



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

Performance Benchmarking

(Block IV)

Training of Trainers

26.XI to 1.XII 2007

Kiev



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

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OVERVIEW

- Performance Indicators in the Context of Strategy
- Management Control Data and Performance Measures
- Summary of Performance Indicators
- Benchmarking – Definitions and Methods
- IBNET Toolkit
- Benchmarking – Examples

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Function of performance indicators

- Identify and track problems and trends
- Manage the company
- Measure improvements in the overall performance of the utility
- Demonstrate development of utility to customers, external regulators, funding agents, shareholders

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Performance indicator - principles

- Measure financial and non-financial information
- Two-way tool: 1) provides information to management about performance; 2) explains organisational objectives to employees
- Helps with strategy implementation
 - Selecting measures creates focus and helps implement strategy
 - Philosophy: "What you measure is what you get"

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Performance indicator - principles - 2

- Should be based on reliable, easy-to-collect data that are not susceptible to multiple interpretation
- Correct indicators - unambiguous, verifiable, and quantifiable
- Correct indicators - consistent with company objectives (STRATEGY).

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PIs and Company Strategy

- Cause and effect – company actions should be based on cause and effect hypotheses
- Hypothesis: if we perform action A, we expect result B, which in turn will contribute to achieving a higher level result C, which in turn will contribute to achieving company objectives (strategy)
- Thus, all performance indicators that are observed and tracked should be solidly based in the need to attain company objectives
- Prerequisite: well-defined strategy or business plan with well-defined objectives or mission statement

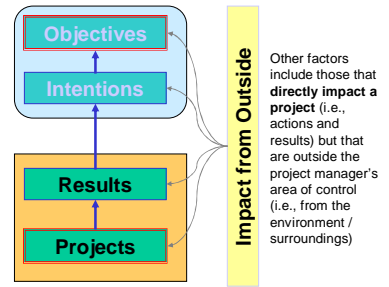
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PIs and Company Strategy

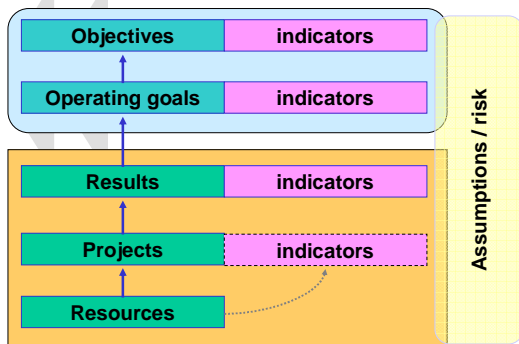
- To summarise: it is not proper to discuss and track performance indicators outside of the concrete context of the company
- Actions of all managers should be guided by implementation of the Strategy; this is measured using performance indicators

Managers: Projects and Context

- There should be a clear division between a **project (action)** and its **objectives**:
- Manager should be able to guarantee performance of a **project (action, initiative)** and its **results**
 - Objectives and intentions lie outside the manager's **direct** area of impact
 - It is assumed that a project will to a large degree contribute to achieving **intentions** and therefore to attaining all **objectives**



Indicators of Success

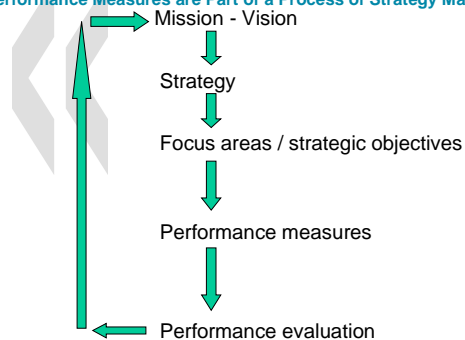


Thus, managers manage resources and projects (initiatives) in order to achieve results.

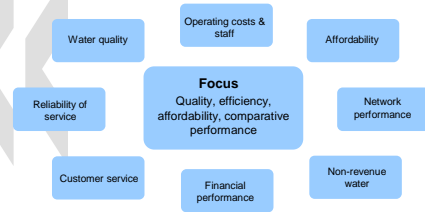
These results contribute to achievement of company objectives

To monitor achievement – performance data are required at each organisational level

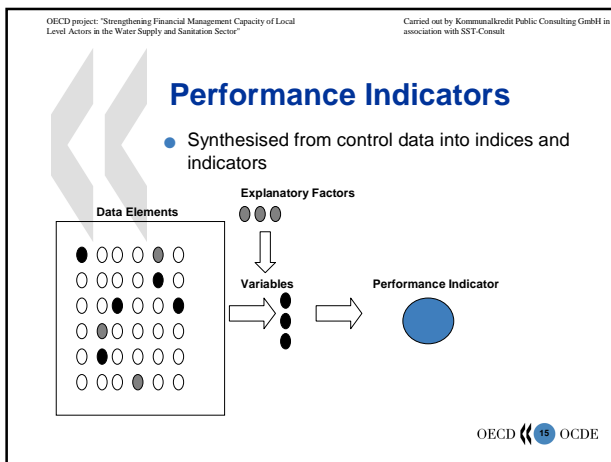
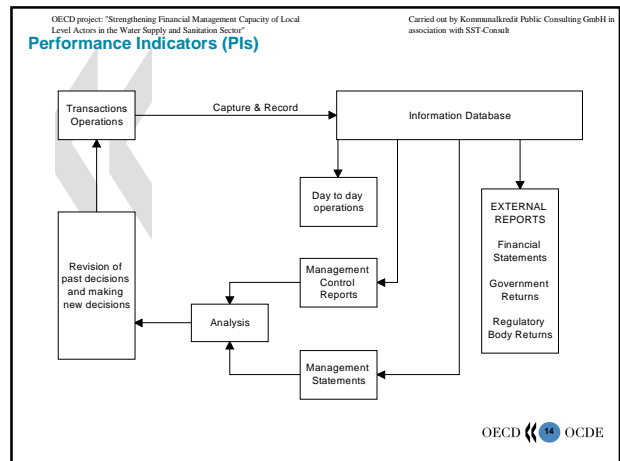
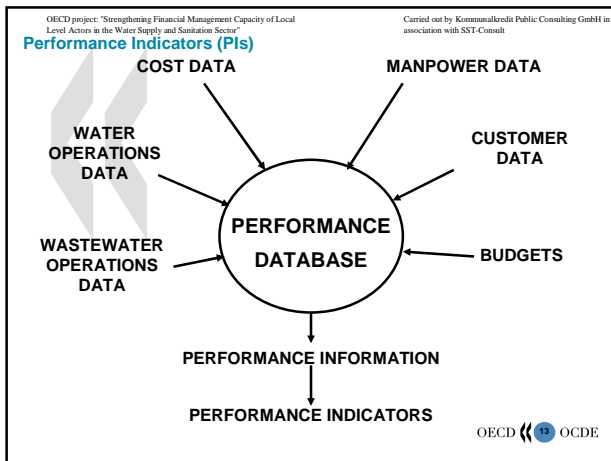
Performance Measures are Part of a Process of Strategy Management



Performance Indicators (PIs)



Requirements
Data: reliable, easy to collect, not susceptible to multiple interpretations, reflecting controllable conditions
PIs: unambiguous, verifiable, consistent, easy to understand



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	Full Control Data	Summary Control Data	Perform Data	Monitor Data
Low Level Supervision	Yes			
Middle Level Management	Yes	Yes		
Corporate Management		Yes	Yes	Yes
External Monitoring			Yes	Yes
Funding Agent Liaison			Yes	Yes

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- ### Performance Indicators
- Performance indicators must be measured against defined targets.
 - Targets should be short-term (monthly and quarterly), medium-term (quarterly or annually), and long-term (multi-year)
 - Must be grounded in the logic of company operations – used to measure outcomes that are the result of specific efforts to implement change through new projects (initiatives)
 - Used to measure cause-and-effect relationships between change initiatives and desired outcomes
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- ### Performance Indicators
- Each performance indicator should be defined in an „indicator passport“, containing:
 - indicator definition and purpose,
 - unit and frequency of measurement,
 - method of measurement,
 - Targets – short-term and „stretch“ (longer term and ambitious) targets
 - person responsible for monitoring of indicator,
 - list of initiatives designed to improve indicator including assigned resources and budget
 - Handout
- OECD 18 OCDE

PI Examples

Performance Targets Staffing Levels				
	2006 - Baseline	2007	2008	2009
Staff Employed	1400	1200	950	800
Staff Reductions	200	250	150	100
Staff per 1000 connections	28	24	18	15

PI Examples

Performance Targets - Customer Service				
	2006 - Baseline	2007	2008	2009
Duration of supply (average hours of service/day)	4	8	10	12
Customers receiving intermittent supply (%)	80	65	50	45
Number of complaints / year	575	reduction by 20%	reduction by 20%	reduction by 20%

PI Examples (service standards)

Indicator	Minimum Performance
Percentage of billing enquiries acknowledged within 7 working days	90%
Percentage of billing enquiries dealt with within 14 working days	90%
Percentage of complaints acknowledged within 7 working days	90%
Percentage of complaints dealt with within 14 working days	90%

PI Examples (corporate planning)

Qualitative indicators				
	Current - 2007	2008	2009	2010
Update Asset Register		June	June	June
Strategic (5-year) / Business Plan		November	update	update
Capital Expenditure and Rehabilitation Plan		August	update	update
Production Performance Improvement Action Plan		September	update	update

Benchmarking

Benchmarking

- Formal definition: "Continuous process of measuring products, services, and practices against the toughest competitors of those companies recognised as industry leaders" (former Chief Executive Officer of Xerox Corporation)
- "The purpose of benchmarking is to search for and identify best practice in whatever sector with the objective of implementing appropriate best practice and improving performance. Collection of data is not benchmarking, but is an integral step in the benchmarking path to improved performance." (IBNET)



Benchmarking

- American Waterworks Association
 - “a systematic process of searching for best practices, innovative ideas, and highly effective operating procedures that lead to superior performance and then adapting those practices, ideas, and procedures to improve the performance of one's own organisation.”



Benchmarking

- Metric Benchmarking
 - quantitative measurement of performance against other utilities over time, using Key Performance Indicators, e.g. those in IBNET Toolkit;
- Process Benchmarking
 - management analysis of a utility's own business processes and comparison with those of utilities with exemplary performance in those processes.



Common Concepts

- Baseline – organisation's actual or current level of results for a particular performance indicator
- Benchmark – organisation's desired level of results for a particular performance indicator
- Best practice – underlying innovation or lesson learned that enabled a high-performing organisation to meet or exceed a benchmark
- Business process – coordinated set of activities designed to produce certain outcomes
- Continuous improvement – constant, systematic cycle of identifying best practices and applying them within an organisation to promote better performance



Roles

- Benchmarking plays three main roles:
 - Helps understand the performance of the utility relative to others;
 - Facilitates the sharing of best practice information and supports decisions to improve performance in terms of productivity and efficiency; and
 - Helps control the efficiency (efficiency/quality) development in different sectors or between sectors (authorities viewpoint).



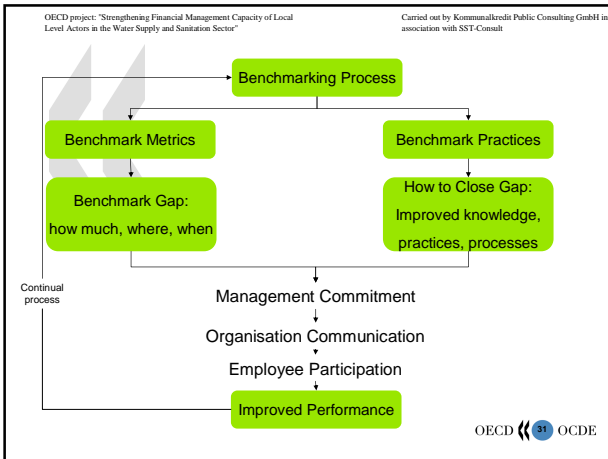
Benchmarking misconceptions

- | | |
|--|--|
| <ul style="list-style-type: none">● Misconceptions:<ul style="list-style-type: none">– Mechanism for determining resource reductions;– Panacea or programme with finite end– Cookbook process – look-up ingredients and use them for success– Passing fad or outdated concept– Passive, one-off activity | <ul style="list-style-type: none">● Actual:<ul style="list-style-type: none">– Increase or decrease could occur in attempt to emulate best industry practices;– Ongoing management process requiring constant updating– Learning experience requiring observation and projections– Winning business strategy – assist managers in identifying practices that can be adapted to achieve better performance– Constant testing of internal actions against external standards of industry practices |
|--|--|



Benefits

- Higher standards
 - Company strives to exceed expectations
 - Abandon reactive approach: act in relation to top performers rather than simply internal standards
 - Forward-thinking
- Focus on strategy and mission
 - To compare organisation to other organisations, must understand what organisation does (processes) and what it really wants to accomplish (outcomes)
 - Requires clearly defined strategy and mission
 - Focus on real problems rather than pursuit of pet projects
- Identify strengths and weaknesses
 - Self-assessment in the context of other companies
 - Focus on market reality and objective evaluation rather than history, intuition or perception
- Focus on innovation and creativity
 - Looking at best practices allows company to consider alternative ways of achieving company mission
- Stakeholders
 - Benchmarking viewed positively by donors and lenders



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General Steps (IBNET)

Broader study of industry

- Organise Team
- Identify Objective
- Select Methods
- Collect Data
- Verify Data
- Analyse Data
- Sensitivity Tests
- Develop Strategies

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Identify Objective

- Processes or performance
- Simple initial benchmarking - based on review of problems and opportunities within industry
- Focus on issues that need further analysis - e.g., productive inefficiency, poor service quality, high non-revenue water, financial difficulties
- Most important and urgent problems - is sufficient information available?

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Analyse Data

Performance Benchmarking

- Four analytical techniques
 - Partial Indicators - combinations of indicators of operating or financial performance
 - Total Factor Productivity (TFP) - index number approach that considers output per unit input
 - Data Envelopment Analysis - non-parametric technique that makes no assumptions about the functional form of production or cost functions
 - Statistical Techniques - parametric approaches that involve assumptions about functional relationships.

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Partial Indicators

- Calculating different measures of the financial, operating, commercial, and quality of a utility's performance.
- Often the relationship of two simple measures, yielding indices of productivity, non-revenue water, human capital development, or financial conditions, among others.
- Sample performance indicators include: number of workers per one thousand connections, percentage of water loss, training outlays as a percentage of labor costs, or the ratio of total debt to total assets.

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Summary Measures

- Specific Core Indicators - unaccounted for water, collections, network expansion
- Overall Performance Indicator - combination (weighted average of core indicators)

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IBNET

- Idea is that benchmarking must start as a local initiative - ensures sustainability over time.
- To have impact, benchmarking must be "institutionalized" - one-off benchmarking efforts tend to have little long-term impact.
- Datasets are managed through "dataset owners".

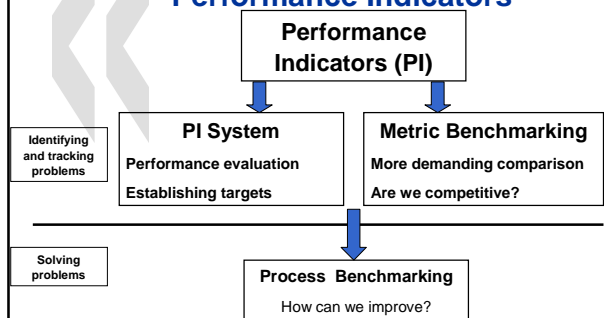
IBNET Toolkit

- Completing forms and system calculates indicators
- 26 Required Indicators in following areas:
 - service coverage, consumption and production, non-revenue water, metering, network performance, cost & staffing, quality of service, billing and collection, financial performance, assets, affordability of services
- 15 Process Indicators

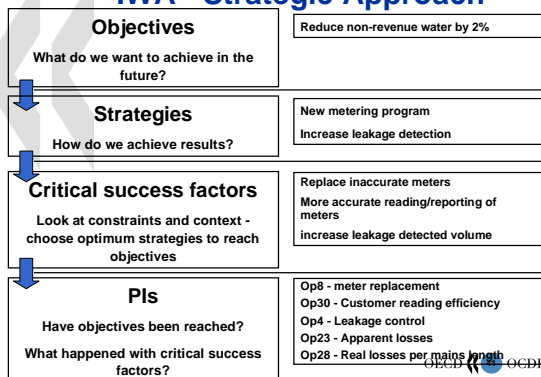
International Water Association (IWA)

- IWA Performance Indicator System for water services is recognised as worldwide reference
 - Widely quoted and used in internal evaluation; metric/process benchmarking; performance assessment (e.g., Balanced Scorecard); asset management.
- Newest manual (Performance Indicators for Water Supply Services) has 166 reviewed and tested indicators
 - Confidence grading system
 - Step-by-step implementation procedures
 - Case studies
 - Software

IWA Approach to Performance Indicators



IWA - Strategic Approach



Benchmarking in USA

- American Water Works Association has developed a system of performance indicators for the industry
- 22 performance indicators in five areas of water and wastewater utility operations
 - Organisational Development
 - Customer Relations
 - Business Operations
 - Water Operations
 - Wastewater Operations



Benchmarking in USA - 2

- **Organisational Development**
 1. Organisational Best Practices Index (self-assessment of implementation of seven management practices): strategic planning, long-term financial planning, risk management planning, asset management, performance measurement, customer involvement, continuous improvement
 2. Employee Health and Safety (lost workdays per employee per year)
 3. Training Hours per Employee
 4. Customer accounts per employee, Water delivered per employee, wastewater processed per employee



Benchmarking in USA - 3

- **Customer Relations**
 5. Customer service complaints and technical quality complaints per 1000 customer accounts
 6. Disruptions in water service - number of customers per 1000 active customer accounts
 7. Residential cost of water and/or sewer service (6 indicators) - size of bill for services
 8. Customers service cost per account - cost of managing 1 customer account per year
 9. Billing accuracy - errors leading to bill adjustments per 10000 bills issued in year



Benchmarking in USA - 4

- **Business Operations**
 10. Debt ratio
 11. System replacement rate - replacement of infrastructure
 12. Return on assets - financial effectiveness



Benchmarking in USA - 5

- **Water Operations**
 13. Drinking water compliance rate - % of days in full compliance with quality standards
 14. Distribution system water loss - % water not reaching customers
 15. Water distribution integrity - number of breaks and leaks requiring repair per 100 km of pipes
 16. Operations and maintenance costs - per account, per million litres of water
 17. Planned maintenance ratio - effectiveness of investment in planned maintenance



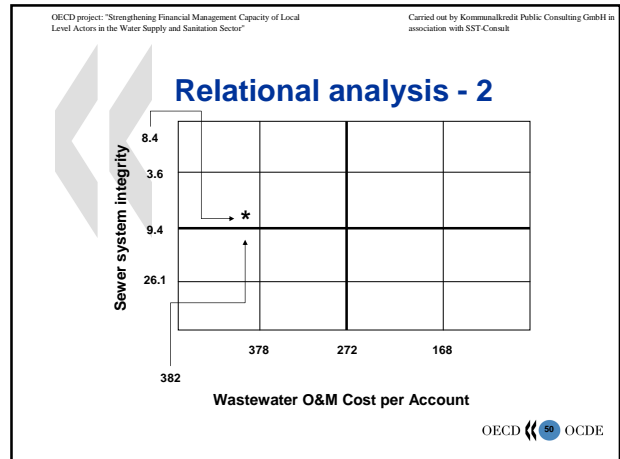
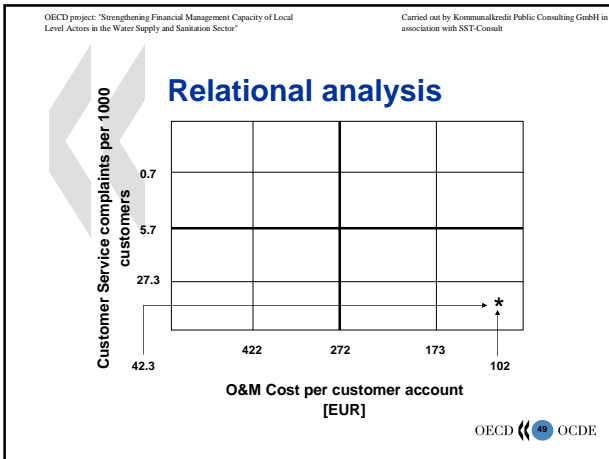
Benchmarking in USA - 6

- **Wastewater Operations**
 18. Sewer overflow rate - ratio of number of overflows per 100 kilometers of collection piping
 19. Collection system integrity - system failures per 100 kilometers of piping
 20. Wastewater treatment effectiveness rate - compliance with standards
 21. Operations and maintenance costs - per account, per million litres of wastewater processed
 22. Planned maintenance ratio - effectiveness of investment in planned maintenance



Benchmarking in USA - 7

- **Grouped according to:**
 - utility service type
 - region
 - utility size (population served)
 - organisational structure
 - governance
- **Analysed using quartile charts - distributing results from participating companies along a median value (50th percentile)**
- **enables best practices and leaders to be identified**
- **relational analysis**



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Other Examples

- Denmark (Danish Water and Wastewater Association)
 - full cost recovery in sector, but with no profit; tariffs approved by municipalities
 - competition authority claimed sector spent too much on treatment (was inefficient)
 - objective: provide a good management tool for participating water companies and basis for water association to cooperate with competition authority
 - ensure efficiency based on finance, customer service, quality and the environment
 - Project financed from a fee of about 2900 EUR per participant (2006 budget was 320 thousand EUR)

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Other Examples

- Denmark
 - Project run by Association secretariat with 5 persons organized through a steering committee.
 - Number of working groups - development of customer service standards, initiation of process benchmarking projects, development of a standardized account plan, development of a web-based data reporting and analytical tool, development and creation of benchmarking reports in cooperation with the authorities, development and facilitation of international benchmarking cooperation and projects.

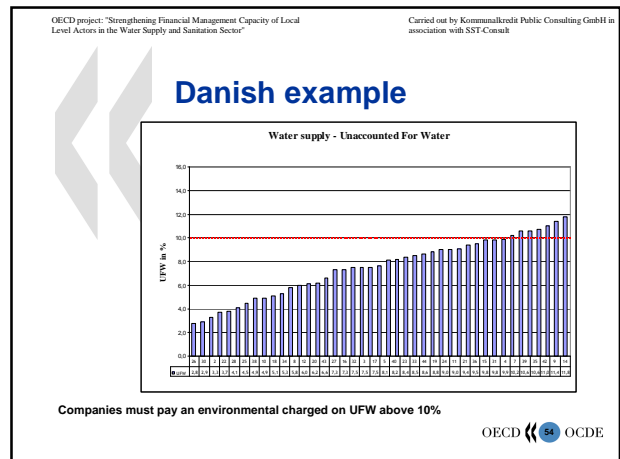
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Other Examples

- Danish benchmarking system
 - drinking water supply - production, distribution and administration
 - wastewater - sewerage, treatment and administration
 - investments
 - operation & maintenance costs - salary and other
 - customer service
 - product quality
 - environmental impact
 - organisation

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Benchmarking Wastewater Services in Austria

(Block IV)

Training of Trainers

26.XI to 1.XII 2007

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Project design – benchmarking of wastewater treatment in Austria





Principal of project :
Ministry of the environment




Project executing organisation:
ÖWAV - Austrian Water Association




Project monitoring:

Technical University; Vienna 	University of Natural Resources & Applied Life Sciences, Vienna 	Quantum - economic consulting 	ÖWAV 
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Financing as a research project by environmental support scheme



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Procedure of the benchmarking project

1. Survey of technical data
2. Plausibility check
3. Reference parameter → Cost accounting
4. Management ratios of progresses

preliminary purification	biological wastewater treatment	stabilisation and densification of sludge	further sludge treatment
Investment costs and operational costs			

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Procedure of the benchmarking project

Basis of Data

76	Wastewater treatment plants invited
-2	Denied participation
74	Wastewater treatment plants
-3	Pilot plants
71	„normal“ treatment plans

Collection of data by data entry form (designed by the universities)

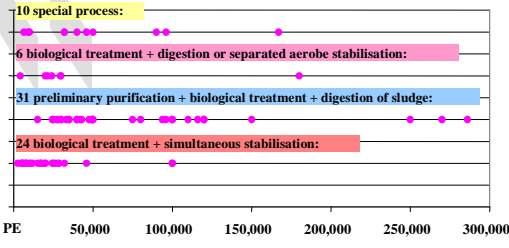
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Procedure of the benchmarking project

Types of treatment plants



10 special process:	~50,000 PE
6 biological treatment + digestion or separated aerobic stabilisation:	~100,000 PE
31 preliminary purification + biological treatment + digestion of sludge:	~280,000 PE
24 biological treatment + simultaneous stabilisation:	~100,000 PE

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Procedure of the benchmarking project


Plausibility check

on-site inspection:

- by chartered engineer consultant

At the university:

- Comparison of measured data and empirical values
- by balancing

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Procedure of the benchmarking project

Reference parameter

Aims:

- big quantity of plants with plausible operating data, which are used for reference parameters
- costs of capital and operational cost should be investigated simply and clearly

Groups organized

- Group A: construction and operating of the wastewater treatment plant only
- Group B: construction and operating of collection system of sewer and the wastewater treatment plant
- Group C: Municipalities and association of municipalities which are responsible for the whole wastewater disposal (incl. sewers to households)

Methodical procedure

Cost accounting

- **implementation of cost and activity accounting**
 - Classification of operational costs
 - Classification of costs of capital by assets analysis
 - Administration costs by apportion
- **plausibility check and approval of results by participants**
- **arrangement of participants in groups for account analysis**

Methodical procedure – sewer systems

- **comparison of organisational and technical units of sewer-facilities**
- **technical and economical plausibility check**
- **analysis of reference parameter**
- arrangement in groups: **by sewer length**
- **definition of benchmark**

Methodical procedure – treatment plants

- **comparison of cleaning processes of plants**
- **plausibility check by comparison of management ratios and balancing**
 - arrangement in groups: **by PE-COD₁₁₀**
- **analysis of reference parameter**
- **definition of benchmark**

Result – cost accounting

- **new structure of accounting**
- **analysis of overall costs (of groups organized)**
 - total of **operational costs and costs of capital**
 - **distribution of costs within processes**
- **sewer system / treatment plant:**
 - total of **operational costs**
 - **distribution of costs within operational costs**
 - **distribution of cost categories within processes**
- **analysis of administration costs**

Result – sewer system

- **benchmarking**
 - **cost of capital** (sewers excl./incl. punctual construction)
 - **operational costs** (sewers excl./incl. punctual construction)
 - **annual costs** (sewers excl./incl. punctual construction)
- **economical consideration**
 - **analysis relating to population (P)**
 - **analysis relating to operational cost categories**
 - **analysis relating to kind of sewer system**

Result – treatment plant

- **internal benchmarking**
 - **cost of capital** (processes 1-4 and complete plant)
 - **operational costs** (processes 1-4 and complete plant)
 - **annual costs** (complete plant)
- **external benchmarking**
 - **potential for reduction of costs**
 - **cost-efficiency for water protection**
 - **analysis of processes in detail** (oxygen demand, sludge drainage)

Benchmarking in practice

- **organised by ÖWAV** (Austrian Water Association)
- **Internet platform: www.abwasserbenchmarking.at**
- **registration possible every year** (till May)
- **costs for participant:**
 - first year: **EUR 3.200,-**
 - Following years:

for sewer	< 50.000 m	€1.200
	50.001–100.000 m	€200 + €0,02 x lfm
	> 100.000 m	€1800 + €0,004 x m
for plant	< 5.000 PE	€800
	5.001–10.000 PE	€1.500
	10.001–100.000 PE	€1500 + €0,02 x PE

Benchmarking in practice

