



OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

## Towards to Financial Sustainability of Water Utilities. Key Concepts

(Block 1)

Workshop for water companies and municipalities  
26.III to 28.III 2008  
Tbilisi, Georgia



Carried out by Kommunalkredit Public Consulting GmbH in association with SST-Consult

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

Carried out by Kommunalkredit Public Consulting GmbH in association with SST-Consult



## OVERVIEW

- What does the financial sustainability mean and why it is so important?
- Full cost recovery tariffs and tariffs structure;
- Affordability of tariffs and price elasticity of water demand;
- Role of long and medium term financial planning in achieving the financial sustainability;

OECD OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

Carried out by Kommunalkredit Public Consulting GmbH in association with SST-Consult



*"Today, one person in six will drink unclear water. One person in three will not have access to proper sanitation. ... That is unacceptable... That is why commitments were made in the Millennium Declaration in 2000 and at Johannesburg in 2002. The commitments were to halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation..."*

Statement of the United Nations Secretary General Kofi Annan to the United Nations Advisory Board on Water and Sanitation in July 2004.

Note: The Millennium Development Goal's target for water and sanitation (MDG Target 10) aims to reduce by half the number of people without sustainable access to safe drinking water and basic sanitation by 2015, using 1990 as the baseline year.

OECD OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

Carried out by Kommunalkredit Public Consulting GmbH in association with SST-Consult



## SUSTAINABILITY

*Meeting the current needs without compromising the opportunities of future generations to meet their needs*

Definition of sustainability by the Brundland Commission formally the UN World Commission on Environment and Development, 1987

OECD OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

Carried out by Kommunalkredit Public Consulting GmbH in association with SST-Consult



## FINANCIAL SUSTAINABILITY OF WATER UTILITY

**Long term guaranty of revenues covering full costs of delivered water and sanitation services** including the costs of operation & maintenance, renewal & rehabilitation, and extension & expansion.

OECD OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

Carried out by Kommunalkredit Public Consulting GmbH in association with SST-Consult

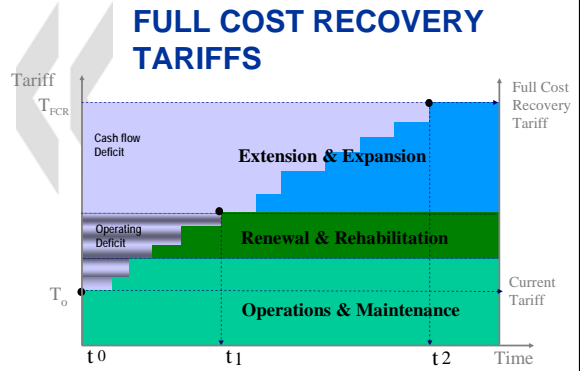


## WHY FINANCIAL SUSTAINABILITY IS SO IMPORTANT

- Only financially sustainable water utilities can **guarantee provision of services** that will meet the current and future needs;
- Lack of financial sustainability of water utilities means operating with **looses and permanent cash flow deficit** leading to degradation of infrastructure and resulting in worst quality services;
- Water utilities that are financially sustainable have **wider access to external funds** including grants and loans from international finance institutions;
- Financially sustainable water utilities are the most effective and efficient utilities **providing their clients with services that meet their needs for the lowest possible cost.**

OECD OCDE

## KEY CONCEPT: FULL COST RECOVERY TARIFFS AND TARIFFS STRUCTURES



## TARIFFS FUNCTIONS

- Efficiency function
- Revenue function
- Affordability function
- Administrative function

## EFFICIENCY FUNCTION

- Setting tariff at level of full cost recovery effect the rational behavior of customers
- Ensuring that customers will pay exactly the amount as the cost of providing the service

## REVENUE FUNCTION

- Effect of tariff on revenues of water utility
- Effect of tariff on the degree of financial autonomy of water utility
- Effect of financial autonomy of water utility on accountability for achieving results

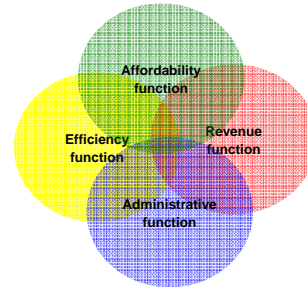
## AFFORDABILITY FUNCTION

- Effect of tariff on economic affordability of services
- Effect of tariff on discipline of payments and outstanding payments

## ADMINISTRATIVE FUNCTION

- Effect of tariff on administrative activities associated with settlements with customers
- Effect of tariff on administrative costs
- Effect of tariff on the understandability of billing of customers for services

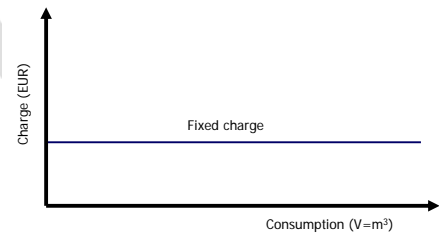
## WHAT IS GOOD TARIFF?



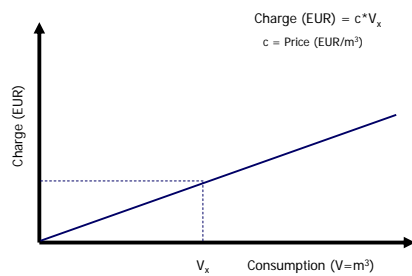
## TARIFF STRUCTURE DESIGN OVERVIEW

- **Non Metered System:**
  - Uniform Flat Rate
- **Metered System:**
  - Uniform Rate
  - Two-part Rate
  - Descending Block Rates
  - Ascending Block Rates
  - Seasonal /Peak Use Rates

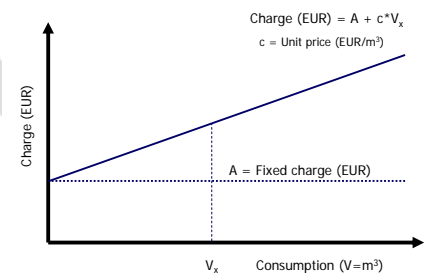
## UNIFORM FLATE RATE



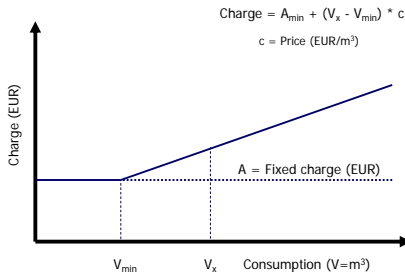
## UNIFORM RATE



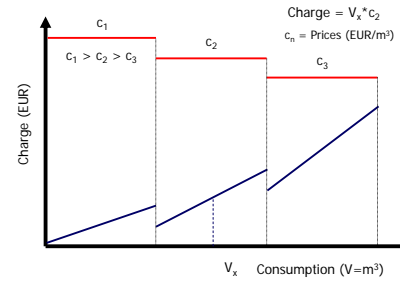
## TWO PART RATE (1)



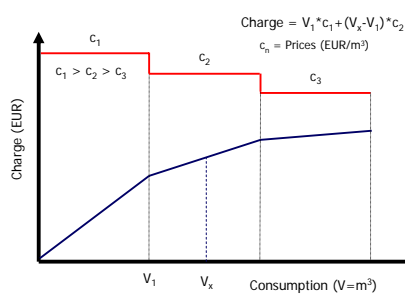
## TWO PART RATE (2)



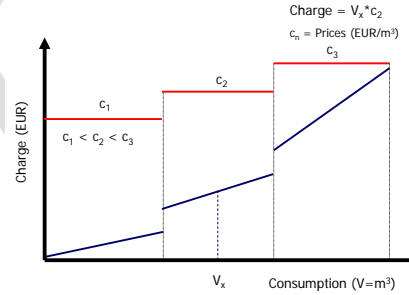
## DESCENDING BLOCK RATE STRUCTURE (1)



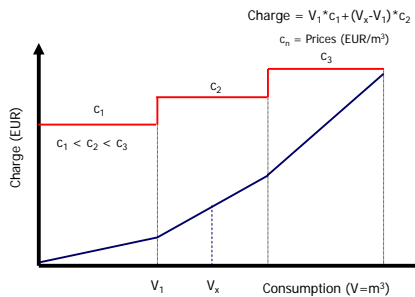
## DESCENDING BLOCK RATE STRUCTURE (2)



## ASCENDING BLOCK RATE STRUCTURE (1)

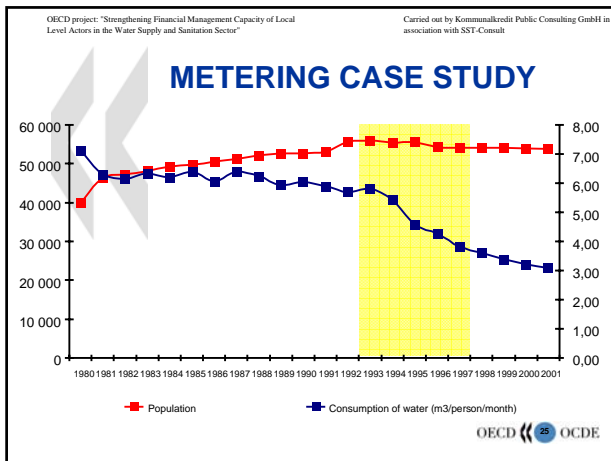


## ASCENDING BLOCK RATE STRUCTURE (2)



## SEASONAL RATE

- Winter/Summer Tariffs



- OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by Kommunalcredit Public Consulting GmbH in association with SST-Consult
- ## BENEFITS OF METERING
- Enabling customers to evaluate their own marginal benefits and costs, metering leads to more efficient consumption
  - Metering generates a wealth of statistical data on consumption leading to more realistic projections and correct decisions
  - Metering eventually places pressure on water and wastewater service delivery to become more efficient - due to drop in revenues (decreased consumption in stagnant or declining demographic situation)
- OECD OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by Kommunalcredit Public Consulting GmbH in association with SST-Consult

## EXERCISE

### WATER TARIFFS STRUCTURE AND FORMULAS

### TWO PARTS TARIFF

OECD OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by Kommunalcredit Public Consulting GmbH in association with SST-Consult

## EXERCISE

Uniform Rate with Fixed Charge	Total	Residential	Budgetary	Other
Number of Customers	89 000	88 000	150	850
Billed consumption (000s of m3)	37 300	28 000	2 800	6 500
Revenue requirement total (000s)	18 650	14 000	1 350	3 300
Revenue requirement B&C (000s)	800			
Fixed charge per month				
Unit rate per m3				

OECD OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by Kommunalcredit Public Consulting GmbH in association with SST-Consult

## EXERCISE - RESULTS

Uniform Rate with Fixed Charge	Total	Residential	Budgetary	Other
Number of Customers	89 000	88 000	150	850
Billed consumption (000s of m3)	37 300	28 000	2 800	6 500
Revenue requirement total (000s)	18 650	14 000	1 350	3 300
Revenue requirement B&C (000s)	800			
Fixed charge per month	0,75	0,75	0,75	0,75
Unit rate per m3	0,479	0,472	0,482	0,507

OECD OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by Kommunalcredit Public Consulting GmbH in association with SST-Consult

## KEY CONCEPT:

## AFFORDABILITY OF WATER SUPPLY AND SANITATION SERVICES

OECD OCDE



## AFFORDABILITY

- The price of water should be set so that price does not prevent consumers from obtaining water of sufficient quantity and quality to meet fundamental domestic needs.
- Water supply and sanitation services are considered economically affordable if households can pay the water bill without a significant reduction of expenditures on other essential goods and services.



## WILLINGNESS TO PAY

- **Key question:** *Will a customer pay?*
- A willingness-to-pay indicator aims to identify the maximum amount a customer would be willing-to-pay for a given number of units of a service of given quality. In addition, willingness-to-pay for improvement in quality can indicate the maximum amount a household would be prepared to pay for better quality.
- Willingness-to-pay analysis is based on subjective statements of households and their judgment about their income, the quality and the price of the service.



## ABILITY TO PAY

- **Key question:** *Is a customer able to pay?*
- Ability-to-pay indicator aims to answer the question of whether household income is sufficient to pay the increased price of services without seriously affecting its ability to pay for other essential goods and services. This is the concept of affordability.
- A household is considered unable to pay the service price when this would require a substantial reduction of other essential expenditures.
- Ability-to-pay analysis is based on statistical data and is objective.



## MEASURING ABILITY OF CUSTOMERS TO PAY

- Assessment of the current burden of payment based on macroeconomic data, by calculating the share of average water charges in average household income, i.e. at the level of society as a whole.
- Assessment of the current burden of payment based on microeconomic data, by calculating the share of water charges in the income of individual households or groups of households, i.e. at the household level.



## ABILITY TO PAY AT THE COUNTRY LEVEL

- Share of the water and wastewater service bill in average household income (disposable or gross income); or, in the case when household income data are inaccessible or unreliable, in average household expenditures.
- Analysis of household expenditure structure as an indicator of household well-being.
- Household payment discipline as a response to tariff rise (the level of non-payment).



## ABILITY TO PAY AT THE LOCAL LEVEL

- Share of the water and wastewater service bill in average household income (disposable or gross income); or, in the case when household income data are inaccessible or unreliable, average household expenditures.
- Access to data needed to calculate - sometimes statistical information is not available at local level and this must be estimated (e.g., using tax return information)

## AFFORDABILITY CRITERION

- OECD 3-5%
- EU 3%
- USEPA 2,5%
- IFIs 4%

## WAYS TO INCREASE AFFORDABILITY

- Measures aimed at lowering tariffs:
  - public budget subsidies,
  - cross-subsidies,
  - privileges.
- Measures to increase income of low-income households:
  - housing subsidies,
  - social assistance.

## CONCLUSIONS

- Affordability analyses for water and wastewater services should become an integral and indispensable element of tariff revision procedure. Such analyses should be introduced into regular practice of local governments in the process of approving tariffs and strategic development plans of water utilities.
- Affordability assessments should be required by feasibility studies for large investment projects to ensure that consumers are able to pay for the investments (through tariffs).

## EXERCISE AFFORDABILITY OF WATER SUPPLY AND SANITATION SERVICES

## EXERCISE

Average Monthly Income (EUR)	No of Households	% of Population	Consumption m3/month/ household	Monthly Charge (EUR)	Monthly Charge as % of Monthly Income
(1)	(2)	(3)	(4)	(5)	(5/1)
Less than 10	3000	2%	12	3,6	
11 - 50	6000	4%	13	3,9	
51 - 100	45000	30%	16	4,8	
101 - 200	52500	35%	16	4,8	
200 - 500	30000	20%	15	4,5	
500 - 1000	7500	5%	17	5,1	
More than 1000	6000	4%	18	5,4	

## EXERCISE - RESULTS

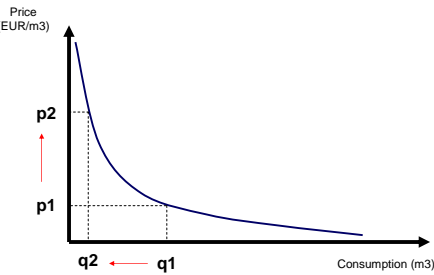
Average Monthly Income (EUR)	No of Households	% of Population	Consumption m3/month/ household	Monthly Charge (EUR)	Monthly Charge as % of Monthly Income
(1)	(2)	(3)	(4)	(5)	(5/1)
Less than 10	3000	2%	12	3,6	Up to 36%
11 - 50	6000	4%	13	3,9	36 – 8%
51 - 100	45000	30%	16	4,8	8 – 5%
101 - 200	52500	35%	16	4,8	5 – 2%
200 - 500	30000	20%	15	4,5	2 – 1%
500 - 1000	7500	5%	17	5,1	1 -0,5%
More than 1000	6000	4%	18	5,4	Below 0,5%

## KEY CONCEPT: PRICE ELASTICITY OF WATER DEMAND

## PRICE ELASTICITY OF DEMAND

The price elasticity of demand is defined as the percentage change in the consumption which follows from a percentage change in price.

## PRICE ELASTICITY OF DEMAND CURVE



## EXERCISE PRICE ELASTICITY

## EXERCISE

q (m <sup>3</sup> )	Δq	(q1+q2)/2	Δq/(q1+q2)/2	p (EUR/m <sup>3</sup> )	Δp	(p1+p2)/2	Δp/(p1+p2)/2	PED
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[4/8]
6,30				0,15				
5,70				0,20				
5,30				0,25				
4,00				0,50				
3,40				1,00				

## EXERCISE - RESULTS

q (m <sup>3</sup> )	Δq	(q1+q2)/2	Δq/(q1+q2)/2	p (EUR/m <sup>3</sup> )	Δp	(p1+p2)/2	Δp/(p1+p2)/2	PED
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[4/8]
6,30				0,15				
5,70	-0,60	6,00	-0,10	0,20	0,05	0,18	0,29	-35%
5,30	-0,40	5,50	-0,07	0,25	0,05	0,23	0,22	-33%
4,00	-1,30	4,65	-0,28	0,50	0,25	0,38	0,67	-42%
3,40	-0,60	3,70	-0,16	1,00	0,50	0,75	0,67	-24%

## ROLE OF FINANCIAL PLANNING IN ACHIEVING FINANCIAL SUSTAINABILITY

## LONG-TERM PERSPECTIVE

- Financial sustainability of water utility is a strategic objective rather than a short-term task;
- It requires long and medium-term planning framework for considering different ways of achieving the goal;
- Typical planning framework consist of medium to long term financial plans including tariffs policies and capital improvement programs.

## WHY MEDIUM-TERM FINANCIAL PLANNING


- Long-term strategy of strengthening financial sustainability enables definition of medium-term financial planning
- At the same time, the evaluation of investment and capital financing options is conducted - this is compared to the financial plan

## BENEFITS OF FINANCIAL PLANNING

- Benefit to utility: financial sustainability
- Benefit to owner: possible decrease in subsidies
- Benefit to customers: greater chance of fair price for services
- Benefit to financing institutions: transparency; greater confidence in ability to repay loans

**THANK YOU FOR YOUR ATTENTION!**



OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"



## What is the Financial Planning Tool for Water Utilities: Its Structure and Functionalities

(Block 1)

Workshop for water companies and municipalities  
26.III to 28.III 2008  
Tbilisi, Georgia


Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

## WHY FPTWU TOOL?

Problem areas	Solution
<ul style="list-style-type: none"> <li>● Water utilities in the EECCA region generally remain financially weak, unstable and under-funded</li> <li>● While there are many reasons for such a situation, one of the most important ones is the <u>absence of proper financial planning and forecasting</u></li> </ul>	<ul style="list-style-type: none"> <li>● The implementation of financial planning represents a <u>systematised and integrated approach</u> to all financial issues</li> <li>● This approach is best achieved by using a <u>financial planning tool</u>, encompassing all financial, technical and economic aspects of the utility</li> </ul>
Tools for implementation	
<ul style="list-style-type: none"> <li>● The main rationale for this Project is to provide EECCA water utilities with such a <u>financial planning and modelling tool</u></li> </ul>	


OECD  OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

## PURPOSE OF FPTWU

Financial Planning Tool for Water Utilities is a **strategic planning tool** created to assist the water utilities in Eastern Europe, Caucasus and Central Asia in achieving their financial sustainability through **helping them in medium to long term financial planning and modeling.**


OECD  OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

## TARGET USERS OF FPTWU

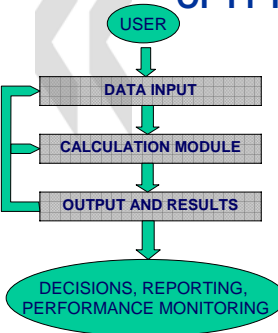
- The Financial Planning Tool for Water Utilities helping in elaboration of comprehensive strategic financial plans is designated for the financial and investment planning specialists of water utilities
- The tool is to be used also by the planning specialists of municipalities in a process of approving the final financial plan of water utility

OECD  OCDE


OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

## MAIN CHARACTERISTIC OF FPTWU TOOL



- Computerised tool for water utilities helping in medium to long term financial planning;
- User-friendly tool for modelling and integrating operation & maintenance, capital investments, and tariffs policies and programs;
- Graphical tool presenting financial ratios and performance indicators that guide water utilities in improving their efficiency and achieving financial sustainability
- Flexible tool adaptable to different legal and tax regimes


OECD  OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector"

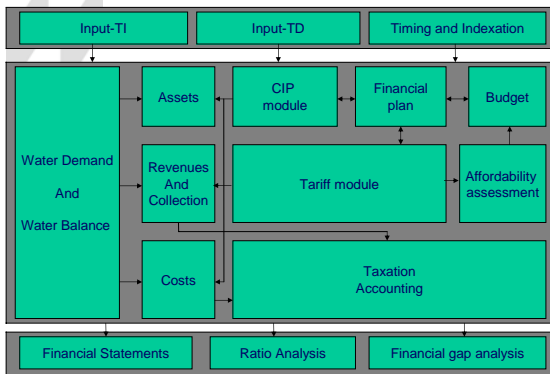
Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

## MAIN FEATURES OF FPTWU TOOL

- 34 interlinked tables in Excel
- Planning period – one year and planning up to 20 years
- Data input is allocated in two input tables
- Calculations in nominal and real terms
- Separation of water supply and sanitation data
- Period for historical data length can be modified

OECD  OCDE

## STRUCTURE OF THE FPTWU TOOL



## STRUCTURE AND WORKSHEETS (1/4)

- Input-TI: all time independent inputs; nominal or real variables
- Input-TD: time dependent inputs; refer to specific time period
- Timing Flags: specific timing flags (1 and 0) are set out for the period
- Indexation: calculate the indexation factor for a period
- Water Demand: main input to the Water Balance and for revenues in Water Utility; water consumption by customer category

## STRUCTURE AND WORKSHEETS (2/4)

- Water Balance: calculate annual water supply and demand
- Fixed Assets: calculation of Fixed Assets and Depreciation for the entire period
- Costs: operating costs (fixed & variable), maintenance costs, energy consumption costs
- Tariff calculation: calculate tariffs, influence the decision for inclusion of different cost components
- Revenues: from all customer groups on cash receipts and P&L basis

## STRUCTURE AND WORKSHEETS (3/4)

- Collection: analysis for the collection of water tariffs; debt from each customer group
- Taxation: fees and taxes payable on financial results
- Financing: calculates principal and interest repayments on borrowings
- Financial Statement: profit and loss statement, cash flow statement, balance sheet

## STRUCTURE AND WORKSHEETS (4/4)

- Affordability: calculates average household bill as percentage of average household income
- CIP: capital investment programme for decision-making; rate of return on project; basis for analysis
- Charts: graphical presentation of operational and financial indicators

## DATA INPUT MODULE

- Divided into Time Independent and Time Dependent Data spreadsheets
- Almost all data required has to be entered in this module
- Option for calculation in real and nominal terms
- Various input assumptions are to be made, which will influence subsequent calculations.

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult


## DATA INPUT MODULE

Input-TI data categories	Input-TD data categories
<ul style="list-style-type: none"> <li>Timing</li> <li>Taxation assumption</li> <li>Depreciation rates</li> <li>Financing assumption</li> <li>Other</li> <li>Unit costs</li> <li>Indexation assumption</li> <li>Staff cost data</li> <li>Staff numbers data</li> <li>Manual data input selector</li> </ul>	<ul style="list-style-type: none"> <li>Macroeconomic data</li> <li>Inflation</li> <li>Service level data</li> <li>Water consumption &amp; wastewater discharge assumption</li> <li>Technical assumption</li> <li>Fixed assets</li> <li>Human resource development</li> <li>Other</li> </ul>

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

## TARIFF CALCULATION MODULE

- Dynamic process (user-defined scenarios)
- Separation of water and wastewater tariffs
- Costs are divided into fixed and variable
- Implementation of different approaches for tariff calculation used in the EECCA countries


OECD  OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

## TARIFF CALCULATION MODULE

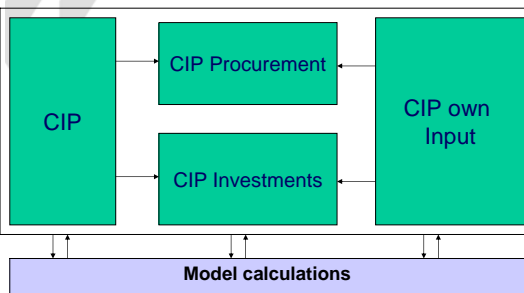
- The user is able to include various cost categories in the tariff calculation:
 


Operating expenses	Investment costs
Maintenance	Financial costs
Depreciation	Margin
- Two-tier tariff structure – per household and per non-household

OECD  OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

## CIP MODULE – LOGICAL STRUCTURE




OECD  OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

## FUNCTIONS OF CIP MODULE


- Selection and assessment of an investment project separately for water and wastewater related activities
- Inclusion of selected investment project costs
- Recalculation of the new fixed assets resulting from the investment
- Option for definition of new investment project, not included in pre-defined list
- Calculation of the effects of each investment project on the Water Utility's statement

OECD  OCDE

OECD project: "Strengthening Financial Management Capacity of Local Level Actors in the Water Supply and Sanitation Sector" Carried out by KommunalKredit Public Consulting GmbH in association with SST-Consult

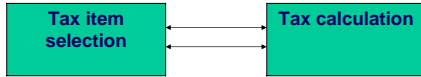
## TAXATION MODULE

- Objective: Calculation of taxes and the charges payable
- Consideration of country-specific taxation requirements
- Accounting forms and taxation requirements could be utilised in different countries
- Specifications are defined by end-user

OECD  OCDE



## TAXATION MODULE



- List of all taxes and charges to be paid
- Defining the tax basis for each item
- Defining the tax rate
- Automatic calculation of the taxes payable



## FINANCIAL STATEMENTS MODULE

- Contributes to an overview of the financial situation of the Water Utility
- Contents:
  - Profit and loss account
    - Historical and forecasted revenues
  - Balance spreadsheet
    - Overview of assets and liabilities
  - Cash flow statement
    - Overview of expenditures and revenues (in and outflows)



## CHART MODULE

- Visualisation of the most important financial and operational variables
  - Financial surplus or gap
  - Total sales
  - Total operating costs
  - Net cash inflow/outflow
  - Water and wastewater tariff development
  - Ratios



## BENEFITS OF FPTWU IMPLEMENTATION

- Implementation of FPTWU results in an integrated medium to long term financial plan covering all financial aspects of water utilities;
- The medium to long term financial plan including tariffs policy and capital improvement program guides in achieving the financial sustainability of water utility;
- Implementation of FPTWU leads to the enhancement of water utility's creditability in relations with the clients, owners and financial institutions.



**THANK YOU  
FOR YOUR ATTENTION!**