



Financing an incinerator of dried wastewater sludge by using the financial net present value method in Skywalker City in Lithuania (EU)



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Project Background (1)



The municipality - Skywalker City, LT

- 4th largest city in Lithuania
- Population: 133,900
- 1 wastewater treatment plant that was successfully completed in 2012
- The sewage system comprises a sewer network of 636 km of pipelines, 122 km mixed water or combined sewers, 283 km foul sewers, 199 km rain water sewers and 32 km pressure pipelines
- The company has around 65 employees



Project Background (2)

- **New investment beneficial for all stakeholders**
- **Achieve the broader social goals**
- **Environmental benefits**

Sludge incineration at the treatment plant provides the following advantages:

- Sludge transportation is avoided,
- Other solid waste, such as screenings or bio-waste, can be incinerated together with the sewage sludge,
- Locally generated power substitutes expensively purchase of power, co-generated heat is used on site for sludge drying and
- Wastewater treatment plant operators remain independent of large power companies

Management model and types of regulation

Public service management model

- Public sector is responsible for the management of the service and owns the assets
- operated by the municipality as a special asset with independent accounting (economic autonomy)
- The wastewater company has its own budget plan and is responsible for the implementation of this plan.

Regulation

Legal framework

- Directly from the EU
- Directly from the State

Economic framework

- Independent Agency
- Self-regulation



STAKEHOLDERS

National
Government

Local municipal
Government

Environmental
regulator

Ministry of
environmental
affairs

Key users

Water association

Community groups

Industry experts
and academics

Investments group



The WaWat (Wastewater) Project: some technical specifications

The project is a net revenue-generating operation, in the meaning of Article 61 (*Operations generating net revenue after completion*) of Regulation (EU) 1303/2013, which applies to operations which generate net revenue after their completion.

Demand	
Wastewater treatment service sold per year (m3)	3.731.400
Technical data of incinerator	
Burner	1
Heat capacity at the beginning of tburning	1,3 MW
Working hours	8000 h/a
Dried sludge (90% SM)	300-480 kg SM/h
Semi-dried sludge (50% SM)	400-600 kg SM/h
Average capacity for both dried and semi-dried	300-600 kg SM/h
Solids in the dried sludge	90%
Thermal value of dried sludge	11,2 MJ/kg DS
SM - solids	
DS - dry sludge	



The WaWat (Wastewater) Project: environmental benefits

The creation of such a facility prevents from the production of costly environmental externalities that the public administration would have had to repay. Such savings can be intended as a sort of shadow income.

Value of Environmental Benefit: CO2 reductions	
Decrease of CO2 emissions per year (kg/year)	1.398.700,00
Benefit (EUR/kg)	0,04
Benefit per year (EUR/year)	55.948,00
Value of Environmental Benefit: Phosphorus (P) reductions	
Ash per year (kg/year)	260.000,00
P per year (kg/year, 5,5% of ash per year)	14.300,00
Benefit (EUR/kg)	42,74
Benefit (EUR/year)	611.182,00



The WaWat (Wastewater) Project: the cost of the capital

The project is partially funded by public funds, and the remaining part by financial markets' wealth. The positive IRR, greater than the WACC, sets the project as perfectly viable, and shows it is a good alternative to Lithuanian 30 y Bonds.

Capital structure	
Equity	40,00%
Debt	60,00%
Tax rate	15,00%
WACC	4,03%
Kd (2,18% Lith. 30y Bonds + a spread)	3,20%
Ke (rate decided by Lith. Authority)	6,00%
Project IRR	7,83%



The WaWat (Wastewater) Project: the financial data

The NPV is positive, and accounts for 12,92% of the initial investment at year 0, and the working capital over revenues ratio is 11,24%.

Main Financial Data	
Cost of investment/asset (€)	10.920.000
– financed by equity (€)	4.368.000
– financed by loan (€)	6.552.000
Useful life (years)	30
NPV (€)	1.410.885
Working capital % of revenue	11,24%
Project IRR	7,83%



Thank You for Your Attention

