



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

## Multiyear Investment Planning (Block 2)

Training of Trainers

26.XI to 1.XII 2007

*Kiev*



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

## Overview of MYIP (Multiyear Investment Planning)

- Introduction – Definitions and Principles
  - Definition of the MYIP
  - Time horizon of the MYIP
- MYIP process step-by-step:
  - Budget revenues and current expenditures forecast
  - Definition of operating surplus
  - Investment ranking and selection
  - Loans and debt servicing
  - Presentation of cash flow and decision-making process
- Role of procedures in the MYIP process.

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## Overview of the MYIP

- What information about investments should be collected (example of forms to be used to collect information)
- Debt financing: loan repayment schedule, debt limits, debt service ratios
- Citizen participation in the process
- Discussion about the legal background and/or limitations of MYIP implementation in EECCA countries

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## Objective of the MYIP process

- MYIP introduces capital improvement **planning**
- **Multi-year** perspective as opposed to one-year planning
- Capital project selection is **objective**
- **Transparent** selection **criteria** for capital projects
- Tool for development **strategy** implementation
- Tool for **communication with citizens** about the most important strategic investments
- Tool for **communication with banks** and financing intuitions

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## Definition of the MYIP

MYIP (sometimes called Capital Investment Planning) shows:

- which investments the local government (LG) should implement in the next few (4-6) years and whether in each year of the plan it will have sufficient money for financing
- whether the LG will take out a loan for this purpose and whether it will be able to repay it
- which investments are beneficial to local society, which are less important, and which can be delayed for the future, and which are bad ideas that should be abandoned.

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## Definition of the MYIP

MYIP is not a wish list of investments without regard to the LG's financing capacity

### What the MYIP is ?

Document for local society and local government and NOT for other institutions (e.g., regional and state authorities, banks, donor), although often this document can be useful in negotiations with these institutions

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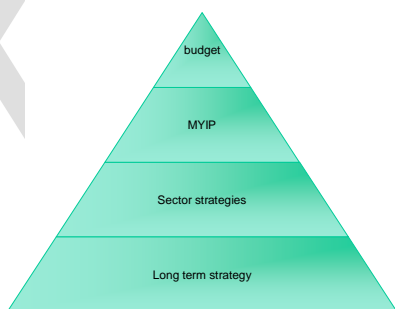
## Definition of the MYIP

- process of selecting strategic capital projects in long-term perspective allowing for the achievement of the largest possible benefits (financial, social, environmental, others) as a result of their implementation, it includes the following:
  - multi-year financial plan:
    - budget revenue forecast
    - required level of current expenditures along with the service and repayment of debt incurred
    - amount of debt to be incurred
    - total funds intended for capital projects
  - clear selection criteria and capital project priorities
- list of capital projects to be implemented along with the material scope and sources of financing broken down by individual year.

## Time horizon of the MYIP

- Usually shorter than strategy
- Longer than election period
- Financial forecast to be comparable with loan(s) repayment period
- Time horizon depends on the stability of budget revenues and expenditures
- Often time horizon of the MYIP is related to other strategic documents or financing institution requirement

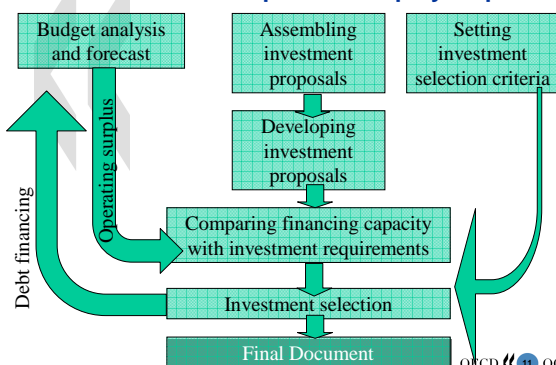
## Time horizon of the MYIP



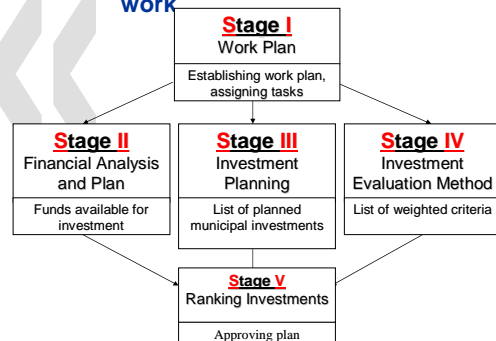
## MYIP process step by step

- Budget revenues and current expenditures forecast
- Definition of operating surplus
- Investment ranking and selection
- Loans and debt servicing
- Presentation of cash flow and decision-making process
- Role of procedures in the MYIP process

## MYIP process step by step



## MYIP process - organization of work



## Budget revenues and current expenditures forecast

- Revenue forecast
  - Revenues are planned based on last years' revenues, taking into account macroeconomic tendencies (increase of GDP, increase of salaries), local tendencies (population growth), improvements in revenue collection, introducing new taxes and known changes in legislation
- Current expenditure forecast
  - Current expenditure are forecasted based on last years' expenditures, taking into account macroeconomic tendencies (increase of GDP, increase of salaries), local tendencies (population growth), predicted changes in the scope and quality of services provided by municipality, introducing new tasks to local governments

## Operating surplus

- Operating surplus is the difference between forecasted revenues (excluding capital revenues, such as grants for capital investments) and current (mandatory) expenditures
- Operating surplus tells us what amount city may spend for capital investments from own sources and for debt service
- Its the most important indicator for banks and rating agencies when testing creditworthiness of the city

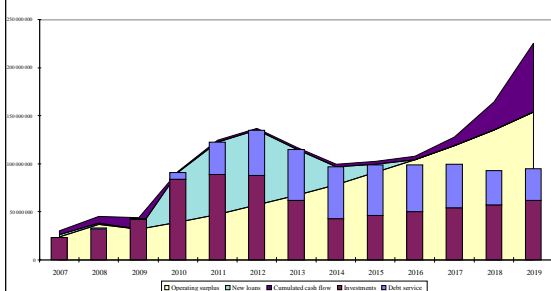
## Why investment ranking and selection?

- Local government capital investment needs are always much higher then financing sources they may provide
- Ranking seeks to reduce subjective motivations for project selection – replacing political (short-term) considerations with objective criteria
- Ranking „locks-in“ investment choices that may extend beyond political terms of office – gives incentive for longer-term thinking
- Should mix economic (e.g., operating costs) and non-economic criteria (e.g., percent of population served)

## Loans and debt servicing

- In MYIP we may design not only debt financing (loans, municipal bonds) of capital investments but also observe the influence of future debt repayment (principal repayments and interest) on decreasing operating surplus to be spent for future investments
- Calculation of debt indicators and debt limits could be a part of MYIP process

## Presentation of cash flow and decision-making process



## The role of procedures in the MYIP process

- Procedures (e.g., budget preparation instructions) may make the process easier, as each key player (city department) knows their responsibilities and deadlines in the process
- Procedures should detail WHO and WHAT KIND of data should be prepared and should set deadlines
- Procedures may contain forms to be used in the process
- MYIP procedure is like a recipe for baking the MYIP

## The role of procedures in the MYIP process - example

- MYIP for the city is prepared for 5-year time horizon
- Assumptions for budget forecast (by January 31st); assumptions are distributed among departments (by January 31st)
  - Person responsible: head of Budget Department
- Revenue forecast (by February 28th)
  - Person responsible: head of Budget Department
- Departments (x, y, z,...) prepare current expenditure forecast (by February 28th)
  - Person responsible: head of each department
- Verification of forecast and calculation of operating surplus estimate for next 5 years
  - Person responsible: head of Budget Department

## The role of procedures in the MYIP process - example

- Long list of investments (by March 31st) prepared using existing database. City Departments may also prepare requests (using the investment form) and deliver to the Public Works department by February 28
  - Person responsible: head of Public Works department
- Initial list of investment project selection methodology and criteria
  - Person responsible: head of Public Works department
- Review of the project selection methodology and criteria, final version of the project selection methodology (by March 31)
  - Person responsible: Mayor and the executive board
- Citizen participation, collecting investment proposals (by March 31):
  - Person responsible: head of Public Works Department

## The role of procedures in the MYIP process - example

- Final long list of investments contains additional investments from citizen participation process (by April 30)
  - Person responsible: head of Public Works department
- Initial investment project selection (by May 31)
  - Person responsible: head of Public Works department
- Final investment project selection and proposal for financing of major investment tasks
  - Person responsible: Mayor and the board
- Final MYIP document (by June 30)
  - Person responsible: Mayor
- City council
- Attachments:
  - Revenues and expenditures forecasting forms, Investment forms, investment project selection form

## What information about investments should be collected

- For MYIP process at least the following information about each investment proposal should be collected:
  - Project name
  - Project objective
  - Project location
  - Project scope
  - Investment costs for project preparation (documentation), land acquisition and construction
  - Investment costs schedule
  - Sources of project financing
  - Expected project results (qualitative and quantitative)

## Investment form – case study

City of Lezajsk, Poland

**Investment symbol and number:** RGM-1/05/2000

**Department:** Economic Development

**Name of investment:** Construction of sports hall at the vocational school complex in Lezajsk

### INVESTMENT DESCRIPTION

Sports hall at vocational school complex of 13 270 m<sup>3</sup> and total usable surface area of 2 237 m<sup>2</sup>. Capacity 277 seats. Planned completion by the end of June 2006.

### LOCATION

Lezajsk, M.C.Skłodowska Street

## Investment form – case study

### PROJECT SCOPE

As above

### ESTIMATED INVESTMENT COSTS

Current cost estimate – 5.4 million PLN (about 1.4 million EUR)

### EXPECTED RESULTS AFTER INVESTMENT COMPLETION

Development of sports and recreation in the city; capacity to organise sporting and cultural events

Name of person preparing investment form: Jerzy Mroczkowski

## Investment form – case study

### PROJECT IMPLEMENTATION SCHEDULE

Cost elements	2005	2006	2007	2008	2009	2010	Total in years of the plan
Purchase and preparation of site							
Pre-investment documentation							
Construction and installation works	3,652,000	1,748,000					5,400,000
Purchases of equipment and machines							
Other							
<b>Total costs</b>	<b>3,652,000</b>	<b>1,748,000</b>					<b>5,400,000</b>

## Investment form – case study

### SOURCE OF FINANCING

	2005	2006	2007	2008	2009	2010	Total in years of plan
<b>Own sources – LG budget</b>	450,000	20,000					470,000
<b>Preferential loan</b>							
<b>Commercial loan</b>							
<b>Grants from central budget (Superintendent of Education, district budget)</b>	1,887,200	1,592,800					3,480,000
<b>Non-budgetary grants (Parents' Council)</b>	250,000						250,000
<b>Grants from local funds</b>							
<b>Others (Office of Physical Fitness and Sport)</b>	1,064,800	135,200					1,200,000
<b>Total</b>	<b>3,652,000</b>	<b>1,748,000</b>					<b>5,400,000</b>

## Investment form – case study

### IMPACT OF INVESTMENT ON BUDGET

Calculation of annual revenues:		
Source of revenues	Calculation	Revenue
Fees for organising events	250 PLN x 100	25 000 PLN
Individual hiring of hall	25 PLN/h x 500h	12 500 PLN
<b>Total revenues</b>		<b>37 500 PLN</b>
Calculation of annual costs:		
Cost position	Calculation	Cost
Heating		150 000 PLN
Employment		200 000 PLN
<b>Total cost</b>		<b>350 000 PLN</b>
<b>Financial result (revenues – costs)</b>		<b>-312 500 PLN</b>

## Debt financing

- Why incur debt?
  - Makes it possible to implement important investments more quickly and gain benefits from implementation sooner (social, financial, etc.)
  - Municipal infrastructure typically has a long project lifespan, thus it is better than expenditures are spread out over time
  - Infrastructure built today will be used by next generation – thus, it is not just that only the current generation pay for this infrastructure
- Why NOT incur debt?
  - Costs of debt (commission, interest) mean that loans are always most expensive than current financing and consequently loan financing always results in building a bit less (over the long run)
  - In a few years the city will be paying debt and will have less funds for other investments

## Citizens in participation the process - surveys

- Use of surveys:
  - Survey a group of residents but reach them using questionnaires through local councils (sub-municipalities), neighbourhoods, economic chambers, NGOs – serve as intermediaries in delivering questionnaires, explain purpose of completing surveys and collect completed questionnaires;
  - Pupils and students (indirectly reach parents);
  - Information in local newspaper, can be printed in specified place;
  - Information in local television, radio;
  - Using a website or possibility of sending by e-mail (need to secure against abuse).

## Citizens in participation the process – flaws and merits of surveying

- Merits:
  - Collecting proposals from large group of residents;
- Flaws:
  - Proposals are often not concrete and difficult to process,
  - Proposals require lots of work,
  - Some proposals, or parts of proposals, must be rejected if they do not meet the requirements of the MYIP process (e.g. Investments that cannot be implemented by local government);
  - Most often a „representative sample“ of citizens is not surveyed but just a random, preferred group of people due to the method of distributing questionnaires



## ADVANTAGES of MYIP implementation

- Decreased influence of the current political issues on the capital improvement process in the city, in particular the capital project selection process
- Better planning
- Possibility of better concentration and faster implementation of capital projects
- Reduced practice of formulating overstated needs by departments / municipal companies
- Tool for communication with the local community
- Facilitates access to those external sources of finance that require a MYIP (almost all significant)



## ADVANTAGES of MYIP implementation

- Banks and rating agencies look at creditworthiness to ensure that the local government is a reliable partner and will be able to repay its loan. Even with EU grants, co-financing is necessary and city must know how much it can finance.



## Link between MYIP and FPTWU

- Most water and wastewater companies in EECCA countries do not have sufficient financial resources to implement investments by themselves, even if tariffs are calculated correctly (in this case time is needed for company to accumulate financial resources)
- Water supply and wastewater collection is a local government task; therefore, local governments provide at least part of the funds for investment (and repay loans) in this sector. In PPP cases, often the local government continues to own the assets and provide investment funds
- Therefore, water and sewer companies must try to ensure that local governments have a proper MYIP process, so that investments in the sector are included



## Discussion about legal background and/or limitations of MYIP implementation in EECCA

- What is the planning period?
- How stable are revenues and expenditures – can a good forecast be prepared?
- Can the MYIP document be passed by resolution and what legal force will it have in preparing annual budgets?



## Questions and Discussion



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## Investment Projects Appraisal, Ranking and Selection

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## OVERVIEW

- Financial analysis: NPV and IRR
- Cost Benefit analysis
- Cost Effectiveness Analysis
- Multi-criteria analysis
- Advantages and disadvantages of each method

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## Financial analysis – what for?

- **Financial viability** – to assess if the project is financially sustainable
- **Profitability** - in order to assess the project's capacity to generate revenue and thus the need (or not) for public aid.
- Assessment tool: **feasibility study**

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## What is a Feasibility Study?

- The analysis of a problem to determine if it can be solved effectively. The operational (will it work?), economic (costs and benefits) and technical (can it be built?) aspects are part of the study. Results of the study determine whether the solution should be implemented.
- Feasibility study is **NOT** for profitable investments only!

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## Net Present Value (NPV)

- Effective method, relies on Discounted Cash Flow techniques
- Steps to proceed:
  1. Find the PV of each cash flow, discounted at cost of capital (k)
  2. Sum the discounted cash flows = project's NPV
  3. If  $NPV > 0$  accept the project  
 $NPV < 0$  reject the project  
if two projects, accept the one with higher NPV

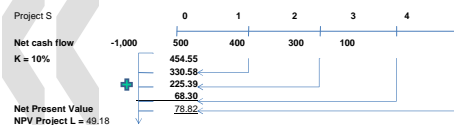
$$NPV = CF_0 + \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \dots + \frac{CF_n}{(1+k)^n} = \sum_{t=0}^n \frac{CF_t}{(1+k)^t}$$

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## Net Present Value



- If  $NPV = 0$  – the project's cash flow covers the investment and provide the required rate of return
- If  $NPV > 0$  – the project generates excess cash

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## Internal Rate of Return (IRR)

- IRR – discount rate that equates the PV of project expected cash inflows to the PV of the project's costs

- PV (Inflows) = PV (Investment costs)

➢ IRR forces the NPV to equal to zero

$$CF_0 + \frac{CF_1}{(1 + IRR)^1} + \frac{CF_2}{(1 + IRR)^2} + \dots + \frac{CF_n}{(1 + IRR)^n} = 0$$

$$NPV = \sum_{t=0}^n \frac{CF_t}{(1 + IRR)^t} = 0$$

➢ Example: for project S, IRR = 14.5%; for project L, IRR = 11.8%

➢ If the cost of capital = 10%

➢ Accept the both projects (IRRs and IRR > 10%)

➢ IRRs has a higher rank

## The Choice of (Social) Discount Rate

Annual Net Benefits and Net Present Values for Alternative projects

Year	Project A	Project B	Project C
0	-70 000	-70 000	-70 000
1	15 000	50 000	0
2	20 000	10 000	0
3	20 000	10 000	0
4	20 000	10 000	0
5	20 000	10 000	100 000
<b>NPV(2%)</b>	<b>18 987</b>	<b>16 030</b>	<b>20 170</b>
<b>NPV(10%)</b>	<b>1 155</b>	<b>3 883</b>	<b>-7 189</b>

## Comparison of NPV and IRR Methods

- NPV declines as the cost of capital increases
- The impact of an increase in the cost of capital is greater on the NPV of long-term than on short-term projects
  - Long-term projects are more sensitive to changes
- In case of *independent projects*, both methods lead to the same accept/reject decision
- In case of *mutually exclusive projects*, NPV and IRR deliver different results due to project size and timing differences of the cash flows
  - NPV method is preferred because it selects the project that adds the most to wealth
- Projects with several cash outflows produce multiple IRRs
  - Preference for the NPV method

## Investment projects appraisal, ranking and selection – economic analysis

Introduction to various approaches to investment appraisal when public funds are involved:

- Cost Benefit Analysis (CBA) - total project benefits exceed total project costs
- Cost-effectiveness analysis (CEA) - select the cheapest approach to addressing a given issue; assume all options produce the same benefit
- Multi-criteria analysis
- Advantages and Disadvantages of Simplified Approach

Note: in all of the above, an analysis is necessary to ensure that the project is financially sustainable

## Investment projects appraisal, ranking and selection – economic analysis

The general goal of financial and economic analysis of investment projects is to assess the sustainability of project effects to ensure that:

- project provides sufficient incentives for the investor (cost recovery, etc.)
- sufficient funds are available to maintain project operations
- least cost means of providing the project benefits is used
- distribution of project benefits and costs is consistent with project objectives, and
- project effects are included in the analysis

## Cost-Benefit Analysis (CBA)

- CBA - effort to identify and quantify the benefits and cost associated with project implementation.
- CBA – also an attempt to identify and quantify costs and benefits that accrue both to the investor institution as well as to the society as a whole.
- Includes effects that are external to the investor's decision on whether to proceed with project implementation

## Financial vs Economic (CBA) Analysis

### Financial Analysis

- financial analysis of the investment project itself - before and after
- focus on the project
- data sources are typical - engineer cost estimates, technical designs, offers from contractors, initial studies, municipal investment departments

### Integrated Economic Analysis

- investor analysis, social benefit-cost analysis, analysis of investment effects - with and without investment
- focus on project effects on firm, society as a whole and, possibly, the environment
- data sources are varied - investor financial statements, municipal budgets, capital investment plans, willingness to pay studies, travel cost studies, contingent valuation, dose/response curves, EIA

## Financial vs Economic (CBA) Analysis

### Financial Analysis

- interpretation of results using typical profitability indicators - NPV, IRR
- effective project by itself does not necessarily mean one that is feasible

### Integrated Economic Analysis

- interpretation of results using profitability indicators - NPV, IRR of investor and/or ENPV, ERR
- effective project (incremental analysis) that provides a benefit for investor (does not disrupt liquidity) may be feasible

## Cost-Benefit Analysis

- important supplement to financial analysis
  - provides a view of the social and environmental impacts of the project
  - goes beyond simple financial model by analyzing the actual impact of the proposed project on the natural environment and local society
- methodology is analogous to financial analysis
  - financial analysis = cash flow
  - CBA = cash flow modified by stream of other benefits
  - difference lies in the stream of benefits to other parties (even to those not directly or indirectly involved in the project)

## Social Benefits - water investment

- Improvement of living conditions involving drinking water quality, elimination of cesspools as well as operational improvement of the water treatment system, health benefits due to a decrease in the communicable diseases, savings on purchases of bottled water and water filters
- Increased value of land zoned for future investment due to provision of a more reliable water supply structure
- Improvement in tourist and recreational attractiveness of some areas or communities as well as quality and sanitation of rivers

## Social Benefits - water investment

- Directing pollution through a sewer system to a wastewater treatment plant and not directly to the environment
- Elimination of the need to transport drinking water and fecal matter by vehicle
- Intrinsic benefits to the environment

## Social Costs - water investment

- Increase in costs of water delivery and wastewater collection;
- Loss of land needed for the pumping station and water treatment plant;
- Temporary burden to residents during construction of large objects and underground infrastructure

## Advantages of CBA

- solid approach for considering costs and benefits that are typically external to the investor/applicant's decision process.
- modified by valuation techniques aimed at estimating willingness to pay or willingness to accept (such as travel-cost and contingent valuation), it can deliver a powerful tool to assist in making more informed decisions.
- initially recommended by European Commission for project appraisal in candidate countries in CEE.

## Disadvantages of CBA

- Valuation of benefits from capital investment is difficult and ambiguous.
  - Difficult because few local governments or consulting firms have the expertise to conduct a full CBA
  - Ambiguous because many social costs and benefits are difficult to quantify, including with respect to environmental protection.

## Disadvantages of CBA (cont.)

Is CBA an adequate method to be applied for environmental projects?

- If (discounted) social costs are higher than (discounted) social benefits, the project should NOT be pursued. This could place the investor (local government) in a serious dilemma.
- In effect, very often such an investor has no choice because legislation – for example environmental standards - are binding and compliance is compulsory.

## CBA – case of wastewater project

- City of 30 thousand residents
- Project objectives: reduce pollution by – BOD5 – 83%, COD – 46%, TSS – 65%, Ntot – 78%, Ptot – 52%
- Increase from 24 756 to 29 735 (about 5 000 persons) in the number of residents served by sewer system and sewer services for 7 327 residents of nearby communities
- Increase in capacity of WWTP from 5300 m<sup>3</sup>/d to 6 247 m<sup>3</sup>/d
- Increase from 25 581 to 29 735 (about 4 000 persons) in the number of persons served by mains water system

## Scope of investment

	Item	Number
A. WASTEWATER TREATMENT PLANT		1
1	Modernisation of WWTP in City X (change in technology, increasing capacity)	1
B. SEWER SYSTEM		
1	Gravity sewers	34.5 km
2	Pressure sewers	44.6 km
3	Pumping stations	23 pcs.
C. WATER MAINS SYSTEM		
1	Water intakes (modernisation – 9, expansion – 1)	10 pcs.
2	Water treatment stations (modernisation – 9, construction – 1)	10 pcs.
3	Water mains (construction of new segments and replacement)	64.5 km

## Forecast of water and sewerage prices

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Gross tariff (with VAT) for water and sewer together	5,93	6,45	8,08	8,73	10,33	11,53	11,50	11,44	11,63	11,81
Gross unit price for water	2,60	2,85	3,39	3,66	4,24	4,75	4,87	4,93	5,06	5,17
Gross unit price for sewerage	3,33	3,60	4,69	5,07	6,09	6,78	6,63	6,51	6,57	6,64
Share of tariff for water and sewer services in disposable household income	3,23%	3,33%	3,82%	3,93%	4,46%	4,78%	4,56%	4,34%	4,23%	4,12%

PLN/m<sup>3</sup>

1 EUR ≈ 3.7 PLN



## Financial results of investment

- Financial net present value of investment (NPV) -46 708 460 PLN (about -12 million EUR)
- Financial net present value of investment (NPV) taking into account grant -5 394 198 (about -1.3 million EUR)



## Social effects – environmental benefits

Status	Pollution indicator	Wastewater treated and put into the environment	Untreated wastewater put into the environment	Total load of wastewater put into the environment
Without investment implementation	BOD5	(kg/d) 56,7	(kg/d) 664,9	721,6
	COD	199,8	1 477,6	1 677,4
	TSS	59,4	701,9	761,2
After investment completion [2015]	BOD5	76,5	-	76,5
	CODT	269,4	-	269,4
	TSS	80,0	-	80,0
Environmental effect	BOD5			645,2
	COD			1 408,0
	TSS			681,2



## Social effects – environmental benefits

- Avoided pollution was multiplied by environmental use charges – a proxy estimate of the harmfulness to the environment of each type of pollutant
  - BOD5: 3.51 PLN/kg
  - COD: 1.40 PLN/kg
  - TSS: 0.44 PLN/kg

1 EUR ≈ 3.7 PLN



## Other social effects

- Increase in value of land plots that have sewer access: 10% of current value
- Hiring unemployed during construction and rehabilitation outlays
- Hiring unemployed during operations (increase in employment at WWTP and in operating the network)
- Correction for VAT and income tax



## Results of CBA

- ENPV 1 946 838 thousand PLN (about 0.5 million EUR) at a discount rate of 8%
- ERR of 8.70%
- Many social effects that were not possible to quantify:
  - Reduction in differences in development disparities between regions
  - Safeguarding of protected areas and land that are valuable for their natural environment
  - Economic development / new businesses



## Why Cost-Effectiveness Analysis ?

Key Question remaining from CBA:

If an investment is required by law, the question becomes: what is the lowest cost of achieving the objective environmental compliance?

One reply to this is to apply cost-effectiveness analysis.

## Unit Costs (UC)

$$UC=I/EE$$

Where:

- UC - Unit Cost,
- I - Total Investment Cost,
- EE - Investment Effect (in the first year of operations)

## Advantages of Unit Costs analysis

- Cheaper and simpler to apply than CBA since there is no need to determine external costs and benefits
- Generates a clear result that can be tested
- Project development and appraisal are faster (no need for complex study)
- Leads to unambiguous conclusions
- Requires less investor and evaluator know-how

## Disadvantages of Unit Costs analysis

- Investors often have difficulty generating more than one project option
- Uses marginal, or unit, cost as an estimate of the cost-effectiveness of an investment
- Found by dividing the sum of investment outlays by the environmental effect achieved in a given year – no time component (discounting)

## Disadvantages of Unit Costs analysis

- Costs of achieving many of the effects (e.g., pollution reduction) depend not only on investment outlays but also on operating costs
- Ignores fact that different installations differ in operating periods
- Lag time before full effect is attained: frozen capital that could have been spent achieving more immediate results

## Response to Unit Costs analysis shortcomings

- One possible response: modify CEA to reduce the impact of these shortcomings – introduce Dynamic Generation Cost analysis (DGC)
  - discounted project investment and operating costs over the investment lifetime are divided by discounted stream of revenue (environmental benefits) over the project lifetime. This yields a dynamic indicator of cost-effectiveness rather than a snapshot in time resulting from Unit Cost analysis.

## Dynamic Generation Cost Analysis (DGC)

- The sum of investment and operating costs are discounted over the project period
- This sum is divided by the discounted (environmental) effect

## Dynamic generation cost analysis (DGC)

- Example - discounted investment and operating costs of a small wastewater treatment plant over 20 years equal 10 million EUR
- If over the project period 5 million m<sup>3</sup> of wastewater are treated (discounted), we know that the DGC of wastewater treatment is 2 EUR/m<sup>3</sup>

## Dynamic generation cost

- Results are more meaningful for decision-makers than negative NPV or IRR (which for public projects are typically low)
- Constitutes a more complete measure of cost-effectiveness

## Dynamic generation cost

$$DGC = p_{EE} = \frac{\sum_{t=0}^{t=n} \frac{KI_t + KE_t}{(1+i)^t}}{\sum_{t=0}^{t=n} \frac{EE_t}{(1+i)^t}}$$

- $KI_t$  – investment costs incurred in a given year;
- $KE_t$  – operating costs incurred in a given year;
- $i$  – discount rate;
- $t$  – year, assume value from 0 to  $n$ , where 0 is the year in which the first costs are incurred. On the other hand,  $n$  is the final year of installation operations.

## Dynamic generation cost

- Advantages and disadvantages:
  - Quick and easy to calculate
  - Compares the period of time for that portion of the indicator responsible for the environmental effect
  - Enables the comparison only of projects of the exact same type of effect (very strictly defined)
  - Ignores revenues from operating the investment, which in most cases is justified

## Dynamic generation cost

- used widely in Germany (sometimes called Dynamic Prime Cost)
- applied in Poland by the National Fund for Environmental Protection and Water Management to EU ISPA/Cohesion Fund investments
- applied in Poland by the Ministry of Economy to evaluate environmental projects financed from EU structural funds
- Methodology supported by OECD

## Dynamic generation cost – case study

- City wants to implement three water investment projects and has sources to finance only one. Our task is to select the best one:
  - Investment costs are 2 060 thous. EUR (60 thous. in the year 0), operating costs are 50 thous. EUR since year 1, water delivered is 20 thous. m<sup>3</sup> in year 1, 25 thous. in year 2, and 50 thous. in and after year 3)
  - Investment costs are 2 000 thous. EUR (1 million in the year 0), operating costs are 25 thous. EUR in year 1 and 30 thous. EUR since year 2, water delivered is 10 thous. m<sup>3</sup> in year 1, 23 thous. in year 2, and 30 thous. beginning in year 3)
  - Investment costs are 3 million EUR (in the year 0), operating costs are 25 thous. EUR in year 1 and 30 thous. EUR since year 2, water delivered is 60 thous. m<sup>3</sup> since in year 1, but decreases to 40 thous. m<sup>3</sup> beginning in year 8)



## Unit Annual Cost

- Annualised cost is the cost per year of owning and operating an asset over its entire lifespan
- Annualised cost is often used as a decision-making tool in capital budgeting when comparing investment projects of unequal lifetimes. For example, if project A has an expected lifetime of 7 years, and project B has an expected lifetime of 11 years, it would be improper to simply compare the net present values (NPVs) of the two projects, unless neither project could be repeated.



## Unit Annual Cost (UAC)

$$UAC = AC / EE$$

Where:

- UAC - Unit Annual Cost,
- AC - annualised cost of a project (ACC plus yearly O&M costs),
- EE - average annual effect expressed in physical units.



## Unit Annual Cost

The Annualised Capital Cost is defined:

$$ACC = I \times \frac{r}{1 - (1 + r)^{-n}}$$

Where:

- ACC – Annualised Capital Cost,
- I - total investment cost,
- r - discount rate (or an expected rate of return on a project),
- n - lifetime of a project.



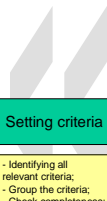
## Unit Annual Cost

- Unit Annual Cost is a very good indicator
  - Provides a very precise estimates of a true long-term average cost when the effect is distributed evenly over the life-time of the investment.
  - Is also useful when different investments have the same profile of effect.

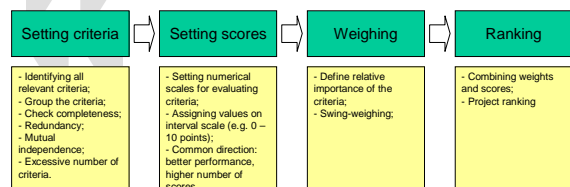


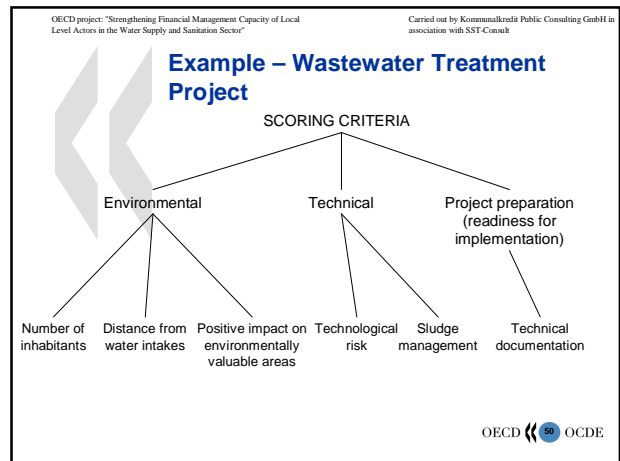
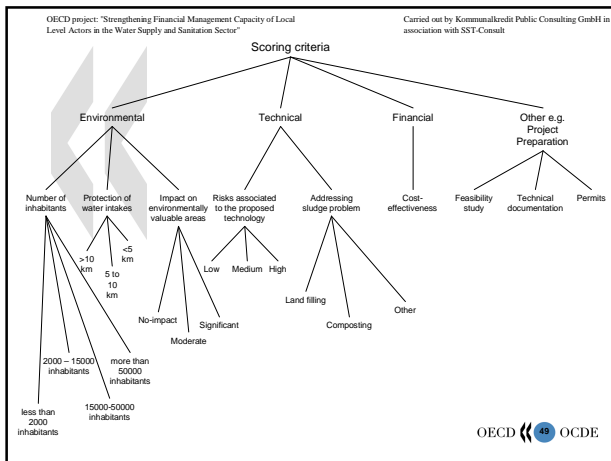
## Multi-criteria analysis

- Investment evaluation using this method involves the development of a finite number of criteria against which all investment proposals should be measured.
- The criteria themselves may vary in their detail, ranging from simple questions (yes or no) to more detailed and graded criteria depending on the degree to which the criteria is met (such as the extent to which some desired effect has been obtained).



## Multi-criteria analysis - Scoring Weighing Ranking Procedure





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### Multi-criteria analysis

No	Description	Weight for group	Weight for criterion
<b>1</b>	<b>Group 1</b>	<b>30</b>	
3.1	Legal-formal documentation		10
3.2	Local public acceptance		10
3.3	Confirmation of financing		10
3.4	Links to other investments		10
3.5	Degree of progress on investment		15
3.6	Engagement of „soft“ financing		15
3.7	Investment impact		15
3.9	Economic analysis		15
<b>2</b>	<b>Group 2</b>	<b>20</b>	
2.1	Criterion 1		50
2.2	Criterion 2		50
<b>3</b>	<b>Group 3</b>	<b>50</b>	
3.1	Criterion 3		100

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### Multi-criteria analysis – Sample city

No.	Name of criterion	Weight
1	Implementation of strategic objectives listed in „Development Strategy for City X“	15
2	Investment at advanced stage	15
3	Possibility of obtaining extra-budgetary grant	10
4	Investment generates budget revenues	10
5	Positive impact on natural environment	10
6	Investment impact	10
7	Compliance with single-year priorities	5
8	Possibility of obtaining preferential loan	5
9	Link to other investments	5
10	Positive evaluation of local society	5
11	Formal and legal documentation	5
12	Investment can be divided into stages	5
	<b>TOTAL</b>	<b>100</b>

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### Examples of the Scoring, Weighing and Ranking of ERDF Investments In Poland

Criterion	Weight	Max. No scores	Reference to the application form	Scores awarded	Justification
I. Project impact on implementing EU environmental directives	3	12	D6/SW		
II. Project complementarity with other projects in particular with ERDF financed projects or Cohesion Fund projects	1	4	D7/SW		
III. Project sustainability and institutional preparation (ensuring financial and institutional sustainability)	2	8	D10/SW		
IV. Cost-effectiveness	4	16	SW		

[1] a) National Programme for Municipal Wastewater Treatment:  
 From 10 000 to 20 000 Population equivalent (P.E.) – 4 points,  
 From 5 000 to 10 000 P.E. – 3 points,  
 From 2 000 to 5 000 P.E. – 2 points,  
 Under 2 000 P.E. – 1 point,  
 b) Waste management plans:  
 From 10 000 to 20 000 inhabitants – 4 points,  
 From 5 000 to 10 000 inhabitants – 3 points,  
 From 2 000 to 5 000 inhabitants – 2 points,  
 Under 2 000 inhabitants – 1 point,  
 c) Air protection investments within the areas covered by Air Protection Programmes – 4 points  
 d) Renewable Energy Source capacity:  
 - Over 10 MW – 4 points,  
 - From 5 to 10 MW – 3 points,  
 - From 1 to 5 MW – 2 points,  
 - Under 1 MW – 1 point.

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### Examples of the Scoring, Weighing and Ranking of ERDF Investments In Poland

Criterion	Weight	Max. No scores	Reference to the application form	Scores awarded	Justification
V. Correctness of the indicators presented	1	4	E2/SW		
VI. Technical viability	1	4	SW		
VII. Complex projects carried out by more than one local government units	2	8	D6/D9		
		56			

Name of the expert evaluating  
 Date  
 Signature

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## Advantages and disadvantages of each method of project appraisal

- CBA: very complex and costly but may be used to compare wide-range of investment tasks
- CEA: easier to use but may be used to compare investments with coherent effects (one sector only)
- Multi-criteria analysis: the easiest to use, but results can be the most ambiguous



## Application of Appraisal Methods

	Large-scale projects	Small-scale projects	Policies/programmes
Cost-Benefit Analysis	X		X
Multi-criteria-analysis/Scoring Weighing Ranking	X	X	X
Financial analysis	X	X	
Cost-effectiveness analysis	X	X	



## Questions and Discussion



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## Multiyear Investment Planning Case study from CEE country (Block 2)

Training of Trainers  
26.XI to 1.XII 2007



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

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## Case study on MYIP process

- City in Poland: population 50 thousand; unfortunate location between two large agglomerations Krakow and Katowice (attract investors)
- Budget in 2004: about 20 million EUR
- In 2004, when MYIP was done, the city had debt of about 6 million EUR
- City had high operating costs (low operating surplus); financing of investments had to include loans and grants
- MYIP prepared for the years 2004-2008

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## MYIP process

- Work begun in April 2004 with workshops
- Entire process included workshops on: 8 April 2004, 1 June 2004, 6 October 2004, and 26 October 2004. On 18 November 2004, the MYIP was presented at the session of the Economic Development Commission of the City Council
- At the beginning of the process, the mayor issued an executive order on formation of a working group to prepare the MYIP and to establish investment selection criteria and determine work schedule (procedure)
- The following worked on the MYIP in parallel:
  - Treasurer – revenue and expenditures forecast (2 months)
  - Team developed investment selection criteria using the multi-criteria analysis method (2 months)
  - Organised meetings with citizens and collected data about investments – this process lasted until October
  - MYIP was passed by the City Council on 22 March 2005

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## Revenues and expenditures forecast

- In forecasting expenditures – needed to take into account drop in number of pupils in schools (demographic trough).
  - Education grant is calculated on the number of pupils,
  - Costs of maintaining schools dropped only a little bit (expenditures increasing faster than revenues)
- Developed revenues and expenditures forecast and calculated operating surplus. Also calculated maximum capacity to incur new loans

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## Determining maximum capacity to incur debt

Category	2006	2007	2008	2009	2010	2011
Total instalments of new loans	18 414	6 404	7 128	0	0	0
Total payment of instalments	0	1 841	2 482	3 195	3 195	3 195
Total interest	645	1 449	1 771	1 822	1 598	1 375
Status at end of year	18 414	22 977	27 624	24 429	21 234	18 039

Category	2006	2007	2008	2009	2010	2011
Total payments (all loans)	5 328	6 785	7 553	8 122	4 793	4 569
Total debt at end of year	38 914	40 477	42 124	35 929	21 234	18 039
Ratio of debt / revenues	55,0%	55,0%	55,0%	45,1%	25,6%	20,8%
Ratio of debt service / revenues	7,8%	9,5%	10,1%	10,4%	6,1%	5,6%

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## Selecting evaluation criteria

- Team proposed 14 criteria (each member could make proposals)
- Survey form prepared and each member of Team ranked the most important criteria
- Next, each Team member compared criteria between themselves

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10	Av.	Weight
Criteria 1	1											
Criteria 2		1										
Criteria 3			1									
Criteria 4				1								
Criteria 5					1							
Criteria 6						1						
Criteria 7							1					
Criteria 8								1				
Criteria 9									1			
Criteria 10										1		

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## Selection of evaluation criteria

- Criteria were compared – evaluating their importance on a scale from -5...0...5
- Next, geometric mean was calculated and based thereon each criterion was weighted
- Next, average weight of all questionnaires was calculated
- During later meeting it was determined that some of the criteria overlap and they were then combined (summing all earlier weights)

## Evaluation criteria

Criterion	Weight
1. Compliance with EU objectives or objectives of other funds – so that investment has a chance to obtain financing	30
2. Economic development and new jobs	18
3. Extent of investment preparation	18
4. Project beneficiaries	9
5. Impact on the natural environment (specialist evaluation from 0 – 10)	8
6. Citizen participation	12
7. Investment generates budget revenues	5

## Collecting investment proposals

- June – September 2004, using forms developed for this purpose
- Public Project Department completed investment forms
- Starting on 1 July, forms were sent to Chairs of Neighbourhood Councils, who then organised public meetings
- Idea of conducting citizen survey was ultimately not implemented
- Investment proposals collected from residents often contained flaws: not concrete, no estimate of investment outlays, sometimes not possible for local government to implement because proposed task not a LG competency

## Information collected on investments (sample investment card)

- Task Number: 1
- Task Name: Sewer system for areas of X, Y, and Z and district of A in City A under the project "Supply of water (transport and storage) together with construction of municipal sewerage and expansion of WWTP for Cities A, B and C" – co-financing from the Cohesion Fund.
- Task Score (points): 804 points
- Total investment outlays: 47 857 thousand PLN
- Assumed level of financing from own sources and loans 22.9%
- Note:
  - Own sources of financing include:
    - Municipal Budget, of which:
      - Municipal Fund for Environmental Protection and Water Management
      - Loan from National Fund for Environmental Protection and Water Management (NFEP)

## Information collected on investments (sample investment card)

Source financing	Year						TOTAL
	2004	2005	2006	2007	2008	Next years	
1 Own funds, of which: - budget municipality /from municipal fund for environmental protection/ - loan from National Fund for Environmental Protection and Water Management	-	2301 1327	3761 2226	2451 2192	2478 2215	-	10 991 7 960
2 Co-financing from Cohesion Fund	-	4769	8102	7976	8059	-	28 906
3 Other sources	-	-	-	-	-	-	-
TOTAL	-	8397	14089	12619	12752	-	47 857

## Case study on MYIP process

- 48 important investments (for each an investment form was completed) were written into MYIP
- In addition, collected data on 65 other investments – not included in MYIP due to lack of sufficient funds
- Prepared combined schedule of planned investments, year by year

## Table with ranked investments

r.	Investment	pts.	Total outlays (thousand PLN)						
			Total	2004	2005	2006	2007	2008	next
1	Sewer system in areas X, Y, Z and district A in Chrzanow	804,7	47 857		8 397	14 089	12 619	12 752	
2	North bypass of city from „Balinski” interchange to „Byczynski” interchange along national road no. 79 – Stage I	560,8	10 991		2 301	3 761	2 451	2 478	
3	West bypass of city – from „Byczynski” interchange along regional road no. 933	554,1	1 200			500	700		
4	Modernisation of traffic signal on intersection of Oswiecim Street (road no. 933) from Slowacki Street to Partyzantow Street in Chrzanow	503,5	150	40	110				
5	Construction of pedestrian sidewalk on Oswiecim Street in Chrzanow	476,2	1 530				1 530		

## Questions and Discussion



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

## Multiyear Investment Planning

### Case study from Lutsk

(Block 2)

Training of Trainers

26.XI to 1.XII 2007

Kiev



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## Характеристика города Луцк

- Население около 200 тыс. жителей
- Расположен недалеко от западной границы Украины
- Красивый исторический центр города, хотя в настоящее время немного заброшенный
- Власти города открыты для новых предложений – участвуют во многих программах развития.
- Бюджет: около 105 000 тыс. гривен (2003)
- Бюджет развития: 4 800 тыс. гривен

OECD OCDE

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## Ход работы

- Первый визит в город и встреча с органами местной власти.  
– Февраль 2002
- ... Выборы местной администрации в Украине...
- обучение нескольких административных работников в Польше  
– июнь 2002

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## Ход работы

- Составление подробного плана работы, утвержденного муниципальной администрацией и главным консультантом; Разработка образца формуляра для сбора данных  
– август 2002

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## Ход работы

- Вместе с финансовым отделом муниципалитета, разработка финансового плана
  - Анализ бюджетной истории за последние 3 года
  - Сопоставление макроэкономических показателей (помощь из Киева)
  - Составление, до 2007 года, прогноза уровня свободных финансовых средств которые можно будет инвестировать
  - Определение кредитоспособности  
15 сентябрь 2002

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

## Ход работы

- Сбор данных о инвестициях:
  - Описание инвестиции
  - График финансирования
  - Источники финансирования (как правило собственные средства, но бывают и целевые дотации)
- до 15 сентября 2002

OECD OCDE



## Ход работы

- Определение критериев выбора инвестиции.
- Присуждение веса каждому из критериев – до 20 сентября 2002



## Ход работы

- Оценка инвестиций при помощи критериев
- Составление заключительного документа – До конца сентября 2002



**ЛУЦЬКА МІСЬКА РАДА  
ВИКОНАВЧИЙ КОМІТЕТ**

**РІШЕННЯ**


№ 30.09.4054 / № 300  
м. Луцьк


Про проект багаторічного інвестиційного плану міста Луцька (2002-2007рр.), виконавчого міського ради.

Заступник інформувати про проект багаторічного інвестиційного плану міста Луцька (2002-2007рр.), виконавчого міського ради.

**ВИРІШИВ:**

1. Нести за основу пропозицій спеціалістів Європейської організації співробітництва та розвитку проект багаторічного інвестиційного плану міста Луцька на 2002 – 2007 роки.
2. Доручити управління економіки (Тарасюк С.Р.) допрацювати проект багаторічного інвестиційного плану міста Луцька на 2002 – 2007 роки з урахуванням пропозицій членів виконавчого комітету.
3. Внести проект багаторічного інвестиційного плану міста Луцька на 2002 – 2007 роки на розгляд сесії Луцької міської ради.

Міський голова:  М.А.Кравчук

Круглий стілець:  О.П. ...

Л. Луцьк, 2002

Грн	Название показателя	2003	2004	2005	2006	2007
<b>Доходы</b>						
<b>1. Основной фонд</b>						
1.1.	Доходы, зарпеченные за бюджетом города и учитываемые при определении объема межбюджетных трансфертов	84670.8	86844.4	90203.1	91978.4	95477.5
1.2.	Доходы, не учитываемые при определении объема межбюджетных трансфертов	9996.3	11158.0	10798.6	11946.8	11571.5
<b>2. Специальный фонд</b>						
2.1.	Бюджет развития	4800.0	4789.2	4760.6	4746.9	4951.0
2.2.	Специальный фонд	5984.4	6307.85	6591.3	6874.8	7170.4
<b>Всего доходов</b>		<b>105451.5</b>	<b>109099.1</b>	<b>112353.7</b>	<b>115546.8</b>	<b>119170.4</b>
<b>Расходы</b>						
<b>1. Основной фонд</b>						
1.1.	Расходы, зарпеченные за бюджетом города и учитываемые при определении объема межбюджетных трансфертов	82432.2	85106.73	87525.73	89869.67	92389.17
1.2.	Расходы, не учитываемые при определении объема межбюджетных трансфертов	12234.99	12895.68	13475.99	14055.45	14659.84
<b>2. Специальный фонд</b>						
2.1.	Специальный фонд	5984.35	6307.51	6591.35	6874.77	7170.39
<b>Всего расходов</b>		<b>100651.5</b>	<b>104309.9</b>	<b>107593.1</b>	<b>110799.9</b>	<b>114219.4</b>
<b>Бюджет развития</b>		<b>4800</b>	<b>4789</b>	<b>4761</b>	<b>4747</b>	<b>4951</b>



## Формуляр инвестиции

### Описание инвестиционного задания для г. Луцк

- Код и название задания:
- Решение стратегической проблемы (подробно описать, какая из стратегических проблем будет решена после реализации задания)
- Координатор инвестиционного задания: (ответственный за подготовку задания)
- Подготовка задания: (необходимо описать как проходит подготовка к реализации задания с формально-юридической точки зрения)
- Описание задания: (необходимо представить краткое описание и обьм задания)
- Начало: Окончание:



## Формуляр инвестиции

- График реализации и источники финансирования

Год	Собственные средства муниципалитета	Дотации	Займы	Другие
До конца 2002				
2003				
2004				
2005				
2006				
2007				
После 2007				
Всего				
Всего расходы				

- Показатель эффективности задания: (Необходимо подробно описать результаты реализации задания, напр. группу жителей, которые пользуются эффектом задания, уменьшение текущих бюджетных затрат и т.п.)

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## Метод оценки инвестиций

Название критерия	Значимость
Инвестиция в ходе реализации	<b>14</b>
Возможность получения дотаций	<b>11</b>
Проект генерирует бюджетные поступления	<b>12</b>
Позитивное влияние на окружающую среду	<b>11</b>
Влияние инвестиции	<b>10</b>
Связь с другими инвестициями	<b>6</b>
Нормативно-правовая документация	<b>9</b>
Участие местной общины	<b>7</b>
Социальные эффекты	<b>11</b>
Возможность разделения на этапы	<b>5</b>
Займы на льготных условиях	<b>4</b>

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Вариант 1

Сальдо (тыс. грн)	2003	2004	2005	2006	2007	2008	2009	2010
	-4 626	-5 573	-5 843	-2 687	4 855	13 747	22 937	32 131

№ п/п	Заголовок	Вид	Код	Дата н/п	Дата зак.	Прогноз	Влияние(тыс. грн)
1	Установка пароприборной котельной системы	И	1	03.2003	11.2005	63.00	5.200
2	Завершение благоустройства Замку Либарта	И	27	04.2002	09.2008	60.00	2.000
3	Замена теплоизоляции на объектах спортивной канализации	И	6	04.2003	11.2004	57.00	182
4	Демонтаж котельной в котельной	И	2	03.2005	11.2006	57.00	2.550
5	Очистка и обслуживание на гидравлических насосных станциях	И	4	04.2004	10.2004	49.40	53
6	Плановая реконструкция канализационной системы Лудана	И	13	04.2001	11.2004	49.00	3.320
7	Ремонт трансформаторной подстанции в Дубнянской водонапорной станции	И	3	04.2003	10.2003	49.40	8
8	Установка электроразрядной лампы	И	10	05.2003	09.2003	47.00	208
9	Замена труб разводки котельной	И	7	04.2003	11.2006	47.00	5.570
10	Завершение бюджета наводного периода	И	12	04.1999	11.2004	33.00	1.700
11	Котельный рынок народного дома "Прометей"	И	18	04.2002	09.2008	33.00	415
12	Котельный рынок детской школы №2	И	24	04.2002	09.2007	33.00	91
13	Котельный рынок детской школы №3	И	25	04.2002	09.2007	33.00	29
14	Установка котельной системы в газовой котельной	И	8	04.2003	11.2004	32.00	780
15	Котельный рынок мусорной плечи	И	17	04.2003	11.2006	31.40	4.500
16	Ремонт котельной в РЭС с замкнутой насосной системой	И	5	04.2003	11.2003	31.00	65
17	Ремонт котельной в котельной котельной	И	16	04.2003	11.2003	30.00	95
18	Будничное газопроводу по вул. Гладань	И	14	04.2003	11.2003	27.00	100
19	Модернизация та автоматизация центрального котельной	И	11	04.2003	11.2003	25.00	295
20	Модернизация котельной котельной	И	9	03.2003	11.2003	16.40	500
21	Котельный рынок централизованной котельной системы	И	22	04.2003	09.2007	15.00	240
22	Котельный рынок детской школы №1	И	23	04.2003	09.2007	10.00	53
23	Котельный рынок детской школы №1	И	20	04.2003	09.2006	10.00	151
24	Будничное газопроводу по вул. Володарский	И	28	04.2003	09.2004	4.00	1.000
25	Включая проекты работ благоустройства	И	15	04.2003	11.2003	3.60	200
26	Котельный рынок мусорной плечи "Счастье"	И	21	04.2003	09.2007	0.00	21
27	Котельный рынок Тернопольского будничного культуры	И	20	04.2003	09.2007	0.00	23
28	Котельный рынок будничного культуры в микрорайоне Вороняки	И	19	04.2003	09.2007	0.00	50

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Вариант 1

Перечень	2003	2004	2005	2006	2007	2008
Годовой операционный излишек	3000	4800	4789	4761	4747	4951
Сальдо в начале года	0	-4626	-5573	-5843	-2687	4855
Капиталовложение	8817	6033	5913	4159	1446	300
Внешние источники финансирования (без кредитов)	1191	0	0	0	0	0
Прибыли от реализации инвестиций	0	286	854	2554	4241	4241
Инвестиционные затраты	0	0	0	0	0	0
Сальдо перед использованием кредитов	-4626	-5573	-5843	-2687	4855	13747
Кредиты, суды, облигации	0	0	0	0	0	0
Обслуживание долга	0	0	0	0	0	0
частичное погашение	0	0	0	0	0	0
комиссионные	0	0	0	0	0	0
проценты	0	0	0	0	0	0
Сальдо	-4626	-5573	-5843	-2687	4855	13747

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Вариант 1

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Вариант 2

Сальдо (тыс. грн)	2003	2004	2005	2006	2007	2008
	0	1 939	1 939	3 607	3 607	20 424

№ п/п	Заголовок	Вид	Код	Дата н/п	Дата зак.	Прогноз	Влияние(тыс. грн)
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8	Установка электроразрядной лампы	И	10	05.2003	09.2003	47.00	208
9	Замена труб разводки котельной	И	7	04.2004	11.2007	47.00	5.570
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11	Котельный рынок народного дома "Прометей"	И	18	04.2002	09.2008	33.00	415
12	Котельный рынок детской школы №2	И	24	04.2002	09.2007	33.00	91
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27	Котельный рынок Тернопольского будничного культуры	И	20	04.2005	09.2009	0.00	23
28	Котельный рынок будничного культуры в микрорайоне Вороняки	И	19	04.2005	09.2009	0.00	50

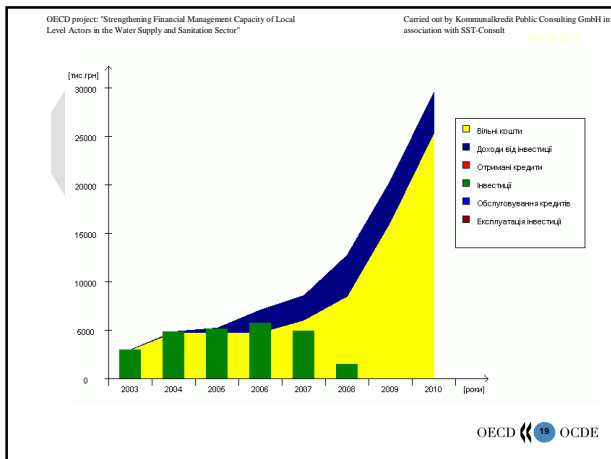
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Вариант 2

Перечень	2003	2004	2005	2006	2007	2008
Годовой операционный излишек	3000	4800	4789	4761	4747	4951
Сальдо в начале года	0	0	0	27	1289	3607
Капиталовложение	4191	4902	5199	5817	4992	1522
Внешние источники финансирования (без кредитов)	1191	0	0	0	0	0
Прибыли от реализации инвестиций	0	102	437	2327	2554	4241
Инвестиционные затраты	0	0	0	0	0	0
Сальдо перед использованием кредитов	0	0	27	1298	3607	11277
Кредиты, суды, облигации	0	0	0	0	0	0
Обслуживание долга	0	0	0	0	0	0
частичное погашение	0	0	0	0	0	0
комиссионные	0	0	0	0	0	0
проценты	0	0	0	0	0	0
Сальдо	0	0	27	1298	3607	11277

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### Опыт работы и рекомендации

№ п/п	Элементы МИП	Из опыта работы в Луцке	Рекомендации
1	Организация работ – время проведения:		
1.1.	- Календарный срок - Рабочее время	- ок. 5-6 месяцев - ок. 15-20 рабочих дней	- ок. 3-5 месяцев - ок. 15-20 рабочих дней
2	Организация работ – лица – участники процесса:		
2.1.	Использование работников в процессе внедрения МИП	5 человек участников процесса: - 2 - экономиста - 1 - организационные вопросы - 1 - инвестиции - 1 - координатор	Необходимо ок. 3 человек: - 1 – экономист - 1 – координатор, в сфере инвест. - 1 – координатор всего процесса

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### Опыт работы и рекомендации

№ п/п	Элементы МИП	Из опыта работы в Луцке	Рекомендации
2	Организация работ – лица – участники :		
2.2.	Участие других работников	Передача информации, регистрация информации: - Работниками коммунальных предприятий - Работниками мэрии занимающимися инвестициями - Работниками мэрии, занимающимися бюджетным планированием	Так же как в Луцке
2.3.	Утверждение работ	На уровне исполкома	Как минимум, так же как в Луцке

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### Опыт работы и рекомендации

№ п/п	Элементы МИП	Из опыта работы в Луцке	Рекомендации
3	Организация работ – дополнительные элементы для облегчения процесса:		
3.1.	Компьютер	2 компьютера на которых регистрировались: - финансовый план - Инвестиционный план (программа МИР) - формуляры инвестиций	Минимум 1 компьютер и принтер
3.2.	Коммуникация	E-mail; телефон	E-mail, телефон

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### Проблемы

Исходя из опыта работы по внедрению МИП, часто возникают следующие проблемы:

- отсутствие или неправильный подбор лиц, занимающихся внедрением многолетнего инвестиционного плана
- отсутствие возможности «вытянуть» соответствующую информацию у городских отделений и коммунальных предприятий, занимающихся инвестированием – отсутствие у властей желания разрабатывать многолетний инвестиционный план

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### Эффекты

- Небольшая разница между прогнозами и реальными результатами бюджетов в 2004 и 2005 г.
- Плановая реализация инвестиций из ранжирного списка.
- Быстрая реакция Мирового банка и предложение открытия кредитных линий для коммунальной инфраструктуры
- Повышение престижа города как во внутренних так и в международных контактах

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## Questions and Discussion



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## Multiyear Investment Planning

### MIP software

(Block 2)

Training of Trainers

26.XI to 1.XII 2007

Kiev



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## MIP - Software for the development of Multi-year Investment Plans

- Multi-year financial plan – estimating the level of own sources available for investment financing
- Creating an investment ranking based on user-established priorities
- List of planned investment projects (for selection)
- Schedule for financing outlays, planned external financing sources, potential loans, impact of investment implementation on future budgets

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## MIP - Software for the development of Multi-year Investment Plans

- List of criteria – enables the development of a ranking list
- Macro-economic parameters - inflation, economic growth – required for preparation of multi-year financial plan, useful for projections and simulations (calculating real outlays in the event that investment start and completion dates are modified)

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## List of investments

- List of all planned investment projects – parameter addition, removal, correction for each project

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## Investment data

- Basic parameters – project code, name and description; information on project benefits and alternative solutions
- Investments may be grouped:
  - Option group – different variants of the same investment may be planned (financing, investment duration, etc.)
  - Phasing group – project may be divided into stages or phases
- Initial planned date for investment implementation (may be changed over the course of the simulation)

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## Project schedule and sources of financing

- Entering a schedule of total outlays on investment by year
- Planned own sources and external sources of financing
- Draft credit plan

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## Budget impact

- Revenues realised after investment project completion: user charges, local taxes, reduction of fines, reduction in operating costs of modernised equipment, etc.
- Investment operating costs: personnel costs (salaries) and material costs (energy, fuel, operating materials, repairs)
- Costs of ceasing investment implementation may also be considered (fines for environmental degradation, repairs costs of old, not modernised equipment, risk of environmental catastrophe, etc.)



## Selection criteria

- Entering information essential to the creation of an investment ranking based on a list of criteria.



## Loans

- List of all loans/credits that can be obtained
- Entering a schedule for transfer of instalments and for loan repayment
- Payment schedules may be automatically calculated based on entered parameters (interest rate, payment period, etc.)



## Scenarios

- Purpose of simulation: creating an investment list of the highest possible priority, such that these investments may be completed using available, planned and potential sources of finance
- Scenarios: variants of simulations conducted by varying input parameters: weight of priorities, various options for investment projects depending on obtaining of certain grants, subsidies and loans



## Simulation

- Setting weights of each criteria
- Designing variants for multi-option investment projects
- Developing ranking of investment projects
- Observing budget projections, as influenced by approved investment projects, date for their implementation and approved credit
- Controlling course of simulation using a form or on a graph



## Financial cash flow

- Numerical presentation – in tabular form
- Graphical presentation – figures



## Software technology

- client-server version, WWW server using internet
  - May operate on many platforms and on several types of operating systems
  - May be used from many workstations on the administration's network
  - Simulation results may be made available on the internet
  - Server and internet connection may be initiated on an individual computer that is not connected to the network
  - Ease in creation of new language versions by replacing library file



## Minimum Requirements

- Pentium, minimum 32 MB RAM, screen dimensions 800x600
- If server is used through network, MS Windows NT or higher operating system recommended or Unix/Linux group systems



## Questions and Discussion



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## Multiyear Investment Planning

### Financial analysis

(Block 2)

Training of Trainers

26.XI to 1.XII 2007

Kiev



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## Budget revenues and current expenditures forecast

- Purpose of developing forecast:
  - determining free available funds that local government can allocate toward investment implementation in planned years of the analysis
- Method:
  - Analysis of historic data (budgets)
  - Forecast and project city revenues
  - Forecast and project city expenditures
  - Analyse debt
  - Plan available resources for investment

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## Analysis of historic data

- How have various revenue positions changed from year to year
- What are the main causes and what is the conclusion from this
- How are current expenditures changing and at what rate
- How are level of fixed expenditures changing
- Current debt and changes

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## Revenue forecast

- Revenues are planned based on last years' revenues, taking into account macroeconomic tendencies (increase of GDP, increase of salaries), local tendencies (population growth), improvements in revenue collection, introducing new taxes and known changes in legislation

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## Current expenditures forecast

- Current expenditure are forecasted based on last years' expenditures, taking into account macroeconomic tendencies (increase of GDP, increase of salaries), local tendencies (population growth), predicted changes in the scope and quality of services provided by municipality, introducing new tasks to local governments

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## FORECAST VERSUS FINANCIAL PROJECTION

- Forecast is effectively an assumption of what will happen in the future based on a certain set conditions as an analysis of past trends and estimates of of future internal and external developments
- Financial projection is the arithmetic result of a group of previously decided assumptions or forecasts; it refers also to the estimated data that appear in the financial statments for future periods

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## FORECAST VERSUS FINANCIAL PROJECTION

- Financial projection is just the arithmetic result of forecasts and assumptions
- It is the forecasts and the assumptions that should be analyzed and scrutinized

## USES OF FINANCIAL PROJECTION

Financial projections form the foundation of the planning process by:

- Providing estimates of future flows and outflows
- Indicating required funds so that appropriate sources and mix of financing can be negotiate
- Establishing performance objectives as a guide to operational decision-making

## TIPS FOR FINANCIAL PROJECTION

- Projections are useful guides for planning and control of municipality's goals
- Projections are based on forecasts/ assumptions of future flows and outflows of resources and they are as good as the assumptions
- Actual flows will almost certainly be different from projections and in order to minimise variance, forecasts and projections should be revised regularly to reflect recent developments
- For better guidance, it is desirable that more than one set of forecasts be prepared to give range of results and show the sensitivity of results to different assumptions

## MAIN CONCLUSIONS

- Making financial projections is a "simple" process, since it is an orderly and arithmetic way of presenting information; projections are based on forecasts/ assumptions
- Forecasting is a "difficult" process since the forecasts are assumptions based on judgment about uncertain future conditions

## How to do a forecast ?

$$V_n = V_{n-1} \times (1 + \alpha \times C_{Inf(n)}) \times (1 + \beta \times C_{GDP(n)}) \times (1 + \gamma \times C_{PR(n)}) \times (1 + \delta \times C_{PI(n)}) \times (1 + \epsilon)$$

где:

- $V_n$  величина для года  $n$
- $V_{n-1}$  величина для предыдущего года ( $n-1$ )
- $\alpha$  параметр, ставящий в зависимость данную бюджетную категорию от роста инфляции
- $C_{Inf(n)}$  коэффициент роста инфляции в году  $n$
- $\beta$  параметр, ставящий в зависимость данную бюджетную категорию от роста валового внутреннего продукта
- $C_{GDP(n)}$  коэффициент роста валового внутреннего продукта в году  $n$
- $\gamma$  параметр, ставящий в зависимость данную бюджетную категорию от роста валового регионального продукта
- $C_{PR(n)}$  коэффициент роста валового регионального продукта в году  $n$
- $\delta$  параметр, ставящий в зависимость данную бюджетную категорию от роста промышленного производства
- $C_{PI(n)}$  коэффициент роста промышленного производства в году  $n$
- $\epsilon$  дополнительный параметр, на который будет ежегодно увеличиваться данная бюджетная категория

## Operating surplus

- Operating surplus is the difference between forecasted revenues (excluding capital revenues, such as grants for capital investments) and current (mandatory) expenditures
- Operating surplus tells us what amount city may spend for capital investments from own sources and for debt service
- Its the most important indicator for banks and rating agencies when testing creditworthiness of the city



## Questions and Discussion