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Sewage Sludge

Strategic Urban Mining

ENEA ETV – 18.06.2024

Sewage Sludge

Sewage

Clean Water

Sludge

Production Mton/year
(CAGR 7.5%)

180 (world)
+ 100’000 WWTPs

40 (EU)
+ 20’000 WWTPs

3.2 (IT)
+ 3’500 WWTPs

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Current solutions:

landfill or incineration

Disposal costs:
B 6 €/year (EU)
Mio 480 €/year (IT)

1.4% of global CO2 emissions in 2022*!

*: Zhao et al., 2021. Greenhouse Gas Emission mitigation of Large-Scale Wastewater Treatment Plants (WWTPs): Optimization of Sludge Treatment and Disposal. Pol. J. Environ. Stud., 30(1), 955.

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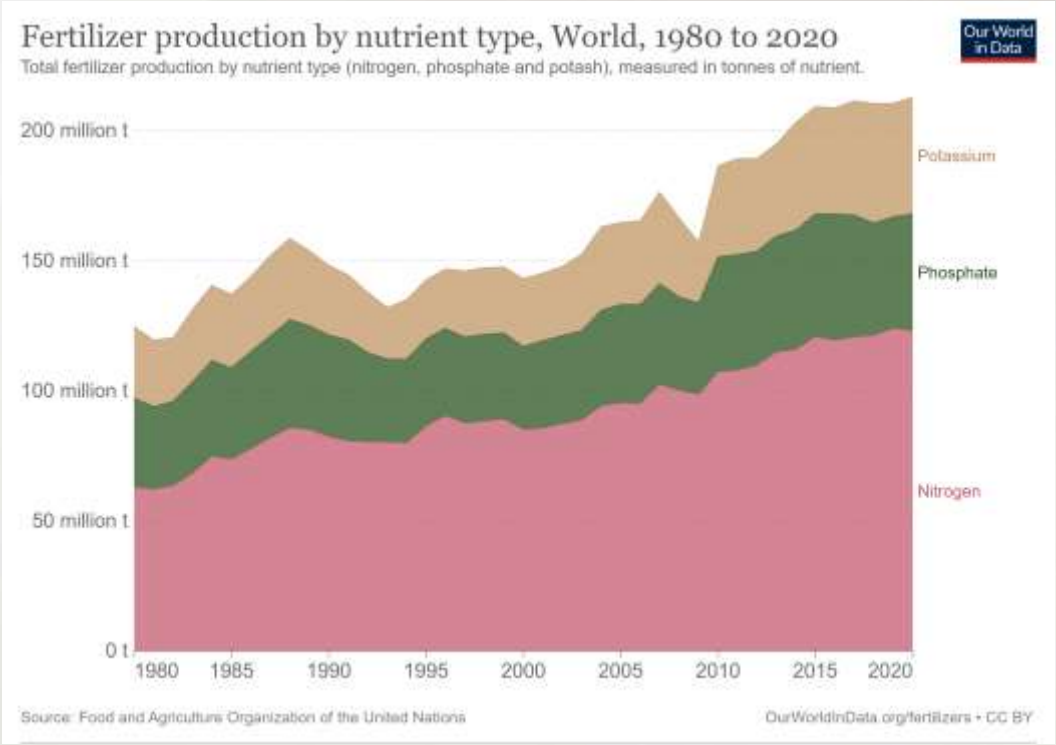
Fertilizers are a key component in Agriculture & Food Production, which is the second most polluting industry, and their production is not circular.

Most of fertilizers end up in the sewage sludge

Fertilizer Consumption

Measured in ton/year.



Sewage Sludge

*«From Sewage Sludge we could **recover valuable matter and energy**. 2021 market research data (ISPRA) indicates that 52,3% of the produced sludge has been landfilled. A huge waste of resources.»*

Filippo Brandolini, President Utilitalia (08/2023)

Resourcing Sewage Sludge

Valuable Resources:

7% nutrients

13% energy

75% water

5% residuals

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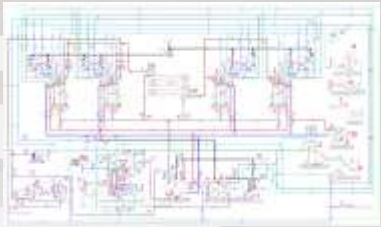
HBI's journey

01

Idea



02

Prototyping & Patents
(4 patents)

03

Scaling-up & Pilot plants

04

Go-to-market

Certified Technology

- 85% water recovery
- Energy efficiency
- Nutrient recovery

94 % waste reduction!

Results

8,135

Total working hours

592

m^3 of water recovered

54,150

m^3 of syngas produced

69

ton of valuable matter recovered

Goals achieved

1. 4 international patents
2. Proof of treatment of wide range of sludges
3. 94 % waste reduction + energy efficiency (certificate ETV)
4. 2 authorized installations (BZ e VE)
5. De-risking industrial scale up

The best team to hit on a disruptive opportunity

Dr. Daniele Basso (CEO)

M.Sc, Ph.D. environmental engineering
Exectuive MBA – SDA Bocconi

Renato Pavanetto

Second generation entrepreneur

Actual team

Federica Bellunato
HR & MKTG

Andrea Benedetti
CSO

Valentina Favaron
PM Engineering

Lucia Zanetti
R&D

Gabriele Mazzoletti
Public Affairs & Regulatory

Partners

CARRETTA

unibz

Main investors

NovaCapital

NGV Next Generation Venture

ETV certification

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1

Performance Certification

2

Market de-risking

3

Market Positioning

- Strong competitive advantage
- Intellectual Property Validation
- Asset value increase --> Enterprise Value

RINA ETV

STATEMENT OF VERIFICATION

Technology: EVA mini

Registration Number: VN20220052

Date of Issuance: 04/11/2022

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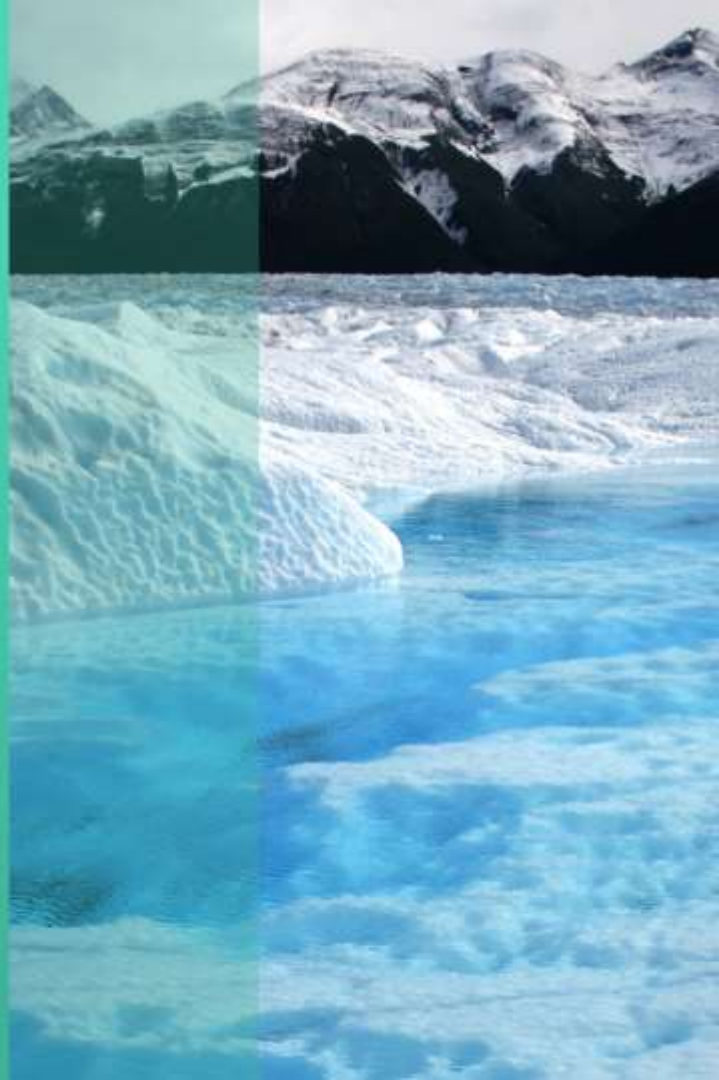
Grazie

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