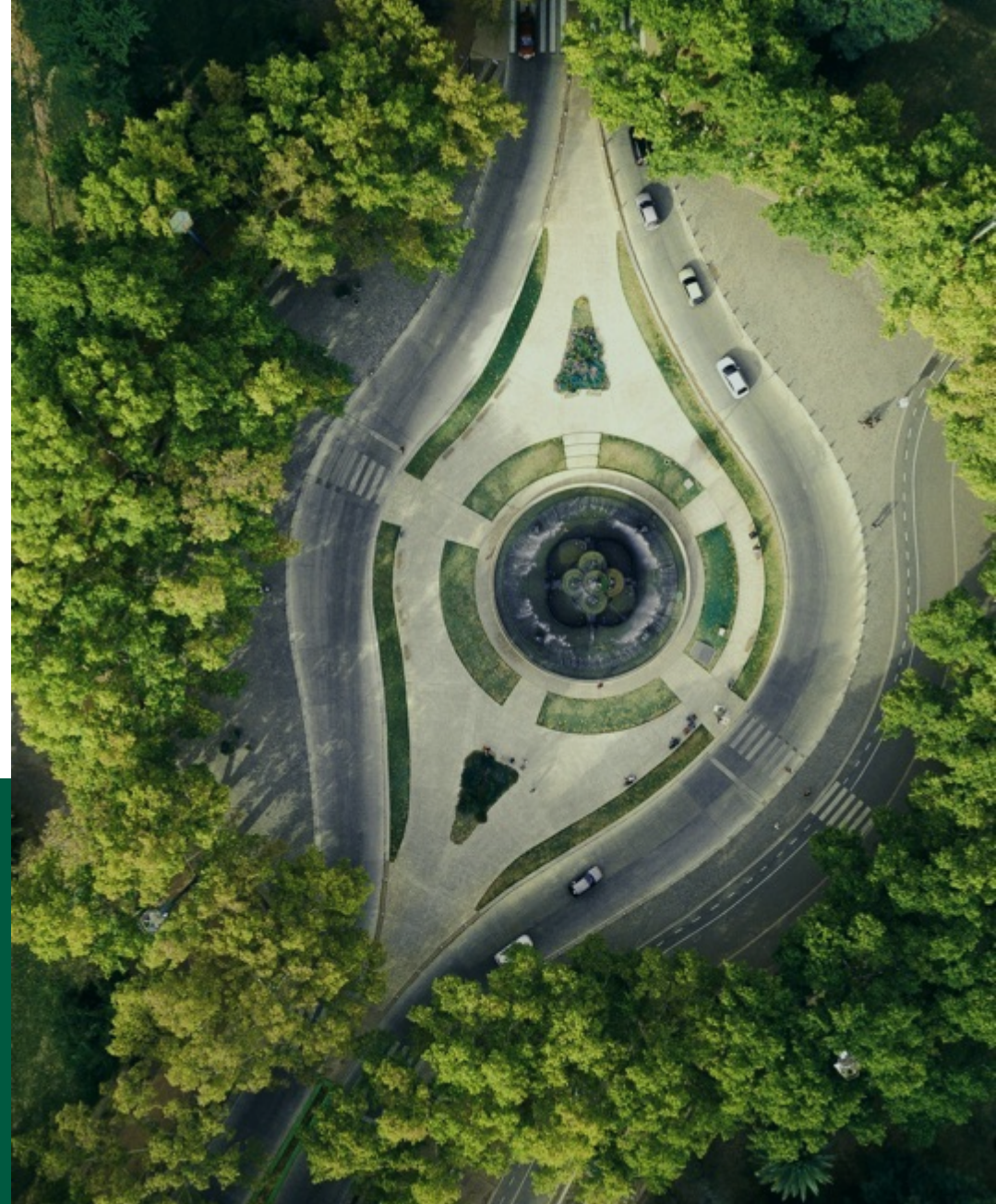


BETOLAR

Investor Presentation

Helsinki

12 January 2024



Content

Business Strategy and Objectives

Riku Kytömäki

Product portfolio and market development

Ville Voipio

Setting up global Operations

Tuija Kalpala

Technology and R&D Advancements

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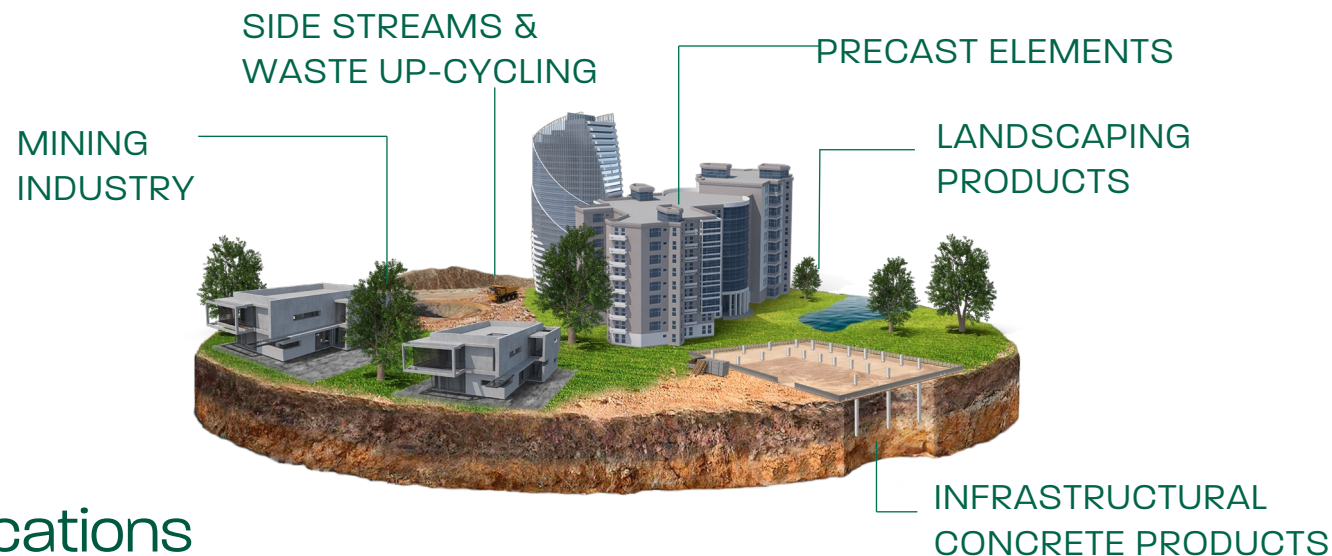
Building the new era of sustainable living environments

Betolar's mission is to reduce CO₂ emissions and consumption of natural resources.

>Geoprime® Innovation

Geoprime is Betolar's 100% cement-free material technology solution that enables concrete manufacturing without cement.

Betolar's Customer Segments



Locations

About us

- HQ in Finland, personnel ~ 60.
 - 16 nationalities
- Activities started in 2017
- Listed on the Nasdaq First North Growth Market since Dec. 2021.
- Piloting extensively in Europe, Asia and the Middle East.
- Commercial production in Europe and Asia.



Betolar accelerates development and commercialization of alternative side streams – Taking a position in side-stream value chain enables better value creation potential

DESCRIPTION

BACKGROUND



1
Develop and productize alternative side streams

- Invest in advanced material testing to assess potential of new side streams
- Accelerate development of alternative low-cost side streams to maximize value creation and answer increasing global demand for green building solutions



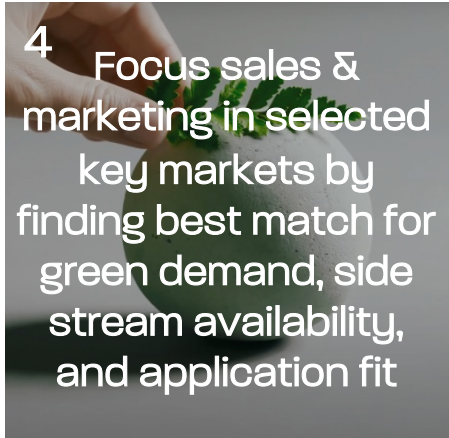
2
Seek stronger position in the side-stream value chain by partnerships or investments

- Build business around side-stream utilization for example by entering to further processing, warehousing and distribution
- Create stronger position and better value creation potential



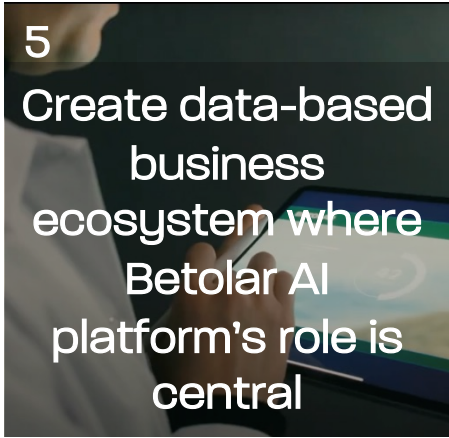
3
Accelerate solution development to large-volume and scalable customer segments

- Betolar solutions target next construction and mining industries with larger scaling potential, for example in hollow-core slab and mining paste backfill projects



4
Focus sales & marketing in selected key markets by finding best match for green demand, side stream availability, and application fit

- Continuously evaluate and prioritize geographical markets to determine best fit for go-to-market strategies
- Start new trials in e.g. NAM and MEA** based on local side stream availability



5
Create data-based business ecosystem where Betolar AI platform's role is central

- Accelerate recipe and customer application development through systematic data collection and use of AI in R&D processes
- Bring ecosystem partners together to scale green transition and create data-based platform services in the AI platform

- Supply of known side streams is decreasing and GGBFS* has become highly priced raw material in many locations

- There are emerging supply chain and circular business model opportunities

- Betolar has strong experience from precast products, where our solutions have worked well
- In mining industry, pressure for green solutions is significant

- Demand for green transition varies across the globe, and product requirements and side stream availability also differ based on location

- Tailored alkali-activated material development with traditional methods is time consuming

* Ground Granulated Blast Furnace Slag
** North American Region / Middle East and Africa
Photos: Unsplash, Betolar

We offer local solutions to upcycle industrial side streams



WASTE UPCYCLING

Industrial side streams that require a solution to avoid landfill and enable profitable manufacturing.



CONCRETE PRODUCTS

Non-structural small concrete products, e.g. paving stones, sewer pipes, roof tiles and infrastructure products.



CONCRETE ELEMENTS

Large structural concrete elements used in house construction and urban planning.



MINING

Concrete solutions used in global mining operations, from shotcrete to fill.

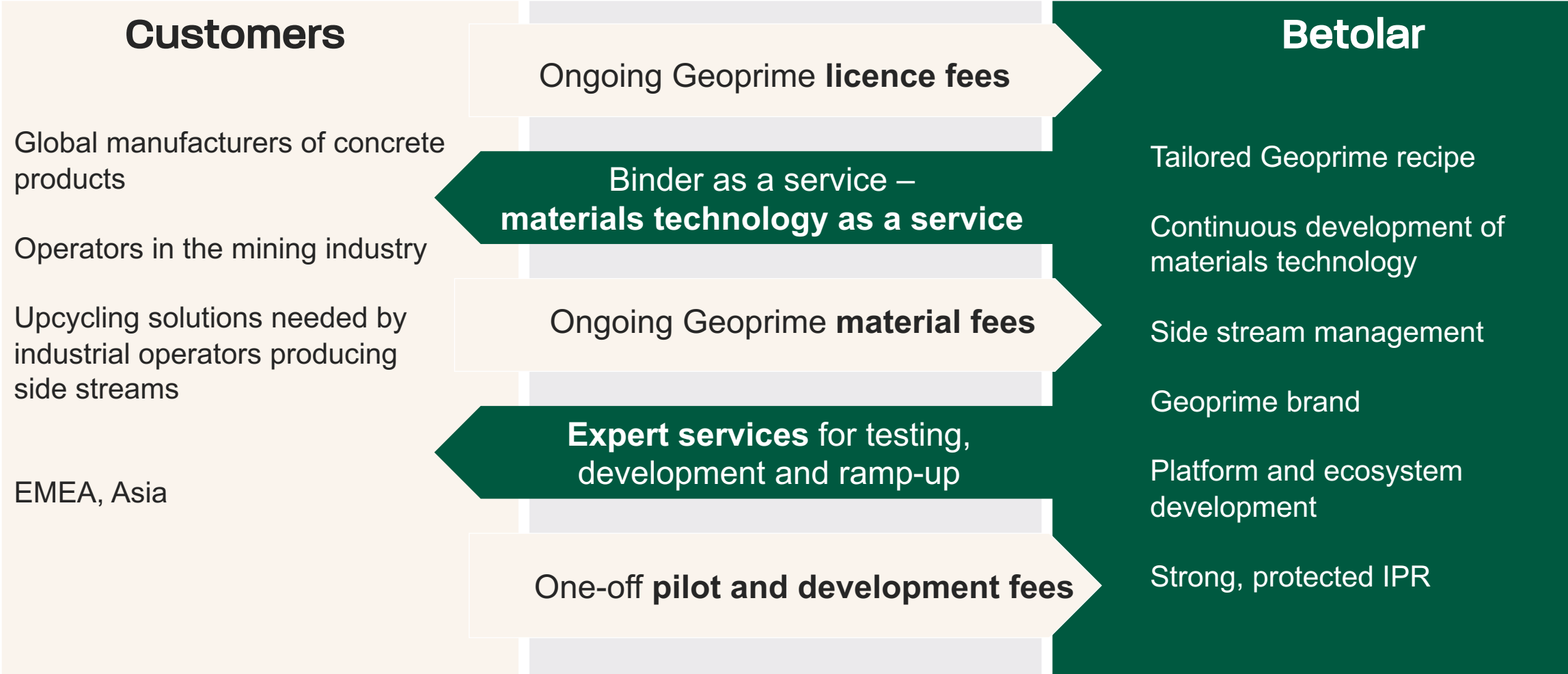
Q3 Financial Review

Financial indicators (EUR thousand, unless otherwise specified)	1–9 2023	1–9 2022	1–12 2022 ²
Net sales	298	65	287
EBITDA ¹	-8,811	-7,104	-9,988
Cash and cash equivalents and short-term fund investments ^{1,2} (at the end of the period)	14,989	30,328	26,624
Operational key figures			
Personnel (average number during the financial period)	62	46	51
Number of pilot customers ¹	23	19	25

Cash impact items:

- Annual 5 m€ cost saving programme finalized
- Outstanding 5 m€ Climate Fund loan
- 2,7 m€ grant from Business Finland

Continuous, volume-based revenue streams are at the heart of Betolar's business model

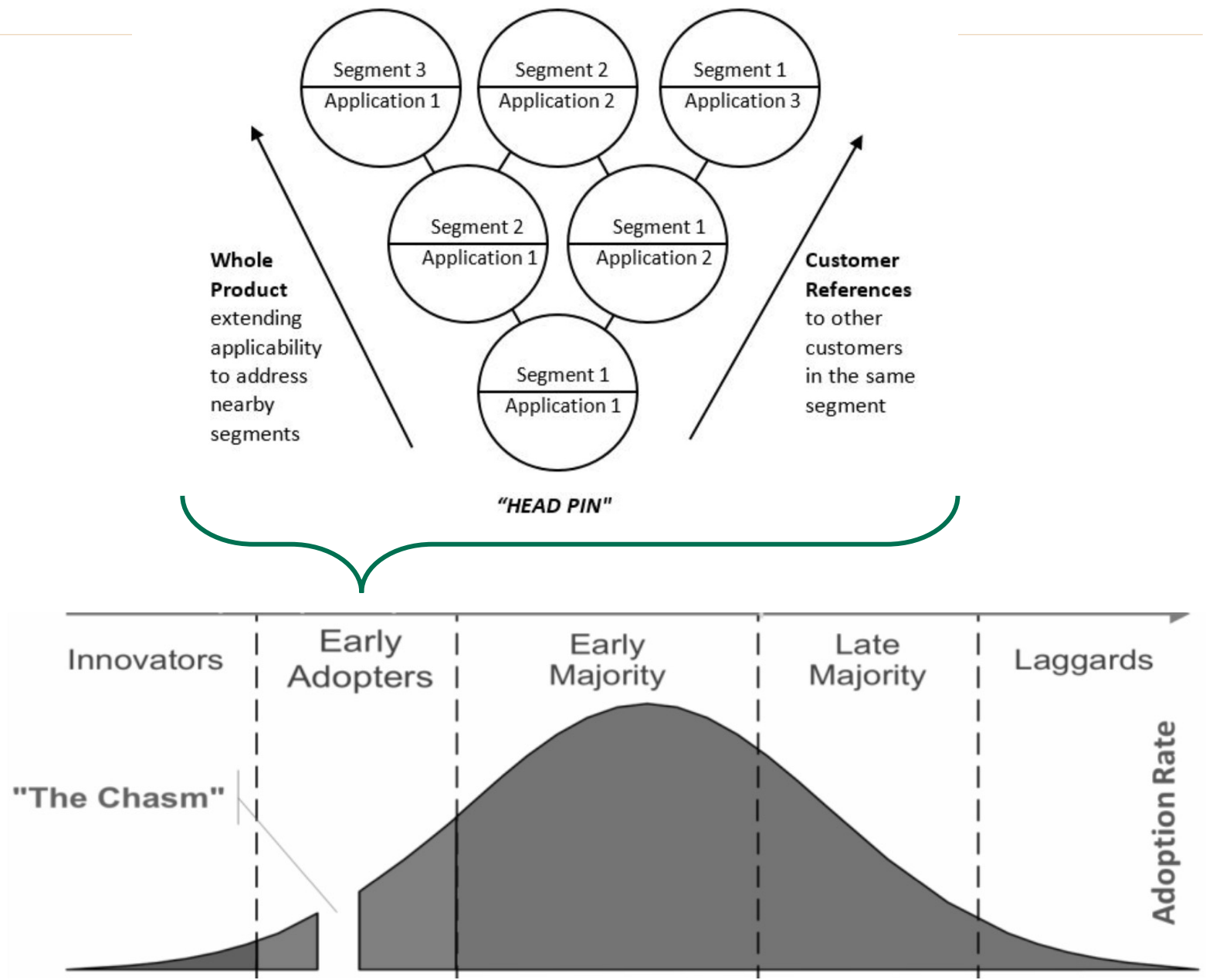


Product portfolio & market development

Ville Voipio

Commercial context

CEMENT
REPLACEMENT
TECHNOLOGY
ADOPTION



Selected highlights 2023

COMMERCIAL FUNCTION – SALES, MARKETING AND PRODUCT MANAGEMENT

1

Updated approach in
Asian markets

2

Introduction
of World's lowest
emission hollow-core
technology

3

Re-organizing to
selected strategy-
aligned product lines

4

Becoming one
of the pioneering
brands in low-carbon
concrete technology

5

Winning first
customers & partners
in mining and
sidestream segments

Betolar well-positioned in key verticals

ALIGNED WITH UNDERLYING TRENDS AND ECONOMIC DEVELOPMENT

REAL ESTATE

CONCRETE PRODUCTS

Offering

Updated Geoprime solution for demanding conditions.

Active regions

EMEA, India, APAC.
Middle East entry 2023.

Commercial outlook

Generally stable market, selective focus on high-growth areas, e.g. M-E.

CONSTRUCTION

Offering

Geoprime Hollow-core slab released. / New undisclosed solution for Indian market under development.

Active regions

EMEA, APAC, (India)

Commercial outlook

Current downturn, green shift driving new growth.

MINERAL INDUSTRIES

MINING & METALS

Offering

Focused solution offering for cement replacement (CPB, Shotcrete, Tailings).

Active regions

EMEA, India, APAC

Commercial outlook

Positive momentum due to ESG, geopolitical context and ongoing energy transition.

SIDESTREAMS

Offering

Commercial research projects on alternative binders.

Active regions

EMEA, APAC

Commercial outlook

Growing commercial interest due to emerging circular economy awareness.



Fujairah
Concrete Products

CONSOLIS

YIT

Metso



Geographical markets

Europe

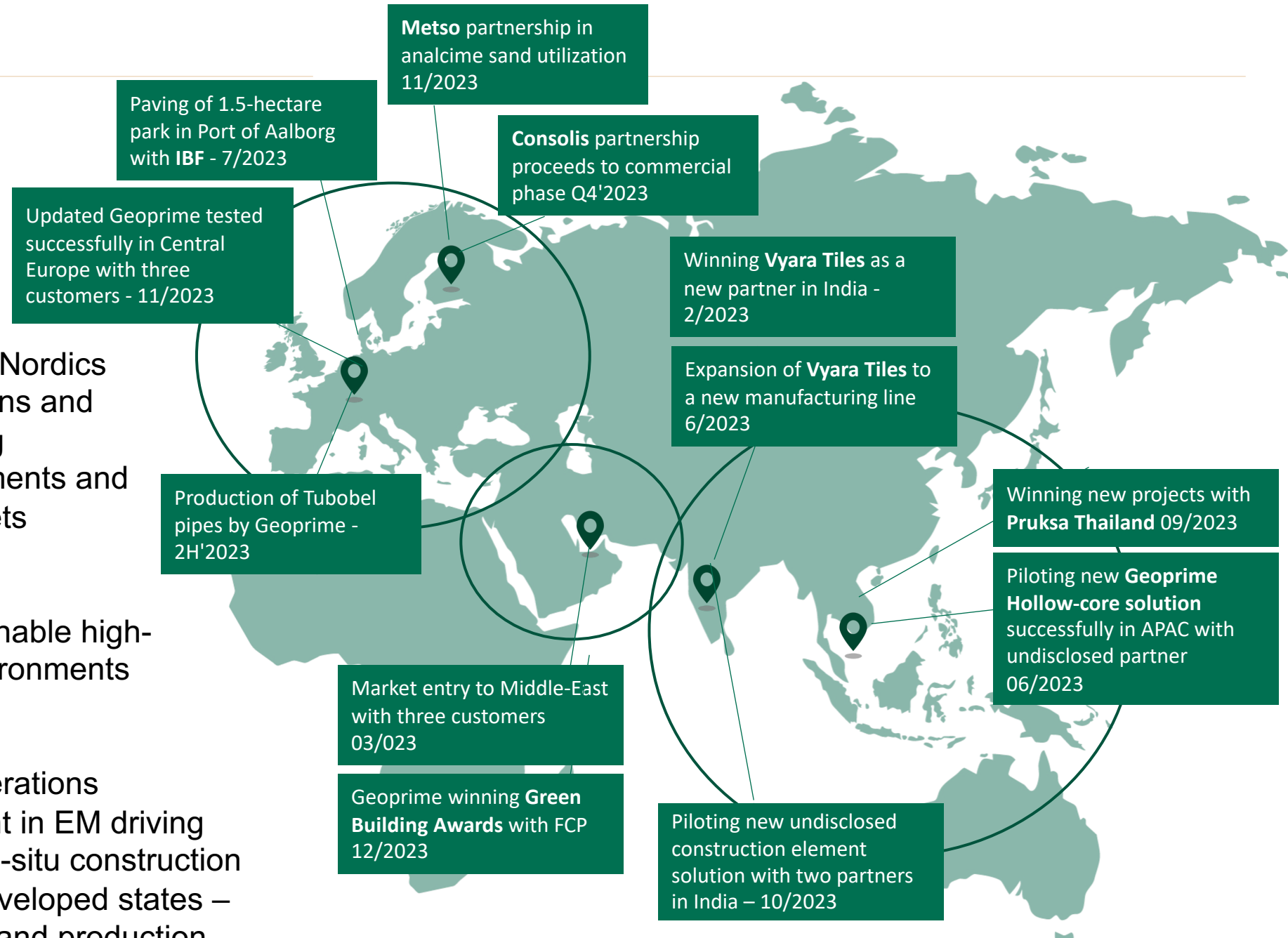
- Re-shoring of mining, where Nordics are leading both the operations and the equipment manufacturing
- Intensive use of precast elements and products in real estate markets

Middle-East

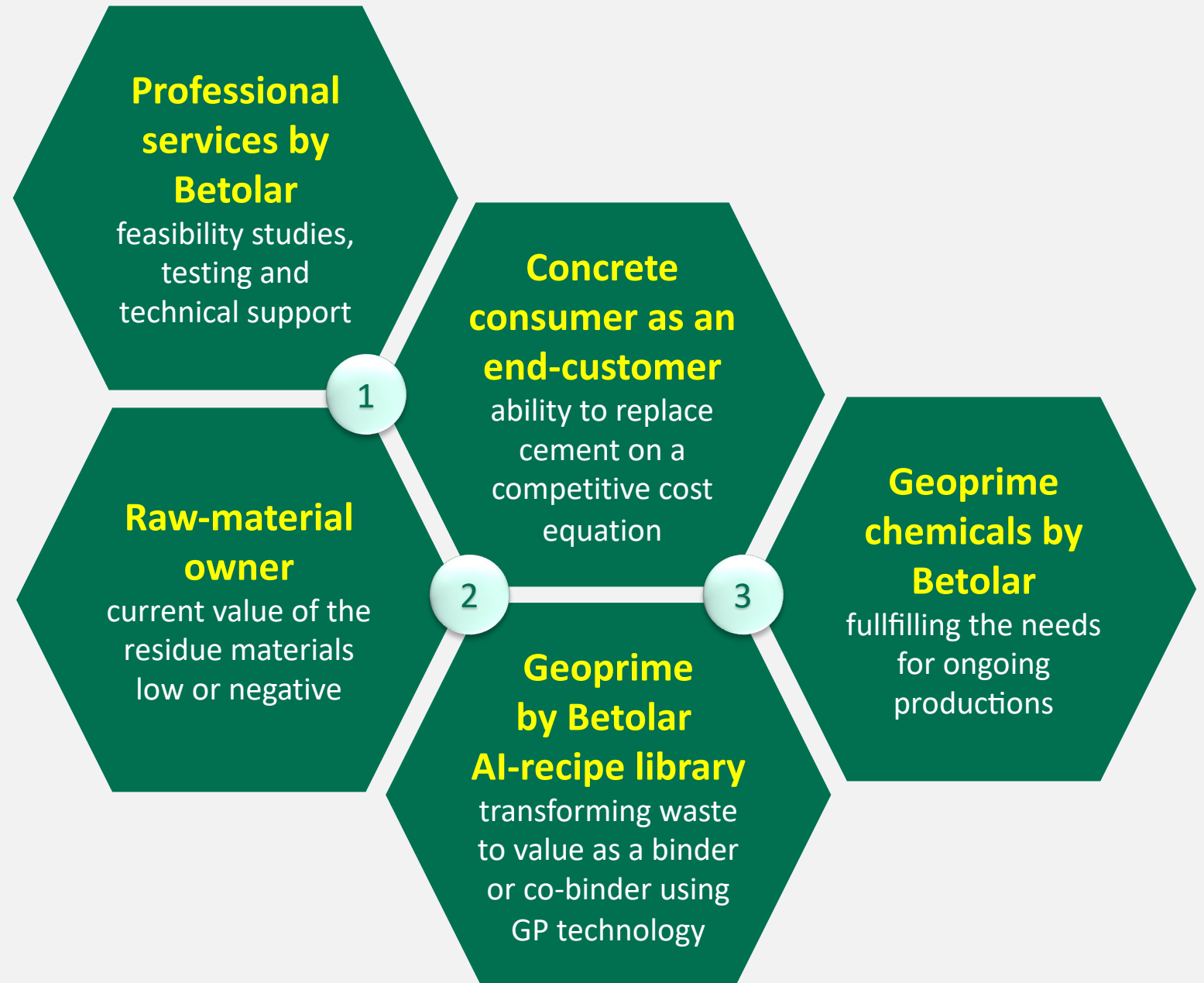
- Rapid development of sustainable high-quality living and leisure environments

India & Asia Pacific

- 80% of the global mining operations
- Rapid economic development in EM driving infrastructural projects and in-situ construction
- Sustainability demands in developed states – especially in IT/data centers and production sites

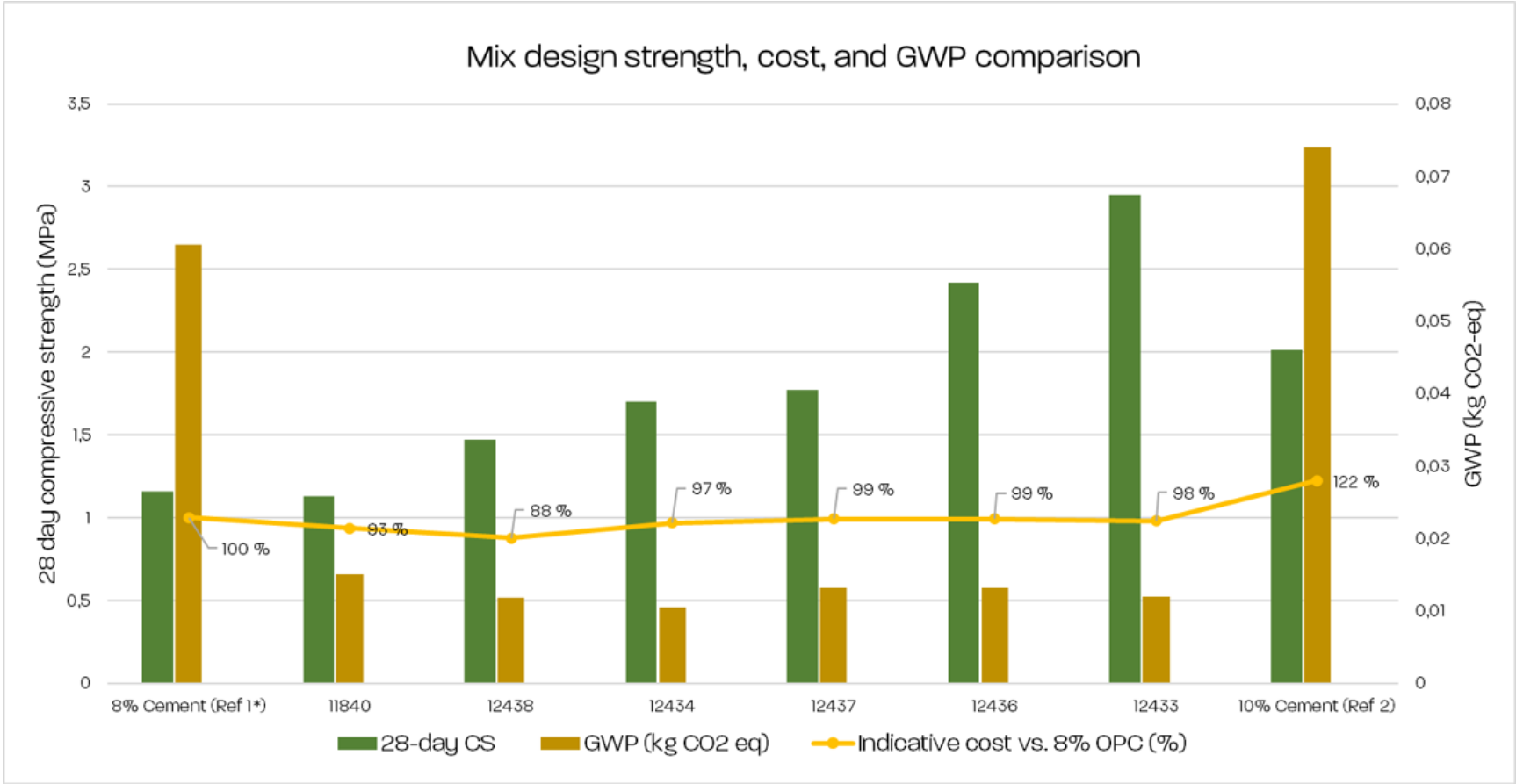


Value creation across business segments



Example from the mining segment

PASTE BACK FILLING APPLICATION IN AN ASIAN MINE



ENERGY TRANSITION / SUSTAINABLE FINANCE

BNP Paribas Ends Financing for Metallurgical Coal Mining

- Major mining operator in Asia investing yearly millions to **paste back filling** application
- With the Geoprime recipe library, significant performance improvement while simultaneously radically lowering costs and emission
- Achieved new value of 50M€ in a 10-year evaluation period

Example from construction segment

GEOPRIME HOLLOW CORE SLAB

Product	A1-A3 Raw Materials, Transport, Production, Energy etc.	CO ₂ Saving compared to reference	Unit
Generic O37 Conservative	87,3	-	kg CO ₂ /m ²
Generic O37 Typical	72,8	~17 %	kg CO ₂ /m ²
Parma OPC	64,6	~26 %	kg CO ₂ /m ²
Parma Low Carbon	41,7	~52 %	kg CO ₂ /m ²
Geoprime	20,8	~76 %	kg CO ₂ /m ²

Values are taken from public EPD calculations, Betolar’s A1 & A2 calculations from Betolar database A3 from Consolis Parma’s EPD.

Greener Concrete for Digital Infrastructure: An Open Letter and Call to Action



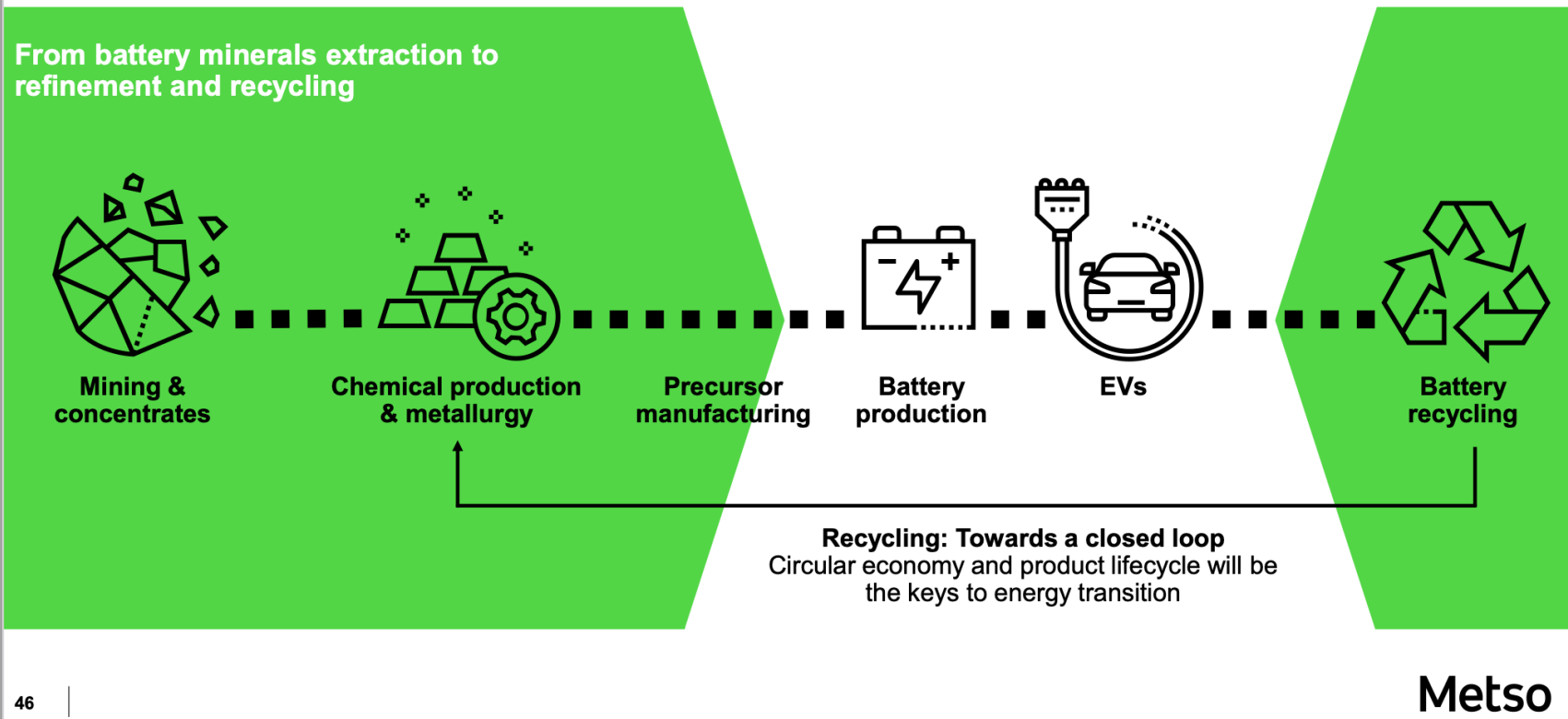
- Hollow-core slabs (HCS) are the most used standard building elements in the Western world
- 30% of the emission in a multistory building are rooted to HCS
- Geoprime provides world's lowest emission solution for HCS manufacturing with 76% reduction from traditional HCS elements
- Geoprime is compliant with current manufacturing and regulation

Example from sidestreams segment

ANALCIME SAND UTILIZATION

Our unique position in the industry

Metso covers over 90% of the value chain



Estimates say that by 2040 demand for Lithium may grow by over

1,500%

- Energy transition drives significant growth of lithium production
- Metso is one of the global leaders with comprehensive solution to Li battery production
- Betolar provides to Metso's customer Geoprime solutions to enable circular use of residue material in the process

Three takeaways

Betolar partners to
scale productized
solutions with
industry leaders
across the
segments

Betolar builds growth
through Geoprime IPR –
the market leading
recipe library enabling
swift transition to low-
carbon technology

Betolar is in the fore-
front of the circular
economy creating
market place for residue
materials in concrete
manufacturing

Setting up global Operations

Tuija Kalpala

Building global supply chain means understanding the local needs and requirements; at the same time being cost competitive and relevant player in the value chain



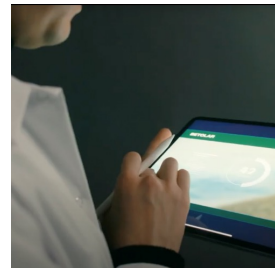
Sourcing, analyzing & finding the best alternative side streams



Building global operations based on country specific needs and operating models



Strong position in the side stream and chemical sourcing and ensuring the cost competitiveness



Creating a supply chain that protects the company's IPR and ensures we are relevant player in the value chain

Our focus in Operations

Our focus is to source the fit for purpose side streams and chemicals to benefit our customers in the construction and mining industries. The key to our success is finding the right partners for robust supply chain and creating logistics hubs in the key market areas.

Logistics
hubs

Supplier
code of
conduct

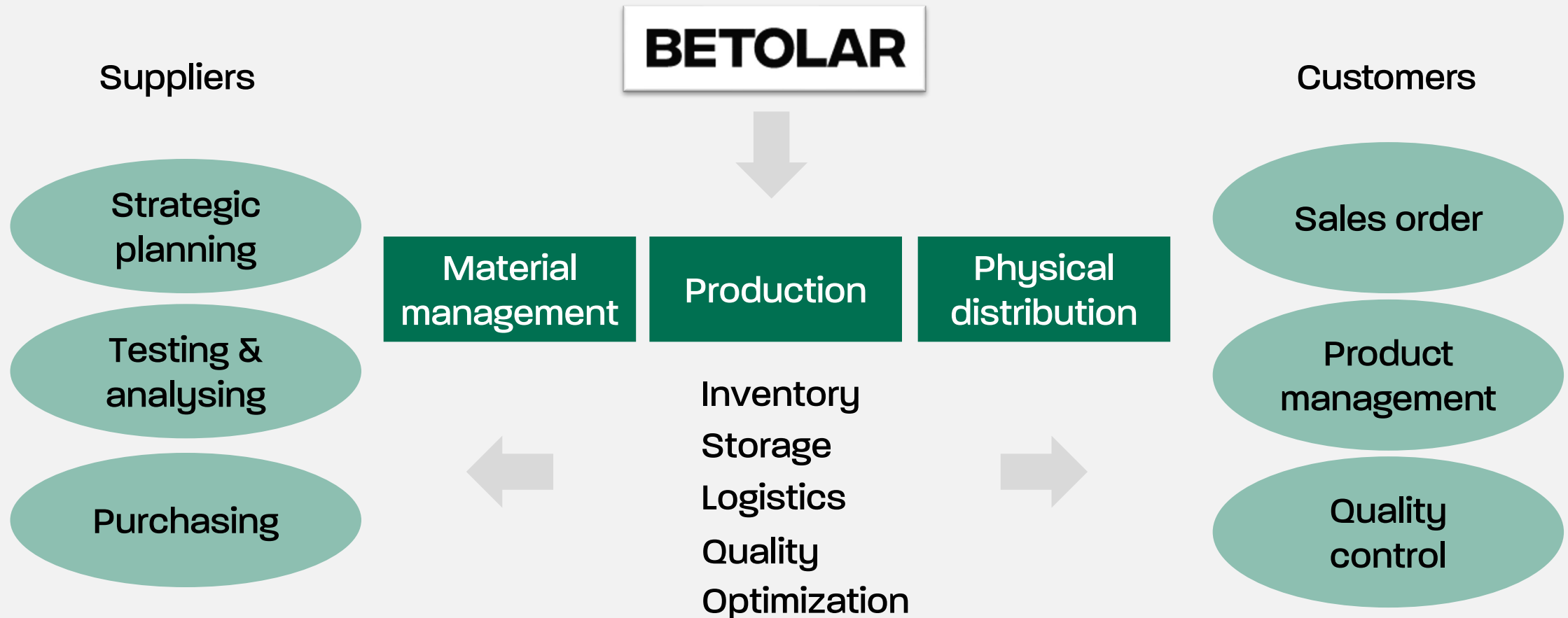
Costs

Quality

Main supply chain focus areas in 1H 2024

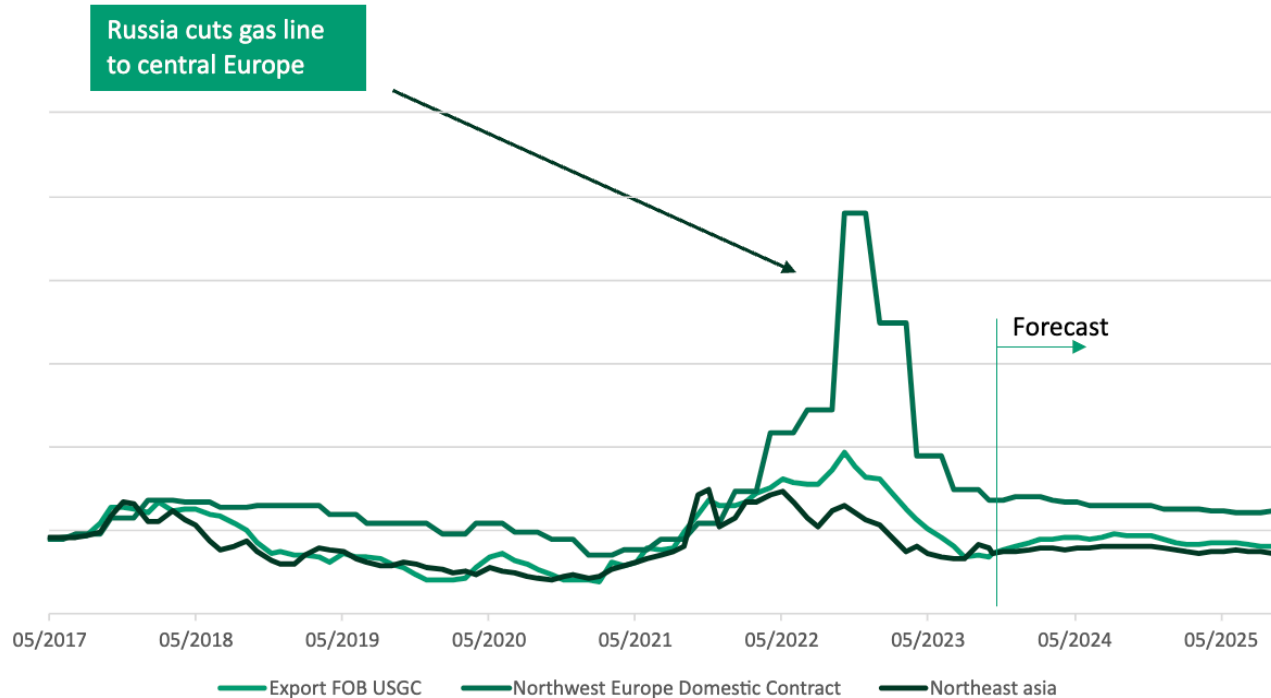


Betolar's robust global supply chain supports the sales & supply and is key to success



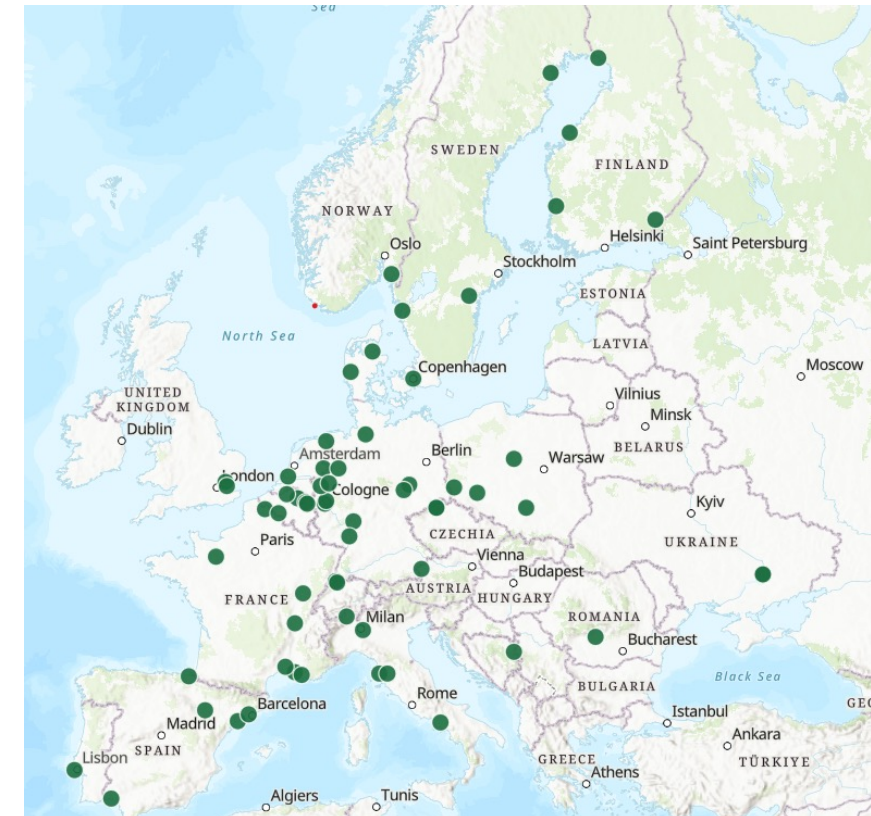
For the most part the chemicals we source are low-volatility and readily available in our key market areas

Example of market prices in US, EU & ASIA



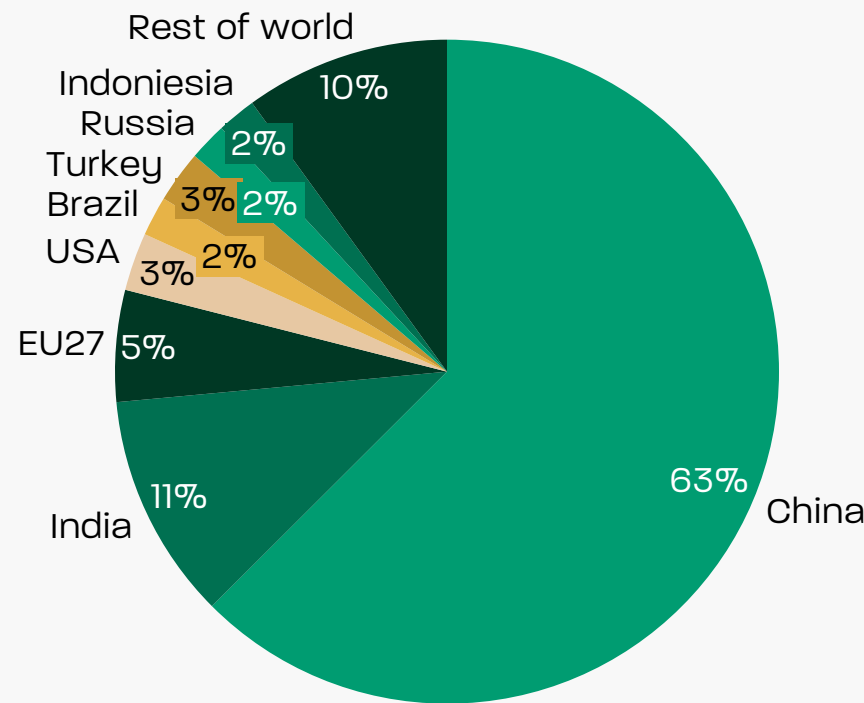
- Large increase in pricing Q4 2022 due to Russia halting gas export to central Europe
- Southern Europe re bounced faster than the rest of Europe

Location of chemical suppliers in Europe for some of the chemicals needed for Betolar's solution

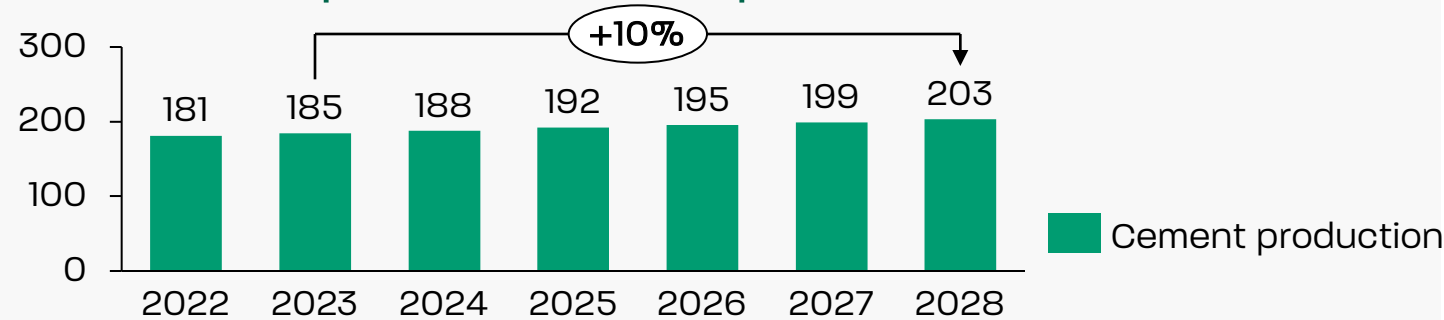


European cement market expected to grow steadily due to increasing investments in the construction sector

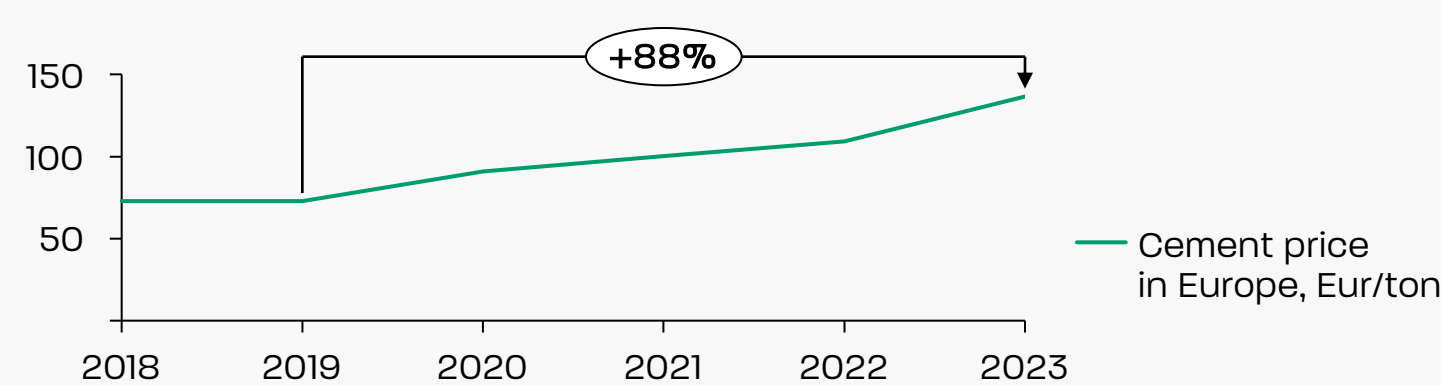
Cement production worldwide in 2022



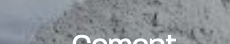


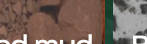







Cement production in Europe (EU27), MMT



Cement prices in Europe, Eur/ton



New materials unlock the potential to reduce cement and the use of virgin materials...

CONVENTIONAL	COMMODITY		NON-COMMODITIZED WASTE MATERIALS							
										
~4.1 bn.ton.	~600-900	~480-560	~160	~50	0.4	4.0 (EU)	>100	7.9 (EU)	~7.5	>12.7 bn. ton.
All consumed	~300	~290	<24	n.a.	n.a.	~0.4	n.a.	n.a.	~2.2	n.a.

... and offer a pathway to decarbonization in hard-to-abate industries

Operations key takeaways

Ready for
commercial scale
production

Robust supply chain brings
value and also protects the
company IPR

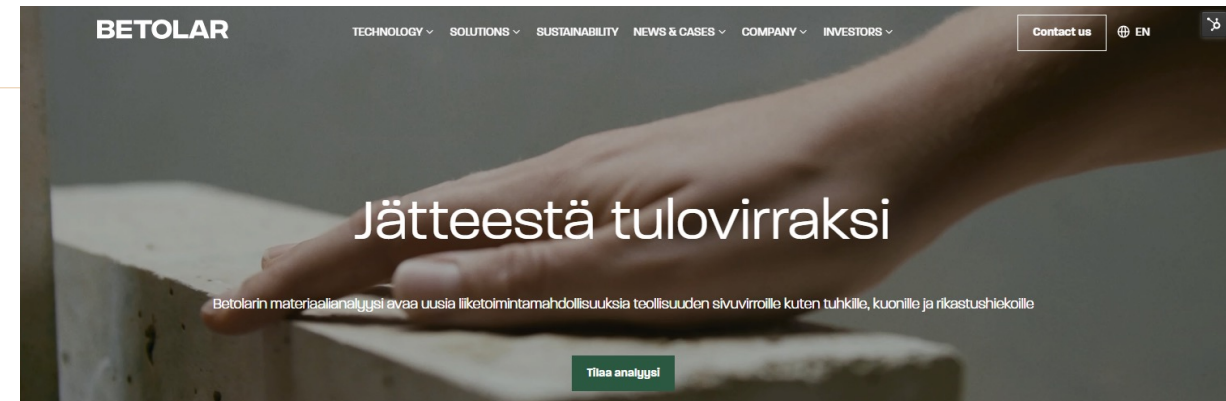
Growing demand for
green cement brings
opportunities

Technology Advancements

Jarno Poskela

Side stream analysis service – an example of data-driven service business

- Side stream analysis
 - Chemical properties
 - Physical properties
 - Strength development
 - Other relevant development requirements
- AI and automation enabled digital service
- Starting point for other services on the path towards a data platform based ecosystem.



Esiselvityksellä etumatkaa vihreään siirtymään

Betolarin **sivuvirran esiselvityksellä** luodaan yhteinen ymmärrys siitä, pystyykö tutkittava materiaali saavuttamaan vertailukelpoisen lujuuskehityksen verrattuna sementtistandardeihin ja yleisimpiin lisäaineisiin. Selvityksessä myös pyritään tunnistamaan yleisimmät kaupallistamisen liiketoimintariskit, jotka saattavat liittyä esimerkiksi esikäsittelytarpeeseen tai haitallisiin ainesosiin.

Kaikki potentiaaliset materiaalit pääsevät osaksi Betolarin verkostoa ja niille tarjotaan tuotteistusehdotus.

Selvityksen kulku.

1. Tilaa tarjous selvityksestä ohessa olevalla lomakkeella

Tarjouspyyntöön voi liittää mahdollisia materiaalista jo olemassaolevia tietoja, kuten käyttöturvallisuustiedote, MARA-raportti, XRF tai vastaavat. Materiaalin turvallista käsittelyä edistävät tiedot pienentävät testaukseen kuluva aikaa ja saattavat siten myös vaikuttaa tarjouksen hintaan alentavasti.

2. Hyväksy tarjous

Tarjous toimitetaan sähköpostitse. Tarjouksesta näkyy myös projektin kesto. Kun tarjous on hyväksytty, voidaan materiaali lähettää.

3. Lähetä materiaali

Asiakas lähettää Betolarin tarjouksessa määrittämän näytemäärän materiaalia Betolarin toimipisteelle Suomeen.

4. Testit suoritetaan

Pyydä tarjous esiselvityksestä materiaalillenne. Vastaamme kaikkiin pyyntöihin 3 arkipäivän kuluessa.

Täytä tietosi sekä mahdolliset esitiedot materiaalista liitetiedostona.

Etinimi*

Sukunimi*

Sähköposti*

Puhelinnumero*

Yritys*

Business Finland funding – material research faster and bolder to create sustainable concrete

- The goal is to develop different binders for concrete products that contains alternative sidestreams that are not currently utilized
 1. In depth understanding of side streams
 2. Pretreatment methods for handling side streams
 3. Validated environmental impact
 4. Research findings to change standardization



Oil shale ash as a cement replacement

- Oil shale ash = by-product of oil shale combustion
- Collaboration project between Eesti Energy and Betolar
- Goal: Find potential commercial use of the generated waste and by-product from oil shale combustion processes in different products in mining and construction industries.



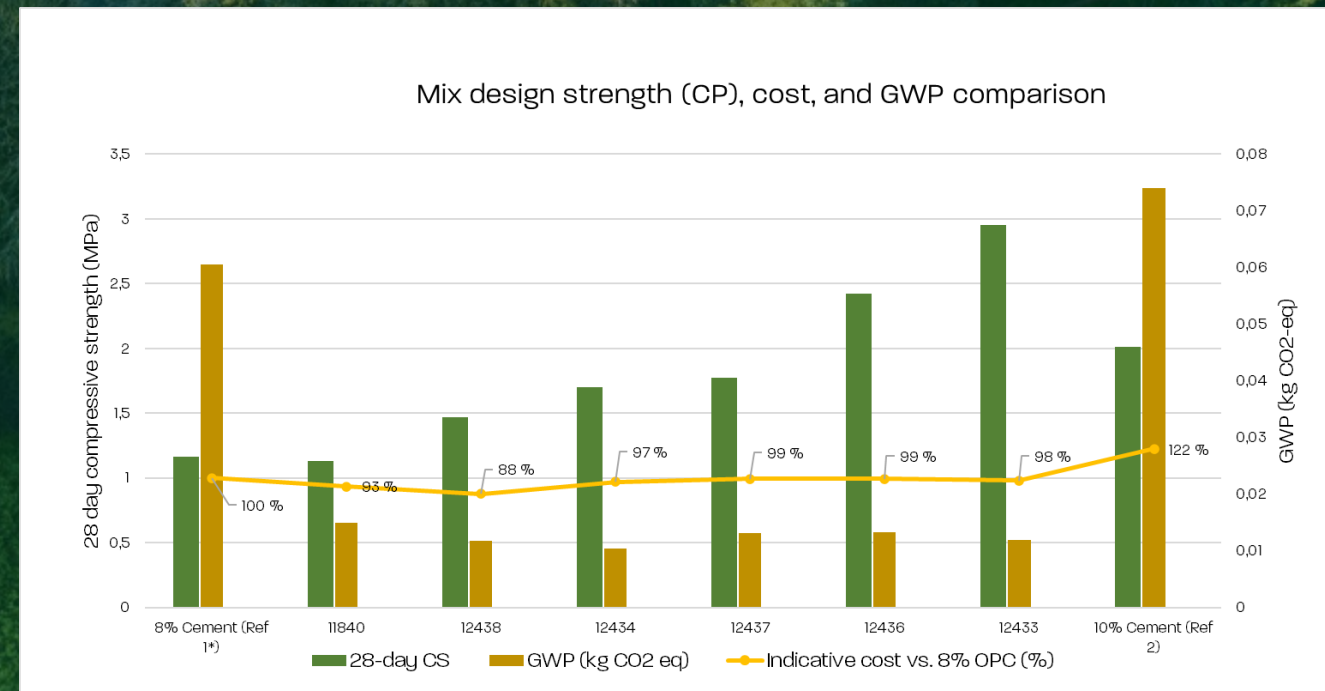
Cementless paste backfill – first solution for a mining sector

Paste backfill = underground voids created by the ore removal are backfilled with the waste tailings in the form of paste fills

Cementless recipe was developed for an Asian customer

- 40-80% reduction in GWP of binder-materials
- no remarkable difference in local environmental impact

GWP – global warming potential



Standardization – performance-based standards in focus

- AAM concrete (alkali activated material concrete) and AAM-concrete-based products challenge existing standards
 - Leading markets have already adopted performance-based standards.
 - Path to low carbon concrete:
 - Adding AAM concrete to the scope of current concrete and concrete product standards
 - Creating a separate AAM concrete standard
- Enabling the CE marking of AAM concrete products

Enabling innovations in the future - Investment in Innovation Center completed

1. Radical innovations
2. Enabling new experiments and wider material treatment capabilities
3. Development of material analytics and lab measurements
4. Standardizing raw material conditions
5. Developing demanding structural elements
6. Re-organizing laboratory processes



Betolar secured new patent on electrical energy storage

Unique expertise and know how in industrial side stream yields groundbreaking opportunities for waste upcycling

NEWS IN WASTE UPCYCLING SEGMENT

Q2/2023

Betolar's patent on electrical energy storage expands to European and Indian markets

About the patent

Betolar has obtained a patent for storing electrical energy. The method can utilize significant amounts of waste-based materials to store energy

Patent portfolio development

Betolar has been granted patents for 5 inventions and 8 more are in the process. The patent portfolio is expected to be a significant component of the company's long-term valuation

RECENT INDUSTRY ACTIVITY

MIT engineers create an energy-storing supercapacitor from ancient materials

Made of cement, carbon black, and water, the device could provide cheap and scalable energy storage for renewable energy sources.

Tiede | Akkuteknologia

Uusi innovaatio muutti sementin sähkövarastoksi – voisivatko rakennukset toimia ikään kuin akkuina?

Kauppalehti

Tutkijat löysivät uuden keinon varastoida sähköä sementtiin - Innovaatio luo lupaavia näkymiä energian varastointiin