RAGN-SELLS

WHAT A WASTE!

Think circular

OSA: NORTHEN EUROPE'S BIGGEST CIRCULAR ECONOMY PROJECT

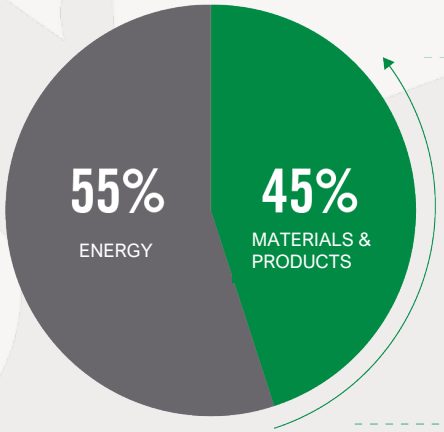
Inspiring story of how industrial waste will be turned into critical raw materials

OUR CHALLENGE

- 45% of global CO_2 emissions come from the production of materials, food and products.
- Population growth and urbanisation are projected to increase demand for raw materials by at least 2 times by 2050.
- At the same time, the extraction of many raw materials has reached its peak – resources are running out.
- The number of critical raw materials in the EU has increased from 15 to 36 in just 10 years.
- The raw materials crisis has already put the EU under price pressure from developing markets, which is pushing up the prices of our everyday products.
- We will not reach our climate target of 1.5 degrees, unless we speed up the circular economy and recycling of materials

OUR PLANET IS FACING A GROWING PROBLEM

CARBON EMISSIONS TODAY



DISTRIBUTION OF MATERIALS

including food, steel, plastics, cardboard, aluminium, etc.

REDUCING EMISSIONS BY 2050

45% Circular Economy

55% New technologies, CCU+S, carbon diet

WE HAVE A SOLUTION

- Scientific studies have proven that part of the solution to the raw materials crisis is to be found in the ash hills of Ida-Viru County, which have not yet been used.
- In Ida-Viru County alone there are nearly **40 idle waste hills** with over a billion tonnes of various industrial and mining residues, of which **nearly 600 million tonnes are oil shale ash**.
- Ragn-Sells has already drilled five ash hills in Estonia, and found that **they contain calcium, magnesium, iron, aluminium, silicon and other critical raw materials.**
- Thus, ash hills should be seen as material banks that provide an opportunity for Narva, Ida-Viru County and Estonia to become one of the centres of the European circular economy .

THE STORY

We are a family owned third generation company, originating from 1881. We want to be living proof that caring for the earth and business go hand in hand. Today's transformation from a linear economy to a circular economy means that contemporary business models may not exist in the future. Therefore, Ragn-Sells has decided to drive sustainable change via thought-leadership, through partnerships with society as well as existing and future business partners. Working both upstream and downstream is a prerequisite to be a role model in creating circular and sustainable material flows to maximize the value of resources.

VISION: We want to be living proof that caring for the earth and business go hand in hand

MISSION: We want to lead the transformation towards a circular society, where we care for the environment, counter climate change, and help communities prosper

ABOUT US

2000
Employees

100
Facilities

870 000 000 €
Sales

6 000 000 T
Treated materials

HOME MARKETS

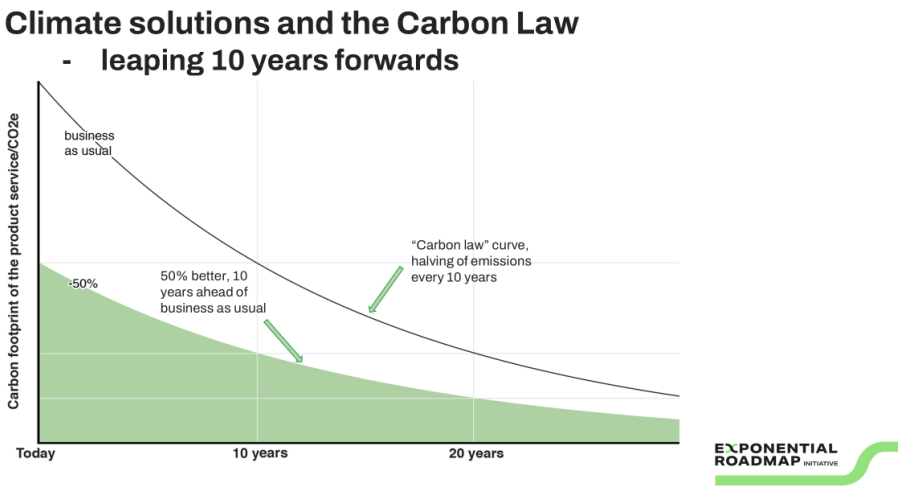
SWEDEN / NORWAY / DENMARK / ESTONIA

ASH2®SALT TURNS HARMFUL ASHES INTO INDUSTRIAL SALTS

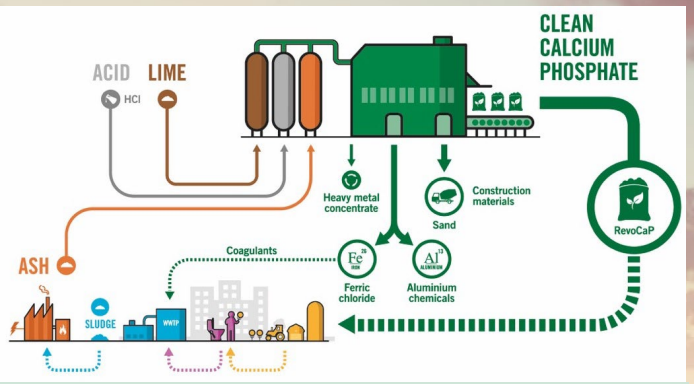
- Capacity: 150 000 tons annually
- Investment: 55 000 000 Euros
- Among the largest investments into circular economy in Scandinavia.
- 12 other markets have high interest to use Ash2Salt Circular Technology

The salts produced from ash have 90% lower CO^2_e footprint compared with today's salt that is mainly imported from Russia and Belarus

CIRCULAR SOLUTION FOR SOLVENTS – ALMOST 90% CO_2 SAVINGS



EXTRACTS PHOSPHORUS AND OTHER RESOURCES



PRODUCTS

Ash2™Phos generates clean, well-recognised products, valorising more than 95% of the ash.

PHOSPHORUS

RevoCaP™

(precipitated calcium phosphate)

CO-PRODUCTS

Aluminium chemicals

Ferric chloride

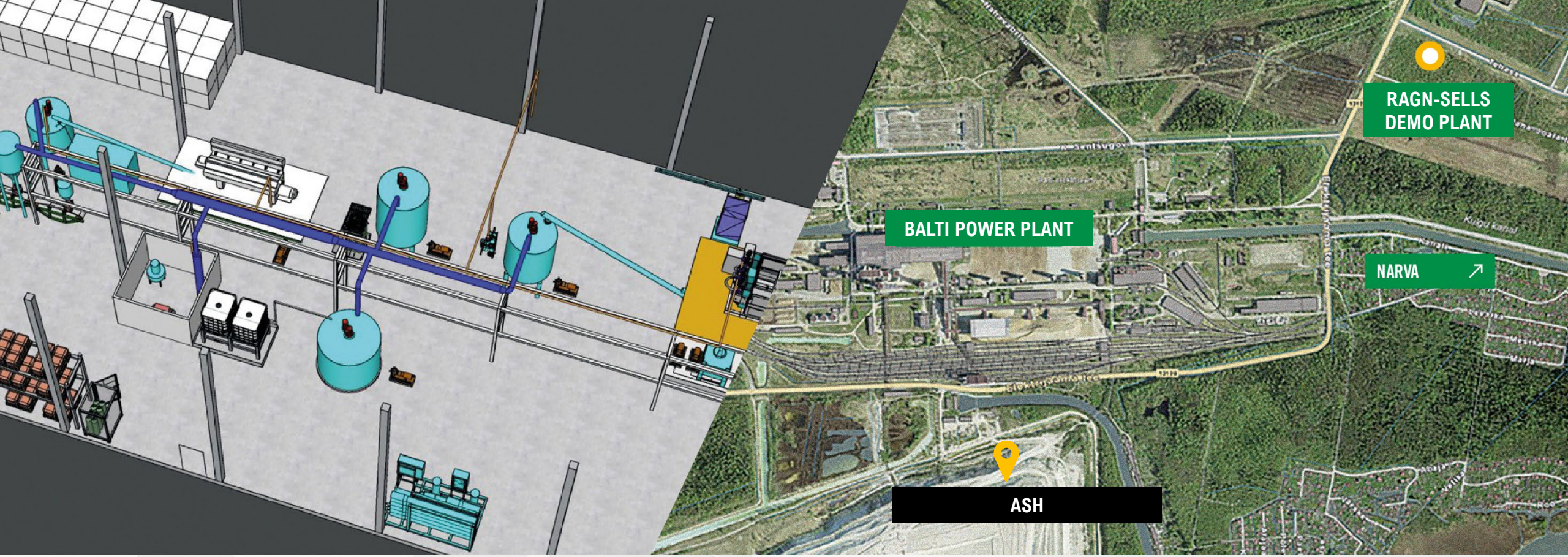
Sand fraction

FIRST PROJECT IN ESTONIA

OIL SHALE ASH VALORISING PLANT

PRECIPITATED CALCIUM CARBONATE (PCC) AS A MAGNET FOR LOCAL AND INTERNATIONAL COMPANIES

- PCC is a raw material in demand in the market because it is used in many of the objects that surround us in our daily lives - from pharmaceuticals to window frames and floor coverings to paints.
- OSA's interest in PCC is driven by the negative CO_2 footprint of the product, which means that the same items can now be produced with significantly less pollution.
- Thanks to its negative carbon footprint, our PCC helps companies to significantly decrease their carbon footprint without compromising on the quality of raw materials and end products.
- A significant number of cooperation agreements have already been signed with both local and foreign companies.
- In addition, our PCC helps to ensure raw material security for EU companies and significantly reduces the risks associated with importing raw materials.



FIRST STEP: DEMO PLANT IN 2025

- Location: Narva Industrial Park (IVIA)
- Production: 50 tonnes of PCC per year
- Purpose: Development of the best production processes for the industrial plant and supply of larger sample batches of PCC to partners