Wastewater and Solid Waste Management in Provincial Centers

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**Edition: 01**

# INTRODUCTION OF WASTE WATER TARIFF IN SOC TRANG

## Workshop Documentation


**Soc Trang, March 2010**

**Ministry of Construction – Hanoi**

*in cooperation with*
**Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH**

**Technical Assistance on behalf of GTZ by GFA Consulting Group & Associates**

Ministry of Construction – 37 Le Dai Hanh Str. – Hai Ba Trung District – Ha Noi – Viet Nam
Tel: 84-4-974 0938 Fax: 84-4-974 0939 Email: frank.pogade@wwm-gfa.org
Website: http://www.wastewaster-vietnam.org

Your contact
with GFA Consulting Group GmbH

**Gudrun Krause**

Fax +49 (40) 6 03 06169

Email: gudrun.krause@gfa-group.de

Address
**GFA Consulting Group GmbH**
**Eulenkrugstraße 82**
**D-22359 Hamburg**
**Germany**

**This documentation was prepared by**
**Le Thi Bich Ngoc**
**Financial Expert**

**Approved by**
**Frank Pogade**
**Chief Technical Advisor**

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## INTRODUCTION & RATIONALE

"Wastewater and Solid Waste Management in Provincial Centers" (WMP) is an ODA program sponsored by the German Government. The objective of WMP is the enhancement of wastewater management and related services in six provincial urban cities and the contribution to better environmental conditions, the reduction of seasonal inundations, and the improvement of water quality in the adjacent drainage channels and rivers. WMP contains of two main modules:

- Financial Cooperation (FC), jointly financed by the German Development Bank (KfW) and the Government of Vietnam (GoV), and
- Technical Cooperation (TC), implemented by German Technical Cooperation Agency (GTZ) and the German Development Service (DED), in close cooperation with the Ministry of Construction (MOC).

Whereas the FC module focuses on the provision of new infrastructure facilities for wastewater and solid waste management in currently six provincial cities in Vietnam, the TC module consist currently of two components. These are

- TC Component 1: "Capacity Development for the MOC", and
- TC Component 2: "Capacity Development for Wastewater Management", also referred to as the "WWM project".

TC Component 2 commenced in February 2005 and officially launched its second phase in August 2008. The second phase is scheduled to be finalized in July 2011.

Until date, TC Component 2 (WWM), provides capacity building services to local governments and public wastewater companies (WWC) in six provincial urban centers in Vietnam, including the cities of Bac Ninh, Hai Duong, Vinh, Can Tho, Soc Trang and Tra Vinh. The capacity building activities focus, amongst operational fields, such as financial, customer, asset and human resource management and community awareness raising, predominantly on the re-organization of the WWCs and the creation of favorable institutional framework conditions at local government level for fostering effective and efficient wastewater management.

Furthermore, the construction of demonstration plants and the raising of awareness among decision makers on decentralized wastewater treatment (DWWT) approaches for urban or semi-urban areas in the outskirts of cities that are not served by centralized wastewater collection and treatment systems is a major focus of the component.

Seen as the most crucial of all tasks, the WWM project is assigned to introduce a tariff system to the participating provincial urban centers charging households, businesses and industries in the area for wastewater collection and treatment services. The introduction of wastewater tariffs is the principal condition of the FC loan agreement between KfW and the GoV and is a mandatory measure nation-wide since Decree 88/2007/ND-CP was promulgated by the prime minister of Vietnam in 2007. The objectives of a tariff introduction are:

- to generate a sufficient and stable revenue for the wastewater service provider that enables him to become a financially autonomous organization and deliver better services to the public;
- to guarantee proper and long-time operation and maintenance, thus sustainability of investments into wastewater systems.

Tariffs must follow certain principles. These principles are:

- polluter-pays: meaning that the polluters, hence the people and industries residing in the WW service areas and discharging into the public sewer system, have to pay for the treatment of their wastewater and not the beneficiaries of the treatment (rural downstream population).
- cost-recovery: the revenue from tariffs must cover at least the costs for operation and maintenance as well as depreciation of mechanical and electrical equipment (short-living assets) in full.

This type of tariff introduction is a complete novelty to Vietnam and hasn't been implemented in a single province so far. It differs strongly from the idea of simple wastewater fees as those introduced with Decree No. 67/2003/ND-CP in 2003, named 'Environmental Protection fees' (EP fees). The EP fees are simply defined as a certain percentage of the water bill (for households not exceeding 10% of the water tariff (excl. VAT)) and the collected revenue from the EP fee (after deduction of 10% for collection efforts of the water supply company) is transferred to the local government budget (45%) and the Central Budget for the Vietnam Environmental Protection Fund (45%).

In contrary to that, a wastewater tariff system according to Decree 88/2007/ND-CP is demand-driven. The basis for its calculation is the real costs for operating and maintaining the wastewater systems in a proper and sustainable way. The tariff must cover these costs. If costs rise, the tariff rises, if they fall, it falls accordingly. Basically it can be compared to common water tariffs. The collected revenue from the wastewater tariff either stays directly within the wastewater service provider's accounts, or is transferred to the local government's budget that then, in return provides sufficient funds covering all costs needed to meet certain service standards that are defined in a management contract signed between the local governments as the owner and the wastewater service provider as the operator of the wastewater systems.

As one of six cities under the WMP, Soc Trang city is the first municipality in Vietnam that is about to introduce the wastewater tariff in accordance to Decree 88/2007/ND-CP. The wastewater tariff proposal for Soc Trang city as presented here was designed and calculated by financial experts of TC Component 2 of the WMP in close cooperation with experts from the Soc Trang Urban Public Works Company (UPWC). It offers varios options for political decision makers of Soc Trang province. It is the local government's decision, what degree of cost-recovery shall be achieved and residents of which area of the city shall be charged the tariff. Furthermore, it must be noted that the tariffs as presented here reflect the revenue necessary to cover the wastewater operator's costs. Whether 100% of this revenue is charged to the local population right from the beginning or whether initially the tariff is subsidized by local government budgets, is a decision up to the leaders of Soc Trang province.

This report documents the results of a first stakeholder meeting held in Soc Trang city on March 17, 2010. The meeting served the objective to inform related stakeholders on local government level about the tariff proposal developed by Soc Trang UPWC and the WMP advisory team as well as to clarify questions and comments that were officially collected in written form prior to the meeting. After the presentation of the proposal, further stakeholder comments were collected and a timeline for next steps was agreed.

**AGENDA**

# Workshop on the Introduction of Waste Water Tariff in Soc Trang

***Location: SPWC, Soc Trang***

***Date: March 17, 2010***

| Time | Topic | Moderator / Presenter |
|---|---|---|
| 8:00 | Welcome Address and Opening | Mr Tung, Director of SPWC |
| 8:10 | Introduction of WWM Project | Frank Pogade / CTA WWM Project |
| 8:30 | Rationale: why introducing waste water tariffs? | Mr Minh, WWM Project |
| *9:00* | *Coffee Break* | |
| 9:15 | Proposal of Waste Water Tariff for Soc Trang | Ms Ngoc, WWM Project |
| 10:00 | Comments from Stakeholders | Mr Minh |
| 11:30 | Closing of Workshop | Mr Tung |
| *11:45* | *Lunch* | |

# PRESENTATIONS


First Phase :
January 2005 until July 2008

Second Phase:
August 2008 until July 2011

**Frank Pogade**

Chief Technical Advisor
GFA Consulting Group

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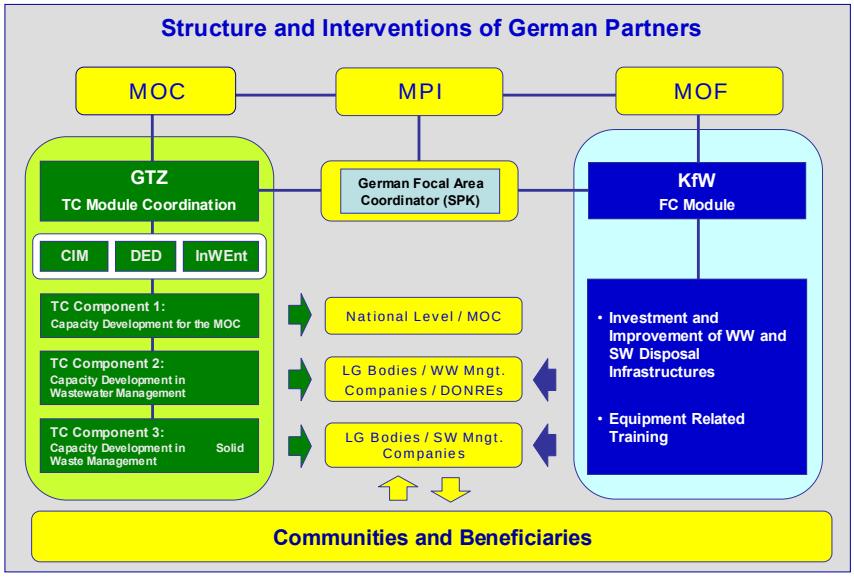
Wastewater and Solid Waste Management in Provincial Centers

Overall Program Objective:
**Conditions for sustainable wastewater disposal are improved**

Goal of Phase 2 – TC Component 2 (until 2011):
**Wastewater disposal in supported provincial centers improved**

2

Wastewater and Solid Waste Management in Provincial Centers




Wastewater and Solid Waste Management in Provincial Centers


- Capacity Building involves a comprehensive PERCEPTION BUILDING process that includes all directly involved stakeholders and concerned decision makers.
- Understanding the CAUSE of public service shortages and/or deficiencies is guiding the development of conducive institutional and legal framework STRATEGIES, including effective remedies and incentives.
- Broad PARTICIPATION of the directly involved -during the entire capacity building process- is a key factor for the establishment of OWNERSHIP, SELF-ESTEEM and ACCOUNTABILITY.
- Incorporating the macro (national), mezo (provincial), and micro (community) levels into the participation process is the precondition for a HOLISTIC capacity building approach.

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Wastewater and Solid Waste Management in Provincial Centers

Areas of Capacity Building in 6 Wastewater Companies

1. Financial Management
2. Asset Management
3. Human Resource Management
4. Customer Relations Management
5. Institutional & Organisational Building
6. Decentralized Waste Water Treatment

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Wastewater and Solid Waste Management in Provincial Centers

## Scope of Works of TC Component 2

**Local Government Level:**
- Improvement of local institutional framework conditions
- Implementation of Decree 88
- Application of WW Tariffs that cover O&M costs in full
- Introduction of Management Contracts based on Performance of WW Services

**Wastewater Company Level:**
- Institutional & Organizational Issues
- Financial Management & WW Tariff
- Customer Relations Management & Community Participation
- Asset Management, O&M and Documentation
- Human Resource Management

**DONRE Level:**
- Improvement of analytic skills and supervisory functions with regard to effluent control and surface water monitoring

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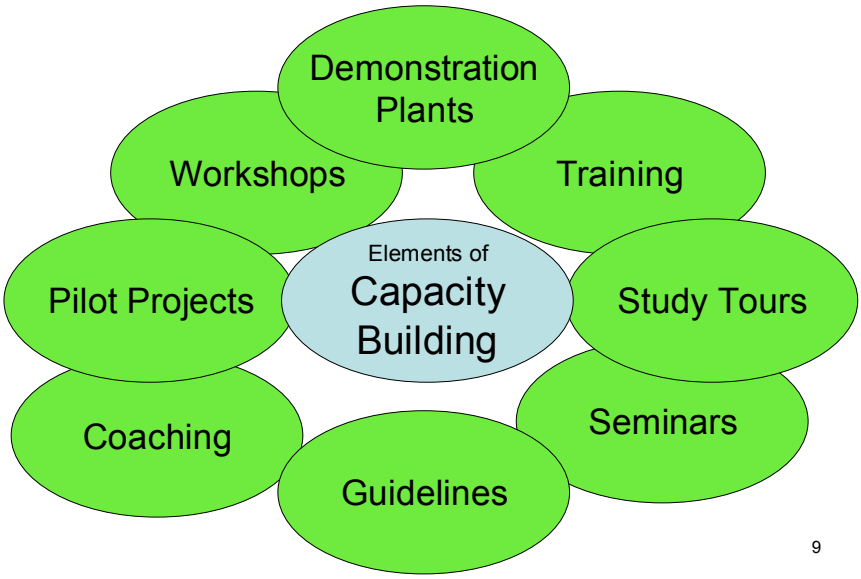
Wastewater and Solid Waste Management in Provincial Centers

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Wastewater and Solid Waste Management in Provincial Centers

## Support Needed from Local Governments

- Establish local WASTEWATER REGULATION, based on Decree 88 and other relevant national legislation
- TRANSFER WW Companies and assets from provincial to city level government (if required) and establish a MANAGEMENT CONTRACT between the city and WW Company
- Approve WW TARIFF proposal and ensure that revenue from the tariff is transferred to the WW Company to cover costs for O&M of assets and depreciation of M+E equipment
- Reduce Subsidies over a period of time and adjust WW Tariff if necessary
- Support CDP implementation during Phase II with funds; in particular for PROCUREMENT of O&M EQUIPMENT for sewers
- Establish SUPERVISORY FUNCTIONS for implementation of Management Contract
- Consider DECENTRALIZED WW treatment options for urban and suburban areas not covered by centralized WW treatment

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Wastewater and Solid Waste Management in Provincial Centers

# THE RATIONALE OF WASTEWATER TARIFF INTRODUCTION

SOCTRANG 3-2010

Presented by: Đinh Đăng Minh

Project implementation on behalf of GTZ by GfA Consulting Group in cooperation with DED

Ministry of Construction – 37, Le Dai Hanh - Hai Ba Trung – Hanoi - Vietnam
Tel: 04 – 974 09 38 Fax: 04 – 974 09 39 Email: gtz-www@fpt.vn

## WASTEWATER TARIFF

**BASIS FOR ESTABLISHMENT OF LOCAL REGULATION ON WASTEWATER MANAGEMENT**

- PROTOCOLE BETWEEN GERMAN AND VIETNAMESE GOVERNMENTS ON TECHNICAL COOPERATION
- AGREEMENT BETWEEN GTZ AND MOC ON BEHALF OF BOTH GOVTS
- DECREE 88/CP & CIRCULAR 09/TT-BXD
- COMPANY'S CDP
- AGREEMENT BETWEEN COMPANY AND WWM PROJECT (TA)
- OTHER RELATED LEGAL DOCUMENTS

WASTEWATER TARIFF

**INDICATORS FOR ASSESSING THE PROJECT-PHASE II**

**Indicator 1. Participating Companies operate under commercial principles, WWM charge can recover at least all O&M costs**

WASTEWATER TARIFF

**INDICATORS FOR ASSESSING THE PROJECT-PHASE II**

**Indicator 2. WW systems are maintained in acc. with agreed plans**

WASTEWATER TARIFF

**INDICATORS FOR ASSESSING THE PROJECT-PHASE II**

**Indicator 3. In project area, at least 60% of households connected to WW system aware on their rights & obligations in WWM (survey result)**

WASTEWATER TARIFF

**INDICATORS FOR ASSESSING THE PROJECT-PHASE II**

**Indicator 4. Decision maker levels and stakeholders aware on Decentralized treatment solutions and agree those solutions.**

WASTEWATER TARIFF

**INDICATORS FOR ASSESSING THE PROJECT-PHASE II**

**Indicator 5. DONREs in participating provinces implement monitoring activities on surface water and wastewater in acc. to regulations**

WASTEWATER TARIFF

**DECREE 88/2007/NĐ-CP**

**Article 48. All households who discharge into wastewater system are obliged to pay wastewater tariff in accordance with this decree**

**Article 55. Wastewater system operator must establish and submit wastewater tariff proposal, DoC must check it in coordination with DoF and submit it to Provincial People's Council for approval, PPC will promulgate in acc. to People's Council Resolution .**

WASTEWATER TARIFF

**CIRCULAR 09/2007/TT-BXD**

**Article 9. Wastewater system Operator has the responsibility to organize the establishment of Wastewater Tariff Proposal based on articles 49-54 of Decree 88/2007/NĐ-CP**

- **THE TARIFF NOT EXCEEDING 2-3% OF THE MONTHLY AVERAGE INCOME**
- **PROPOSAL FOR A ROADMAP FOR WW TARIFF APPLICATION**

Wastewater and Solid Waste Management in Provincial Centers

**INTRODUCTION OF A WASTEWATER TARIFF FOR SOC TRANG CITY**

March 17, 2010

Prepared by: Le Thi Bich Ngoc

Ministry of Construction – 37, Le Dai Hanh - Hai Ba Trung – Hanoi - Vietnam
Tel: 04 – 3974 09 38 Fax: 04 – 3974 09 39 Email: gtz-www@fpt.vn

Wastewater and Solid Waste Management in Provincial Centers

# Objectives of WW Tariff Introduction

- For Wastewater operator:
  - Generate sufficient and stable revenue for wastewater management based on cost recovery
  - Become a financial autonomous organization
  - Reduce government subsidies

## General Basis for WW Tariff Calculation & Introduction

- Loan Agreement between Ministry of Finance of Vietnam and KfW
- Separate agreement between Companies and KfW regarding the KfW loan
- Detailed design report on wastewater disposal system prepared by CES-Nagecco
- Legal basis
  - Decree No. 88/2007/ND-CP on drainage and sewerage in urban areas and industrial zones
  - Circular 09/2009/TT-BXD regarding the detail regulations about implementation of Decree 88/2007/ND-CP
  - Circular 108/2003/TT-BTC guiding the financial mechanism applied for environment projects that have ODA
  - Others

Wastewater and Solid Waste Management in Provincial Centers

## Guiding Principles (Decree 88, Circular 09)

- Wastewater tariff shall
  - be based on cost-recovery to maintain sewerage services;
  - consider different stage of socio-economic development in accordance with the level of investment and improvement of quality, but have an increasing trend;
  - be in accordance with investments for the improvement of service standards;
  - have a roadmap for a gradual increase of the wastewater tariff to meet the objective of covering O&M costs and depreciation expenses (first partly, then fully);
  - not exceed 3% of the average monthly household income
  - be supplemented by local budgets in case the total revenue from the approved wastewater tariff is lower than actual costs

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- Legal basis
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  - Circular 108/2003/TT-BTC guiding the financial mechanism applied for environment projects that have ODA
  - Others

Wastewater and Solid Waste Management in Provincial Centers

## WW Tariff Determination Method (Decree 88)

- Tariff determination:
  - For domestic WW: based on the volume of consumed water as stated in the water bill.
  - For other WWs: volume of wastewater and load of pollutants (i.e. COD)

| No. | Concentration of COD (mg/l) | K |
|---|---|---|
| 1 | ≤100 | 1 |
| 2 | 101-200 | 1,50 |
| 3 | 201-300 | 2 |
| 4 | 301-400 | 2,5 |
| 5 | 401-600 | 3,5 |
| 6 | > 600 | 4,5 |

## Wastewater Volume and Collection & Treatment Costs

- Volume of wastewater collected for treatment
  - Domestic wastewater flow
  - Industrial wastewater flow
  - Wastewater flow from other sources
  - Infiltration flow
- Costs for wastewater collection & treatment
  - Operation and maintenance (O&M) costs: direct labour costs, manufacturing overheads such as fuel, tools, electricity, general administrative costs etc.
  - Depreciation costs:
    - Depreciation cost of electrical and mechanical equipment
    - Depreciation cost of civil works
  - Standard profit

Wastewater and Solid Waste Management in Provincial Centers

## Wastewater Tariff Area Options & Levels of Cost-recovery

- Area Option:
  - ***Area Option 1:*** All customers in Soc Trang city pay the wastewater tariff.
  - ***Area Option 2:*** All customers residing in the sewerage service area covered by the German Financial Cooperation program (7 wards in Soc Trang City) pay the wastewater tariff.
- Cost recovery Level:
  - ***Level 1***: Recovery of O&M costs.
  - ***Level 2***: Recovery of O&M costs and depreciation of **electrical and mechanical equipment.**
  - ***Level 3***: Recovery of O&M costs and all depreciation costs .

# Water sold in the whole city

| No. | Item | 2009 | Plan – unit (m3) | | | |
|---|---|---|---|---|---|---|
| | | | 2010 | 2011 | 2012 | 2013 |
| 1 | Households | 5,545,000 | 5,941,000 | 6,338,000 | 6,734,000 | 7,130,000 |
| 2 | Administrative offices,government offices | 1,205,000 | 1,291,000 | 1,377,000 | 1,463,000 | 1,549,000 |
| 3 | Service and trading units | 32,000 | 34,000 | 36,000 | 38,000 | 40,000 |
| 4 | Production units | 218,000 | 234,000 | 249,000 | 265,000 | 281,000 |
| | **Total** | **7,000,000** | **7,500,000** | **8,000,000** | **8,500,000** | **9,000,000** |

Wastewater and Solid Waste Management in Provincial Centers

# Water sold in the sewerage service area

| No. | Item | 2009 | Plan – unit: m3 | | | |
|---|---|---|---|---|---|---|
| | | | 2010 | 2011 | 2012 | 2013 |
| 1 | Households | 2,069,782 | 2,235,365 | 2,414,194 | 2,607,329 | 2,815,916 |
| 2 | Administrative offices, government offices | 346,871 | 374,621 | 404,591 | 436,958 | 471,915 |
| 3 | Service and trading units | 16,672 | 18,005 | 19,446 | 21,002 | 22,682 |
| 4 | Production units | 54,992 | 59,391 | 64,142 | 69,274 | 74,816 |
| | **Total** | **2,488,317** | **2,687,382** | **2,902,373** | **3,134,563** | **3,385,328** |

## Estimated Costs of Wastewater Collection & Treatment - 2010

| | Items | Value |
|---|---|---|
| **I** | **Collected and treated wastewater (1000 m3)** | **4,811** |
| **II** | **Expenses (million VND)** | |
| 1 | Direct labor | 3,214 |
| 2 | Indirect labor | 556 |
| 3 | Fuel expenses | 717 |
| 4 | Tool expenses | 800 |
| 5 | Electricity expenses for pumping and WWTP operation | 1,461 |
| 6 | Maintenance and repair expenses | 1,006 |
| 7 | Other cash expenses | 277 |
| 8 | General overhead costs | 2,214 |
| ***9*** | ***Total O&M costs excluding depreciation (Total (1:8))*** | 10,537 |
| ***10*** | Depreciation of electrical and mechanical equipments | 2,596 |
| 11 | ***Total O&M costs and depreciation of electrical and mechanical equipment (total (9+10))*** | ***13,133*** |
| ***12*** | Depreciation of civil works for the drainage/sewerage system | 4,114 |
| 13 | ***Total O&M cost and all depreciation costs (Total (11+12))*** | ***17,247*** |
| **III** | **Required revenue in accordance with levels of cost–recovery (Million VND)** | |
| ***14*** | Required revenue to cover O&M cost and 4,5% of standard profit (11*1.045) | 11,011 |
| ***15*** | Required revenue to cover O&M cost, depreciation of electrical and mechanical equipment and 4,5% of standard profit (13*1.045) | 15,310 |
| ***16*** | Required revenue to cover O&M cost, full depreciation cost and 4,5% of standard profit (15*1.045) | 18,023 |

Wastewater and Solid Waste Management in Provincial Centers

## Average Wastewater Tariff by Levels of Cost Recovery and Tariff Options

| **Wastewater tariff area options** | Consumed water volume (1000 m3) | **Required Revenue (million VND)** | | | **Average WW tariff (VND/m3)** | | |
|---|---|---|---|---|---|---|---|
| | | ***Level 1*** | ***Level 2*** | ***Level 3*** | ***Level 1*** | ***Level 2*** | ***Level 3*** |
| **Area Option 1** Whole Soc Trang City | 7,466 | 11,011 | 15,310 | 18,023 | 1,479 | 2,056 | 2,420 |
| **Area Option 2** 7 wards of Soc Trang City (Project's area) | 2,672 | 11,011 | 15,310 | 18,023 | 4,121 | 5,730 | 6,745 |

# Current Water Tariff

| Group | Categories of customers | Water tariff / m3) | Coefficient |
|---|---|---|---|
| 01 | Households | 3,800 | 0.950 |
| 02 | Administrative offices, government offices | 4,500 | 1.125 |
| 03 | Production units | 5,100 | 1.275 |
| 04 | Service and trading units | 6,700 | 1.675 |
| | **Weighted Average price** | **4,000** | 1.000 |

Wastewater and Solid Waste Management in Provincial Centers

# Soc Trang City's Socio- Economic Development

- Class 3 municipality since 2007
- Population of over 170,000 people
- Economic growth rate: 13.78% in year 2009
- Estimated average income per household: 11,7 millions per month
- "One of the policies of Soc Trang city's people and the party committee is to build and upgrade Soc Trang city to a green, clean, beautiful city and soon become a class 2 municipality" – City's chairman

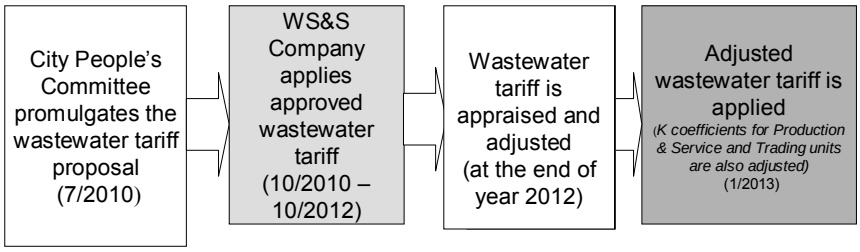
# Proposed Wastewater Tariff

- Area Option: Option 1 – all customers of Soctrang city have to pay wastewater tariff.
- Cost-recovery Level: level 2 – revenue can cover O&M costs & depreciation of **electrical and mechanical equipment** (VND 2000 as rounded)

| Group | Categories of customers | Average ww.tariff (VND/m3) | Coefficient K based on COD | Proposed ww.tariff (VND/m3) |
|---|---|---|---|---|
| 01 | Households | 2,000 | 1 | 2,000 |
| 02 | Administrative offices, government offices | 2,000 | 1 | 2,000 |
| 03 | Production units | 2,000 | 2* | 4,000 |
| 04 | Service and trading units | 2,000 | 1.5* | 3,000 |

Wastewater and Solid Waste Management in Provincial Centers

# Application & Adjustment of WW Tariff



Wastewater and Solid Waste Management in Provincial Centers

# Estimated revenue & Govt' subsidy

| | Items | Proposed ww.tariff (VND/m3) | Y. 2010 | Y. 2011 | Y. 2012 |
|---|---|---|---|---|---|
| I | **Revenue from** | | | | |
| 1 | Households | 2,000 | 11,882 | 12,676 | 13,468 |
| 2 | Administrative offices, government offices | 2,000 | 2,582 | 2,754 | 2,926 |
| 3 | Service and trading units | 3,000 | 109 | 115 | 91 |
| 4 | Production units | 4,000 | 562 | 598 | 848 |
| | ***Total*** | | 15,294 | 16,313 | 17,333 |
| II | Required revenue to cover O&M cost, depreciation of electrical and mechanical equipment and 4,5% of standard profit | **N/A** | **15,310** | **17,761** | **18,971** |
| III | Required Subsidy from the Government (I-II) | **N/A** | **16** | **1,448** | **1,637** |

Wastewater and Solid Waste Management in Provincial Centers

# Stakeholder comments for 1st draft of the proposal

| WHO | WHAT | REFERENCES |
|---|---|---|
| Ms. Nguyen Tuyet Lien, Vice Director of **Justice Department,** PC of Soc Trang Province | Advisory agencies to advise PPC in submitting document related to wastewater tariff are DOC, DOT | Clause 8, Article 4 of Decree No.88/2007/ND-CP |
| | Responsibilities for establishing wastewater tariff, authorities for appraising and approving the wastewater tariff will be as follows:<br>• The Owner of wastewater asset is responsible for guiding operators to prepare and submit the wastewater tariff proposal.<br>• DOC and DOT are leading agencies to appraise the wastewater tariff proposal in cooperation with DOF.<br>• PPC will issue wastewater tariff proposal after approval of People's Councils. | Clause 1, 2 and 3, Article 55 of Decree No.88/2007/ND-CP |
| | • The documents submitted by Soctrang company lacks draft statement, draft resolution of the People Council and summary of stakeholders' comments.<br>• Also, Soctrang Company should take into account of environmental fee to avoid duplication | Clause 2, Article 24 of Law on Promulgation of Legal Documents of People's Councils and People's Committee on Dec. 03, 2004 |
| Mr. Vo Thanh Van, Vice Director of **Financial Department,** PC | Currently, the sewerage system has not completed. Thus, to assess WW tariff and the roadmap for ww.tariff, Soctrang Company must request PPC to establish a ww.tariff appraisal taskforce presided over by DOC or DOT in cooperation with DOF and others | The Clause 55 of the Decree No.88/2007/ND-CP |

Wastewater and Solid Waste Management in Provincial Centers

| WHO | WHAT | REFERENCES |
|---|---|---|
| Mr. Nguyen Dai Luong, Vice Director of **DONRE**, Soc Trang PPC | DOC will be the leading agency to appraise the wastewater tariff proposal in cooperation with DOF. | Clause 2, Article 55 of the Decree No.88/2007/ND-CP |
| | The ww.tariff proposal does not fully express all required contents. It needs to present the following:<br>• Assessment of using water and wastewater in the city<br>• Assessment of demand and ability for investment and development of sewerage system and improving ww. sewerage services.<br>• Estimated revenue from sewerage services as percentages of estimated revenue from supplying water.<br>• Assessment and forecast about socio - economic development, living standard of households for period of five years, including forecast of changes in living standards, inflation rate and affordability.<br>• To balance operation, maintenance expenses and loan expenses (if any) with estimated revenue from ww.tariff; and proposed subsidy from Owner' budget in recommending ww.tariff and roadmap for increasing ww.tariff.<br>• The roadmap for adjusting ww.tariff; proposed points of times for ww.tariff adjustment in accordance with level of investment and service quality and the actual conditions of the city. | Article 9 of the Circular No. 09/2009/TT-BXD on detailed guideline for implementing some contents of the Decree No.88/2007/ND-CP |
| Mr. Hoang Van Xuan, Vice Director of **DOC,** Soc Trang PPC | • Supplement the basis for tariff calculation options | Article 54 of Decree No.88/2007/ND-CP |
| | • Explanation for tariff calculation options | Article 9 of the circular No. 09/2009/TT-BXD |

Wastewater and Solid Waste Management in Provincial Centers

Questions, Comments & Recommendations:

1.

2.

3.

4.

5.

## RESULT OF DISCUSSIONS

| WHO | CONTENT |
|---|---|
| 1. Mr. Tran Van Thanh - DONRE | Agreements:<br>- Decree 88 is an important legal document that mentions wastewater dischargers have to pay wastewater tariff. This is a breaking through step regarding people' obligations on environmental protection.<br>- Wastewater tariff calculation based on cost recovery agrees with the socialization trend of environmental protection, and also with MONRE's policy.<br>Wastewater tariff calculation and proposal are thoroughly prepared, relevant with a suitable roadmap for increasing waste water tariff. |
| | Comments:<br>- Tariff calculation needs to comply with the existing regulations/laws. According to Decree 88, ww. tariff must only be applied in areas where there is availability of sewerage services. Thus, the option that all citizens of Soctrang city have to pay ww.tariff, is not consistent with Decree 88.<br>- According to decree 88, the state budget will cover the shortage of revenue in case revenue from ww.tariff is not enough to cover costs. Thus, ww.tariff application should not be included citizens who are out of sewerage service areas.<br>- The proposal of ww.tariff introduction has not mentioned ww. tariff exemption. According to decree 88, ww.tariff should not applied for subjects who are not connected to the sewerage system although they are in the sewage service areas or companies that treat their wastewater in accordance with the required standards.<br>- Proposal lacks solutions to ensure quality of treated wastewater – this is considered as the wastewater operator's commitment toward its customers.<br>- Industrial zones are not subjects of ww.tariff as they have their own sewerage treatment systems in accordance with decree 88. |
| 2. Mr. Hoang Dong Tam - DOPI | - Agreed with WW.tariff introduction. Because this is necessary and relevant with Decree 88 and the Agreement between two governments. Wastewater treatment is important and is one of criteria reflecting steps of upgrading Soctrang city to a city of the level 2.<br>- This is a meticulous proposal. However, when the assessment of living standard should not be based only on the report from CPC, but there is a need to do surveys of living standard in the Project's area and in city as a whole. According to the proposal, the average income per household of 5 members is 11.7 millions per month. However, in practice, not all members can generate income.<br>In principle, the citizens who pay ww.tariff will not pay environmental fee and V.S. Thus, citizens will choose to pay environmental fee rather than ww.tariff as environmental fee is lower. |
| 3. Mr. Cuông - DOF | - In Decree 88, "wastewater tariff" should be changed to "wastewater service tariff" to reflect its nature.<br>- Agreed with the wastewater tariff introduction to get revenue to cover operation & maintenance costs and also increase the citizens' awareness regarding environmental sanitation.<br>- Since July 1.2010, according to regulations, the government will not compensate for the operation losses of enterprises. Therefore, levels |

| WHO | CONTENT |
|---|---|
| | of ww.tariff should take this into consideration and the proposal should eliminate options that require the government's subsidy.<br>ww.tariff introduction and roadmap for increasing ww.tariff should be relevant with financial capacity of the local budget. In Soctrang, getting subsidy from local budget will be difficult |
| 4. Mr. Phúc - PC | - Agreed with ww.tariff introduction for environmental protection<br>- In order to persuade PC and citizens, there are some more comments as follows:<br>o Subjects of ww.tariff: agreed with Mr. Thanh – ww.tariff application is only in sewerage service areas.<br>o Name of tariff: agreed with Mr. Cuong – Change "ww.tariff" to "ww. service tariff"<br>o Level of ww.tariff: Agreed with Option 1 and level 2 in the proposal because when Soc Trăng Urban Public Works Company becomes an One Member Limited Company, State budget will not compensate for the operation losses. Thus, revenue from ww.tariff need to cover all operation & maintenance costs and eliminate the State Budget's subsidy. |

## AGREED NEXT STEPS

| No. | Contents | Expected time |
|---|---|---|
| 1 | The Project and the company complete documents and submit to the DOC | 10/4/2010 |
| 2 | DOC, DOT appraise the documents | |
| 3 | DOC send to DOJ documents including:<br>• Draft statement,<br>• Draft resolution of the People Council<br>• Summary of stakeholders' comments.<br>• Other documents | |
| 4 | DOJ appraise within 8 days, then send the documents back to DOC | |
| 5 | DOC made adjustments and then submit to PC | |
| 6 | PC submit PPC | Before 15/6/2010 |

## LIST OF PARTICIPANTS OF THE WORKSHOP

1/ Trần Đại Phúc – Vice Leader of Budget Board, PPC
2/ Trần Minh Thụ - Specialist of General Reseach Department of PC
3/ Lê Minh Thượng – Vice chairman of CPC
4/ Nguyễn Hiếu Nghĩa – Specialist of DOC
5/ Trần Văn Thanh – Vice Director of DONRE
6/ Hoàng Đồng Tâm – Vice Head of General Department of DOPI.
7/ Hoàng Văn Cuông – Vice Director of DOC.
8/ Nguyễn Văn Phương – Specialist of DOJ
9/ Kiều Vũ Phong – Specialist of Department of Urban Management of City
10/ Quách Hoàng Đẹp – Finance and Planning Department of City
11/ Nguyễn Văn Thương – Head of Environmental and Resource Department of City
12/ Đặng Văn Ngọ - Vice Director of Water supply Company
13/ Nguyễn Văn Quý – Vice Director of Travinh Water Supply Sewerage Company
14/ Lâm Hữu Tùng – Director of Soc Trăng Urban Public Works Company
15/ Vương Văn Việt – Vice Director of Soc Trăng Urban Public Works Company
16/ Đòan Thị Bích - Vice Director of Soc Trăng Urban Public Works Company
17/ Đậu Đức Hiển – Head of Technical Department of ST Urban Public Works Company
18/ Phùng Thanh Tâm – Vice Head of Technical Department of ST Urban Public Works Company
19/ Trần Thị Ngọc Phước – Chief Accountant Head of Technical Department of ST Company
20/ Vũ Thị Lan – Vice chief Accountant Head of Technical Department of ST Company
21/ Hà Thị Xuân Mai – Head of Business Planning Department of ST Company
22/ Nguyễn Thành Sự - Head of Personnel Department of ST Company
23/ Thái Bỉnh Khuôl – Specilist of Technical Department
24/ Nguyễn Hoàng Lan – Staff of Business Planning Department
25/ Thạch Huông – Head of Sewerage Unit
26/ Nguyễn Hữu Tòng - Head of Lighting Unit
27/ Nguyễn Quốc Khởi – Head of Green Park Unit
28/ Đinh Xuân Trung – Vice Forman of Environmental Division.

# PROPOSAL FOR THE INTRODUCTION OF A WASTEWATER TARIFF FOR SOCTRANG CITY

## 1. Introduction of WWM Project

"Wastewater and Solid Waste Management in Provincial Centers" is a program funded by the German government and jointly implemented by different institutions of the Government of Vietnam and several German Development Cooperation (GDC) agencies. The overall objective of the cooperation program is **"Conditions for sustainable wastewater disposal and solid waste management are improved."**

The program consists of two complementary modules:

a) the Financial Cooperation (FC) module, jointly financed by the German Development Bank (KfW) and the Government of Vietnam (GoV), and

b) the Technical Cooperation (TC) module, implemented by the German Technical Cooperation (GTZ), the German Development Service (DED) and InWEnt with the Ministry of Construction (MOC) as the responsible line ministry.

The FC module focuses on the provision of new infrastructure facilities for wastewater and solid waste management in currently six provincial cities in Vietnam. The TC module consists of three components that provide "Capacity Development for the MOC" (TC Component 1), "Capacity Development in Wastewater Management" (TC Component 2) – also referred to as "WWM" – and "Capacity Development in Solid Waste Management" (TC Component 3) – also referred to as "SWM".

Until date, WWM provides technical support to local governments, public wastewater companies (WWCs) and Departments of Natural Resources and Environment (DONREs) in currently six participating provincial urban centers in Vietnam, including the cities of Bac Ninh, Hai Duong, Vinh, Can Tho and Soc Trang as well as Tra Vinh town. WWM focuses on creating favorable conditions for improved public wastewater services and raising awareness on wastewater related issues among the communities and beneficiaries. The objective of TC Component 2 is accordingly: **"Wastewater management in the supported provincial centers is improved."** This objective is measured by three major indicators as follows:

- *The wastewater operators operate according to commercial principles* and *revenue from waste wafer tariffs cover at least* the *O&M costs in full.*
- *The wastewaterInstallations are maintained in accordance with the agreed inspection and maintenance programme.*
- *In the project areas of* the *towns under the progamm, at least* 60% *of the households* that *are connected to the sewerage system are informed about their rights and obligations in wastewater management.*

Wastewater tariff calculation and introduction for Soctrang City is to meet the first indicator of TC Component 2

## 2. General basis for the wastewater tariff and its calculation

The different options for the wastewater tariff calculation were considered and are proposed on the basis of:

- Loan and Project Agreement between Ministry of Finance of Vietnam, Soc Trăng Urban Public Works Company, CanTho Water Supply and Drainage-Sewerage Company and Kreditanstalt fuer Wiederaufbau (KfW) dated 16/5/2003.
- Separate agreement No. 2002 66 577 dated 16/5/2003 between Soc Trăng Urban Public Works Company and KFW regarding the KFW's loan
- Legal basis:
    - Governmental Decree No. 88/2007/ND-CP dated 28 May 2007 on drainage and sewerage in urban areas and industrial zones.
    - Circular 09/2009/TT-BXD dated 21 May 2009 regarding the detail regulations about implementation of Decree 88/2007/ND-CP.
    - Circular 108/2003/TT-BTC dated 7 November 2003 issued by the Ministry of Finance, guiding the financial mechanism applied for environment projects that have ODA.
    - Decree 97/2009/ND-CP dated 30 October, regulating basic salary for employees who work for companies, enterprises, cooperatives, farms households, individuals and other organizations of Vietnam that hire employees.
    - Circular No. 06/2008/TT-BXD dated 20 March 2008 by the Ministry of Construction providing guidelines for managing costs of public utility services in urban areas.
    - Decision No. 206/2003 – BTC dated 12 December 2003 by the Ministry of Finance on regulation of depreciating fixed assets
    - Joint Circular 23/TT-BLDTBXH dated 20 October 2008 regarding the guidance for implementing basic salary state companies, one member limited companies with state share account for 100 percent of the charter capital.
    - Resolution No. 1062 of Soctrang's People Committee dated 19/8/2009 regarding standard costs for operation and maintenance of sewerage systems.
    - Detailed design report on Soctrang wastewater disposal system prepared by CES-Nagecco dated 11/2004.
- CDP of SocTrang Urban Public Works Company with assumptions that the treatment plant and pumping stations will start operate since 2010.

## 3. The principle of wastewater tariff determination

In accordance with Decree 88 and Circular 09, the wastewater tariff shall:

- be based on the principle of full cost recovery for drainage/sewerage services;
- be determined considering socio-economic development at different stages;
- be in accordance with investments for the improvement of service standards;
- having a roadmap for a gradual increase of the wastewater tariff to meet the objective of covering O&M costs and partly and then fully all depreciation expenses;
- not exceed 3% of the average monthly household income;

- be supplemented by local budgets in case the total revenue from the approved wastewater tariff is lower than actual costs for the management, operation and maintenance of the drainage/sewerage system.

**4. Method of wastewater tariff determination**

1. For domestic wastewater generated from households using piped water, the wastewater tariff is calculated based on the volume of consumed water as stated on the water bill.
2. For other kinds of wastewater (non-domestic), the wastewater tariff is calculated based on the volume of wastewater and the load of pollutants in the wastewater based on the concentration of COD (mg/l), using adjustment coefficient K (K=1 for domestic wastewater)

According to Article 53 in the Governmental Decree 88/2007/ND-CP the adjustment coefficient K is determined as follows:

Table 1: **Concentration of COD**

| No. | Concentration of COD (mg/l) | K |
|---|---|---|
| 1 | ≤100 | 1 |
| 2 | 101-200 | 1,50 |
| 3 | 201-300 | 2 |
| 4 | 301-400 | 2,5 |
| 5 | 401-600 | 3,5 |
| 6 | > 600 | 4,5 |

**5. Method of determination of wastewater volume for treatment**

5.1 Volume of wastewater collected for treatment:

The volume of wastewater collected for treatment is determined on the basis of the report on Soctrang wastewater disposal system, which was prepared by CES-Nagecco, specifically:

The total volume of wastewater collected for treatment includes:

- **Domestic wastewater flow**: determined based on the population living in the sewerage service area, the per capita water consumption, the percentage of household connections, and the percentage of water discharging to the sewerage system.
- **Industrial wastewater flow**: determined based on water consumption of existing industrial parks and expected water consumption of future industrial parks.
- Wastewater flow from **other sources**
- Infiltration flow

5.2 Costs for wastewater treatment

The total costs for wastewater collection and treatment consist of the following cost items:

- Operation and maintenance (O&M) costs (excluding depreciation) including material costs, direct labour costs, manufacturing overheads such as fuel, tools, electricity, General administrative costs…
- Depreciation costs
- Standard profit: 4.5%

**6. Determination of wastewater volume for charging**

For domestic customers:

- For customers using piped water, the volume of wastewater to be charged equals 100% of the water consumption as stated on the water bill.

For non-domestic customers:

- The volume of wastewater for charging is equal to 80% of water consumption in water bill and 80% water consumption from all additional water sources (eg. Storm water and ground water)

**7. Wastewater tariff area options and levels of cost-recovery**

7.1 Regarding the recovery of costs for wastewater collection, treatment and disposal, three different levels of cost-recovery are possible:

***Level 1***: Recovery of O&M costs.

***Level 2***: Recovery of O&M costs and depreciation of **electrical and mechanical equipment.**

***Level 3***: Recovery of O&M costs and all depreciation costs.

Note: According to the agreement between KfW and the Vietnamese Government, the wastewater tariff shall cover the costs for O&M and depreciation of electrical and mechanical equipment as suggested in Level 2.

7.2 With regards to the areas in that the wastewater tariff shall be applied and hence the number of customers that will have to pay the tariff, two different area options are suggested:

***Area Option 1:*** All customers in Soctrang City pay the wastewater tariff.

***Area Option 2:*** All customers residing in the sewerage service area covered by the German Financial Cooperation program (7 wards in Soctrang City) pay the wastewater tariff.

**8. Assessment of using water in the city and in the Project's area**

At the city level, according to the plan from the Water supply Company**,** in 2010, estimated volume of water supplied by the company for the whole city is 7,500,000 m3, of which water consumed by households accounted for mainly part of 80%, water used by government agencies accounted for 17% while water used by business and industrial units accounted for very small parts of 0,45% and 3% respectively.

As forecast, compared with year 2009, the volume of water supplied by the water supply company will increase by 7% in year 2010 and about by 6% each year for years 2011-2013. By the year 2013, the estimated water is about 9 millions m3 (please see the table below)

Table 2: **Water sold in the whole city**

Unit: m3

| No. | Item | 2009 | Plan | | | |
|---|---|---|---|---|---|---|
| | | | 2010 | 2011 | 2012 | 2013 |
| 1 | Households | 5,545,000 | 5,941,000 | 6,338,000 | 6,734,000 | 7,130,000 |
| 2 | Administrative offices, government offices | 1,205,000 | 1,291,000 | 1,377,000 | 1,463,000 | 1,549,000 |
| 3 | Service and trading units | 32,000 | 34,000 | 36,000 | 38,000 | 40,000 |
| 4 | Production units | 218,000 | 234,000 | 249,000 | 265,000 | 281,000 |
| | **Total** | **7,000,000** | **7,500,000** | **8,000,000** | **8,500,000** | **9,000,000** |

At the project level, also according to data from Water Supply Company, water supplied in Project area in 2010 is about 2,687,382 m3. The volume of water supplied in the Project's area is estimated to increase by 8% afterwards. In this area, water mainly consumed by household (accounts for 83%), water used by government agencies accounts for 1.4%. Meanwhile, water supplied for business and industrial units account for very small parts of 0.67% and 2.2% respectively. Please see the table below for more detail

Table 3: **Water sold in the sewerage service area**

**Unit: m3**

| TT | Item | 2009 | Plan | | | |
|---|---|---|---|---|---|---|
| | | | 2010 | 2011 | 2012 | 2013 |
| 1 | Households | 2,069,782 | 2,235,365 | 2,414,194 | 2,607,329 | 2,815,916 |
| 2 | Administrative offices, government offices | 346,871 | 374,621 | 404,591 | 436,958 | 471,915 |
| 3 | Service and trading units | 16,672 | 18,005 | 19,446 | 21,002 | 22,682 |
| 4 | Production units | 54,992 | 59,391 | 64,142 | 69,274 | 74,816 |
| | **Total** | **2,488,317** | **2,687,382** | **2,902,373** | **3,134,563** | **3,385,328** |

**9. Wastewater flow collected and treated**

**Table 4: Volume of collected and treated wastewater**

**Unit: m3**

| No. | Item | 2009 | Plan | | | |
|---|---|---|---|---|---|---|
| | | | 2010 | 2011 | 2012 | 2013 |
| | Wastewater flow collected and treated | 3,699,854 | 4,810,736 | 5,013,383 | 5,220,732 | 5,432,833 |

In year 2009, the volume of waste water from all types of customers discharging in the sewerage system is 3,699,854. This estimated figure for year 2010 is 4,810,736. In this year, the connection percentage of households to the sewerage system is about 75%. In coming years, the connection percentage is estimated to increase by 5.25% per annum. In 2013, the connection percentage will reach 87% and the volume of waste water the company will collect for treatment is about 5,432,833 m3.

**10. Estimated costs of wastewater collection and treatment and required revenue for year 2010**

Costs incurred for wastewater collection and treatment of year 2010 are estimated as follows:

Table 5: **Estimated costs and required revenue for year 2010**

| | Items | Value |
|---|---|---|
| **I** | **Collected and treated wastewater (1000 m3)** | **4,811** |
| **II** | **Expenses (million VND)** | |
| 1 | Direct labor | 3,214 |
| 2 | Indirect labor | 556 |
| 3 | Fuel expenses | 717 |
| 4 | Tool expenses | 800 |
| 5 | Electricity expenses for pumping and WWTP operation | 1,461 |
| 6 | Maintenance and repair expenses | 1,006 |
| 7 | Other cash expenses | 277 |
| 8 | General overhead costs | 2,214 |
| ***9*** | ***Total O&M costs excluding depreciation (Total (1:8))*** | 10,537 |
| ***10*** | Depreciation of electrical and mechanical equipments | 2,596 |
| 11 | ***Total O&M costs and depreciation of electrical and mechanical equipment (total (9+10))*** | ***13,133*** |
| ***12*** | Depreciation of civil works for the drainage/sewerage system | 4,114 |
| 13 | ***Total O&M cost and all depreciation costs (Total (11+12))*** | ***17,247*** |
| **III** | **Required revenue in accordance with levels of cost–recovery (1000 VND)** | |

| | Items | Value |
|---|---|---|
| ***14*** | Required revenue to cover O&M cost and 4,5% of standard profit (item 9*1.045) | 11,011 |
| ***15*** | Required revenue to cover O&M cost, depreciation of electrical and mechanical equipment and 4,5% of standard profit (item 11*1.045) | 15,310 |
| ***16*** | Required revenue to cover O&M cost, full depreciation cost and 4,5% of standard profit (item 13*1.045) | 18,023 |

Required needed to cover costs in accordance with levels of cost recovery for wastewater collection and treatment in year 2010 are as follows:

- ***Level 1:*** Required revenue to cover O&M cost and 4,5% of standard profit is VND 11,011 million.
- ***Level 2:*** Required revenue to cover O&M cost, depreciation of electrical and mechanical equipment and 4,5% of standard profit is 15,310 millions.
- ***Level 3:*** Required revenue to cover O&M cost, full depreciation cost and 4,5% of standard profit is 18,023 millions (for more detail, please see table 5)

**11. Average wastewater tariff by levels of cost recovery and tariff options**

The calculation of average wastewater tariffs in accordance with three levels of cost-recovery for area options (whole Soctrang city and the sewerage area are based on total volume of consumed water by area options and total costs in accordance with levels of cost-recovery.
Specifically:

**Area Option 1**: All customers in Soctrang City pay the wastewater tariff.

- ***Level 1***: Average wastewater tariff to cover operation and maintenance costs excluding depreciation is VND 1,479/m3.
- ***Level 2:*** Average wastewater tariff to cover operation and maintenance costs including depreciation cost of electrical and mechanical equipment is VND 2,056 /m3.
- ***Level 3:*** Average wastewater tariff to cover operation and maintenance costs including all depreciation costs is VND 2,420/m3.

**Area Option 2*:*** All customers residing in the sewerage service area covered by the German Financial Cooperation program (7 wards in Soctrang City) pay the wastewater tariff.:

- ***Level 1***: Average wastewater tariff to cover operation and maintenance costs excluding depreciation is VND 4,121/m3.
- ***Level 2***: Average wastewater tariff to cover operation and maintenance costs including depreciation cost of electrical and mechanical equipment is VND 5,730/m3.

- ***Level 3***: Average wastewater tariff to cover operation and maintenance costs including all depreciation costs is VND 6,745 /m3.

In comparison of two area options above, needed average wastewater tariffs of option 2 (only customers in the sewerage service area have to pay wastewater tariff) are much higher and equal three times of needed average wastewater tariffs of area option 1 (All customers in Soctrang City pay the wastewater tariff)

**Table 6: Average wastewater tariff by levels of cost recovery and tariff options**

| Wastewater tariff area options | Consumed water volume (1000 m3) (1) | Required Revenue (million VND) | | | Average WW tariff (VND/m3) | | |
|---|---|---|---|---|---|---|---|
| | | Level 1: Cover O&M cost and 4.5% of standard profit (2) | Level 2: Cover O&M cost, depreciation of electrical and mechanical equipment and 4.5% of standard profit (3) | Level 3: Cover O&M cost, full depreciation cost and 4.5% of standard profit (4) | Level 1: cover O&M cost and 4.5% of standard profit (5)=(2): (1) | Level 2: Cover O&M cost, depreciation of electrical and mechanical equipment and 4.5% of standard profit (6)=(3) : (1) | Level 3: Cover O&M cost, full depreciation cost and 4.5% of standard profit (7)= (4) : (1) |
| **Area Option 1**: Whole Soctrang City | 7,466 | 11,011 | 15,310 | 18,023 | 1,479 | 2,056 | 2,420 |
| **Area Option 2:** 7 wards of Soctrang City | 2,672 | 11,011 | 15,310 | 18,023 | 4,121 | 5,730 | 6,745 |

### 12. Current water tariff

At present, Soctrang Company is applying a water tariff on the basis of the following customer categories:

Table 7: **Current water tariff**

| Group | Categories of customers | Water tariff incl. VAT (VND/ m3) | Coefficient* |
|---|---|---|---|
| 01 | Households | 3,800 | 0.950 |
| 02 | Administrative offices, government offices | 4,500 | 1.125 |
| 03 | Production units | 5,100 | 1.275 |
| 04 | Service and trading units | 6,700 | 1.675 |
| | **Weighted Average price** | **4,000** | 1.000 |

*: The coefficients equals the prices applied to each type of customer divided by the weighted Average price

### 13. Socio- economic development of Soctrang City

In 8 February 2007, Vietnamese government issued Decree No. 22/2007/ND-CP, accordingly Soctrang town had been upgraded to a town of level 3 with a new name of Soctrang city. Since then its transportation system, water supply and sewerage system and other public works have been schemed toward environmental protection and utilizing the city's strengths. After three years of establishment, Soctrang city has had many changes. Until 2010, Soctrang city has population of more then 170,000 people. According to data from General Statistics Office of Vietnam, in year 2006, the average income per capita of Soctrang province as a whole is VND 495,000 per capita and the growth rate of the average income for the period from year 1999 to year 2006 is 21%/year. With this growth rate, estimated income per capita for year 2010 will be VND 1,100,000 per person. It should be noticed that Soctrang City is a cultural, economic and social Central of Soctrang province. Thus the average income per capita for Soctrang city is definitely much higher than the mentioned figure.

According to the report No. 132/BC.UBTP dated 23 October 2009, namely "Result of managing social and economic activities for year 2009 and orientation and mission for year 2010", that is issued by Soctrang City's Committee of People, the city has maintained a high economic growth. In 2009 the economic growth rate is 13.78%, an average income per capita is USD 1,587 per year (equivalent to VND 2.33 millions per month).

Table 8**: Average income per capital**

| Sources of information | Year 2010 *(average income per capita per month)* |
|---|---|
| Estimation based on data from General Statistics Office of Vietnam | VND 1,100,000 |
| Report of Soctrang City's Committee of People | VND 2,330,000 |

If the average number of people in families is 5 per a family. Then, in 2010 the estimated average income per household of Soctrang City is VND 11,7 millions per month (VND 2.33 million/person*5 people per household according to the report No.132/BC-UBTP). At the modest figure of VND 1.1 million/person per month, the average income per household is VND 5.5 million (VND 1.1 millions/person* 5 persons/household)

In parallel with the economic growth rate, Soctrang city has been facing to a danger from environmental pollution. Like other cities, pollution of water sources is one of Soctrang city's biggest challenges toward its sustainable development. Having recognised an importance of environmental protection on the city's sustainable development, in one of his speech about development orientation of Soctrang city, the city's president – Mr. Nguyen Ngoc Thong said "One of policies of Soctrang city's people and the party committee is to build and upgrade Soctrang city to a green, clean city and soon become a level 2's city"(www.kinhtenongthon.com.vn – Feb.22.2010)

**14. Proposed wastewater tariff**

Following a detailed analysis and careful consideration of all above mentioned alternatives, options and local socio-economic conditions, water tariffs and pollutant degree discharged by different kinds of customers and others, the Soctrang Urban Public Works Company proposes to the City People's Committee to apply the following constellation of options as wastewater tariff for 2010:

- Area Option: select option 1 – all customers of Soctrang city have to pay wastewater tariff. The customers who are subject to the wastewater tariff will not pay environmental fee. Beside, for customers who are the subjects to an exemption of connection to the sewerage system (according to Circular 09), will not be subjects of this wastewater tariff.
- Cost-recovery Level: select level 2 – revenue from wastewater tariff can cover O&M costs and depreciation of **electrical and mechanical equipment.** At this level, the average wastewater tariff is VND 2056 per 1 m3 (VND 2000 as rounded)
- The tariff for each categories of customers are proposed as follows:

Table 9: **Proposed wastewater tariff**

| Group | Categories of customers | Average ww.tariff/ m3) | Coefficient K based on COD | Proposed ww.tariff (VND/m3) |
|---|---|---|---|---|
| 01 | Households | 2,000 | 1 | 2,000 |
| 02 | Administrative offices, government offices | 2,000 | 1 | 2,000 |
| 03 | Production units | 2,000 | 2* | 4,000 |
| 04 | Service and trading units | 2,000 | 1.5* | 3,000 |

***: According to decree 88, ww.dischargers are responsible to provide Soctrang Urban Public Works Company information about COD concentration in their wastewater. However, at present, there is lack of the awareness of most dischargers about this responsibility. Thus, in the first two years of applying new ww.tariffs, coefficients of 2 and 1.5 are recommended to apply for Production and Service and trading units respectively. However, these coefficients will be adjusted after two years, based on actual COD information provided by dischargers.***

***Reasons for this selection are as follows:***

- With **Area Option 1**, all customers in Soctrang City will have to pay the wastewater tariff. Even though not all of these customers discharge their wastewater into the new sewerage system financed by German Financial Cooperation, they all benefit from the reduced pollution of surface water bodies in and around Soctrang city as a result of the new WWT facilities. In addition, in practice, customers in this area are benefiting from sewerage services though dredging drain and drainage system. Furthermore, the distribution of total costs on more customers reduces the average tariff that every customer has to pay and the increase in charges for wastewater from currently 245 VND/m3 to the new tariff of VND 2,000 per m3 (in case customers are households) – this level equals 44% of the average water tariff that is conformity with decree 88 "wastewater tariff should not below 10% water tariff currently applied for customers. The wastewater tariff of VND 2,000/m3 will find less disapproval and resistance among the affected population than VND 5,730 – in case only customers in the sewage service area have to pay the wastewater tariff.
- The proposed tariffs are relevant with **Affordability and social compability of households in Soctrang City.**

  In 2010, if we apply wastewater tariff of VND 2,000/m3, and average consumption of water per person is 4.5 m3/month, then the total estimated amount of money each household has to pay for wastewater tariff will be:

  VND2.000/m3 × 4.5 m3/person/month × 5 persons/household* = VND 45,000 per month

  This figure accounts for only 0.82% total household income in 2010 (if household income is VND 1.1 millions per person or VND 5.5 millions per household) in Soctrang City. Total amount of money spent for both water and wastewater services accounts for about 2.37% the average income of household. These figures reflect the comformity of the recommended wastewater tariff with circular 09/2009/TT-BXD "wastewater tariff should not exceed 3% of the average monthly household income".

- With the application of **Cost-recovery Level 2** of this wastewater tariff proposal, all costs for the operation and maintenance of Soctrang's drainage/sewerage system as well as the depreciation of electrical and mechanical equipment will be covered by the revenue from the wastewater tariff. This complies exactly with the special agreement

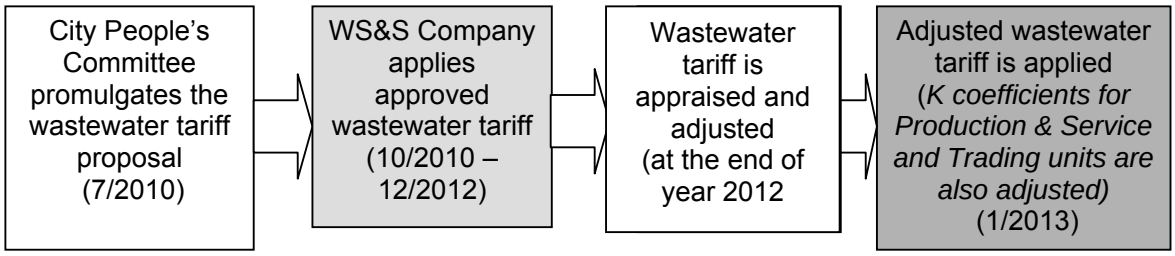
signed between the Government of Vietnam and the German KfW Development Bank and decree 88.

In summary, from the mentioned analyses above, the wastewater tariff of VND 2,000/m3 is conformity with the affordability of households and also in accordance with decree 88 and the Loan and Project Agreement signed by the Vietnamese Government and KFW.

**15. Proposal for the application and adjustment of the wastewater tariff**

The application and adjustment of the wastewater tariff is proposed as follows:

- The proposed estimated wastewater tariff is promulgated by the City People's Committee after approval by the City People's Council in July 2010.
- The proposed estimated wastewater tariff will be applied for about 2 years, from October 2010 to December 2012.
- The proposed estimated wastewater tariff will then be evaluated, appraised and adjusted in the fourth quarter of 2012 based on the principle of step-wise increase to cover O&M costs and full depreciation of not only electrical and mechanical equipment but also fixed assets, such as civil works etc. The adjusted average wastewater tariff for 2013 is estimated as approx. 2,468 VND/m3 – equivalent to Cost-recovery Level 3 with Area Option 1 – all customers in Soctrang city will have to pay the wastewater tariff and the company's revenue from wastewater tariff will cover all O&M expenses and full depreciation expense and since year 2013, specific ww.tariff imposed on production and service and trading units will take actual K coefficient of COD into consideration.




**16. Estimated revenue and subsidy from the Budget**

If level 2 of cost recovery of area option 1 is chosen**.** That means all customers in Soctrang City have to pay the wastewater tariff and wastewater tariff calculation is based on total operation and maintenance costs plus depreciation of electrical and mechanical equipment, then revenue from wastewater tariff for years 2010, 2011 and 2012 are VND 15,294, 16,313 and 17,333 millions respectively. Revenue from households accounts for a large part of total revenue of about 78%. While required revenue to cover operation and maintenance cost, depreciation of electrical and mechanical equipment for years 2010, 2011 are VND 15,310, 17,761 and 18,971 millions respectively. As a result, the maximum subsidies from the government for these years estimated are VND16 and 1,448 and 1,637, millions accordingly for whole years (more detail please see the table below). However, as proposed wastewater tariff shall be applied since October 2010. Therefore, maximum required subsidy from the Budget for the last quarter of year 2010 is about VND 4 million and increases to VND 1,448 and 1,637 million for year 2011 and 2012, respectively.

There is increase in required subsidy in year 2011 and 2012 because in year 2011, the company plans to invest more in mechanical and electrical equipments with value of VND 13,152 millions. To cover total operation, maintenance cost and equipments' depreciation

expenses, required average wastewater tariff in year 2011 and 2012 increase to VND 2,236 and 2,246, respectively. Meanwhile, as recommended, the average waste water tariff applied in year 2011 and 2012 is only VND 2,000/m3 - level of year 2010. This is an important reason for increase of required subsidies in these years.

In year 2013, with adjusted wastewater tariff of VND 2.468/m3 applied for all customers in the city, estimated revenue from wastewater tariff can cover all operation & maintenance costs and full deprecation expenses of wastewater management.

Table 10: **Estimated revenue and subsidy from the Budget**

**Unit: million VND**

| | **Items** | **Proposed ww.tariff (VND/m3)** | **Y. 2010** | **Y. 2011** | **Y. 2012** |
|---|---|---|---|---|---|
| **I** | **Revenue from** | | | | |
| 1 | Households | 2,000 | 11,882 | 12,676 | 13,468 |
| 2 | Administrative offices, government offices | 2,000 | 2,582 | 2,754 | 2,926 |
| 3 | Service and trading units | 3,000 | 109 | 115 | 91 |
| 4 | Production units | 4,000 | 562 | 598 | 848 |
| | ***Total*** | | 15,294 | 16,313 | 17,333 |
| **II** | Required revenue to cover O&M cost, depreciation of electrical and mechanical equipment and 4,5% of standard profit | **N/A** | **15,310** | **17,761** | **18,971** |
| **III** | Required Subsidy from the Government (I-II) | **N/A** | **16** | **1,448** | **1,637** |

## WASTEWATER CALCULATION SHEETS

## TABLE 1 A: THE VOLUME OF WATER SOLD IN ST CITY

| No. | Content | Unit | Year 2008 | Year 2009 | Plan | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Year 2010 | Year 2011 | Year 2012 | Year 2013 |
| 1 | Household | $m^3$ | 5,149,000 | 5,545,000 | 5,941,000 | 6,338,000 | 6,734,000 | 7,130,000 |
| 2 | Administrative offices, government offices | $m^3$ | 1,119,000 | 1,205,000 | 1,291,000 | 1,377,000 | 1,463,000 | 1,549,000 |
| 3 | Service and trading units | $m^3$ | 29,000 | 32,000 | 34,000 | 36,000 | 38,000 | 40,000 |
| 4 | Production units | $m^3$ | 203,000 | 218,000 | 234,000 | 249,000 | 265,000 | 281,000 |
| | **Total** | $m^3$ | **6,500,000** | **7,000,000** | **7,500,000** | **8,000,000** | **8,500,000** | **9,000,000** |
| | | | | | | | | |

*Note: data provided by Soctrang water supply company*

## TABLE 1B: THE VOLUME OF WATER SOLD IN THE ST CITY AS A BASIS FOR WASTE WATER TARIFF CALCULATION

| No. | Content | Unit | Year 2008 | Year 2009 | Plan | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Year 2010 | Year 2011 | Year 2012 | Year 2013 |
| 1 | Household | $m^3$ | 5,149,000 | 5,545,000 | 5,941,000 | 6,338,000 | 6,734,000 | 7,130,000 |
| 2 | Administrative offices, government offices | $m^3$ | 1,119,000 | 1,205,000 | 1,291,000 | 1,377,000 | 1,463,000 | 1,549,000 |
| 3 | Service and trading units | $m^3$ | 23,200 | 25,600 | 27,200 | 28,800 | 30,400 | 32,000 |
| 4 | Production units | $m^3$ | 162,400 | 174,400 | 187,200 | 199,200 | 212,000 | 224,800 |
| | **Total** | $m^3$ | **6,453,600** | **6,950,000** | **7,446,400** | **7,943,000** | **8,439,400** | **8,935,800** |

## TABLE 2A: THE VOLUME OF WATER SOLD IN THE SEWERAGE SERVICE AREAS (THE PROJECT'S AREAS).

| No. | Content | Unit | Year 2009 | Plan | | | |
|---|---|---|---|---|---|---|---|
| | | | | Year 2010 | Year 2011 | Year 2012 | Year 2013 |
| 1 | Household | $m^3$ | 2,069,782 | 2,235,365 | 2,414,194 | 2,607,329 | 2,815,916 |
| 2 | Administrative offices, government offices | $m^3$ | 346,871 | 374,621 | 404,591 | 436,958 | 471,915 |
| 3 | Service and trading units | $m^3$ | 16,672 | 18,005 | 19,446 | 21,002 | 22,682 |
| 4 | Production units | $m^3$ | 54,992 | 59,391 | 64,142 | 69,274 | 74,816 |
| | | | | | | | |
| | **Total** | | **2,488,317** | **2,687,382** | **2,902,373** | **3,134,563** | **3,385,328** |

## TABLE 2B: THE VOLUME OF WATER SOLD IN THE SEWERAGE SERVICE AREAS (PROJECT'S AREAS). AS A BASIS FOR WASTEWATER TARIFF CALCULATION

| No. | Content | Unit | Year 2009 | Plan | | | |
|---|---|---|---|---|---|---|---|
| | | | | Year 2010 | Year 2011 | Year 2012 | Year 2013 |
| 1 | Household | $m^3$ | 2,069,782 | 2,235,365 | 2,414,194 | 2,607,329 | 2,815,916 |
| 2 | Administrative offices, government offices | $m^3$ | 346,871 | 374,621 | 404,591 | 436,958 | 471,915 |
| 3 | Service and trading units | $m^3$ | 13,337 | 14,404 | 15,557 | 16,801 | 18,145 |
| 4 | Production units | $m^3$ | 43,993 | 47,513 | 51,314 | 55,419 | 59,853 |
| | | | | | | | |
| | **Total** | | **2,473,984** | **2,671,903** | **2,885,655** | **3,116,508** | **3,365,828** |

## TABLE 4A: AVERAGE INCOME OF THE WORKERS IN YEAR 2008

| No. | Content | Number | Minimum Basic salary | Level | Salary rate | Responsibility rate | | Total | | | Total salary | Overtime (Sat+Sun) | Refreshment at the midle of shift | Total income/month | Total income/year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Responsibility rate | Noxious rate | Actual basic Salary | Responsibility salary | Noxious salary | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 14 | 15 | 16 | 17 |
| | **Direct labor** | | | | | | | | | | | | | | |
| **I** | **Salary** | | | | | | | | | | | | | | |
| 1 | Workers | 31 | 540,000 | 3 | 2.31 | | 0.30 | 1,247,400 | | 162,000 | 43,691,400 | 7,131,023 | 16,740,000 | 67,562,423 | 810,749,076 |
| 2 | Drivers | 10 | 540,000 | 3 | 2.31 | | 0.30 | 1,247,400 | | 162,000 | 14,094,000 | 2,756,470 | 5,400,000 | 22,250,470 | 267,005,640 |
| | ***Total I*** | ***41*** | | | | | | | | | - | **9,887,493** | **22,140,000** | **89,812,893** | **1,077,754,716** |
| **II** | **Other income** | | | | | | | | | | | | | | |
| | (Welfare and Rewards) | | | | | | | | | | | | | | 107,775,472 |
| | ***Total (II)*** | | | | | | | | | | | **-** | | | ***107,775,472*** |
| | **Total Direct labor** | **41** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **9,887,493** | **22,140,000** | **89,812,893** | **1,185,530,188** |
| | | | | | | | | | | | | | | | |
| | **Indirect labour** | | | | | | | | | | | | | | |
| 1 | Team leader | 1 | 540,000 | 7 | 4.40 | 0.30 | | 2,376,000 | 162,000 | - | 2,538,000 | 317,300 | 540,000 | 3,395,300 | 40,743,600 |
| 2 | Vice leader of the team | 1 | 540,000 | 7 | 4.40 | 0.20 | 0.30 | 2,376,000 | 108,000 | 162,000 | 2,646,000 | 317,300 | 540,000 | 3,503,300 | 42,039,600 |
| 3 | Office staff | 2 | 540,000 | 1 | 2.34 | | | 1,263,600 | | | 2,527,200 | 460,066 | 1,080,000 | 4,067,266 | 48,807,192 |
| | ***Total*** | **4** | | | | | | | | | - | **1094666** | **2,160,000** | **10,965,866** | **131,590,392** |
| | **Other income** | | | | | | | | | | | | | | |
| | (Welfare and Rewards) | | | | | | | | | | | | | | 13,159,039 |
| | **Total indirect labor** | ***4*** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | - | **1,094,666** | **2,160,000** | **10,965,866** | **144,749,431** |
| | **Total workers** | **45** | | | | | | | | | - | **10,982,159** | **24,300,000** | **100,778,759** | **1,330,279,619** |

## TABLE 4B: AVERAGE INCOME OF THE WORKERS IN YEAR 2008

| No. | Content | Number | Minimum Basic salary | Level | Salary rate | Responsibility rate | | Total | | | Total salary | Overtime (Sat+Sun) | Refreshment at the midle of shift | Total income/month | Total income/year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Responsibility rate | Noxious rate | Actual basic Salary | Responsibility salary | Noxious salary | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 14 | 15 | 16 | 17 |
| A | **Direct labor** | | | | | | | | | | | | | | |
| I | **Salary** | | | | | | | | | | | | | | |
| 1 | Workers | 34 | 650,000 | 3 | 2.31 | | 0.30 | 1,501,500 | | 195,000 | 57,681,000 | 7,821,122 | 22,100,000 | 87,602,122 | 1,051,225,464 |
| 2 | Drivers | 11 | 650,000 | 3 | 2.31 | | 0.30 | 1,501,500 | | 195,000 | 18,661,500 | 3,032,117 | 7,150,000 | 28,843,617 | 346,123,404 |
| | ***Total (I)*** | ***45*** | | | | | | | | | | **10,853,239** | **29,250,000** | **116,445,739** | **1,397,348,868** |
| II | **Other income** | | | | | | | | | | | | | | |
| 1 | (Welfare and Rewards) | | | | | | | | | | | | | | 139,734,887 |
| | ***Total (II)*** | | | | | | | | | | | **-** | | | ***139,734,887*** |
| B | **Total Direct labor** | **45** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **10,853,239** | **29,250,000** | **116,445,739** | **1,537,083,755** |
| | **Indirect labor** | | | | | | | | | | | | | | |
| I | **Salary** | | | | | | | | | | | | | | |
| 1 | Team leader | 1 | 650,000 | 7 | 4.40 | 0.30 | | 2,860,000 | 195,000 | - | 3,055,000 | 317,300 | 650,000 | 4,022,300 | 48,267,600 |
| 2 | Vice leader of the team | 1 | 650,000 | 7 | 4.40 | 0.20 | 0.30 | 2,860,000 | 130,000 | 195,000 | 3,185,000 | 317,300 | 650,000 | 4,152,300 | 49,827,600 |
| 3 | Admin. staff | 2 | 650,000 | 1 | 2.34 | | | 1,521,000 | | | 3,042,000 | 460,066 | 1,300,000 | 4,802,066 | 57,624,792 |
| | ***Total*** | **4** | | | | | | | | | | **1094666** | **2,600,000** | **12,976,666** | **155,719,992** |
| II | **Other income** | | | | | | | | | | | | | | |
| | (Welfare and Rewards) | | | | | | | | | | | | | | 15,571,999 |
| | **TOTAL INCOME OF INDIRECT LABOR (I+II)** | ***4*** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **1,094,666** | **2,600,000** | **12,976,666** | **171,291,991** |
| C | **TOTAL INCOME OF ALL WORKERS (A+B)** | ***49*** | | | | | | | | | **-** | **11,947,905** | **31,850,000** | **129,422,405** | **1,708,375,746** |

## TABLE 4C: AVERAGE INCOME OF THE WORKERS IN YEAR 2010

| No. | Content | Number | Minimum Basic salary | Level | Salary rate | Responsibility rate | | Total | | | Total salary | Overtime (Sat+Sun) | Refreshment at the midle of shift | Total income/month | Total income/year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Responsibility rate | Noxious rate | Actual basic Salary | Responsibility salary | Noxious salary | | | | | |
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 15 | 16 | 17 | 18 |
| **A** | **Direct labor** | | | | | | | | | | | | | | |
| **I** | **Salary** | | | | | | | | | | | | | | |
| 1 | Team leader | 3 | 810,000 | 7 | 4.40 | 0.30 | | 3,564,000 | 243,000 | - | 11,421,000 | 317,300 | 1,950,000 | 13,688,300 | 164,259,600 |
| 2 | Vice team leader | 3 | 810,000 | 7 | 4.40 | 0.20 | 0.30 | 3,564,000 | 162,000 | 243,000 | 11,907,000 | 317,300 | 1,950,000 | 14,174,300 | 170,091,600 |
| 3 | Workers | 64 | 810,000 | 3 | 2.31 | | 0.30 | 1,871,100 | | 243,000 | 135,302,400 | 14,722,112 | 41,600,000 | 191,624,512 | 2,299,494,144 |
| 4 | Drivers | 14 | 810,000 | 3 | 2.31 | | 0.30 | 1,871,100 | | 243,000 | 29,597,400 | 3,859,058 | 9,100,000 | 42,556,458 | 510,677,496 |
| | ***Tổng/ sub-total (I)*** | ***84*** | | | | | | | | | | **19,215,770** | **54,600,000** | **262,043,570** | **3,144,522,840** |
| **II** | **Other income** | | | | | | | | | | | | | | |
| 1 | (Welfare and Rewards) | | | | | | | | | | | | | | 314,452,284 |
| | ***Total (II)*** | | | | | | | | | | | **-** | **-** | | ***314,452,284*** |
| **III** | **TOTAL DIRECT LABOR** | ***84*** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **19,215,770** | **54,600,000** | **262,043,570** | **3,458,975,124** |
| **B** | **INDIRECT LABOR** | | | | | | | | | | | | | | |
| **I** | **Salary** | | | | | | | | | | | | | | |
| 1 | Foreman | 1 | 810,000 | | 5.65 | 0.30 | | 4,576,500 | 243,000 | | 4,819,500 | | 800,000 | 5,619,500 | 67,434,000 |
| 2 | Vice Foreman | 2 | 810,000 | | 4.40 | 0.20 | | 3,564,000 | 162,000 | | 7,452,000 | | 1,600,000 | 9,052,000 | 108,624,000 |
| 3 | Admin. Staff | 1 | 810,000 | | 2.96 | | | 2,397,600 | | | 2,397,600 | | 800,000 | 3,197,600 | 38,371,200 |
| 4 | Accountant | 3 | 810,000 | | 3.58 | | | 2,899,800 | | | 8,699,400 | | 2,400,000 | 11,099,400 | 133,192,800 |
| 5 | Technical staff | 5 | 810,000 | | 3.13 | | | 2,535,300 | | | 12,676,500 | | 4,000,000 | 16,676,500 | 200,118,000 |
| | ***Tổng (1:5)*** | **12** | | | | | | | | | **36,045,000** | **0** | **9,600,000** | **45,645,000** | **547,740,000** |
| **II** | **Other income** | | | | | | | | | | | | | | |
| | Wealfare and rewards | | | | | | | | | | | | | | 54,774,000 |
| | **TOAL INCOME OF INDIRECT LABOR** | ***12*** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **36,045,000** | **-** | **9,600,000** | **45,645,000** | **602,514,000** |
| | **TOTAL INCOME OF ALL WORKERS** | ***96*** | | | | | | | | | **36,045,000** | **19,215,770** | **64,200,000** | **307,688,570** | **4,061,489,124** |

## TABLE 3: VOLUME OF WASTEWATER FOR TREATMENT

| No. | Item | Year | | | | | |
|---|---|---|---|---|---|---|---|
| | | ***2008*** | ***2009*** | ***2010*** | ***2011*** | ***2012*** | ***2013*** |
| 1 | Population | 107,870 | 109,369 | 110,867 | 112,558 | 114,249 | 115,941 |
| 2 | Per capita water consumption (l/hd/d) | 103 | 112 | 120 | 123 | 126 | 129 |
| 3 | % connected to drainage system | 67 | 71 | 75 | 78 | 83 | 87 |
| 4 | % of water supply returned to drainage system | 80 | 80 | 80 | 80 | 80 | 80 |
| 5 | Wastewater flow from domestic ($m^3$/d) | 7,268 | 8,378 | 9,579 | 10,024 | 10,480 | 10,948 |
| 6 | Industrial wastewater flow (m3/d) | | | 597 | 597 | 597 | 597 |
| 7 | Other wastewater flow (m3/d) | 837 | 837 | 1,806 | 1,866 | 1,926 | 1,986 |
| 8 | Total volume of wastewater (m3/d) | 8,105 | 9,215 | 11,982 | 12,487 | 13,003 | 13,531 |
| 9 | Infiltration Allowance (% of wastewater flow) | 10 | 10 | 10 | 10 | 10 | 10 |
| 10 | Average flow (m3/d) | 8,915 | 10,137 | 13,180 | 13,735 | 14,303 | 14,884 |
| 11 | **Average flow (m3/y)** | **3,254,115** | **3,699,854** | **4,810,736** | **5,013,383** | **5,220,732** | **5,432,833** |
| 12 | Souce of this data from basic design report | | | | | | |
| 13 | **Power consumption** | | | | | | |
| 14 | Treatment Plant | | | 370,977 | 386,604 | 402,594 | 418,950 |
| 15 | Pumping stations | | | 846,222 | 881,869 | 918,342 | 955,651 |
| 16 | **Total power consumption** | | | 1,217,199 | 1,268,473 | 1,320,935 | 1,374,601 |
| 17 | Maximum Capacity of the treatment plant | 13,180 m3/d | | | | | |
| 19 | Power consumption of Treatment Plant at maximum capacity (KWh/y) | 370,974.24 | | | | | |
| 20 | Power consumption of Pumping stations at maximum capacity (KWh/y) | 846,216.00 | | | | | |

## Table 5: OPERATION AND MAINTENANCE EXPENSE (NOT INCLUDE DEPRECIATION)

| No. | Expenses | Unit | Actual cost 2008 (VND) | Standard unit cost 2008 (VND/m3) | Actual cost 2009 | Standard unit cost 2009 (VNĐ/m3) | Estimated cost 2010 | Standard unit cost 2010 (VNĐ/m3) |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| I | Collected and Treated wastewater, 2008, 2009,2010 | $m^3$ | 3,254,115 | | 3,699,854 | | 4,810,736 | |
| **II** | **O&M costs** | **VNĐ** | | | | | | |
| | | | | | | | | |
| **1** | **Direct labor cost** | **VNĐ** | **1,185,530,188** | | **1537083755** | | **3,458,975,124** | |
| **2** | **Indirect labor** | VNĐ | 144,749,431 | | 171291991.2 | | 602,514,000 | |
| **3** | **Fuel expense of 3 trucks** | **VNĐ** | **572,616,819** | **176.0** | **629,878,501** | **170.2** | **717,320,668** | **149.1** |
| | *- Fuel expense* | VNĐ | 444,623,952 | | 489,086,347 | | 562,449,299 | |
| | *- Insurance and check fee.* | VNĐ | 127,992,867 | | 140,792,154 | | 154,871,369 | |
| **4** | **Tool, Labor safety** | **VNĐ** | **378,082,385** | **116.2** | **415,890,624** | **112.4** | **765,238,747** | **159.1** |
| **5** | **Repair and maintenance expense** | **VNĐ** | 598,872,945 | **184.0** | 688,703,887 | **186.1** | 1,006,500,000 | **209.2** |
| **6** | **Electricity** | VNĐ | | | | | **1,460,638,800** | |
| | *- 10 pumping stations and treatment plant* | VNĐ | | | | | 1,460,638,800 | |
| **7** | **Other cash expense** | **VNĐ** | **200,871,110** | **61.7** | **231,001,777** | **62.4** | **277,154,418** | **57.6** |
| | *- Clean water* | VNĐ | 829,800 | | 954,270 | | 1,097,411 | |
| | *- Lighting Electricity* | VNĐ | 2,442,831 | | 2,809,256 | | 3,371,107 | |
| | *- Telephones* | VNĐ | 662,953 | | 762,396 | | 914,875 | |
| | *- Other expense* | VNĐ | 196,935,526 | | 226,475,855 | | 271,771,026 | |
| **8** | **Allocated administrative expense = Direct labor x 64%: according to circular 06/2008/TT-BXD)** | **VNĐ** | **758739320.1** | | **983,733,603** | | **2,213,744,079** | |

# TABLE 6: STANDARD COSTS

## A- STANDARD CONSUMPTION MAN-HOUR AND STANDARD OF DIRECT LABOR

| No. | Year | Estimation of collected and treated wastewater | Total working hours / year | Standard hours per m3 (H/m3) | Standard Direct Labor rate (VND/hour) | The average income of indirect labor (VND/year) |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5=4/3 | 6 | 7 |
| | | | | | | |
| 2 | 2008 | 3,254,115 | | - | | |
| 3 | 2009 | 3,699,854 | | - | | |
| 4 | 2010 | 4,810,736 | **177,408** | **0.03688** | **19,497.29** | **50,209,500** |
| 5 | 2011 | 5,013,383 | | **0.03539** | | |
| 6 | 2012 | 5,220,732 | | **0.03398** | | |
| 7 | 2013 | 5,432,833 | | **0.03265** | | |
| | | | | | | |

Note: (4) 8h * 22 days * 12 months * Number of direct labors

(6) Total Income of direct labor / Total working hours/year

(7) Total income of indirect labors/No. of indirect labors

## B - ELECTRICITY STANDARD COSTS

| No. | Year | Power consumption (KWh) | Standard power consumption (KWh/m3) | Standard costs of electricity (VNĐ/KWh) | Remarks |
|---|---|---|---|---|---|
| 9 | 10 | 12 | 13=12/4 | 13 | 14 |
| | 2009 | | | | |
| | 2010 | 1,217,199 | **0.25302** | | |
| | 2011 | 1,268,473 | **0.25302** | **1200** | |
| | 2012 | 1,320,935 | **0.25302** | | |
| | 2013 | 1,374,601 | **0.25302** | | |

*Note: Power consumption calculated for 10 pumping stations and the treatment plan.*

## TABLE 7A: FIXED ASSETS

Exchange rate VND and EURO dated 12/09/2009: **26,407**

*Unit:1,000,000 VND*

| No. | Fixed Assets | Estimated Useful life | Year 2010 | | Year 2011 | | Year 2012 | Year 2013 |
|---|---|---|---|---|---|---|---|---|
| | | | Euro | VND | Euro | VND | | |
| 1 | 2 | 3 | 4 | 5=4*Ex.rate | 6 | 7=6*Ex.rate | 9 | 10 |
| **A** | **From KWF Source** | | | | | | | |
| 1 | **Construction investment - Civil works** | | | | | | | |
| | Civil works | 35 | 1,169,375 | 30,880 | | 30,880 | 30,880 | 30,880 |
| | Sewerage system | 35 | 2,271,097 | 59,973 | | 59,973 | 59,973 | 59,973 |
| | **Sub-Total** | | 3,440,472 | 90,853 | | 90,853 | 90,853 | 90,853 |
| 2 | **Electrical and mechanical equipments** | | | | | | | |
| | Electrical and mechanical equipments | 12.5 | 982,323 | 25,940 | | 25,940 | 25,940 | 25,940 |
| | Electrical and mechanical equipments | 10 | 743,898 | 19,644 | | 19,644 | 19,644 | 19,644 |
| | **Sub-total (II)** | | 1,726,221 | 45,584 | | 45,584 | 45,584 | 45,584 |
| | **Total (I+II)** | | **5,166,693** | **136,437** | | **136,437** | **136,437** | **136,437** |
| | | | | | | | | |
| **B** | **From the company and PPC Sources** | | | | | | | |
| 1 | **Electrical and mechanical equipments** | | | | | | | |
| | Sludge carrying lorry with loading capacity of 3 tons | 10 | | 748 | | 748 | 748 | 748 |
| | Combined vehicles | 10 | | | 210,000 | 5,545 | 5,545 | 5545.47 |
| | Vacuum vehicles | 10 | | | 130,000 | 3,433 | 3,433 | 3432.91 |
| | Inspection Camera | 10 | | | 38,000 | 1,003 | 1003.466 | 1003.466 |
| | Binder distributor truck | 10 | | | 61,170 | 1,615 | 1,615 | 1615.31619 |
| | Self-propelled crane truck | 10 | | | 58,912 | 1,556 | 1,556 | 1555.68918 |
| | **Total fixed assets from the company and PPC source** | | | **748** | | **13901** | **13901** | **13901** |

**TABLE 7B: FIXED ASSET DEPRECIATION** *Unit:1,000,000 VND*

| No. | Fixed asset depreciation | Year 2010 | Year 2011 | Year 2012 | Year 2013 |
|---|---|---|---|---|---|
| **A** | **KWF source** | | | | |
| 1 | **Construction Capital – Civil works** | | | | |
| | Civil works | 882 | 882 | 882 | 882 |
| | Sewerage system | 1,714 | 1,714 | 1,714 | 1,714 |
| | **Sub-Total** | **2,596** | **2,596** | **2,596** | **2,596** |
| 2 | **Electrical and mechanical equipments** | | | | |
| | Electrical and mechanical equipments | 2,075 | 2,075 | 2,075 | 2,075 |
| | Electrical and mechanical equipments | 1,964 | 1,964 | 1,964 | 1,964 |
| | **Sub-total (II)** | **4,040** | 4,040 | **4,040** | 4,040 |
| | **Total depreciation expense of fixed asset from KFW source** | **6,635** | **6,635** | **6,635** | **6,635** |
| | | | | | |
| **B** | **From the company and PPC Sources** | | | | |
| | **Electrical and mechanical equipments** | | | | |
| | Sludge carrying lorry with loading capacity of 3 tons | 75 | 75 | 75 | 75 |
| | Combined vehicles | | 555 | 555 | 555 |
| | Vacuum vehicles | | 343 | 343 | 343 |
| | Inspection Camera | | 100 | 100 | 100 |
| | Binder distributor truck | | 162 | 162 | 162 |
| | Self-propelled crane truck | | 156 | 156 | 156 |
| | **Total depreciation expenses of fixed assets from the company and PPC source** | **75** | **1,390** | **1,390** | **1,390** |
| **C** | **KFW's, PPC's and Company's sources** | | | | |
| | **Total depreciation expenses of civil works and sewerage system** | 2,596 | 2,596 | 2,596 | 2,596 |
| | **Total depreciation expenses of electrical and mechanical equipment** | 4,114 | 5,430 | 5,430 | 5,430 |
| | **Total depreciation expenses of fixed assets** | **6,710** | **8,025** | **8,025** | **8,025** |

## TABLE 8: INPUT DATA SHEET

**For 5 year period**

| No. | Content | | Plan | | | |
|---|---|---|---|---|---|---|
| | | Year 2009 | Year 2010 | Year 2011 | Year 2012 | Year 2013 |
| 1 | **A. WATER SOLD AND COLLECTED AND TREATED WASTEWATER AS A BASIS FOR WW.TARIFF CALCULATION** | | | | | |
| 2 | **Water sold by WS in ST city as a basis for ww.tariff calculation (Area Option1) - 1000 m3** | | | | | |
| 3 | Household | **5545** | **5941** | **6338** | **6734** | **7130** |
| 4 | Administrative offices, government offices | **1205** | **1291** | **1377** | **1463** | **1549** |
| 5 | Service and trading units | **25.6** | **27.2** | **28.8** | **30.4** | **32** |
| 6 | Production units | **174.4** | **187.2** | **199.2** | **212** | **224.8** |
| 7 | **Total water sold in water supply service areas** | **6,950.0** | **7,446.4** | **7,943.0** | **8,439.4** | **8,935.8** |
| 8 | **Water sold by WS in sewerage service areas (Project's areas) as a basis for ww.tariff calculation (Area Option2) - 1000 m3** | | | | | |
| 9 | Household | **2,069.8** | **2,235.4** | **2,414.2** | **2,607.3** | **2,815.9** |
| 10 | Administrative offices, government offices | **346.9** | **374.6** | **404.6** | **437.0** | **471.9** |
| 11 | Service and trading units | **13.3** | **14.4** | **15.6** | **16.8** | **18.1** |
| 12 | Production units | **44.0** | **47.5** | **51.3** | **55.4** | **59.9** |
| 13 | **Total water sold in the sewerage service areas** | **2,474** | **2,672** | **2,886** | **3,117** | **3,366** |
| 14 | **Total collected and treated wastewater (1000 m3)** | **3,700** | **4,811** | **5,013** | **5,221** | **5,433** |
| 15 | **B. EXPENSES** | | | | | |
| 16 | **Direct material** | | | | | |
| 17 | Quantity standard (gram/$m^3$) | | | | | |
| 18 | Standard unit cost (VND/gram) | | | NO INPUT | | |
| 19 | Escalation factor for direct material | NO INPUT | | | | |
| 20 | **Direct labor** | | | | | |
| 21 | Standard hours (hours/$m^3$) | 0.0257 | 0.0369 | 0.0354 | 0.0340 | 0.0327 |
| 22 | Standard rate (VND/hour) | 16173 | 19,497 | NO INPUT | | |
| 23 | Escalation factor for direct labor | NO INPUT | | 10% | 10% | 10% |
| 24 | **Production Overhead** | | | | | |
| 25 | *Indirect labor* | | | | | |
| 26 | Number of indirect labors | 4 | 12 | 12 | 12 | 12 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 27 | Average salary and benefit (VND/năm) | 42,822,998 | 50,209,500 | NO INPUT | | |
| 28 | Escalation factor for Indirect labor | NO INPUT | | 10% | 10% | 10% |
| 29 | *Fuel* | | | | | |
| 30 | Fuel cost standard | 170.20 | 149.10 | NO INPUT | | |
| 31 | Escalation factor for fuel costs | NO INPUT | | 10.0% | 10.0% | 10.0% |
| 32 | *Tools and labor safety* | | | | | |
| 33 | Standard cost for tool and labor safety | 117.50 | 166.30 | NO INPUT | | |
| 34 | Escalation factor for tools and labor safety | NO INPUT | | 10.0% | 10.0% | 10.0% |
| 35 | *Electricity (pumping stations and treatment plant)* | | | | | |
| 36 | Standard consumption (Kwh/m3) | | 0.253 | 0.253 | 0.253 | 0.253 |
| 37 | Standard unit cost (VND/KWh) | | 1200.00 | NO INPUT | | |
| 38 | Escalation factor for electricity | NO INPUT | | 10.0% | 10.0% | 10.0% |
| 39 | *Repair and maintenance cost* | | | | | |
| 40 | Standard cost (VND/m3) | 186.10 | 209.20 | NO INPUT | | |
| 41 | Escalation factor for repair and maintenance cost | NO INPUT | | 10.0% | 10.0% | 10.0% |
| 42 | *Other cash expenses (clean water, lighting electricity and telephone..)* | | | | | |
| 43 | Standard cost (VND/m3) | 62.40 | 57.60 | NO INPUT | | |
| 44 | Escalation factor for other cash expenses | NO INPUT | | 10.0% | 10.0% | 10.0% |
| 45 | Allocated administrative expense (VND mill) | 984 | 2,214 | 2,214 | 2,214 | 2,214 |
| 46 | **Depreciation expenses** | | | | | |
| 47 | Civil works (VND Million) | | 2,596 | 2,596 | 2,596 | 2,596 |
| 48 | Electrical and mechanical equipment (VND Million) | | 4,114 | 5,430 | 5,430 | 5,430 |
| 49 | Corporate income tax | 28% | 28% | 28% | 28% | 28% |

## TABLE 9: REVENUE AND AVERAGE WASTEWATER TARIFF

**FOR 5 YEAR PERIOD**

| No. | Content | Source/ formula | Year 2008 | Estimated Year 2009 | Plan Year 2010 | Year 2011 | Year 2012 | Year 2013 |
|---|---|---|---|---|---|---|---|---|
| 1 | **A. WATER SOLD AND COLLECTED AND TREATED WASTEWATER (1000 $m^3$)** | | | | | | | |
| 2 | **Water sold by WS in ST city as a basis for ww.tariff calculation (Area Option1)** | **Input Sheet** | **6454** | **6950** | **7446** | **7943** | **8439** | **8936** |
| 3 | **Water sold by WS in sewerage service areas (Project's areas) as a basis for ww.tariff calculation (Area Option2)** | **Input Sheet** | **2,351** | **2,474** | **2,672** | **2,886** | **3,117** | **3,366** |
| 4 | **Total collected and treated wastewater (1000 m3)** | **Input Sheet** | **3,254** | **3,700** | **4,811** | **5,013** | **5,221** | **5,433** |
| 5 | **B. OPERATION AND MAINTENANCE COST (Excl. depreciation) (VND mil.)** | | | | | | | |
| 6 | **i. Direct material** | | | | | | | |
| 7 | Quantity standard (gram/$m^3$) | **Input Sheet** | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | Standard unit cost (VND/gram) | **Input Sheet** | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | *Total direct material* | [ 4* 7*8/ 1,000 ] | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | **ii. Direct labor** | | | | | | | |
| 11 | Standard hours (hours/$m^3$) | **Input Sheet** | 0.027 | 0.026 | 0.037 | 0.035 | 0.034 | 0.033 |
| 12 | Standard rate (VND/giờ) | **Input Sheet** | 13,691 | 16,173 | 19,497 | 21,447 | 23,592 | 25,951 |
| 13 | *Total direct labor expenses (mill. VND)* | [ 4*11*12/1,000 ] | 1,186 | 1,537 | 3,459 | 3,805 | 4,185 | 4,604 |
| 14 | ***iii. Production Overhead (excl. depreciation)*** | | | | | | | |
| 15 | *a. Indirect labor* | | | | | | | |
| 16 | Number of indirect labors | **Input Sheet** | 4 | 4 | 12 | 12 | 12 | 12 |
| 17 | Average salary and benefit (VND/năm) | **Input Sheet** | 36,187,358 | 42,822,998 | 50,209,500 | 55,230,450 | 60,753,495 | 66,828,845 |
| 18 | Total indirect expenses (VND mill) | [16*17]/1000 | 145 | 171 | 603 | 663 | 729 | 802 |
| 19 | *b. Fuel* | | | | | | | |
| 20 | Fuel cost standard | **Input Sheet** | 176 | 170 | 149 | 164 | 180 | 198 |
| 21 | *Total fuel expense (VND mil.)* | [ 4* 20/1,000 ] | 573 | 630 | 717 | 822 | 942 | 1,078 |
| 22 | *c. Tools and labor safety* | | | | | | | |
| 23 | Standard cost for tool and labor safety | **Input Sheet** | 116 | 118 | 166 | 183 | 201 | 221 |
| 24 | *Total tool and labor safety expense (VND mil.)* | [ 4* 23/ 1,000 ] | 378 | 435 | 800 | 917 | 1,051 | 1,203 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 25 | *d. Electricity (pumping stations and treatment plant)* | | | | | | | |
| 26 | Standard consumption (Kwh/m3) | **Input Sheet** | 0.000 | 0.000 | 0.253 | 0.253 | 0.253 | 0.253 |
| 27 | Standard unit cost (VND/KWh) | **Input Sheet** | 0 | 0 | 1,200 | 1,320 | 1,452 | 1,597 |
| 28 | Total electricity (VND mil.) | [ 4*26*27/1,000 ] | 0 | 0 | 1,461 | 1,674 | 1,918 | 2,196 |
| 29 | *e. Repair and maintenance cost* | | | | | | | |
| 30 | Standard cost (VND/m3) | **Input Sheet** | 184 | 186 | 209 | 230 | 253 | 278 |
| 31 | *Total repair and maintenance cost (VND mil.)* | [ 4*30/1,000 ] | 599 | 689 | 1,006 | 1,154 | 1,322 | 1,513 |
| 32 | *f. Other cash expenses (clean water, lighting electricity and telephone..)* | | | | | | | |
| 33 | Standard cost (VND/m3) | **Input Sheet** | 62 | 62 | 58 | 63 | 70 | 77 |
| 34 | *Total other cash expense (VND Mil.)* | [ 4*33/1,000 ] | 201 | 231 | 277 | 318 | 364 | 417 |
| 35 | *Total of Production Overhead (excl. depreciation) - VND Mill.* | [ 18+21+24+28+31+34 ] | 1,895 | 2,155 | 4,864 | 5,548 | 6,325 | 7,207 |
| 36 | ***v. ALLOCATED ADMINISTRATIVE EXPENSE (VND mil.)*** | **Input Sheet** | 759 | 984 | 2,214 | 2,214 | 2,214 | 2,214 |
| 37 | **TOTAL OPERATION AND MAINTENANCE COSTS (EXCL. DEPRECIATION EXPENSE)** | [ 9+13+35+36] | 3,839 | 4,676 | 10,537 | 11,566 | 12,724 | 14,025 |
| 38 | **C. DEPRECIATION EXPENSE** | | | | | | | |
| 39 | *a. Civil works (VND mil,)* | **Input Sheet** | 0 | 0 | 2,596 | 2,596 | 2,596 | 2,596 |
| 40 | *b. Electrical and mechanical Equipment* | **Input Sheet** | 0 | 0 | 4,114 | 5,430 | 5,430 | 5,430 |
| 41 | *Total depreciation expense* | [ 39 + 40 ] | 0 | 0 | 6,710 | 8,025 | 8,025 | 8,025 |
| 42 | **D. Required minimum revenue (including 4.5% of standard profit)** | | | | | | | |
| 43 | *a. Cover O&M costs only (exl. Depreciation) - VND mil.* | [ 37]*(1+SD. profit) | 4,012 | 4,886 | 11,011 | 12,087 | 13,297 | 14,656 |
| 44 | *b. Cover O&M costs and equipment depreciation (VND mil.))* | [ 37+ 40]*(1+SD. profit) | 4,012 | 4,886 | 15,310 | 17,761 | 18,971 | 19,455 |
| 45 | *c. Cover O&M costs and full equipment depreciation (VND mil.)* | [ 37+ 41]*(1+Sd. profit) | 4,012 | 4,886 | 18,023 | 20,474 | 21,683 | 22,051 |
| 46 | **E. Average wastewater tariff (VND/m3)** | | | | | | | |
| 47 | ***i. All customers in water supply service areas have to pay:*** | | | | | | | |
| 48 | *a. Cover O&M costs only (exl. Depreciation)* | [ 43 / 2 ] | 622 | 703 | 1,479 | 1,522 | 1,576 | 1,640 |
| 49 | *b. Cover O&M costs and equipment depreciation* | [ 44 / 2 ] | 622 | 703 | 2,056 | 2,236 | 2,248 | 2,177 |
| 50 | *c. Cover O&M costs and full equipment depreciation* | [ 45 / 2 ] | 622 | 703 | 2,420 | 2,578 | 2,569 | 2,468 |
| 51 | ***ii. Only customers in sewerage service areas have to pay*** | | | | | | | |
| 52 | *a. Cover O&M costs only (exl. Depreciation)* | [ 43 / 3 ] | 1,706 | 1,975 | 4,121 | 4,189 | 4,266 | 4,354 |
| 53 | *b. Cover O&M costs and equipment depreciation* | [ 44 / 3 ] | 1,706 | 1,975 | 5,730 | 6,155 | 6,087 | 5,780 |
| 54 | *c. Cover O&M costs and full equipment depreciation* | [ 45 / 3 ] | 1,706 | 1,975 | 6,745 | 7,095 | 6,958 | 6,551 |

## TABLE 10: RECOMEMDED WW. TARIFF IN ST CITY

| No. | Content | Source/formula | Year 2009 | Pan | | | |
|---|---|---|---|---|---|---|---|
| | | | | Year 2010 | Year 2011 | Year 2012 | Year 2013 |
| 1 | **Water sold by WS in ST city as a basis for ww.tariff calculation (Area Option1) - 1000 m3** | | | | | | |
| 2 | Household | Input sheet | 5545 | 5941 | 6338 | 6734 | 7130 |
| 3 | Administrative offices, government offices | Input sheet | 1205 | 1291 | 1377 | 1463 | 1549 |
| 4 | Service and trading units | Input sheet | 25.6 | 27.2 | 28.8 | 30.4 | 32 |
| 5 | Production units | Input sheet | 174.4 | 187.2 | 199.2 | 212 | 224.8 |
| 6 | ***Total*** | Input sheet | 6950 | 7446.4 | 7943 | 8439.4 | 8935.8 |
| 7 | **Required minimum ww.revenue (VND mi.)** | | | | | | |
| 8 | *Cover O&M costs and equipment depreciation (VND mil.))* | Average tariff sheet | 4,886 | 15,310 | 17,761 | 18,971 | 22,051* |
| 9 | **Required Average wastewater tariff (VND/m3)** | | | | | | |
| 10 | Cover O&M costs and equipment depreciation | Average tariff sheet | | 2,000 | 2,000 | 2,000 | 2,468 |
| 11 | **Tariff adjustment factor** | | | | | | |
| 12 | Household | Adjusts required average WW.tariff. Below 1 means subsidy. Above 1 will cross-subsidize those below 1 | | 1 | 1 | 1 | 1 |
| 13 | Administrative offices, government offices | | | 1 | 1 | 1 | 1 |
| 14 | Service and trading units | | | 1.5 | 1.5 | 1.5 | 1.5 |
| 15 | Production units | | | 2 | 2 | 2 | 2 |
| 16 | **Recommended ww.tariff (VND/$m^3$)** | | | | | | |
| 17 | Household | [ 10 * 12 ] | | 2,000 | 2,000 | 2,000 | 2,468 |
| 18 | Administrative offices, government offices | [ 10 * 13 ] | | 2,000 | 2,000 | 2,000 | 2,468 |
| 19 | Service and trading units | [ 10 * 14 ] | | 3,000 | 3,000 | 3,000 | 3,702 |
| 20 | Production units | [ 10 * 15 ] | | 4,000 | 4,000 | 4,000 | 4,936 |
| 21 | **Actual revenue (VND mil.)** | | | | | | |
| 22 | Household | [ 2 * 17 ] | | 11,882 | 12,676 | 13,468 | 17,597 |
| 23 | Administrative offices, government offices | [ 3 * 18 ] | | 2,582 | 2,754 | 2,926 | 3,823 |
| 24 | Service and trading units | [ 4 * 19 ] | | 82 | 86 | 91 | 118 |
| 25 | Production units | [ 5 * 20 ] | | 749 | 797 | 848 | 1,110 |
| 26 | **Total wastewater revenue (VND mil.)** | [ 22+23 + 24 + 25 ] | | 15,294 | 16,313 | 17,333 | 22,648 |
| 27 | **Required subsidy from CPC (VND mil.)** | [ 8 - 26 ] ideally,, this must be zero or negative which means no subsidy | | 16 | 1,448 | 1,637 | -597 |

Note: Year 2013 : all operation and maintenance costs + full depreciation

## TABLE 11: RECOMMENDED WW.TARIFF IN SEWERAGE SERVICE AREAS (PROJECT'S AREAS)

| No. | Content | Source/formula | Year 2009 | Plan | | | |
|---|---|---|---|---|---|---|---|
| | | | | Year 2010 | Year 2011 | Year 2012 | Year 2013 |
| 1 | **Water sold by WS in wastewater service areas as a basis for ww.tariff calculation (Area Option2 - 1000 m3** | | | | | | |
| 2 | Household | Input sheet | 2,070 | 2,235 | 2,414 | 2,607 | 2,816 |
| 3 | Administrative offices, government offices | Input sheet | 347 | 375 | 405 | 437 | 472 |
| 4 | Service and trading units | Input sheet | 13 | 14 | 16 | 17 | 18 |
| 5 | Production units | Input sheet | 44 | 48 | 51 | 55 | 60 |
| 6 | ***Total*** | Input sheet | 2,474 | 2,672 | 2,886 | 3,117 | 3,366 |
| 7 | **Required minimum ww.revenue (VND mi.)** | | | | | | |
| 8 | *Cover O&M costs and equipment depreciation (VND mil.))* | Average tariff sheet | 4,486 | 15,310 | 17,761 | 18,971 | 22,051* |
| 9 | **Required Average wastewater tariff (VND/m3)** | | | | | | |
| 10 | Cover O&M costs and equipment depreciation | Average tariff sheet | | 5,730 | 5,730 | 5,730 | 6,551 |
| 11 | **Tariff adjustment factor** | | | | | | |
| 12 | Household | Adjusts required average WW.tariff. Below 1 means subsidy. Above 1 will cross-subsidize those below 1 | | 1 | 1 | 1 | 1 |
| 13 | Administrative offices, government offices | | | 1 | 1 | 1 | 1 |
| 14 | Service and trading units | | | 1.5 | 1.5 | 1.5 | 1.5 |
| 15 | Production units | | | 2 | 2 | 2 | 2 |
| 16 | **Recommended ww.tariff (VND/$m^3$)** | | | | | | |
| 17 | Household | [ 10 * 12 ] | | 5,730 | 5,730 | 5,730 | 6,551 |
| 18 | Administrative offices, government offices | [ 10 * 13 ] | | 5,730 | 5,730 | 5,730 | 6,551 |
| 19 | Service and trading units | [ 10 * 14 ] | | 8,595 | 8,595 | 8,595 | 9,827 |
| 20 | Production units | [ 10 * 15 ] | | 11,460 | 11,460 | 11,460 | 13,102 |
| 21 | **Actual revenue (VND mil.)** | | | | | | |
| 22 | Household | [ 2 * 17 ] | | 12,809 | 13,833 | 14,940 | 18,447 |
| 23 | Administrative offices, government offices | [ 3 * 18 ] | | 2,147 | 2,318 | 2,504 | 3,092 |
| 24 | Service and trading units | [ 4 * 19 ] | | 124 | 134 | 144 | 178 |
| 25 | Production units | [ 5 * 20 ] | | 544 | 588 | 635 | 784 |
| 26 | **Total wastewater revenue (VND mil.)** | [ 22+23 + 24 + 25 ] | | 15,624 | 16,873 | 18,223 | 22,501 |
| 27 | **Required subsity from CPC (VND mil.)** | [ 8 - 26 ] ideally,, this must be zero or negative which means no subsidy | | -313 | 888 | 747 | -450 |

Note: * Year 2013: all operation and maintenance cost + full depreciation expense