



BUTK
Bottom Up to Kyoto

BERLINER **nergie** AGENTUR

**Project „Bottom up to Kyoto – ButK“
EIE/06/010/SI2.443504**

WP 3: Feasibility studies

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Introduction

Drafts of feasibility studies were elaborated by BEA based on

- Definition of indicators, methodology for the studies (draft paper discussed in Riga during LTF meeting, final version was distributed to the partners (23.11.07))
- Data input from the partners, additional comments
- Assumptions by BEA for feasibility investigations

After commenting by the partners/discussion the final feasibility studies were performed by BEA (for Riga: 04.03.08) and uploaded to the project website

Riga must organize final decision about the study results and start of the EPC tender procedure including baseline calculation!



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Riga: actual situation and suggestion of efficiency measures

Actual status:

- 12.172 inefficient bulbs (incandescent lamp),
- 186 spotlights,
- 471 halogen lamps,
- 9.445 T5 fluorescent lamps, 8.425 T 12 fluorescent lamps, 20.789 T 8 fluorescent lamps - (among all approx. 6.000 with electronic ballast)
- 990 compact fluorescent lamps/energy saving lamps
- 114 other lamps (e.g. emergency lights)

Suggestion efficiency measures:

- replace of the bulbs with average efficient compact fluorescent lamps
- exchange of inefficient T 12 fluorescent tubes with T 5 fluorescent tubes
- exchange of all inefficient conventional electromagnetic ballasts with electronic ballasts



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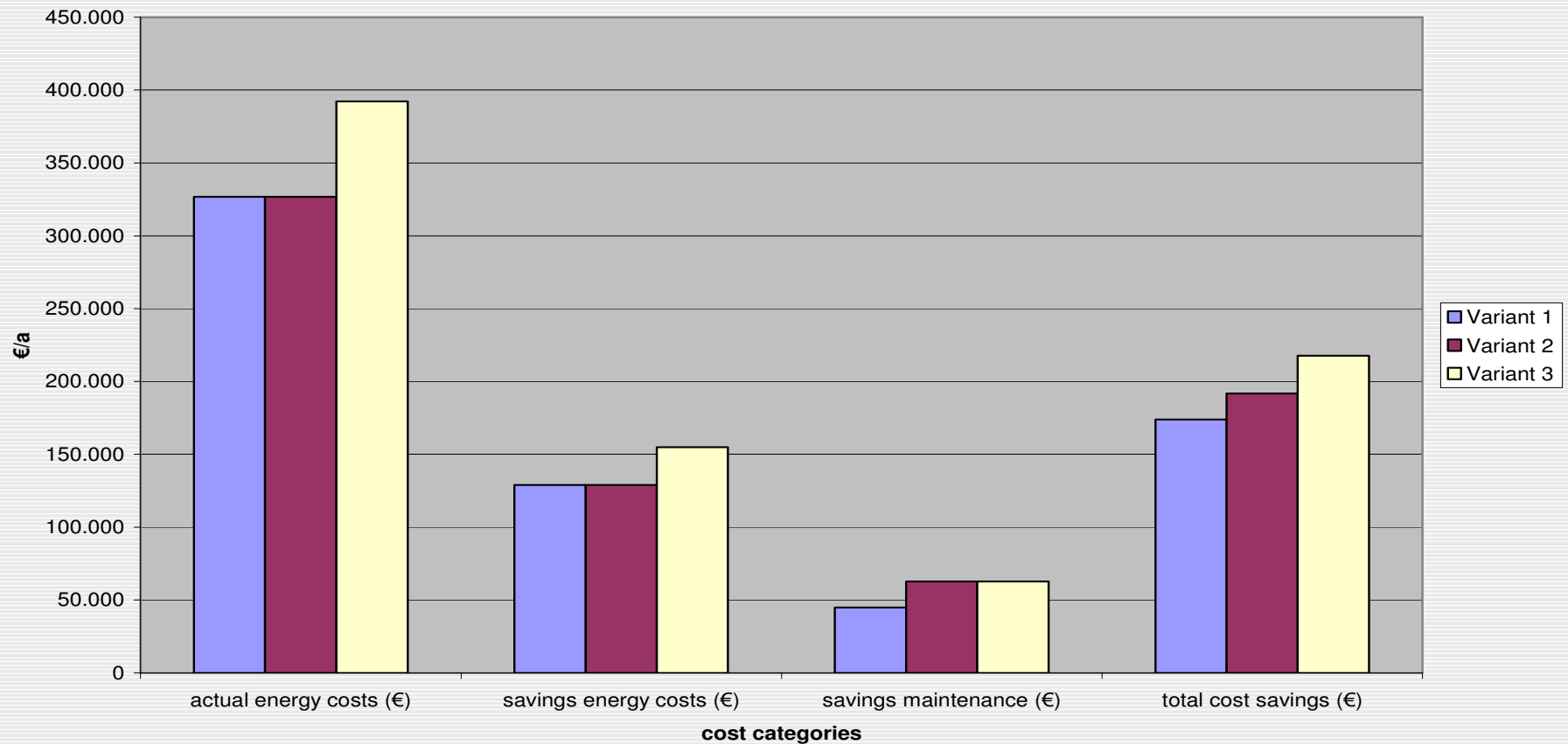
Riga: assumptions for feasibility investigations

- price for the electricity 0,07 €/kWh
- no additional taxes
- cable losses: at the actual status 5%, after refurbishment 3 %
- prices for lamps estimated from the list which were provided by Lighting task force member (are average end-user prices at municipal level without VAT)
- labour costs for lamp exchange estimated with following assumption: each lamp exchange takes 10 min, hourly rate for technical staff approx. 9,1 € (70% of the hourly rate which was budgeted in the ButK proposal for Riga) = 1,52 €
- Exchange cycles are very different, depending from the operation time/a and nominal life time of lamp (between 0,01 and 4,38)
- useful life of reconstruction: 12 years
- necessary investment costs (e.g. new reflectors, lamp boxes, cables): for each school average sum of 5.000 €, in total 300.000 €
- duration and interest of annuity credit: 12 years, 4,75 %
- **3 sub-variants: (1) average efficient lamps, (2) high efficient long-life lamps, (3) same like (2) – but 20 % increased electricity price**

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Riga: comparison of cost savings

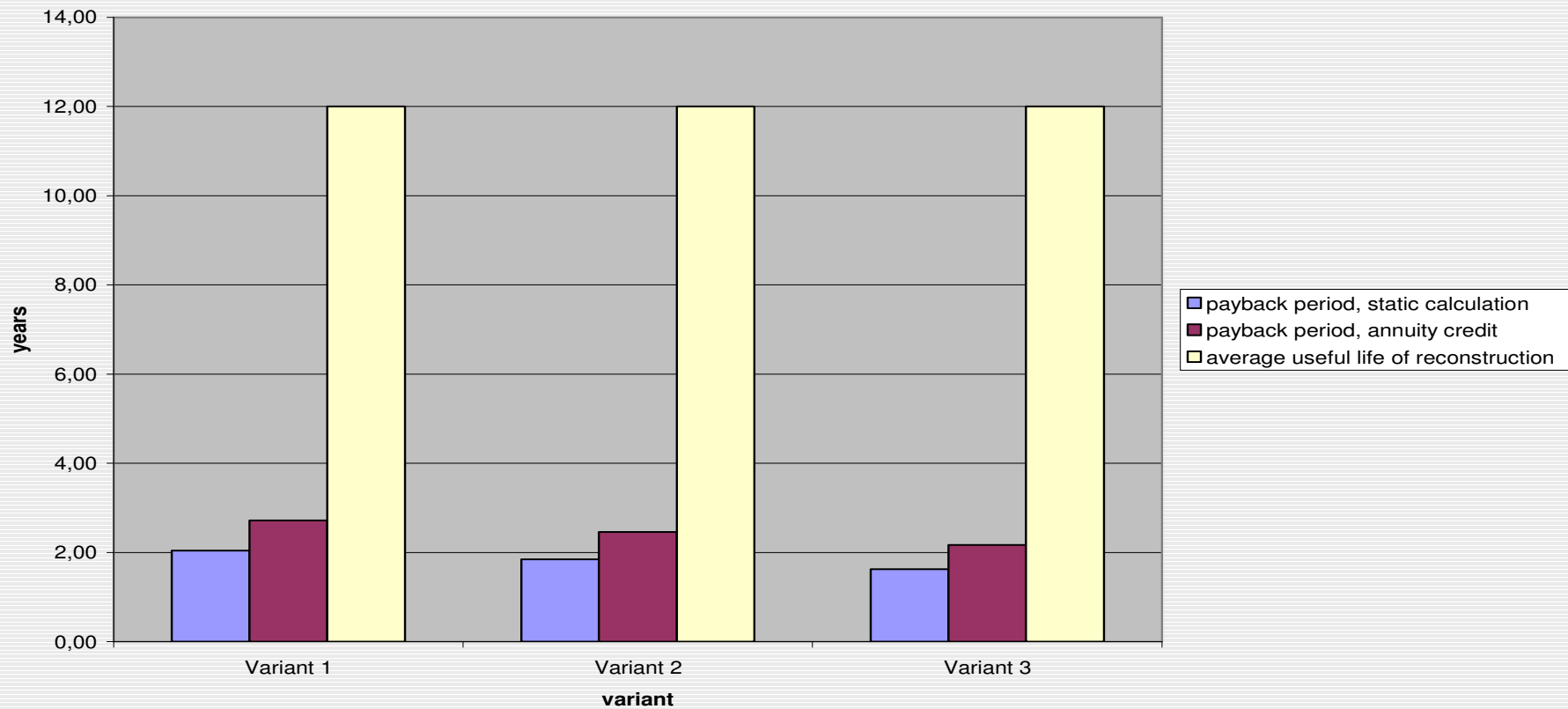
Indoor lighting Riga: comparison of cost savings



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Riga: comparison of payback period

Indoor lighting Riga: comparison of payback period



Dej: conclusions of the feasibility investigations

Municipality Riga has to decide regarding

- 1. the PPP model**
- 2. the compulsory measures, system requirements/specifications for the tender**
- 3. time schedule, responsibilities, next steps (expression of interest, baseline calculation, tender documents etc.)**