



Mineral and Energy
Economy Research
Institute
Polish Academy of Sciences

Case study – Zeocem, Inc.

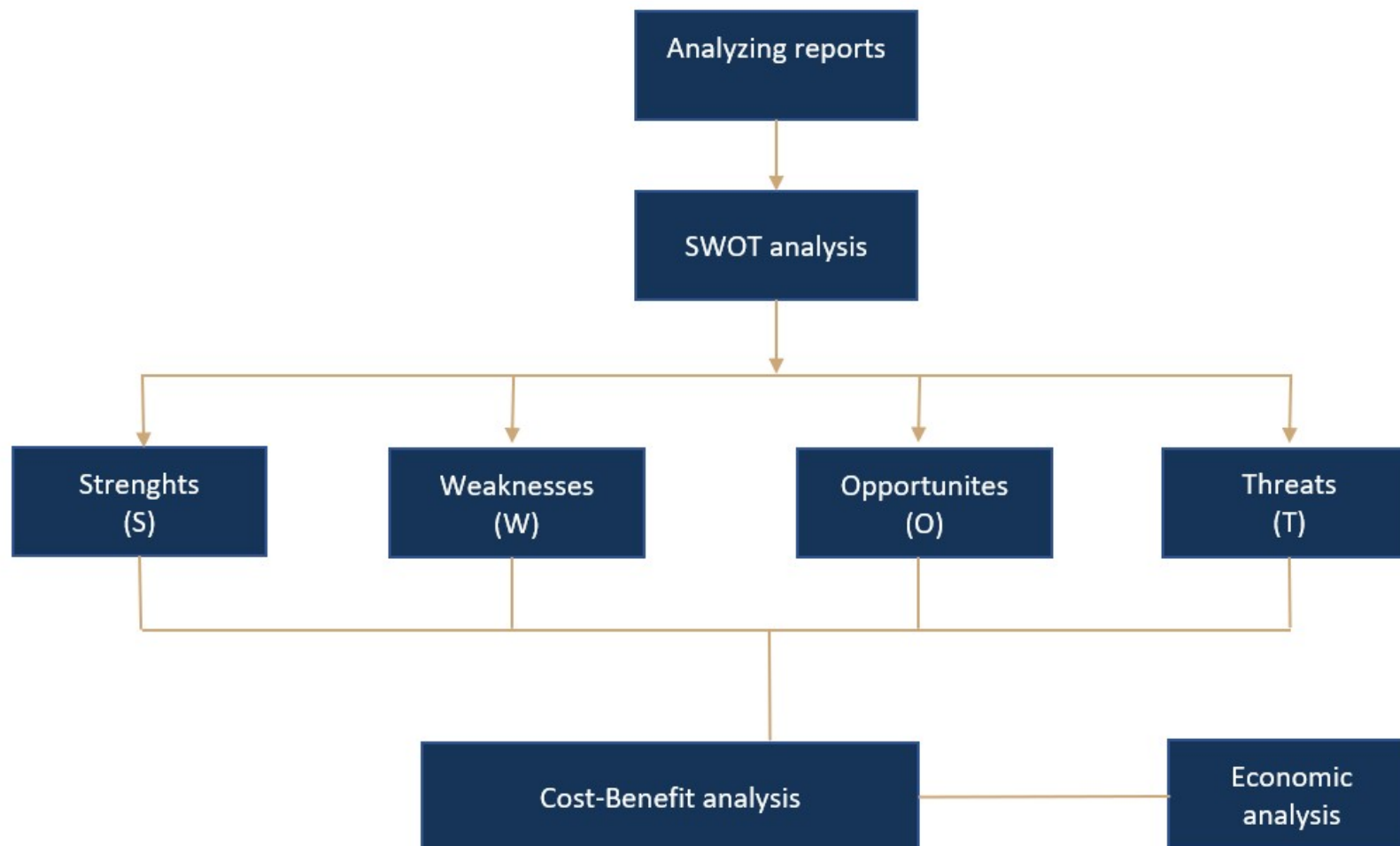
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Research methodology structure

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ZEOCEM, Inc.

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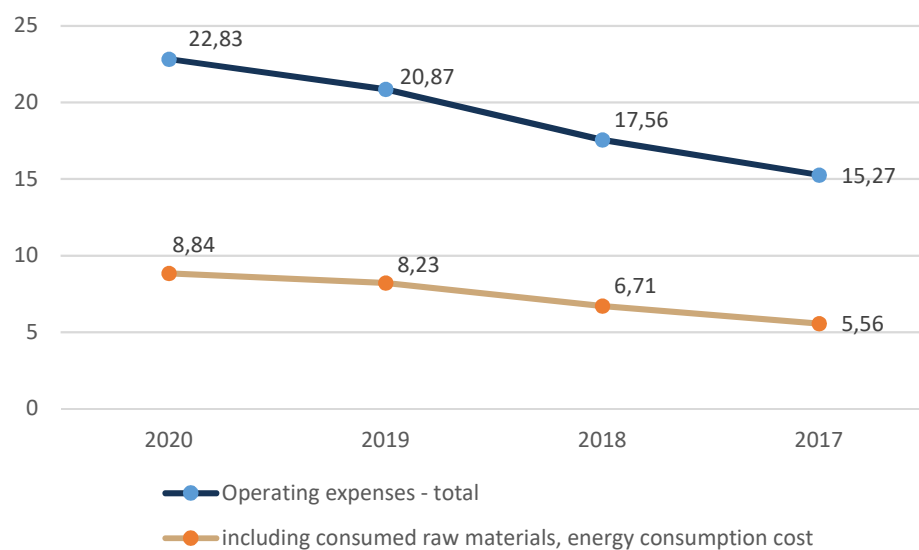
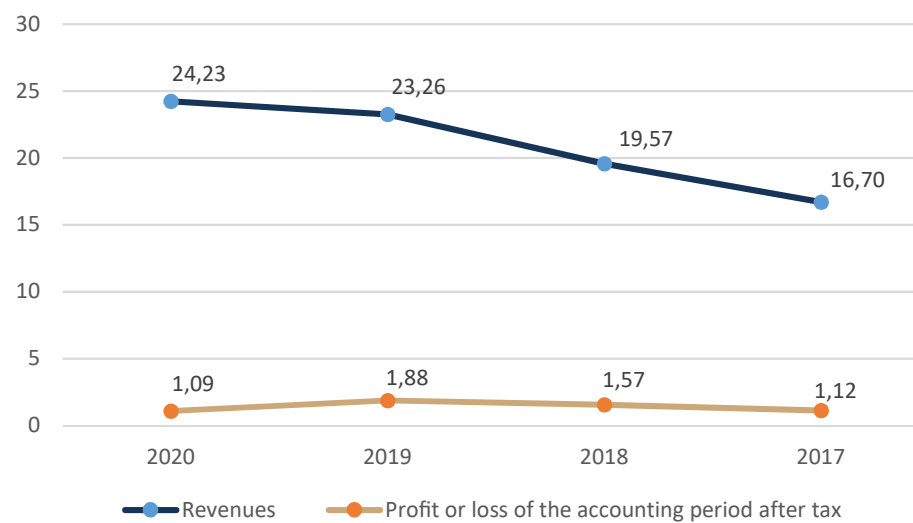
Zeocem, owned by the Czech-Austrian CTR and Austrian Glock Health, is one of the leading producers of zeolite (Zeocem, 2022). Currently (as of January 2021) it has produced less than 200,000 tons of this volcanic rock per year. The company plans to expand its zeolite mining area in Nižný Hrabovec near Vranov nad Topľou by more than 10 hectares, which allows the production of 400,000 tons of zeolite per year. Zeocem employs 200 people. In 2009-19, it increased sales from EUR 8 million to EUR 23 million, achieving a net profit of more than EUR 1.9 million in 2019 (Denník N, 2021).

Products	Description
AGRO	Clinoptilolite is widely used in agriculture, livestock farming, construction, environmental protection, cleaning water and gases, and in various industrial uses.
ZeoFeed	Animal Feed Additive
ZeoSand	Complex soil additive that improves properties of soil increases efficiency and utilization of nutrients in the soil.
ZeoBedding	Mineral additive for livestock bedding
ZeoGrit	Mineral grit for poultry farming
ZeoGravel	Soil conditioner for gardening and sports turf
KlinoGrow	Unique foliar fertilizer
ZeoSand Sil 20	Foliar plant protection



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SWOT ANALYSIS

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Strength:

- Have access to high-quality natural zeolite deposits,
- Broad portfolio with strong clientele,
- Compatibility of products with European standards.

Circular economy:

The intention to implement new investments, technologies improving, for example, reducing air, soil and water pollution.

Weakness:

- Limited geographic presence.

Circular economy:

No funds, bureaucratic requirements, no commitment from management and staff.

Opportunities:

- Pricing power,
- Explore new markets.

Circular economy:

New markets, new consumers and a competitive advantage, increased financing opportunities, exports.

Threats:

- Cutthroat competition,
- Rapid Technological Changes,
- Coronavirus (COVID-19) Outbreak.

Circular economy:

The state should prepare rational environmental regulations, possibilities of co-financing investments, inform consumers about environmental practices related to Zeocem.



Benefit analysis

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Benefits	Type of effect	Valuation method
Reducing air pollution	Direct effect	LCA, prices of emission allowances
Reduce soil pollution	Direct effect	LCA, legal regulations
Reduction of groundwater pollution	Direct effect	LCA
Noise caused by the extraction of natural zeolite	Direct effect	No valuation method
Ecosystem degradation and landscape deterioration caused by the extraction of natural zeolite	Indirect effect	Legal regulations
Proceeds to the state budget	Indirect effect	CIT (corporate income tax), PIT (<u>Personal Income Tax</u>)



ECONOMIC ANALYSIS

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Air pollutant emissions from natural zeolite extraction (EUR/Mg)

Emissions of pollutants into the air	EUR/Mg
Carbon dioxide, fossil	372,52
Carbon dioxide, biogenic	0,59
Methane	0,05
Sulphur dioxide	0,06
Nitrogen oxides	0,02
	373,23

Source: SimPro 8.

Soil emissions from natural zeolite extraction (EUR/Mg)

Emissions of pollutants into the soil	EUR/Mg
Heat, waste	0,0095
Oils, unspecified	0,0041
Carbon dioxide for soil or biomass stocks Silicon Iron	0,0014
Silicon	0,0006
Iron	0,0005
	0,02

Source: SimPro 8.



ECONOMIC ANALYSIS

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Selected emissions of pollutants to groundwater from the extraction of natural zeolite (EUR/Mg)

Emissions of pollutants into water	EUR/Mg
Silicon	0,65
Sulfate	0,47
Sodium	0,24
Aluminum	0,22
Calcium	0,18
Sodium	0,13
Chloride	0,09
COD (Chemical Oxygen Demand)	0,09
Iron	0,08
Magnesium	0,07
Titanium	0,06
Chloride	0,05
	2,33

Source: SimPro 8.



ECONOMIC ANALYSIS

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Other benefits (examples):

- New work places,
- Reduction of social costs, including health costs,
- Development of industries using natural zeolites,
- Expanding the recipient market (export).



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Thank you for your attention