Beyond value creation

impact with resource recovery

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Vitens

Vitens

Largest drinking water company in The Netherlands

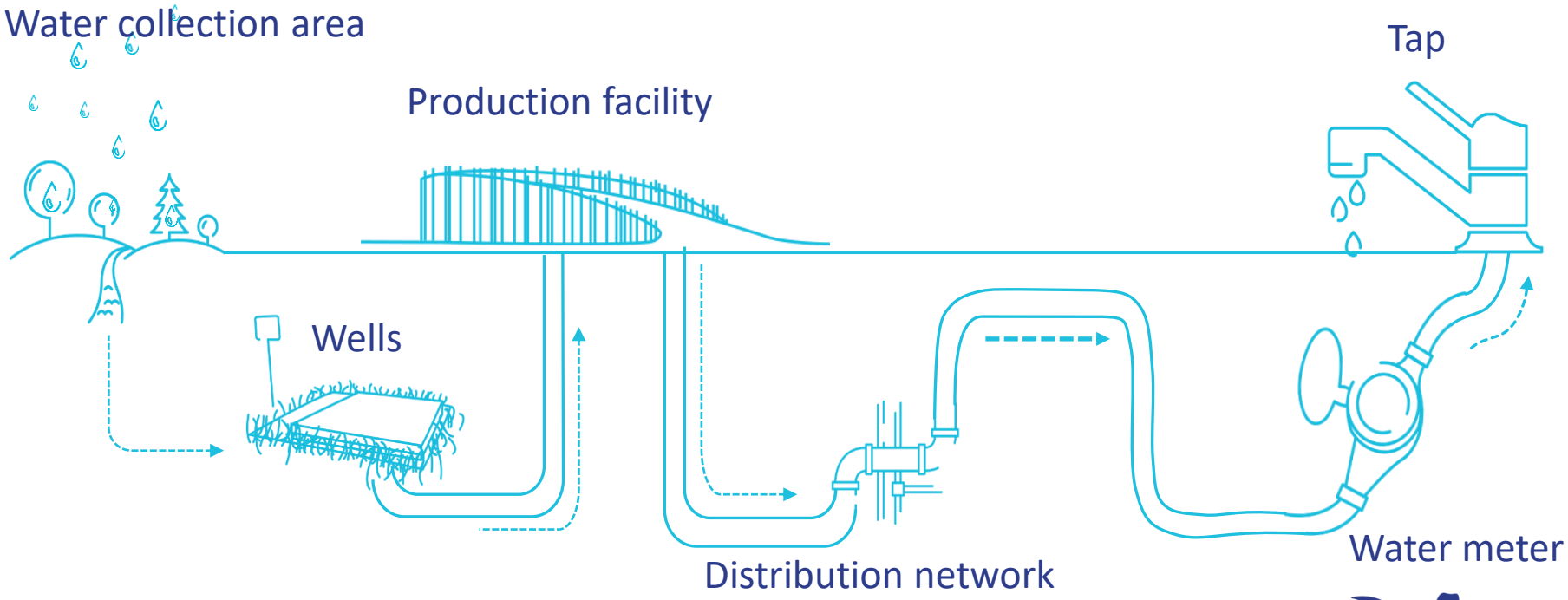
100% dependent on ground water

Most water collection areas are in farmland

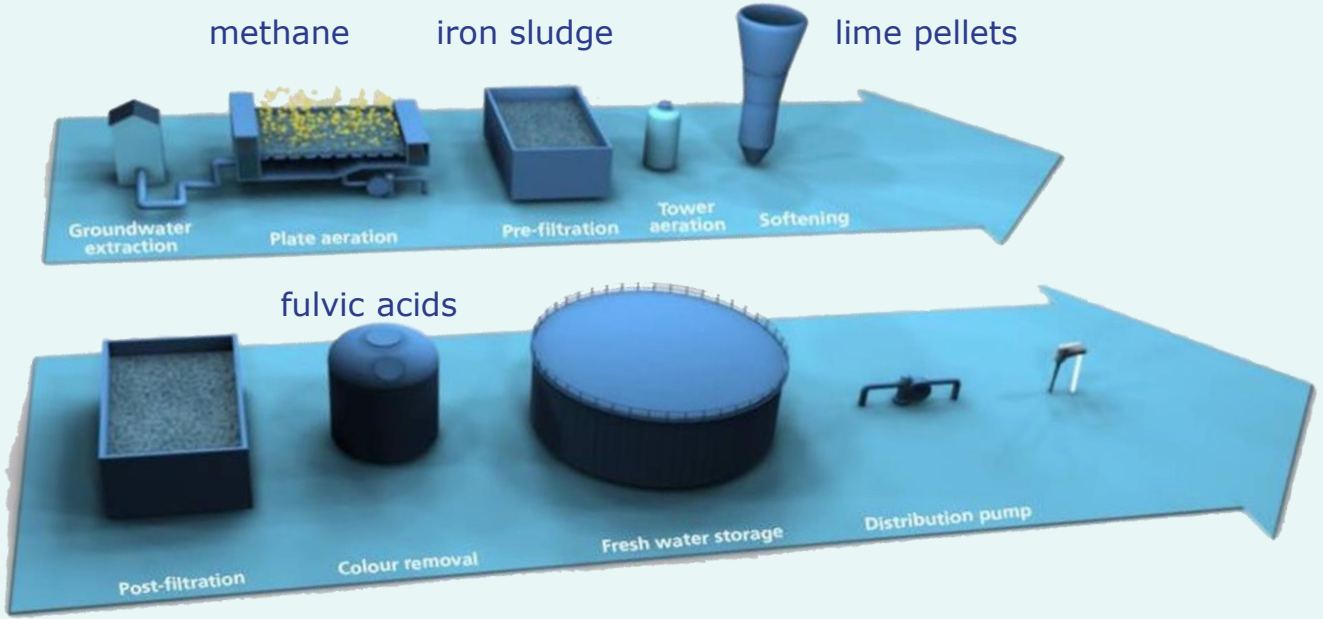
5	provinces
110	public shareholders
1.400	staff
49.000 km	km distribution network
5.600.000	customers
€180.000.000	investments per ear
375.000.000	m^3 water production
100	production locations

Vitens

From source to tap



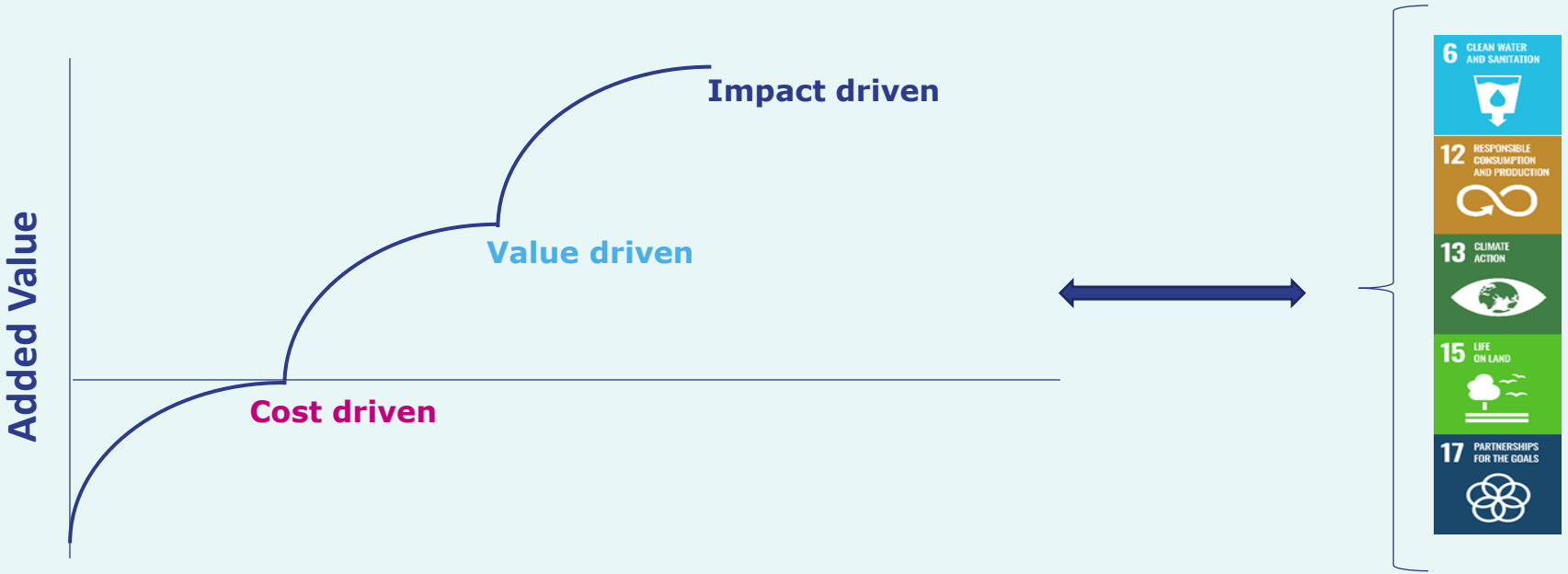
Drinking water production = Resource Recovery



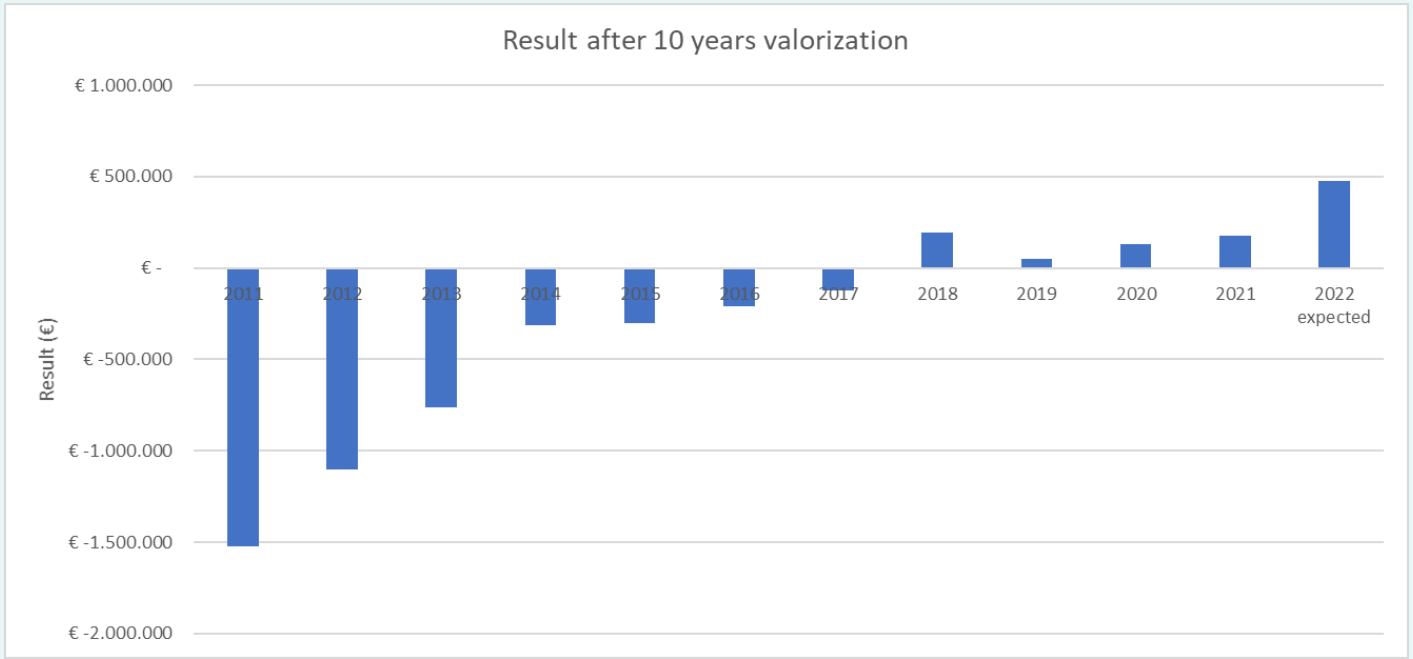
Vitens byproducts

Byproducts	Volume (ton/y)
Iron sludge	35.000
Lime pellets	25.000
Fulvic acids	1.000
Total	**61.000 ton**

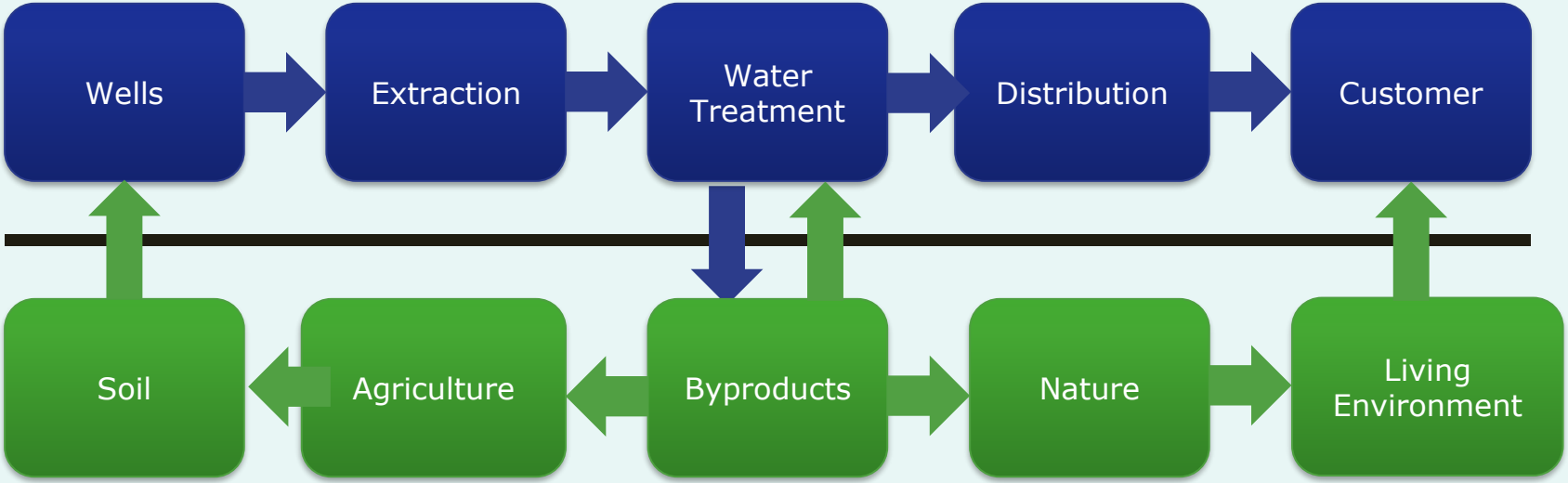
Beyond €€: positive impact on the environment



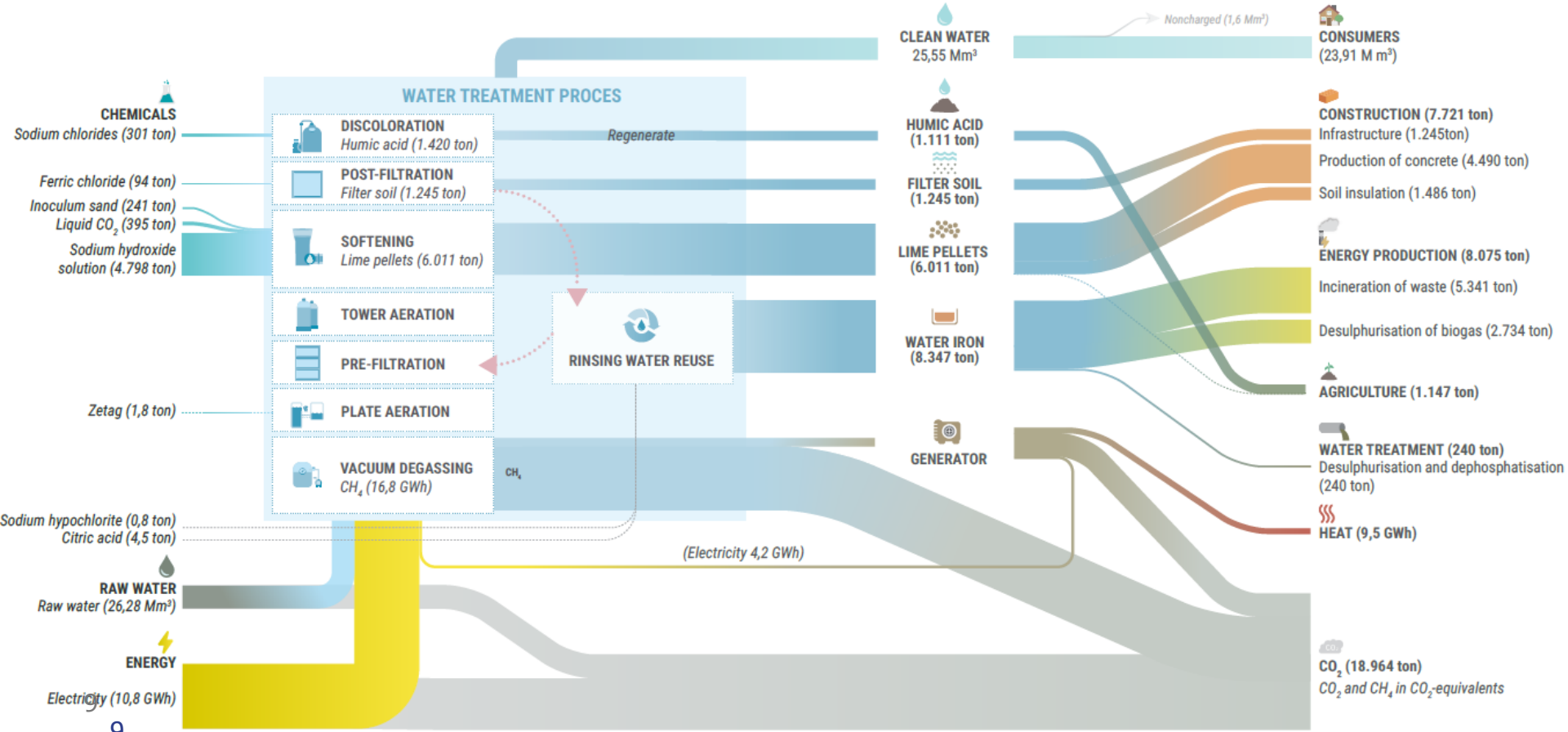
Successful commercialization of byproducts



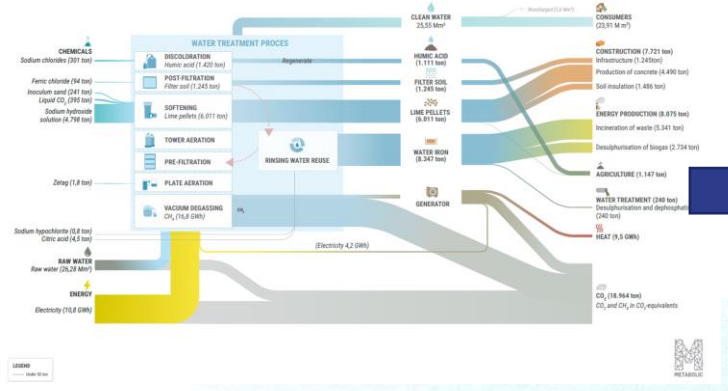
Circular strategy:
from the ground back into the soil

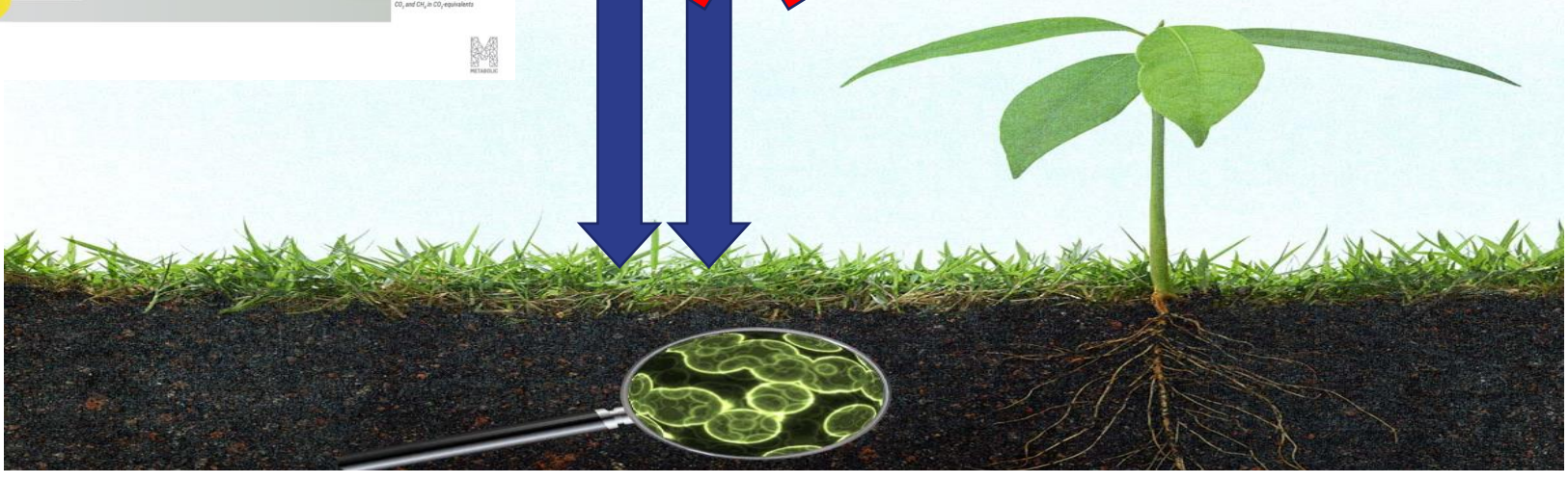


Sankey diagram Spannenburg



Reducing the need for conventional non sustainable products





Product 1: HumVi™

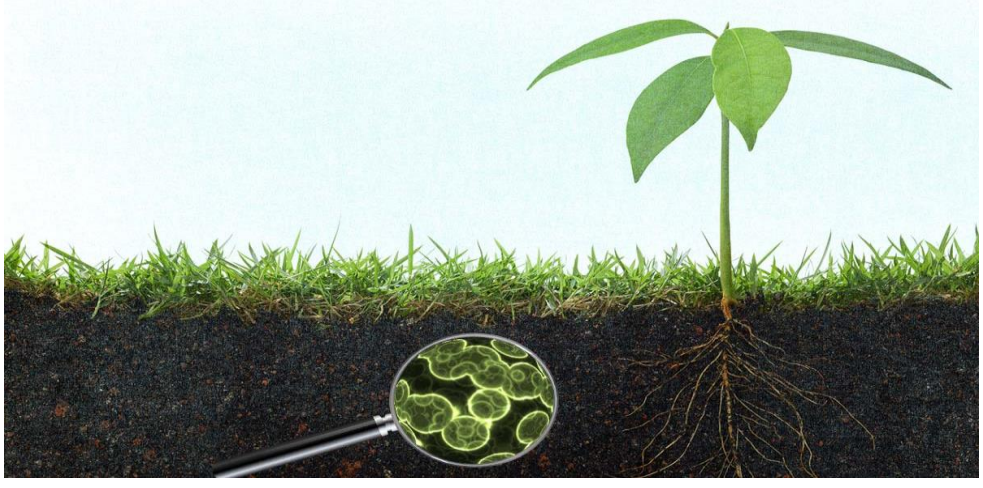
Fulvic acid natural soil conditioner and biostimulant

PHC
Plant Health Cure

Vitens

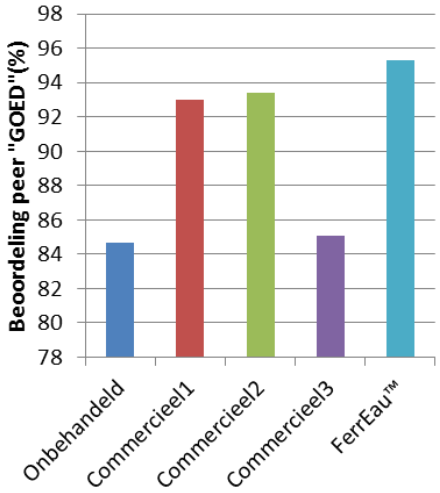
Product 2: Lime pellets

Cirkal® Slow Release Soil Improver

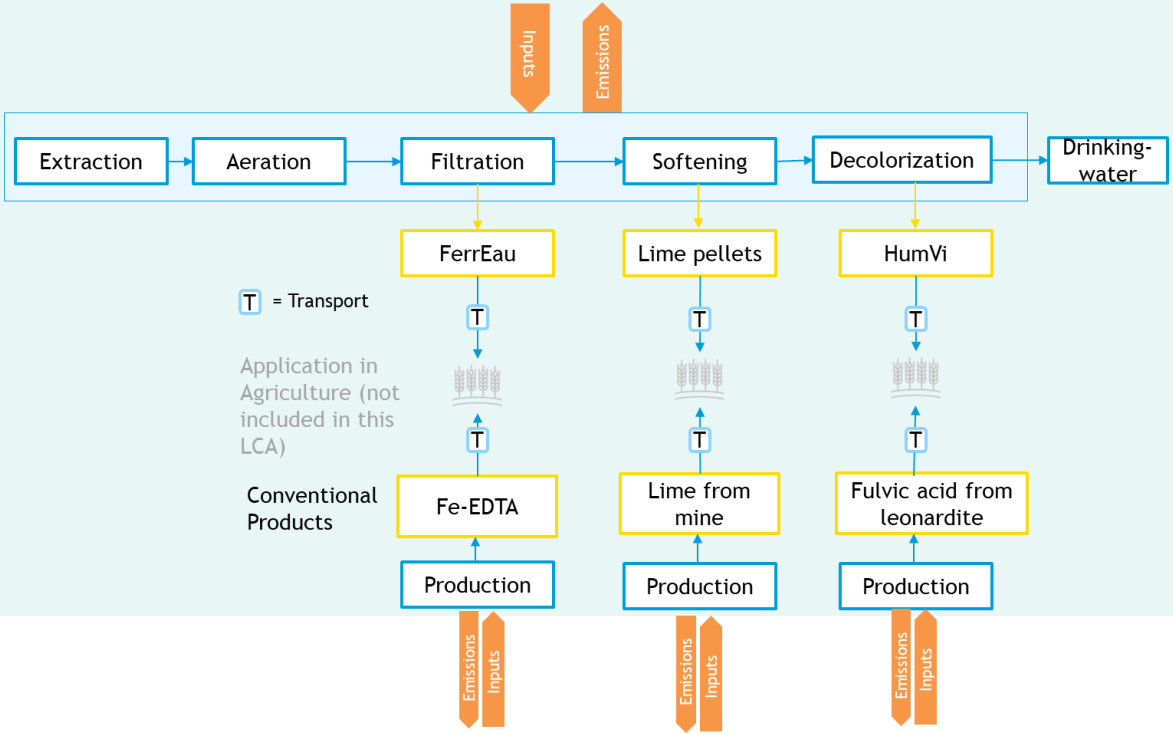


Product 3: FerrEau®

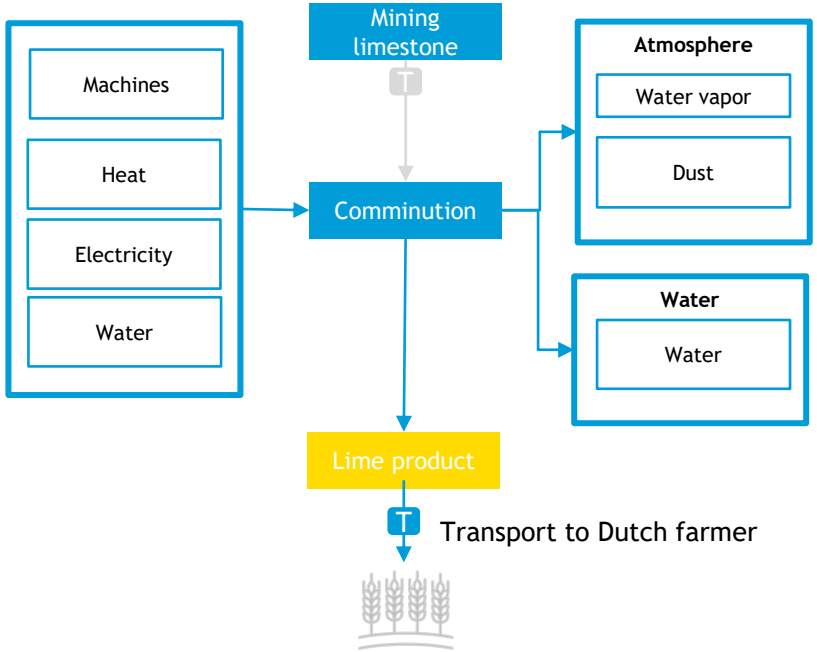
A natural alternative for synthetic iron chelates

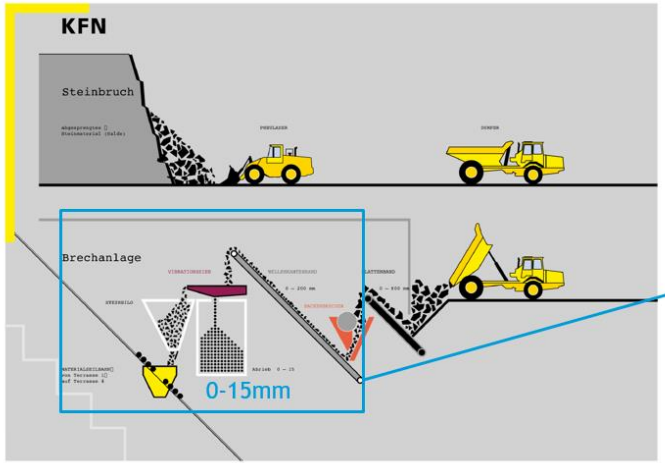


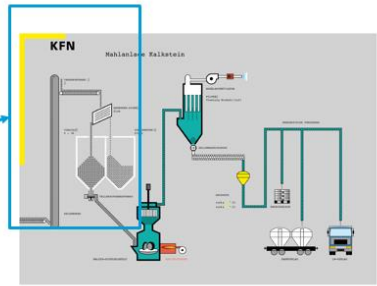
LCA comparison



LCA of lime from mine as an example







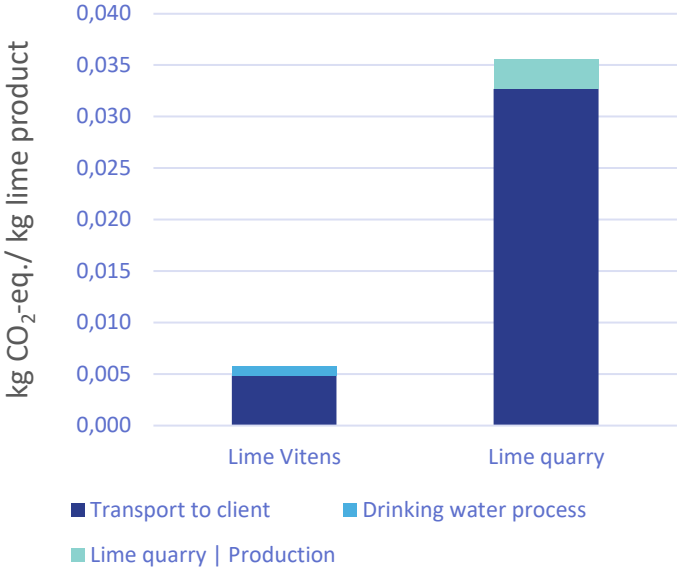
Local high quality lime product

7 x smaller footprint

Assumptions for transport

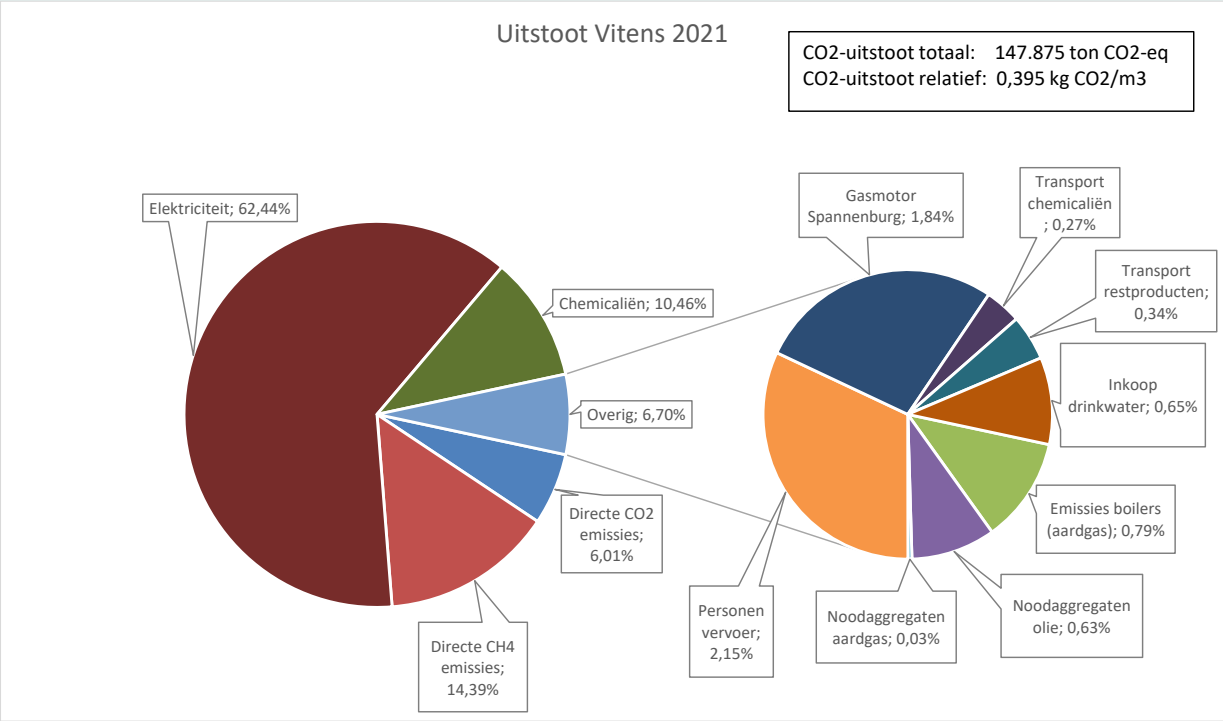
	Product	Distance	Means of transport	Locations
Vitens product	Lime pellets	25 km	Lorry, 10-20 ton, diesel	Spannenburg to diverse locations
Reference product	Lime granules form quarry	200 km	Lorry, 10-20 ton, diesel	Assumption
		700 km	Train	Switzerland to Netherlands or close to border

CO2-footprint Vitens lime pellets vs. lime granules from quarry

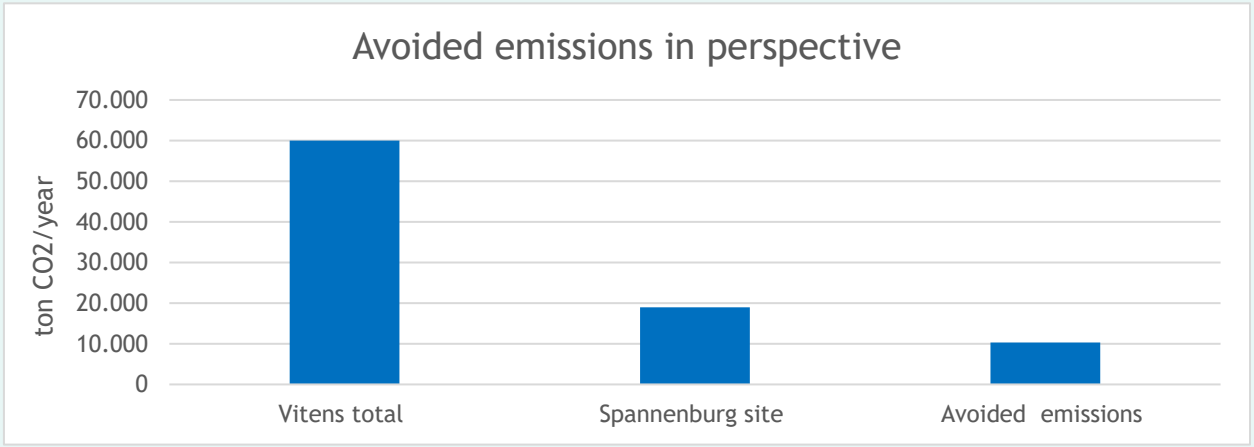


Vitens' footprint

- ~ 150.000 t/y CO_2
- ~ 90.000 t in green electricity
- ~ 60.000 t to be compensated



Significant potential to reduce footprint



- Total volume lime pellets
- Total volume Humvi
- 50% of iron chelates in Dutch pear orchards replaced by FerrEau®

water
voor nu
en later

www.vitens.nl

Vitens

Other initiatives outside scope of this paper

- Lime-pellets applied in nature: to revitalize soil that is acidified by intensive conventional farming
- Lime pellets applied in drinking water production: to harden water on locations where pH of source water is low.
- Iron sludge: produce pellets for applications in the water sector.