2005, about 2,274 pipe breaks were repaired and 1,101 meters were either replaced or repaired.
8. About 54 staff members attended training; total training days was 162 days.

Data as of 2005.
BALIWAG WATER DISTRICT

Address: B. S. Aquino Avenue, Baliwag, Bulacan, Philippines
Telephone: (63-44) 766 2618
Fax: (63-44) 766 3737
E-mail: balwadis@yahoo.com
Head: Artemio F. Baylosis, General Manager

Baliwag Water District (BWD) is a state owned enterprise established in 1989. It is responsible for water supply services in Baliwag municipality which has a total population of 137,898 people. The present service area of BWD has a population density of 3,539 persons/km². The utility draws water from 12 wells. Security services is contracted out to the private sector through a service agreement. It does not publish an annual report.

General Data About Water Utility

| Connections | 14,947 |
| Staff | 64 |
| Annual O&M Costs | PHP34,899,730, US$775,550 |
| Annual Revenues | PHP48,290,510, US$1,073,120 |
| Annual Billings | PHP44,285,990, US$984,130 |
| Total Capital Expenditure | PHP71,136,880, US$1,580,820 |
| Source of Investment Funds | Government bank loan and internally generated funds |

Tariff Structure

<p>| Category | Domestic | Non domestic | Bulk |</p>
<table>
<thead>
<tr>
<th>FIXED MONTHLY CHARGE</th>
<th>PHP</th>
<th>US$</th>
<th>PHP</th>
<th>US$</th>
<th>PHP</th>
<th>US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 10 m³</td>
<td>95.00</td>
<td>2.11</td>
<td>118.75</td>
<td>2.64</td>
<td>166.25</td>
<td>3.69</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/m³</td>
<td>US$/m³</td>
<td>PHP/m³</td>
<td>US$/m³</td>
<td>PHP/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>11.00</td>
<td>0.24</td>
<td>13.75</td>
<td>0.31</td>
<td>19.25</td>
<td>0.43</td>
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<tr>
<td>21 – 30 m³</td>
<td>12.25</td>
<td>0.27</td>
<td>15.30</td>
<td>0.34</td>
<td>21.40</td>
<td>0.48</td>
</tr>
<tr>
<td>31 – 40 m³</td>
<td>13.75</td>
<td>0.31</td>
<td>17.15</td>
<td>0.38</td>
<td>24.05</td>
<td>0.53</td>
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<tr>
<td>41 – 50 m³</td>
<td>15.50</td>
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<td>19.35</td>
<td>0.43</td>
<td>27.10</td>
<td>0.60</td>
</tr>
<tr>
<td>Over 50 m³</td>
<td>17.50</td>
<td>0.39</td>
<td>21.85</td>
<td>0.49</td>
<td>30.60</td>
<td>0.68</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 1,450 new connections in 2005. Price of new connection is PHP2,110 (US$46.89) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP95.00 (US$2.11).

Priority Needs of Utility

1. Additional/alternative water sources
2. Installation of GIS and SCADA systems
3. Construction of new office building

Consumer Service

Average monthly consumption is about 18.3 m³ per domestic connection. The water bill averages PHP231.20 (US$5.14) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 14 meters. Water quality is good with all 228 water samples taken during the year passing the residual chlorine test. There were 4,693 consumers complaints recorded and only 65 pipe breaks repaired during the year. Customers can make complaints as well as express their concerns in person at the utility office or by telephone.

Performance Highlights

BWD provides water at 86 lpcd to its consumers at an average of 24 hours per day. It covers 99% of the population in its service area. NRW at 24% is better than average. Production and consumption are fully metered. Financial management is very good with an operating ratio of 0.72 and a good collection system where all consumers pay on time. Average tariff is lower than average at PHP13.10/m³ (US$0.29/m³) but still allows the utility to cover all its operating expenses well. Staff/1000 connections ratio is good at 4.3 which is seventh lowest in the region. BWD is a well run utility but it can still improve by providing more water to its consumers. The utility needs to develop additional water sources and production facilities coupled with further NRW reduction.
BALIWAG WATER SUPPLY

Population: 101,563

**Production/Distribution**

- Average Daily Production: 12,190 m³
- Production capacity/day: 23,330 m³
- Treatment Type: Disinfection
- Storage: 380 m³
- Service Area: 28.7 sq km
- Distribution pipes: 154 km
- Service pipe length: 4 m

**Service Connections**

- Domestic: 14,366
- Non domestic: 581
- Bulk: Nil

**Total**: 14,947

**Service Indicators**

- Service Coverage: 99.0%
- Water Availability: 24 hours/day
- Per Capita Consumption: 86 l/c/d
- Average Tariff: US$0.29/m³

**Efficiency Indicators**

- Non-Revenue Water: 24.0%
- Unit Production Cost: US$0.17/m³
- Operating Ratio: 0.72
- Accounts Receivable: Nil
- Staff/1,000 Connections: 4.3

Notes:

1. The population is for the present area served by the utility.
2. All 228 water samples tested in 2005 for residual chlorine passed.
3. The total area of responsibility is 44.2 sq km.
4. About 1,450 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 14 meters.
7. In 2005, about 65 pipe breaks were repaired and 1,335 meters were either replaced or repaired.
8. About 13 staff members attended training; total training days was 76 days.

Budget for training and HRD is about 1.2% of operating expenses.

Data as of 2005.
BANSALAN WATER DISTRICT
Address: R. de los Cientos Street corner Camia Street, Bansalan, Davao del Sur, Philippines
Telephone: (63-82) 553 9228
Fax: (63-82) 553 9229
E-mail: none
Head: Paul J. Arches, General Manager

Bansalan Water District (BWD) is a state owned enterprise established in 1977. It is responsible for piped water supply services in the urban center of Bansalan municipality which has a total population of 51,800 people. The present service area of BWD has a population density of 936 persons/km². The utility draws water from 2 wells and 3 spring sources. There is no private sector involvement in the water district. It publishes an annual report that is available to the public.

Connections: 3,876
Staff: 27
Annual O&M Costs: PHP14,726,270 US$327,250
Annual Revenues: PHP16,021,310 US$356,030
Annual Billings: PHP14,818,380 US$329,300
Total Capital Expenditure: PHP23,480,380 US$521,790
(Over the last 5 years) Average capital expenditure/connection/year: US$ 26.92
Source of Investment Funds: Internally generated funds and employees’ cooperative fund.

**Category** | **Domestic** | **Non domestic**
--- | --- | ---
**FIXED MONTHLY CHARGE** | | |
0 – 10 m³ | PHP170.00 | US$3.78 |
11 – 20 m³ | PHP20.00 | US$0.44 |
21 – 30 m³ | PHP23.00 | US$0.51 |
Over 30 m³ | PHP28.00 | US$0.62 |
**CONSUMPTION CHARGE** | | |
11 – 20 m³ | PHP20.00 | US$m² |
21 – 30 m³ | PHP23.00 | US$m² |
Over 30 m³ | PHP28.00 | US$m² |

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 193 new connections in 2005. Price of new connection is PHP2,100 (US$46.67) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP170.00 (US$3.78).

**Priority Needs of Utility**
1. Additional spring water source
2. Full computerization
3. Improved collection efficiency

**Consumer Service**
Average monthly consumption is about 15.1 m³ per domestic connection. The water bill averages PHP298.20 (US$6.63) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 50 meters. Water quality is good with all 72 water samples taken during the year passing the residual chlorine test. There were only 167 consumers complaints recorded and 15 pipe breaks during the year. Customers can make complaints as well as express their concerns in person at the utility office or by telephone or letter.

**Performance Highlights**
BWD provides water at 79 lpcd to its consumers at an average of 24 hours per day. It covers only 63.7% of the population in its service area. NRW at 33.1% is the tenth highest. While all service connections are metered, production is not metered at all. Operating ratio of 0.92 is above average and it takes about 1.9 months to collect bill payments which is sixth longest. Average tariff at PHP20.80/m³ (US$0.46/m³) is ninth highest. It allows the utility to cover all its operating expenses. Staff/1000 connections ratio of 7.0 is just about average among the utilities. BWD needs to provide more water to its consumers, increase coverage by developing additional sources and reducing its NRW, meter its production, and improve collection.
**BANSALAN WATER SUPPLY**

Population: 36,500

**Production/Distribution**

- Average Daily Production: 2,916 m³
- Production capacity/day: 2,957 m³
- Treatment Type: Disinfection
- Storage: 167 m³
- Service Area: 39 sq km
- Distribution pipes: 62 km
- Service pipe length: 6 m

**Service Connections**

- Domestic: 3,685
- Non domestic: 191
- Bulk: Nil
- Total: 3,876

**Service Indicators**

- Service Coverage: 63.7%
- Water Availability: 24 hours/day
- Per Capita Consumption: 79 l/c/d
- Average Tariff: US$0.46/m³

**Efficiency Indicators**

- Non-Revenue Water: 33.1%
- Unit Production Cost: US$0.31/m³
- Operating Ratio: 0.92
- Accounts Receivable: 1.9 months
- Staff/1,000 Connections: 7.0

**Notes:**

1. The population is for the present area served by the utility.
2. All 72 water samples tested in 2005 for residual chlorine passed.
3. The total area of responsibility is 42 sq km.
4. About 193 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 50 meters.
7. In 2005, about 15 pipe breaks were repaired and 148 meters were either replaced or repaired.
8. About 24 staff members attended training; total training days was 24 days

Budget for training and HRD is about 0.5% of operating expenses.

Data as of 2005.
CABANATUAN CITY WATER DISTRICT

Address: 229 Dicarma CVR, Cabanatuan City 3100, Philippines
Telephone: (63-44) 463 1646
Fax: (63-44) 463 1647
E-mail: ccwd@mozcom.com
Head: Mario G. Villasan, General Manager

Cabanatuan City Water District (CCWD) is a state owned enterprise established in 1974. It is responsible for water supply services in Cabanatuan City which has a total population of 248,115 people. The present service area of CCWD has a population density of 4,191 persons/km². The utility draws water from 21 deep wells. There is no private sector involvement in the utility’s operations. It does not publish an annual report. It has a website at www.ccwd.com.ph.

General Data About Water Utility

| Connections: 24,363 | Staff: 173 |
| Annual O&M Costs: PHP109,827,210 | US$2,440,610 |
| Annual Revenues: PHP173,951,640 | US$3,865,590 |
| Annual Billings: PHP146,160,570 | US$3,248,010 |
| Total Capital Expenditure: PHP207,408,130 | US$4,609,070 |
| (Over the last 5 years) Average capital expenditure/connection/year: US$ 37.84 |
| Source of Investment Funds: Government bank loan and internally generated funds. |

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
<th>Bulk</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>PHP</td>
<td>US$</td>
<td>PHP</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>115.00</td>
<td>2.56</td>
<td>230.00</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/m³</td>
<td>US$/m³</td>
<td>PHP/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>12.50</td>
<td>0.28</td>
<td>25.00</td>
</tr>
<tr>
<td>21 – 30 m³</td>
<td>13.75</td>
<td>0.31</td>
<td>27.50</td>
</tr>
<tr>
<td>31 – 40 m³</td>
<td>15.25</td>
<td>0.34</td>
<td>30.50</td>
</tr>
<tr>
<td>Over 40 m³</td>
<td>17.15</td>
<td>0.38</td>
<td>34.30</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 2,449 new connections in 2005. Price of new connection is PHP4,100 (US$91.11) for domestic and PHP12,000 (US$266.67) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP115.00 (US$2.56).

Priority Needs of Utility

1. Alternative water sources other than groundwater
2. Long term funding
3. Modular water treatment

Consumer Service

Average monthly consumption is about 31.6 m³ per domestic connection of. The water bill averages PHP 354.35 (US$7.87) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 16 meters. No residual chlorine tests were conducted prior to 2006. There were 1,518 consumers complaints recorded and only 17 pipe breaks repaired during the year. Customers can make complaints and interact with the water district staff in person at the utility office or by telephone, e-mail, letter and short messages via mobile phones.

Performance Highlights

CCWD provides water at 157 lpcd to its consumers at an average of 24 hours per day. It covers 72.7% of the population in its service area. NRW is seventh lowest at 19.2%. Production and service connections are fully metered. Financial management is mixed with an operating ratio of 0.63, the sixth lowest, and an average collection period of 1.9 months for bill payments, the fifth longest. Average tariff is just above average at PHP16.13/m³ (US$0.36/m³) but it still allows the utility to cover all its operating expenses well. Staff/1000 connections ratio is average and the median value at 7.1. CCWD is doing well in managing its NRW and finances except collection. It needs to improve coverage in its service area by developing new sources and advocating for prudent use of water among its consumers. It can still improve on staff productivity.
CABANATUAN WATER SUPPLY

Population: 201,189

Production/Distribution

- Average Daily Production: 30,706 m³
- Production capacity/day: 46,000 m³
- Treatment Type: Disinfection
- Storage: 4,917 m³
- Service Area: 48 sq km
- Distribution pipes: 199 km
- Service pipe length: 8 m

Service Connections

- Domestic: 22,095
- Non domestic: 2,268
- Bulk: Nil
- Total: 24,363

Service Indicators

- Service Coverage: 72.7%
- Water Availability: 24 hours/day
- Per Capita Consumption: 157 l/c/d
- Average Tariff: US$0.36/m³

Efficiency Indicators

- Non-Revenue Water: 19.2%
- Unit Production Cost: US$0.22/m³
- Operating Ratio: 0.63
- Accounts Receivable: 1.9 months
- Staff/1,000 Connections: 7.1

Notes:

1. The population is for the present area served by the utility.
2. No tests for residual chlorine were conducted prior to 2006.
3. The total area of responsibility is 253 sq km.
4. About 2,449 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 16 meters.
7. In 2005, about 17 pipe breaks were repaired and 831 meters were either replaced or repaired.
8. About 175 staff members attended training; total training days was 404 days
   Budget for training and HRD is about 1.2% of operating expenses.

Data as of 2005.
CAMARINES NORTE WATER DISTRICT

Address: Vinzons Avenue, Pandan, Daet, Camarines Norte, Philippines
Telephone: (63-54) 721 2237
Fax: (63-54) 721 2237
E-mail: cnwd@digitelone.com
Head: Ma. Antonia B. F. Boma, General Manager

Camarines Norte Water District (CNWD) is a state owned enterprise established in 1973. It is responsible for water supply services in 7 towns in Camarines Norte Province including the capital town of Daet. The total area of responsibility has a total population of 322,682 people. The present service area of CNWD has a population density of 751 persons/km². The utility draws water from groundwater sources. Private sector involvement in the utility’s operations is through a number of service and lease contracts. It publishes an annual report but it is not available to the public.

General Data About Water Utility

| Connections | 18,596 |
| Staff | 90 |
| Annual O&M Costs | PHP61,784,000 | US$1,372,980 |
| Annual Revenues | PHP84,198,090 | US$1,871,070 |
| Annual Billings | PHP80,065,250 | US$1,779,230 |
| Total Capital Expenditure | PHP66,094,560 | US$1,468,770 |
| Source of Investment Funds | Internally generated funds |

Tariff Structure

| Category | Domestic | Non domestic |
| FIXED MONTHLY CHARGE | PHP | US$ | PHP | US$ |
| 0 – 10 m³ | 146.00 | 3.24 | 292.00 | 6.49 |
| CONSUMPTION CHARGE | PHP/m³ | US$/m³ | PHP/m³ | US$/m³ |
| 11 – 20 m³ | 17.50 | 0.39 | 35.00 | 0.78 |
| 21 – 30 m³ | 19.00 | 0.42 | 38.00 | 0.84 |
| 31 - 40 m³ | 20.50 | 0.46 | 41.00 | 0.91 |
| Over 40 m³ | 22.00 | 0.49 | 44.00 | 0.98 |

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 490 new connections in 2005. Price of new connection is PHP2,579 (US$57.31) for domestic and PHP3,017 (US$67.04) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP146.00 (US$3.24).

Priority Needs of Utility

1. Additional water sources
2. Watershed management
3. Increase in number of service connections

Consumer Service

Average monthly consumption is about 18.0 m³ per domestic connection. The water bill averages PHP309.33 (US$6.87) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 28 meters. Water quality is good as all 954 samples passed the residual chlorine test. There were 2,658 consumers complaints recorded and only 35 pipe breaks repaired during the year. Customers can make complaints and interact with the water district staff in person at the utility office or by telephone, e-mail, or letter.

Performance Highlights

CNWD provides water at 89 lpcd to its consumers at an average of 24 hours per day. It covers only 35.9% of the population in its service area, the lowest among the utilities. NRW is lower than average at 24.9%. Production and all service connections are fully metered. Financial management is good with an operating ratio of 0.73 and an average collection period of 0.8 month for bill payments. Average tariff is PHP19.24/m³ (US$0.43/m³) that allows the utility to cover all its operating expenses. Staff/1000 connections ratio is good at 4.8 which is the tenth lowest. CNWD manages its financial and human resources well. However, it needs to improve its coverage and increase the amount it provides to customers by developing new water sources.
CAMARINES NORTE WATER SUPPLY

Population: 311,004

Production/Distribution

- Average Daily Production: 15,192 m³
- Production capacity/day: 23,498 m³
- Treatment Type: Disinfection
- Storage: 6,510 m³
- Service Area: 414 sq km
- Distribution pipes: 623 km
- Service pipe length: 12 m

Service Connections

<table>
<thead>
<tr>
<th>Type</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>16,712</td>
</tr>
<tr>
<td>Non domestic</td>
<td>1,884</td>
</tr>
<tr>
<td>Bulk</td>
<td>Nil</td>
</tr>
<tr>
<td>Total</td>
<td>18,596</td>
</tr>
</tbody>
</table>

Service Indicators

- Service Coverage: 35.9%
- Water Availability: 24 hours/day
- Per Capita Consumption: 89 l/c/d
- Average Tariff: US$0.43/m³

Efficiency Indicators

- Non-Revenue Water: 24.9%
- Unit Production Cost: US$0.25/m³
- Operating Ratio: 0.73
- Accounts Receivable: 0.8 month
- Staff/1,000 Connections: 4.8

Notes:

1. The population is for the present area served by the utility.
2. All of 954 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 1,083 sq km.
4. About 490 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 28 meters.
7. In 2005, about 35 pipe breaks were repaired and 4,138 meters were either replaced or repaired.
8. About 51 staff members attended training; total training days was 83 days.

Data as of 2005.
**Metro Cebu Water District (MCWD)** is a state owned enterprise established in 1974 when it took over the management of the city’s waterworks. It is responsible for water supply of Cebu City and 7 other cities and municipalities with a total population of 1,638,922 people. MCWD’s present service area a population density of 2,185 persons/km². The utility draws its water supply from 104 deep wells and the Buhisan River. The private sector is involved in the provision of bulk water supply to the utility. The utility publishes an annual report that is available to the public.

### General Data About Water Utility

| Connections | 105,532 |
| Staff | 845 |
| Annual O&M Costs | PHP 632,569,060 US$ 14,057,090 |
| Annual Revenues | PHP 827,296,660 US$ 18,384,370 |
| Annual Billings | PHP 837,794,330 US$ 18,617,650 |
| Total Capital Expenditure | PHP 583,713,090 US$ 12,971,400 |
| Source of Investment Funds | Government bank loan and internally generated funds |

### Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Regular</th>
<th>Communal taps</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMUM CHARGE</td>
<td>(PHP)</td>
<td>(US$)</td>
</tr>
<tr>
<td>(First 10 m³ or less)</td>
<td>122.00</td>
<td>2.71</td>
</tr>
<tr>
<td>COMMODITY CHARGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumption (m³)</td>
<td>(Php/m³)</td>
<td>(US$/m³)</td>
</tr>
<tr>
<td>11 – 20</td>
<td>13.40</td>
<td>0.30</td>
</tr>
<tr>
<td>21 – 30</td>
<td>15.75</td>
<td>0.35</td>
</tr>
<tr>
<td>31 – 40</td>
<td>43.20</td>
<td>0.96</td>
</tr>
<tr>
<td>41 – 172</td>
<td>43.20</td>
<td>0.96</td>
</tr>
<tr>
<td>Over 172</td>
<td>43.20</td>
<td>0.96</td>
</tr>
</tbody>
</table>

1 Regular rate applies to domestic, commercial & industrial connections. Communal taps are for the urban poor. Notes:

1. All consumers pay on metered use. Consumers are billed monthly.
2. There were 6,945 new connections in 2005. Price of new connection is PHP4,300 (US$95.56) for domestic and PHP4,500 (US$100.00) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP122.00 (US$2.71).

### Priority Needs of Utility

1. Financing for expansion
2. Rehabilitation of water system
3. Capital funding for large source development project

### Consumer Service

Average monthly consumption is about 26.4 m³ per household. The water bill averages PHP 513.92 (US$11.42) per month per household. Water is available 20 hours a day to most users at pressures of 3 to 6 meters. Water quality is good with all 5,160 water samples taken during the year passing the residual chlorine test. There were 32,530 consumers complaints recorded and 18,615 leaks repaired during the year. Consumers can complain in person at the water utility office or by telephone, letter, SMS text messaging or email.

### Performance Highlights

MCWD provides water at 98 lpcd to its consumers at an average of only 20 hours per day. It covers only 55.1% of the population in its service area, the eighth lowest among the utilities. NRW is just about average at 27.4% with production and all service connections fully metered. While operating ratio of 0.76 is good, accounts receivable equivalent of 2.2 months is the second longest collection period. Staff/1000 connections ratio is higher than average at 8.0. Average tariff is PHP21.78/m³ (US$0.48/m³), the seventh highest and enough to cover production costs. MCWD needs to expand coverage, increase water availability, provide more water to consumers, improve collection and staff productivity.
METRO CEBU WATER SUPPLY

Population: 1,638,922

### Production/Distribution

- **Average Daily Production**: 145,260 m³
- **Production capacity/day**: 154,313 m³
- **Treatment Type**: Disinfection & desalination
- **Storage**: 44,000 m³
- **Service Area**: 750 sq km
- **Distribution pipes**: 542 km
- **Service pipe length**: 5 m

### Service Connections

- **Domestic**: 101,869
- **Non domestic**: 3,626
- **Bulk**: 37
- **Total**: 105,532

### Service Indicators

- **Service Coverage**: 55.1%
- **Water Availability**: 20 hours/day
- **Per Capita Consumption**: 98 l/c/d
- **Average Tariff**: US$0.48/m³

### Efficiency Indicators

- **Non-Revenue Water**: 27.4%
- **Unit Production Cost**: US$0.27/m³
- **Operating Ratio**: 0.76
- **Accounts Receivable**: 2.2 months
- **Staff/1,000 Connections**: 8.0

---

**Notes:**

1. The population is for the present area served by the utility.
2. All 5,160 water samples tested in 2005 for residual chlorine passed.
3. The total area of responsibility is 707 sq km. This does not include Talisay town which is not yet part of its official franchise area but is currently being served.
4. About 6,945 new customers connected during the year.
5. Bulk connections serve housing subdivisions and condominiums.
6. This is the population coverage in the present service area.
7. Average mains water pressure ranges from 3 to 6 meters.
8. About 756 staff members attended training; total training days was 4,954 days.

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**Data as of 2005.**

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**Annual Water Use**

- 53,020,000 m³

**Annual Water Billings**

- US$18,617,650

**Annual O&M Costs**

- US$14,057,090
DASMARIÑAS

DASMARIÑAS WATER DISTRICT

Address: Camerino Avenue, Zone 1, Dasmariñas, Cavite 4114, Philippines
Telephone: (63-46) 416 1236
Fax: (63-46) 416 1238
E-mail: dasmawater@dasmawater.com
Head: Alfredo S. Silva, General Manager

Dasmariñas Water District (DWD) is a state owned enterprise established in 1979. It is responsible for water supply services in Dasmariñas town in Cavite Province. The area of responsibility has a population of 600,000 people. The present service area of DWD has a population density of 6,652 persons/km². The utility draws water from spring sources and 90 deep wells. There is no private sector involvement in the utility’s operations. It publishes an annual report that is available to the public.

General Data About Water Utility

- Connections: 86,078
- Staff: 407
- Annual O&M Costs: PHP305,332,320, US$6,785,160
- Annual Revenues: PHP352,883,490, US$7,841,860
- Annual Billings: PHP313,210,180, US$6,960,230
- Total Capital Expenditure: PHP238,385,750, US$5,297,460
  (Over the last 5 years) Average capital expenditure/connection/year: US$12.31
- Source of Investment Funds: Internally generated funds

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>PHP</td>
<td>US$</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>100.00</td>
<td>2.22</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>11.85</td>
<td>0.26</td>
</tr>
<tr>
<td>21 – 30 m³</td>
<td>14.45</td>
<td>0.32</td>
</tr>
<tr>
<td>31 - 40 m³</td>
<td>17.20</td>
<td>0.38</td>
</tr>
<tr>
<td>Over 40 m³</td>
<td>20.30</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 3,845 new connections in 2005. Price of new connection is PHP3,400 (US$75.56) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP100.00 (US$2.22).

Priority Needs of Utility

1. Additional water source
2. Renewable energy source
3. Ground reservoir

Consumer Service

Average monthly consumption is about 19.4 m³ per domestic connection. The water bill averages PHP289.14 (US$6.43) per month per domestic connection. Water is available 23.5 hours a day to users at an average pressure of 10 meters. Water quality is good with almost all of 33,124 samples taken passing the residual chlorine test. There were 3,648 consumers complaints recorded and 484 pipe breaks repaired during the year. Customers can complain and interact with the water district staff in person at the utility office or by telephone, e-mail, SMS text messaging, or letter.

Performance Highlights

DWD provides water at 91 lpcd to its consumers at an average of 23.5 hours per day. It covers 90% of the population in its service area. NRW is lower than average at 25.1% with production and service connections fully metered. Financial management is good with an operating ratio of 0.87 and an average collection period of half a month for bill payments. Average tariff is next to average at Php15.28/m³ (US$0.34/m³) which still allows the utility to cover all its operating expenses. Staff/1000 connections ratio is good at 4.7 which is eighth lowest. DWD, while already a well run utility, can still improve by increasing its coverage and availability, and the amount distributed to its customers by developing new water sources.
DASMARIÑAS WATER SUPPLY

Population: 600,000 ¹

Production/Distribution

- Average Daily Production: 74,954 m³
- Production capacity/day: 74,954 m³
- Treatment Type: Disinfection
- Storage: 1,600 m³
- Service Area: 90 sq km
- Distribution pipes: 591 km
- Service pipe length: 6 m

Service Connections

- Domestic: 76,871
- Non domestic: 9,207
- Bulk: Nil
- Total: 86,078 ⁴

Service Indicators

- Service Coverage: 90.0%
- Water Availability: 23.5 hours/day
- Per Capita Consumption: 91 l/c/d
- Average Tariff: US$0.34/m³

Efficiency Indicators

- Non-Revenue Water: 25.1%
- Unit Production Cost: US$0.25/m³
- Operating Ratio: 0.87
- Accounts Receivable: 0.5 month
- Staff/1,000 Connections: 4.7

Notes:

1. The population is for the present area served by the utility.
2. Only 12 out of 33,124 samples tested for residual chlorine failed the test.
3. The present service area covers utility’s the total area of responsibility.
4. About 3,845 new customers connected during the year.
5. This is the population coverage in the area of responsibility.
6. Average mains water pressure is 10 meters.
7. In 2005, about 484 pipe breaks were repaired and 4,425 meters were either replaced or repaired.
8. About 45 staff members attended training; total training days was 135 days.

Budget for training and HRD is about 0.1% of operating expenses.

Data as of 2005.
DAVAO CITY WATER DISTRICT

Address: Km.5, J. P. Laurel Avenue, Bajada, Davao City, Davao del Sur, Philippines
Telephone: (63-82) 221 9400
Fax: (63-82) 226 4885
E-mail: dcwd@davao-water.gov.ph
Head: Rhodora N. Gamboa, General Manager

Davao City Water District (DCWD) is a state owned enterprise established in 1973. It is responsible for water supply services in the city of Davao in Davao del Sur Province. The area of responsibility has a population of 1,325,355 people. The present service area of DCWD has a population density of 6,738 persons/km². The utility draws water from 2 surface water sources and 48 deep wells. Janitorial, bill handling and security services are handled by the private sector. DCWD publishes an annual report that is available to the public.

General Data About Water Utility

<table>
<thead>
<tr>
<th>Connections</th>
<th>147,618</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff</td>
<td>963</td>
</tr>
<tr>
<td>Annual O&amp;M Costs</td>
<td>PHP607,279,470 US$13,495,100</td>
</tr>
<tr>
<td>Annual Revenues</td>
<td>PHP696,662,630 US$15,481,390</td>
</tr>
<tr>
<td>Annual Billings</td>
<td>PHP638,139,280 US$14,180,870</td>
</tr>
<tr>
<td>Total Capital Expenditure</td>
<td></td>
</tr>
<tr>
<td>(Over the last 5 years)</td>
<td>PHP531,021,020 US$11,800,470</td>
</tr>
<tr>
<td>Average capital expenditure/connection/year:</td>
<td>US$15.99</td>
</tr>
<tr>
<td>Source of Investment Funds</td>
<td>Internally generated funds</td>
</tr>
</tbody>
</table>

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIXED MONTHLY CHARGE</strong></td>
<td>PHP</td>
<td>US$</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>104.00</td>
<td>2.31</td>
</tr>
<tr>
<td><strong>CONSUMPTION CHARGE</strong></td>
<td>PHP/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>10.95</td>
<td>0.24</td>
</tr>
<tr>
<td>21 – 30 m³</td>
<td>14.10</td>
<td>0.31</td>
</tr>
<tr>
<td>Over 30 m³</td>
<td>18.70</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 7,017 new connections in 2005. Price of new connection is PHP1,500 (US$33.33) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP104.00 (US$2.31).

Priority Needs of Utility

1. Reduction of NRW
2. Infrastructure development
3. Improve customer service

Consumer Service

Average monthly consumption is about 25.7 m³ per domestic connection. The water bill averages PHP296.35 (US$6.59) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 10 meters. Water quality is good with almost 97% of 14,201 samples taken passing the residual chlorine test. There were 22,794 consumers complaints recorded and 1,643 pipe breaks repaired during the year. Customers can make complaints and interact with the water district staff in person at the utility office or by telephone or letter.

Performance Highlights

DCWD provides water at 161 lpcd to its consumers at an average of 24 hours per day. It covers 73.7% of the population in its service area. NRW is higher than average at 31.8%. Production and all service connections are fully metered. Financial management is just average for both operating ratio at 0.87 and accounts receivable equivalent of 1.1 months. Average tariff is lower than average at PHP12.36/m³ (US$0.27/m³) but still allows the utility to cover all its operating expenses. Staff/1000 connections ratio is better than average at 6.5. DCWD needs to reduce its NRW to cover the unserved households in its service area. It may also have to encourage its consumers to reduce consumption to more prudent levels by increasing tariffs which will also improve its operating ratio.
DAVAO WATER SUPPLY
Population: 1,010,740

Production/Distribution
Average Daily Production 207,374 m³
Production capacity/day 231,166 m³
Treatment Type Conventional
Storage 33,455 m³
Service Area 150 sq km
Distribution pipes 1,201 km
Service pipe length 30 m

Service Connections
Domestic 141,821
Non domestic 5,777
Bulk 20
Total 147,618

Service Indicators
Service Coverage 73.7%
Water Availability 24 hours/day
Per Capita Consumption 161 l/c/d
Average Tariff US$0.27/m³

Efficiency Indicators
Non-Revenue Water 31.8%
Unit Production Cost US$0.18/m³
Operating Ratio 0.87
Accounts Receivable 1.1 months
Staff/1,000 Connections 6.5

Notes:
1 The population is for the present area served by the utility.
2 About 97% of 14,201 samples taken passed the test for residual chlorine.
3 The total area of responsibility is 2,440 sq km.
4 About 7,017 new customers connected during the year.
5 This is the population coverage in the present service area.
6 Average mains water pressure is 10 meters.
7 In 2005, about 1,643 pipe breaks were repaired and 11,189 meters were either replaced or repaired.
8 About 57 staff members attended training; total training days was 228 days.

Annual Water Use
75,691,450 m³

Annual Water Billings
US$14,180,870

Annual O&M Costs
US$13,495,100

Data as of 2005.
DIPOLOG

DIPOLOG CITY WATER DISTRICT

Address: Highway, Minaog, Dipolog City 7100, Philippines
Telephone: (63-65) 212 2574
Fax: (63-65) 212 4485
E-mail: dipcwd@mozcom.com
Head: Pablito S. Paluca, General Manager

Dipolog City Water District (DipCWD) is a state owned enterprise established in 1981. It is responsible for water supply services in the city of Dipolog in Zamboanga del Norte Province. The area of responsibility has a population of 117,586 people. The present service area of DipCWD has a population density of 1,495 persons/km². The utility draws groundwater from 6 deep wells. The private sector is not involved in any of the utility’s operations. DipCWD does not publish an annual report.

General Data About Water Utility

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>PHP</td>
<td>US$</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>176.00</td>
<td>3.91</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>28.00</td>
<td>0.62</td>
</tr>
<tr>
<td>21 – 30 m³</td>
<td>30.00</td>
<td>0.67</td>
</tr>
<tr>
<td>Over 30 m³</td>
<td>31.80</td>
<td>0.71</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 998 new connections in 2005. Price of new connection is PHP1,750 (US$38.89) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP176.00 (US$3.91).

Priority Needs of Utility

1. Source development
2. Pipe network improvement
3. Storage facilities

Consumer Service

Average monthly consumption is about 16.8 m³ per domestic connection. The water bill averages PHP381.96 (US$8.49) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 17 meters. Water quality is fair with almost 91% of 56 samples taken passing the residual chlorine test. There were 3,231 consumers complaints recorded and 76 pipe breaks repaired during the year. Customers can make complaints and interact with the water district staff in person at the utility office or by telephone or letter.

Performance Highlights

DipCWD provides water at 94 lpcd to its consumers at an average of 24 hours per day. It covers only 46.6% of the population in its service area, the fifth lowest among the utilities. NRW is reasonable at 21.2%, almost at the lowest quartile. Production and consumption are fully metered. Financial management is good with an operating ratio of 0.66 and an accounts receivable equivalent of 1.0 month for bill payments. Average tariff is sixth highest at PHP22.38/m³ (US$0.50/m³) allowing the utility to cover all its operating expenses well. Staff/1000 connections ratio is very good at 3.4 which is the fourth lowest. DipCWD needs to improve its low coverage which may be due to its high tariff rates. It may also have to develop new sources as current level of consumption shows resource constraints as well.
## Area Profile

### DIPOLOG WATER SUPPLY

**Population:** 103,187

#### Production/Distribution

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Production</td>
<td>6,301 m³</td>
</tr>
<tr>
<td>Production capacity/day</td>
<td>10,282 m³</td>
</tr>
<tr>
<td>Treatment Type</td>
<td>Filtration</td>
</tr>
<tr>
<td>Storage</td>
<td>500 m³</td>
</tr>
<tr>
<td>Service Area</td>
<td>69 sq km</td>
</tr>
<tr>
<td>Distribution pipes</td>
<td>85 km</td>
</tr>
<tr>
<td>Service pipe length</td>
<td>5 m</td>
</tr>
</tbody>
</table>

#### Service Connections

<table>
<thead>
<tr>
<th>Type</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>8,184</td>
</tr>
<tr>
<td>Non domestic</td>
<td>2,490</td>
</tr>
<tr>
<td>Bulk</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10,674</strong></td>
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</tbody>
</table>

#### Service Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Coverage</td>
<td>46.6%</td>
</tr>
<tr>
<td>Water Availability</td>
<td>24 hours/day</td>
</tr>
<tr>
<td>Per Capita Consumption</td>
<td>94 l/c/d</td>
</tr>
<tr>
<td>Average Tariff</td>
<td>US$0.50/m³</td>
</tr>
</tbody>
</table>

#### Efficiency Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Revenue Water</td>
<td>21.2%</td>
</tr>
<tr>
<td>Unit Production Cost</td>
<td>US$0.25/m³</td>
</tr>
<tr>
<td>Operating Ratio</td>
<td>0.66</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>1.0 month</td>
</tr>
<tr>
<td>Staff/1,000 Connections</td>
<td>3.4</td>
</tr>
</tbody>
</table>

### Notes:

1. The population is for the present area served by the utility.
2. About 91% of 56 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 136 sq km.
4. About 998 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 17 meters.
7. In 2005, about 76 pipe breaks were repaired and 326 meters were either replaced or repaired.
8. About 3 staff members attended training; total training days was 9 days.

Budget for training and HRD is about 0.6% of operating expenses.

### Annual Water Use

- **Domestic:** 72%
- **Non domestic:** 7%
- **NRW:** 21%

**Total:** 2,300,000 m³

### Annual Water Billings

- **Domestic:** 92%
- **Non domestic:** 8%

**Total:** US$901,170

### Annual O&M Costs

- **Chemicals:** 4%
- **Power & Fuel:** 17%
- **Personnel:** 8%
- **Other:** 71%

**Total:** US$578,520

Data as of 2005.
GUIMBA WATER DISTRICT

Address: 28 Danzalan Street, St. John, Guimba, Nueva Ecija, Philippines
Telephone: (63-44) 611 1207
Fax: (63-44) 611 0141
E-mail: none
Head: Felixberto C. Legarda, General Manager

Guimba Water District (GWD) is a state owned enterprise established in 1987. It is responsible for water supply services in the town of Guimba in Nueva Ecija Province. The area of responsibility has a population of 93,787 people. The present service area of GWD has a population density of 875 persons/km². The utility draws groundwater from 3 deep wells. The private sector is not involved in any of the utility’s operations. GWD does not publish an annual report.

General Data About Water Utility

Connections: 2,440
Staff: 25
Annual O&M Costs: PHP16,067,830 US$ 357,060
Annual Revenues: PHP14,169,760 US$ 314,880
Annual Billings: PHP12,915,570 US$ 287,010
Total Capital Expenditure: PHP58,400,860 US$1,297,800
(Over the last 5 years) Average capital expenditure/connection/year: US$106.38
Source of Investment Funds: Internally generated funds and loan from ODA sources

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>PHP 187.00</td>
<td>US$ 4.16</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>PHP 374.00</td>
<td>US$ 8.31</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/ m³ 20.95</td>
<td>US$/ m³ 0.47</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>PHP/ m³ 23.00</td>
<td>US$/ m³ 0.51</td>
</tr>
<tr>
<td>21 – 30 m³</td>
<td>PHP/ m³ 25.35</td>
<td>US$/ m³ 0.56</td>
</tr>
<tr>
<td>Over 30 m³</td>
<td>PHP/ m³ 30.70</td>
<td>US$/ m³ 0.60</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 414 new connections in 2005. Price of new connection is PHP2,400 (US$53.33) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP187.00 (US$4.16).

Priority Needs of Utility
1. Expansion to inner villages
2. Expansion to adjacent villages
3. Expansion to nearby towns

Consumer Service
Average monthly consumption is about 17.8 m³ per domestic connection. The water bill averages PHP382.60 (US$8.50) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 21 meters. Water quality is good with all of 48 samples taken passing the residual chlorine test. Consumer complaints were not recorded. About 35 pipe breaks were repaired during the year. Customers can make complaints and interact with the water district staff in person at the utility office or by telephone or letter.

Performance Highlights
GWD provides water at 81 lpcd to its consumers at an average of 24 hours per day. It covers only 45.3% of the population in its service area, the third lowest coverage. The utility has the eighth lowest NRW at 19.4%. However, production is not metered although all service connections have operating meters. Financial management is not good with an operating ratio of 1.13 which is the fourth highest. Collection period of 1.0 month is about average. Average tariff is fourth highest at PHP23.97/m³ (US$0.53/m³) which may be a reason for low coverage. It is also an area where groundwater is found at shallow depths. Staff/1000 connections ratio of 10.2 is quite high. GWD will have to address its low coverage with new sources and review of its tariffs. Amount of water provided per capita should also be increased. Operating ratio will also have to be improved by reducing its O&M costs. Staff productivity should be improved as well.
## GUIMBA WATER SUPPLY

Population: 35,000

### Production/Distribution

- **Average Daily Production**: 1,832 m³
- **Production capacity/day**: 1,858 m³
- **Treatment Type**: Disinfection
- **Storage**: 1,230 m³
- **Service Area**: 40 sq km
- **Distribution pipes**: 42 km
- **Service pipe length**: 3 m

### Service Connections

- Domestic: 2,194
- Non domestic: 246
- Bulk: Nil
- **Total**: 2,440

### Service Indicators

- **Service Coverage**: 45.3%
- **Water Availability**: 24 hours/day
- **Per Capita Consumption**: 81 l/c/d
- **Average Tariff**: US$0.53/m³

### Efficiency Indicators

- **Non-Revenue Water**: 19.4%
- **Unit Production Cost**: US$0.53/m³
- **Operating Ratio**: 1.13
- **Accounts Receivable**: 1.0 month
- **Staff/1,000 Connections**: 10.2

---

**Notes:**

1. The population is for the present area served by the utility.
2. All 48 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 259 sq km.
4. About 414 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 21 meters.
7. In 2005, about 35 pipe breaks were repaired and 61 meters were either replaced or repaired.
8. About 2 staff members attended training; total training days was 3 days.

Budget for training and HRD is about 1.4% of operating expenses.

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**Data as of 2005.**
METRO KIDAPAWAN

Address: Lanao, Kidapawan City 9400, North Cotabato, Philippines
Telephone: (63-64) 288 1865
Fax: (63-64) 288 5257
E-mail: metrokidapawan_wd@yahoo.com
Head: Stella G. Anima, General Manager

Metro Kidapawan Water District (MKWD) is a state owned enterprise established in 1976. It is responsible for water supply services in Kidapawan City and the municipalities of Makilala, Magpet and Matalam in North Cotabato Province which has a total combined population of 303,598 people. The present service area of MKWD has a population density of 357 persons/km². The utility draws water from one well, several springs and a river in these city and municipalities. The private sector is not involved in the operation of the water district. MKWD publishes an annual report that is available to the public.

General Data About Water Utility

| Connections | 17,430 |
| Staff | 99 |
| Annual O&M Costs | PHP 87,316,000 US$ 1,940,360 |
| Annual Collections | PHP 85,216,000 US$ 1,893,690 |
| Annual Billings | PHP 87,316,000 US$ 1,940,360 |
| Total Capital Expenditure | PHP 35,000,000 US$ 777,780 |
| (Over the last 5 years) | Average capital expenditure/connection/year: US$ 8.92 |
| Source of Investment Funds | Government bank, internal source, and borrowing from local government |

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
<th>Bulk</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>PHP</td>
<td>US$</td>
<td>PHP</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>156.60</td>
<td>3.48</td>
<td>313.20</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/m³</td>
<td>US$/m³</td>
<td>PHP/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>17.95</td>
<td>0.40</td>
<td>35.90</td>
</tr>
<tr>
<td>21 – 30 m³</td>
<td>20.30</td>
<td>0.45</td>
<td>40.60</td>
</tr>
<tr>
<td>Over 30 m³</td>
<td>22.65</td>
<td>0.55</td>
<td>45.30</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 732 new connections in 2005. Price of new domestic connection is PHP1,500 (US$33.33).
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP156.60 (US$3.48).

Priority Needs of Utility

1. Rehabilitation of distribution system
2. Non revenue water reduction
3. Environmental management

Consumer Service

Average monthly consumption is about 17.0 m³ per domestic connection. The water bill averages PHP412.72 (US$9.17) per month per domestic connection. Water is available 24 hours a day to users at pressures of 7 meters minimum to 35 meters maximum. Water quality is good with all 9,125 water samples taken during the year passing the residual chlorine test. There were 230 consumers complaints recorded and 600 pipe breaks repaired during the year. Customers can make complaints as well as express their concerns in person at the utility office or by telephone or letter.

Performance Highlights

MKWD provides water at 97 lpcd to its consumers at an average of 24 hours per day. However, it only covers 54.9% of the population in its service area, seventh lowest among the utilities. NRW at 28.3% is higher than the average. Production and all service connections are fully metered. Financial management is mixed with an operating ratio of 1.02 while accounts receivable equivalent is good at 0.3 month. Average tariff is fourth highest at PHP22.98/m³ (US$0.51/m³) which may contribute to low coverage. Staff/1000 connections ratio is good at 5.7 which is lower than the average among the utilities. While the utility is doing well with 24-hour supply with reasonable consumption, it should increase its coverage and reduce its NRW further. It can increase its revenues with more consumers and reduce costs to improve its operating ratio.
**METRO KIDAPAWAN WATER SUPPLY**

Population: 165,000  

### Production/Distribution

- Average Daily Production: 14,521 m$^3$
- Production capacity/day: 23,328 m$^3$
- Treatment Type: Filtration
- Storage: 2,700 m$^3$
- Service Area: 462 sq km
- Distribution pipes: 510 km
- Service pipe length: 10 m

### Service Connections

- Domestic: 15,691
- Non domestic: 1,739
- Bulk: Nil
- Total: 17,430

### Service Indicators

- Service Coverage: 54.9%
- Water Availability: 24 hours/day
- Per Capita Consumption: 97 l/c/d
- Average Tariff: US$0.51/m$^3$

### Efficiency Indicators

- Non-Revenue Water: 28.3%
- Unit Production Cost: US$0.37/m$^3$
- Operating Ratio: 1.02
- Accounts Receivable: 0.3 month
- Staff/1,000 Connections: 5.7

### Notes:
1. The population is for the present area served by the utility.
2. All 9,125 water samples tested in 2005 for residual chlorine passed.
3. The total area of responsibility is 2,095 sq km.
4. About 732 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Minimum mains water pressure is 7 meters but can go as high as 35 meters.
7. In 2005, about 600 pipe breaks were repaired and 420 meters were either replaced or repaired.
8. About 50 staff members attended training; total training days was 300 days.

**Data as of 2005.**

**Annual Water Use**

5,300,000 m$^3$

**Annual Water Billings**

US$1,940,360

**Annual O&M Costs**

US$1,940,360
MABALACAT

Utility Profile

MABALACAT WATER DISTRICT

Address : 255 MacArthur Highway, Mabiga, Mabalacat, Pampanga, Philippines
Telephone : (63-45) 331 7404
Fax : (63-45) 626 0838
E-mail : fad@digitelone.com
Head : Francis A. Dimaliwat, General Manager

Mabalacat Water District (MWD) is a state owned enterprise established in 1978. It is responsible for water supply services in the town of Mabalacat in Pampanga Province. Its present service area has a total population of 207,167 people. The service area of MWD has a population density of 2,051 persons/km². The utility draws groundwater from 21 deep wells. The private sector is not involved in the operation of the water district. MWD publishes an annual report that is available to the public.

General Data About Water Utility

Connections : 21,513
Staff : 128
Annual O&M Costs : PHP 78,724,240 US$1,749,430
Annual Collections : PHP 97,111,630 US$2,158,040
Annual Billings : PHP 91,682,740 US$2,037,390
Total Capital Expenditure : PHP100,000,000 US$2,222,220
(Over the last 5 years) Average capital expenditure/connection/year: US$20.66
Source of Investment Funds : Internally generated funds and loan from government bank

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
<th>Bulk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIXED MONTHLY CHARGE</strong></td>
<td>PHP</td>
<td>US$</td>
<td>PHP</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>130.00</td>
<td>2.89</td>
<td>260.00</td>
</tr>
<tr>
<td><strong>CONSUMPTION CHARGE</strong></td>
<td>PHP/m³</td>
<td>US$/m³</td>
<td>PHP/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>13.80</td>
<td>0.31</td>
<td>27.60</td>
</tr>
<tr>
<td>21 – 30 m³</td>
<td>15.00</td>
<td>0.33</td>
<td>30.00</td>
</tr>
<tr>
<td>Over 30 m³</td>
<td>16.80</td>
<td>0.37</td>
<td>33.60</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 1,445 new connections in 2005. Price of new connection is PHP2,500 (US$55.56) for domestic and PHP3,200 (US$71.11) for non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP130.00 (US$2.89).

Priority Needs of Utility

1. Central warehouse
2. Additional water reservoir
3. Water quality laboratory

Consumer Service

Average monthly consumption is about 21.0 m³ per domestic connection. The water bill averages PHP338.85 (US$7.53) per month per domestic connection. Water is available 24 hours a day to users at average pressure of 28 meters. Water quality is good with all 8,760 water samples taken during the year passing the residual chlorine test. There were 86 consumers complaints recorded and 1,679 pipe breaks repaired during the year. Customers can make complaints as well as express their concerns in person at the utility office or by telephone, letter or SMS text messaging.

Performance Highlights

MWD provides water at 115 lpcd to its consumers at an average of 24 hours per day. However, it covers only 54.9% of the population in its service area. NRW is good at 18.1% which is sixth lowest. Production and all service connections are fully metered. Operating ratio is reasonable at 0.81 but collection needs to be improved from its accounts receivable equivalent of 2.6 months, the longest among the utilities. Average tariff is above average at PHP15.24/m³ (US$0.34/m³), and enough to cover operating expenses. Staff/1000 connections ratio is good at 5.9 which is lower than the average. While the utility is doing well with 24-hour supply and adequate water, it should increase its coverage and improve on its collection efforts to get bills paid on time.
# MABALACAT WATER SUPPLY

## Population
Population: 207,167

## Production/Distribution
- **Average Daily Production**: 20,111 m³
- **Production capacity/day**: 46,350 m³
- **Treatment Type**: Disinfection
- **Storage**: 2,863 m³
- **Service Area**: 101 sq km
- **Distribution pipes**: 112 km
- **Service pipe length**: 10 m

## Service Connections
- **Domestic**: 20,293
- **Non domestic**: 1,220
- **Bulk**: Nil

## Total Service Connections: 21,513

## Service Indicators
- **Service Coverage**: 58.8%
- **Water Availability**: 24 hours/day
- **Per Capita Consumption**: 115 l/c/d
- **Average Tariff**: US$0.34/m³

## Efficiency Indicators
- **Non-Revenue Water**: 18.1%
- **Unit Production Cost**: US$0.24/m³
- **Operating Ratio**: 0.81
- **Accounts Receivable**: 2.6 months
- **Staff/1,000 Connections**: 5.9

## Notes:
1. The population is for the present area served by the utility.
2. All of 8,760 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 113 sq km.
4. About 1,445 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 28 meters.
7. In 2005, about 1,679 pipe breaks were repaired and 2,060 meters were either replaced or repaired.
8. About 57 staff members attended training; total training days was 114 days.

## Annual Water Use
- **Annual Water Use**: 7,340,390 m³

## Annual Water Billings
- **Annual Water Billings**: US$2,037,390

## Annual O&M Costs
- **Annual O&M Costs**: US$1,749,430

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**Data as of 2005.**
MUÑOZ WATER DISTRICT

Address: Bayuga Street, Science City of Muñoz, Nueva Ecija, Philippines
Telephone: (63-44) 456 0599
Fax: (63-44) 456 0063
E-mail: munozwd@lycos.com
Head: Rogelio L. Miguel, General Manager

Muñoz Water District (MWD) is a state owned enterprise established in 1987. It is responsible for water supply services in the Science City of Muñoz in Nueva Ecija Province. Its area of responsibility has a total population of 19,307 people. The service area of MWD has a population density of 1,133 persons/km². The utility draws groundwater from 2 production wells in the city. The private sector is not involved in the operation of the water district. MWD publishes an annual report that is available to the public.

General Data About Water Utility

- Connections: 2,643
- Staff: 20
- Annual O&M Costs: PHP11,210,160 (US$249,120)
- Annual Collections: PHP13,554,600 (US$301,210)
- Annual Billings: PHP12,970,790 (US$288,240)
- Total Capital Expenditure: PHP 8,286,590 (US$184,150)

Source of Investment Funds: Internally generated funds

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
<th>Bulk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PHP</td>
<td>US$</td>
<td>PHP</td>
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<tr>
<td>FIXED MONTHLY CHARGE</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>0 – 10 m³</td>
<td>156.00</td>
<td>3.47</td>
<td>234.00</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/m³</td>
<td>US$/m³</td>
<td>PHP/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>16.25</td>
<td>0.36</td>
<td>24.35</td>
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<tr>
<td>21 – 30 m³</td>
<td>17.05</td>
<td>0.38</td>
<td>25.55</td>
</tr>
<tr>
<td>Over 30 m³</td>
<td>19.60</td>
<td>0.44</td>
<td>29.35</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 120 new connections in 2005. Price of new connection is PHP2,150 (US$47.78) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP156.00 (US$3.47).

Priority Needs of Utility

1. Expansion program
2. Rehabilitation of distribution line
3. Develop marketing strategy

Consumer Service

Average monthly consumption is about 21.7 m³ per domestic connection. The water bill averages PHP367.00 (US$8.16) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 28 meters. Water quality is good with 58 out of 60 water samples taken during the year passing the residual chlorine test. There were 175 consumers complaints recorded and 182 pipe breaks repaired during the year. Customers can make complaints as well as express their concerns in person at the utility office or by telephone or letter.

Performance Highlights

MWD provides water at 101 lpcd to its consumers at an average of 24 hours per day. It is among the few participating Philippine utilities that cover 100% of the population in its service area. It has the fourth lowest NRW among the utilities at 15.7%. Production and consumption are fully metered. Financial management is good with an operating ratio of 0.83 and an accounts receivable equivalent of 0.8 month. Average tariff is above average at PHP18.35/m³ (US$0.41). Staff/1000 connections ratio is also just above average at 7.6. MWD is one of the best run small utilities with high customer satisfaction rating on availability, amount and coverage, and good financial management. It can still further improve on staff productivity.
MUÑOZ WATER SUPPLY
Population: 16,406

Production/Distribution
- Average Daily Production: 2,298 m³
- Production capacity/day: 5,339 m³
- Treatment Type: Disinfection
- Storage: 273 m³
- Service Area: 14 sq km
- Distribution pipes: 24 km
- Service pipe length: 3 m

Service Connections
- Domestic: 2,314
- Non domestic: 325
- Bulk: 4
- Total: 2,643

Service Indicators
- Service Coverage: 100%
- Water Availability: 24 hours/day
- Per Capita Consumption: 101 l/c/d
- Average Tariff: US$0.41/m³

Efficiency Indicators
- Non-Revenue Water: 15.7%
- Unit Production Cost: US$0.30/m³
- Operating Ratio: 0.83
- Accounts Receivable: 0.8 month
- Staff/1,000 Connections: 7.6

Notes:
1 The population is for the present area served by the utility.
2 About 97% of 60 samples taken passed the test for residual chlorine.
3 The total area of responsibility is 20 sq km.
4 About 120 new customers connected during the year.
5 This is the population coverage in the present service area.
6 Average mains water pressure is 28 meters.
7 In 2005, about 182 pipe breaks were repaired and 92 meters were either replaced or repaired.
8 About 20 staff members attended training; total training days was 320 days.
   Budget for training and HRD is less than 0.1% of operating expenses.

Data as of 2005.
SAN JOSE DEL MONTE

Utility Profile

SAN JOSE DEL MONTE CITY WATER DISTRICT

Address: Road1, Barangay Minuyan, City of San Jose del Monte, Bulacan, Philippines
Telephone: (63-44) 815 0378
Fax: (63-44) 924 1096
E-mail: sjdm_water@yahoo.com
Head: Loreto G. Limcilioc, General Manager

San Jose del Monte City Water District (SJDMCWD) is a state owned enterprise established in 1980. It is responsible for water supply services in San Jose del Monte City in Bulacan Province. The utility’s area of responsibility has a population of 500,000 people. The present service area of SJDMCWD has a population density of 1,404 persons/km². The utility draws groundwater from 45 deep wells for 30% of its requirements. It buys raw water from Angat River from Metro Manila’s water authority for the remaining 70%. The private sector is involved in most construction works, well drilling and pipe laying. SJDMCWD does not publish an annual report.

General Data About Water Utility

| Connections | 46,673 |
| Staff | 220 |
| Annual O&M Costs | PHP161,980,120 (US$3,599,560) |
| Annual Revenues | PHP242,433,950 (US$5,387,420) |
| Annual Billings | PHP224,897,130 (US$4,997,710) |
| Total Capital Expenditure | PHP 95,569,540 (US$2,123,770) |
| (Over the last 5 years) | Average capital expenditure/connection/year: US$9.10 |
| Source of Investment Funds | Internally generated funds and loans from ODA sources |

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>PHP</td>
<td>US$</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>195.00</td>
<td>4.33</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>21.50</td>
<td>0.48</td>
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<tr>
<td>21 – 30 m³</td>
<td>23.65</td>
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<tr>
<td>31 – 40 m³</td>
<td>25.90</td>
<td>0.58</td>
</tr>
<tr>
<td>Over 40 m³</td>
<td>28.25</td>
<td>0.63</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 3,101 new connections in 2005. Price of new connection is PHP3,500 (US$77.78) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP195.00 (US$4.33).

Priority Needs of Utility

1. Additional raw water allocation
2. Funding for expansion beyond 2010
3. Expansion of distribution lines

Consumer Service

Average monthly consumption is about 17.3 m³ per domestic connection. The water bill averages PHP397.94 (US$8.84) per month per domestic connection. Water is available 24 hours a day to users at an average pressure of 39 meters. Water quality is good with all of 50,213 samples taken in 2005 passing the residual chlorine test. There were 263 consumers complaints recorded and 200 pipe breaks repaired during the year. Customers can make complaints and interact with the water district staff in person at the utility office or by telephone, e-mail, SMS text messaging, or letter.

Performance Highlights

SJDMCWD provides water at 86 lpcd to its customers at an average of 24 hours per day. It covers all of the population in its service area. NRW is almost the average for the utilities at 27.9%. Production and all service connections are fully metered. While operating ratio is good at 0.67, accounts receivable equivalent of 1.5 months can still be improved. Average tariff is among the third highest at PHP22.97/m³ (US$0.51/m³) but this allows the utility to cover all its operating expenses and expansion costs. Staff/1000 connections ratio is good at 4.7 which is eighth lowest. SJDMCWD is a well run utility but can still improve by reducing NRW further and increasing the amount of water provided to its customers.

Data Book of Southeast Asian Water Utilities 2005
Area Profile

SAN JOSE DEL MONTE WATER SUPPLY

Population: 304,577 ¹

**Production/Distribution**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Average Daily Production</td>
<td>37,178 m³</td>
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<tr>
<td>Production capacity/day</td>
<td>68,800 m³</td>
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<tr>
<td>Treatment Type ²</td>
<td>Conventional</td>
</tr>
<tr>
<td>Storage</td>
<td>17,044 m³</td>
</tr>
<tr>
<td>Service Area ³</td>
<td>217 sq km</td>
</tr>
<tr>
<td>Distribution pipes</td>
<td>416 km</td>
</tr>
<tr>
<td>Service pipe length</td>
<td>2 m</td>
</tr>
</tbody>
</table>

**Service Connections**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>46,154</td>
</tr>
<tr>
<td>Non domestic</td>
<td>519</td>
</tr>
<tr>
<td>Bulk</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46,673 ⁴</td>
</tr>
</tbody>
</table>

**Service Indicators**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Coverage ⁵</td>
<td>100%</td>
</tr>
<tr>
<td>Water Availability ⁶</td>
<td>24 hours/day</td>
</tr>
<tr>
<td>Per Capita Consumption</td>
<td>86 l/c/d</td>
</tr>
<tr>
<td>Average Tariff</td>
<td>US$0.51/m³</td>
</tr>
</tbody>
</table>

**Efficiency Indicators**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Revenue Water ⁷</td>
<td>27.9%</td>
</tr>
<tr>
<td>Unit Production Cost</td>
<td>US$0.27/m³</td>
</tr>
<tr>
<td>Operating Ratio</td>
<td>0.67</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>1.5 months</td>
</tr>
<tr>
<td>Staff/1,000 Connections ⁸</td>
<td>4.7</td>
</tr>
</tbody>
</table>

**Notes:**

¹ The population is for the present area served by the utility.
² All of 50,213 samples taken passed the test for residual chlorine.
³ The total area of responsibility is 313 sq km.
⁴ About 3,101 new customers connected during the year.
⁵ This is the population coverage in the present service area.
⁶ Average mains water pressure is 39 meters and ranges from 21 - 56 meters.
⁷ In 2005, about 200 pipe breaks were repaired and 8,370 meters were either replaced or repaired.
⁸ About 95 staff members attended training; total training days was 729 days.

Budget for training and HRD is about 1.0 % of operating expenses.

**Data as of 2005.**
SANTA ROSA (NE)

Utility Profile

Address: Municipal Hall Complex, Santa Rosa, Nueva Ecija, Philippines
Telephone: (63-44) 311 1323
Fax: (63-44) 968 2005
E-mail: srwd95@yahoo.com
Head: Joel Felix H. Bernardo, General Manager

Santa Rosa (NE) Water District (SRWD) is a state owned enterprise established in 1982. It is responsible for water supply services in the town of Santa Rosa in Nueva Ecija Province. The utility’s area of responsibility has a total population of 52,080 people. The present service area of SRWD has a population density of 167 persons/km². The utility draws groundwater from 3 deep wells. There is no private sector involvement in the utility’s operations. SRWD publishes an annual report and it is available to the public.

General Data About Water Utility

- Connections: 2,960
- Staff: 25
- Annual O&M Costs: PHP 9,181,100, US$204,020
- Annual Revenues: PHP13,304,640, US$295,660
- Annual Billings: PHP12,174,410, US$270,540
- Total Capital Expenditure: PHP 6,100,000, US$135,560
- Source of Investment Funds: Internally generated funds and loans from ODA sources

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>PHP</td>
<td>US$</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>150.00</td>
<td>3.33</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>16.00</td>
<td>0.36</td>
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<tr>
<td>21 – 30 m³</td>
<td>17.25</td>
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<tr>
<td>31 – 40 m³</td>
<td>18.75</td>
<td>0.42</td>
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<td>41 – 50 m³</td>
<td>20.50</td>
<td>0.46</td>
</tr>
<tr>
<td>Over 50 m³</td>
<td>22.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 300 new connections in 2005. Price of new connection is PHP1,195 (US$26.56) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP150.00 (US$3.33).

Priority Needs of Utility

1. Additional water storage
2. Additional pipe network
3. Additional deep well source

Consumer Service

Average monthly consumption is about 21.5 m³ per domestic connection. The water bill averages PHP342.12 (US$7.60) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 25 meters. Water quality is good with all 48 water samples taken during the year passing the residual chlorine test. There were 120 consumers complaints recorded and only 2 pipe breaks repaired during the year. Customers can make complaints as well as express their concerns in person at the utility office or by telephone or letter.

Performance Highlights

SRWD provides water at 100 lpcd to its consumers at an average of 24 hours per day. It covers 82.4% of the population in its service area. It has the lowest NRW at 10.2% with its strict implementation of leak management and disconnection policy. Production and all service connections are fully metered. Financial management is very good with an operating ratio of 0.69 and a good collection system where accounts receivable equivalent is only 0.4 month. Average tariff is not high at PHP15.91/m³ (US$0.35) but it still allows the utility to cover all its operating expenses also because of its low NRW. Staff/1000 connections ratio is higher than average at 8.4. SRWD may be the best run small utility but it can still improve in increasing its coverage and improving staff productivity.
SANTA ROSA (NE) WATER SUPPLY
Population: 23,353

Production/Distribution
- Average Daily Production: 2,333 m³
- Production capacity/day: 4,060 m³
- Treatment Type: Disinfection
- Storage: 200 m³
- Service Area: 140 sq km
- Distribution pipes: 37 km
- Service pipe length: 3 m

Service Connections
- Domestic: 2,719
- Non domestic: 241
- Bulk: Nil
- Total: 2,960

Service Indicators
- Service Coverage: 82.4%
- Water Availability: 24 hours/day
- Per Capita Consumption: 100 l/c/d
- Average Tariff: US$0.35/m³

Efficiency Indicators
- Non-Revenue Water: 10.2%
- Unit Production Cost: US$0.24/m³
- Operating Ratio: 0.69
- Accounts Receivable: 0.4 month
- Staff/1,000 Connections: 8.4

Notes:
1. The population is for the present area served by the utility.
2. All of 48 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 215 sq km.
4. About 300 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 25 meters.
7. In 2005, there were only 2 pipe breaks and 105 meters were either replaced or repaired.
8. About 7 staff members attended training; total training days was 28 days.
   Budget for training and HRD is about 1.5 % of operating expenses.

Data as of 2005.

Annual Water Use
- 851,570 m³

Annual Water Billings
- US$270,540

Annual O&M Costs
- US$204,020

Philippines
SILAY CITY WATER DISTRICT

Address: Jose C. Locsin Avenue, Fortuna Subdivision, Silay City, Negros Occidental, Philippines
Telephone: (63-34) 495 5011
Fax: (63-34) 495 4125
E-mail: silaywd@yahoo.com.ph
Head: Glenn C. Antiporda, General Manager

Silay City Water District (SICIWA) is a state owned enterprise established in 1976. It is responsible for water supply services in the city of Silay in Negros Occidental Province. The utility’s area of responsibility has a total population of 70,700 people. The present service area of SICIWA has a population density of 3,774 persons/km². The utility draws groundwater from 5 deep wells. There is no private sector involvement in the utility’s operations. It publishes an annual report and it is available to the public.

General Data About Water Utility

- Connections: 3,942
- Staff: 41
- Annual O&M Costs: PHP15,585,870, US$346,350
- Annual Billings: PHP22,740,540, US$505,340
- Total Capital Expenditure: PHP31,821,870, US$707,150

Source of Investment Funds: Internally generated funds and loan from commercial bank

Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic</th>
<th>Non domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED MONTHLY CHARGE</td>
<td>PHP</td>
<td>US$</td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>218.00</td>
<td>4.84</td>
</tr>
<tr>
<td>CONSUMPTION CHARGE</td>
<td>PHP/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>24.00</td>
<td>0.53</td>
</tr>
<tr>
<td>21 – 30 m³</td>
<td>29.00</td>
<td>0.64</td>
</tr>
<tr>
<td>31 – 40 m³</td>
<td>35.00</td>
<td>0.78</td>
</tr>
<tr>
<td>Over 40 m³</td>
<td>43.00</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 255 new connections in 2005. Price of new connection is PHP2,850 (US$63.33) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP218.00 (US$4.84).

Priority Needs of Utility

1. Replacement of old steel and galvanized iron pipes
2. Storage facilities (reservoirs, cisterns)
3. Pumping stations with filtration and treatment facilities

Consumer Service

Average monthly consumption is about 19.0 m³ per domestic connection. The water bill averages PHP449.31 (US$9.98) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 21 meters. Water quality is good with all 96 water samples taken during the year passing the residual chlorine test. There were 1,080 consumers complaints recorded and 420 pipe breaks repaired during the year. Customers can make complaints as well as express their concerns in person at the utility office or by telephone or letter.

Performance Highlights

SICIWA provides water at 78 lpcd to its consumers at an average of 24 hours per day. It is able to provide water to all of the residents in its service area. It has the fifth highest NRW at 41.2% which may be a reason for the low consumption per capita. Production and all service connections are fully metered. Financial management is mixed with very good operating ratio of 0.65 but an accounts receivable equivalent of 1.3 months. Average tariff is the highest at PHP25.26/m³ (US$0.56/m³) which allows the utility to cover all its operating expenses despite the high NRW. The high average tariff may also be a major reason for the low per capita consumption suppressing demand. Staff/1000 connections ratio is the sixth highest at 10.4. SICIWA will have to reduce its NRW, improve collection and increase staff productivity. It may also need to review its high tariff rates.
SILAY WATER SUPPLY

Population: 30,192

Production/Distribution

- Average Daily Production: 4,196 m³
- Production capacity/day: 4,196 m³
- Treatment Type: Filtration
- Storage: 380 m³
- Service Area: 8 sq km
- Distribution pipes: 72 km
- Service pipe length: 5 m

Service Connections

- Domestic: 3,774
- Non domestic: 168
- Bulk: Nil
- Total: 3,942

Service Indicators

- Service Coverage: 100%
- Water Availability: 24 hours/day
- Per Capita Consumption: 78 l/c/d
- Average Tariff: US$0.56/m³

Efficiency Indicators

- Non-Revenue Water: 41.2%
- Unit Production Cost: US$0.23/m³
- Operating Ratio: 0.65
- Accounts Receivable: 1.3 months
- Staff/1,000 Connections: 10.4

Notes:

1. The population is for the present area served by the utility.
2. All of 96 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 215 sq km.
4. About 255 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 21 meters.
7. In 2005, about 420 pipe breaks were repaired and 288 meters were either replaced or repaired.
8. About 4 staff members attended training; total training days was 8 days.
   Budget for training and HRD is about 0.3 % of operating expenses.

Data as of 2005.
**Utility Profile**

**TANDAG WATER DISTRICT**

Address : Ang’s Building, National Highway, Mabua, Tandag, Surigao del Sur, Philippines  
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Head : Ruben C. Elpa, General Manager

Tandag Water District (TWD) is a state owned enterprise established in 1986. It is responsible for water supply for the town of Tandag in Surigao del Sur Province. Its area of responsibility has a total population of 54,452 people. The present service area of TWD has a population density of 1,372 persons/km². The utility draws groundwater mainly from an infiltration gallery and a small spring source. There is no private sector involvement in TWD’s operations. It has an annual report that is available to the public.

### General Data About Water Utility

- **Connections** : 4,420  
- **Staff** : 26  
- **Annual O&M Costs** : PHP12,975,390 (US$288,340)  
- **Annual Revenues** : PHP18,765,960 (US$417,020)  
- **Annual Billings** : PHP15,197,910 (US$337,730)  
- **Total Capital Expenditure** (Over the last 5 years) : PHP53,415,130 (US$1,187,000)  
- **Source of Investment Funds** : Internally generated funds and loan from ODA sources

### Tariff Structure

<table>
<thead>
<tr>
<th>Category</th>
<th>Domestic (PHP)</th>
<th>Domestic (US$)</th>
<th>Non domestic (PHP)</th>
<th>Non domestic (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIXED MONTHLY CHARGE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 – 10 m³</td>
<td>144.00</td>
<td>3.20</td>
<td>288.00</td>
<td>6.40</td>
</tr>
<tr>
<td><strong>CONSUMPTION CHARGE</strong></td>
<td>PHP/m³</td>
<td>US$/m³</td>
<td>PHP/m³</td>
<td>US$/m³</td>
</tr>
<tr>
<td>11 – 20 m³</td>
<td>17.30</td>
<td>0.38</td>
<td>34.60</td>
<td>0.77</td>
</tr>
<tr>
<td>21 – 30 m³</td>
<td>20.40</td>
<td>0.45</td>
<td>40.80</td>
<td>0.91</td>
</tr>
<tr>
<td>31 - 40 m³</td>
<td>23.75</td>
<td>0.53</td>
<td>47.50</td>
<td>1.06</td>
</tr>
<tr>
<td>Over 40 m³</td>
<td>27.35</td>
<td>0.61</td>
<td>54.70</td>
<td>1.22</td>
</tr>
</tbody>
</table>

Notes:
1. All connections are metered and consumers pay on metered use. Consumers are billed monthly.
2. There were 300 new connections in 2005. Price of new connection is PHP2,500 (US$55.56) for both domestic and non domestic connections.
3. Monthly water bill for a household consuming 6 m³ of water per month is PHP144.00 (US$3.20).

### Priority Needs of Utility

1. Expansion of distribution lines to 2 villages  
2. Construction of ground reservoir  
3. Construction of filtration system

### Consumer Service

Average monthly consumption is about 14.4 m³ per domestic connection. The water bill averages PHP255.38 (US$5.68) per month per domestic connection. Water is available for 24 hours a day to users at an average pressure of 30 meters. Water quality is good with all 348 water samples taken during the year passing the residual chlorine test. There were 1,113 consumers complaints recorded and 44 pipe breaks repaired during the year. Customers can make complaints as well as express their concerns in person at the utility office or by telephone or SMS text messaging.

### Performance Highlights

TWD provides water at only 52 lpcd to its consumers at an average of 24 hours per day. It covers only 78.9% of the population in its service area. NRW is reasonable at 19.7% being the ninth lowest. Production and consumption are fully metered. Financial management is mixed with very good operating ratio of 0.69 but with an accounts receivable equivalent of 1.2 months, longer than the average of 0.9 months. Average tariff is the seventh highest at PHP21.45/m³ (US$0.48/m³). This allows the utility to cover all its operating expenses well but may be suppressing demand also. Staff/1000 connections ratio is good at 5.9 which is lower than the average among the utilities of 7.2. TWD will need to increase the amount of water made available to its consumers, expand its coverage and improve its collection efficiency.
TANDAG WATER SUPPLY

Population: 41,166

Production/Distribution

- Average Daily Production: 2,417 m³
- Production capacity/day: 2,571 m³
- Treatment Type: Filtration
- Storage: 280 m³
- Service Area: 30 sq km
- Distribution pipes: 29 km
- Service pipe length: 6 m

Service Connections

- Domestic: 3,590
- Non domestic: 830
- Bulk: Nil
- Total: 4,420

Service Indicators

- Service Coverage: 78.9%
- Water Availability: 24 hours/day
- Per Capita Consumption: 52 l/c/d
- Average Tariff: US$0.48/m³

Efficiency Indicators

- Non-Revenue Water: 19.7%
- Unit Production Cost: US$0.33/m³
- Operating Ratio: 0.69
- Accounts Receivable: 1.2 months
- Staff/1,000 Connections: 5.9

Notes:

1. The population is for the present area served by the utility.
2. All of 348 samples taken passed the test for residual chlorine.
3. The total area of responsibility is 314 sq km.
4. About 300 new customers connected during the year.
5. This is the population coverage in the present service area.
6. Average mains water pressure is 30 meters.
7. In 2005, about 44 pipe breaks were repaired and 65 meters were either replaced or repaired.
8. About 8 staff members attended training; total training days was 36 days.

Data as of 2005.