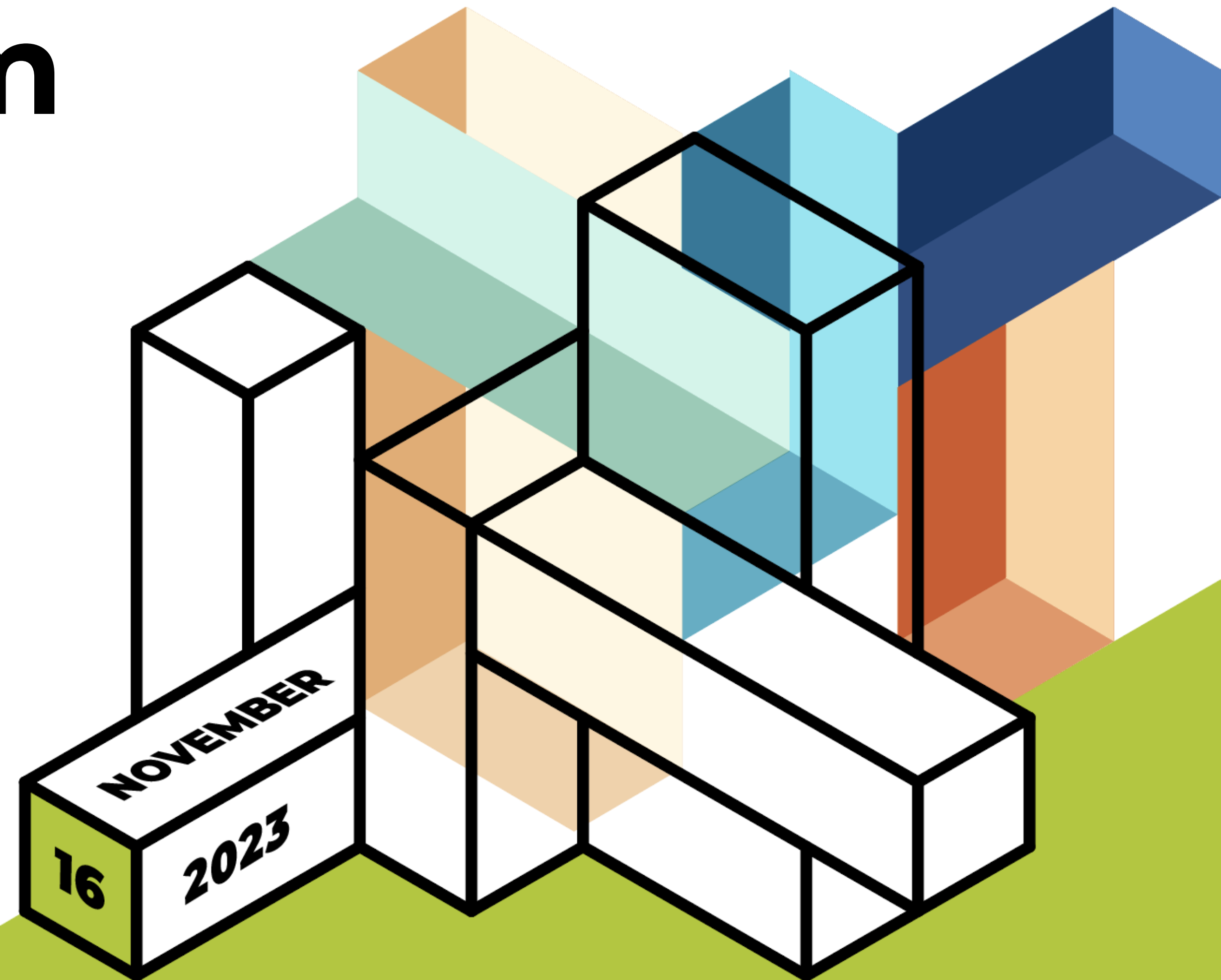


6th European Gypsum Recyclers Forum

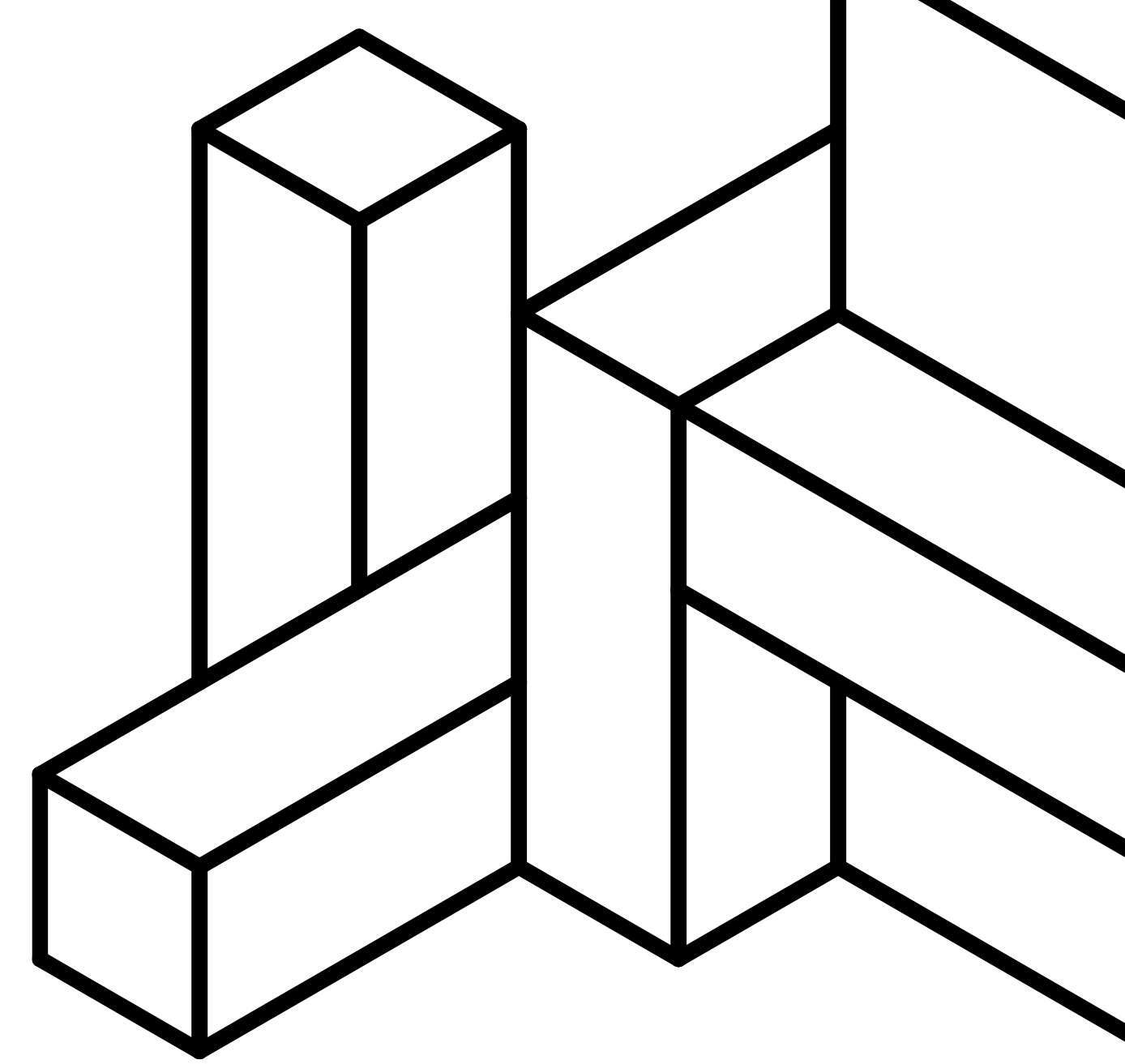
EUROXGYPSUM
THE VOICE OF THE EUROPEAN GYPSUM INDUSTRY





Welcome

Jörg Ertle
President, EUROGYPSUM





The latest figures on gypsum recycling in Europe

Xavier Meyer
EUROGYPSUM

2022 annual survey



Gypsum Volumes Processed in Europe by the Plaster and Plasterboard Industry 2022

Processed raw materials



Virgin gypsum rock
16,903,176 tonnes



DSG/FGD gypsum*
6,530,255 tonnes



**Recovered gypsum
(total volumes)**
1,349,518 tonnes



**Recycled gypsum from
construction & demolition waste****
749,695 tonnes



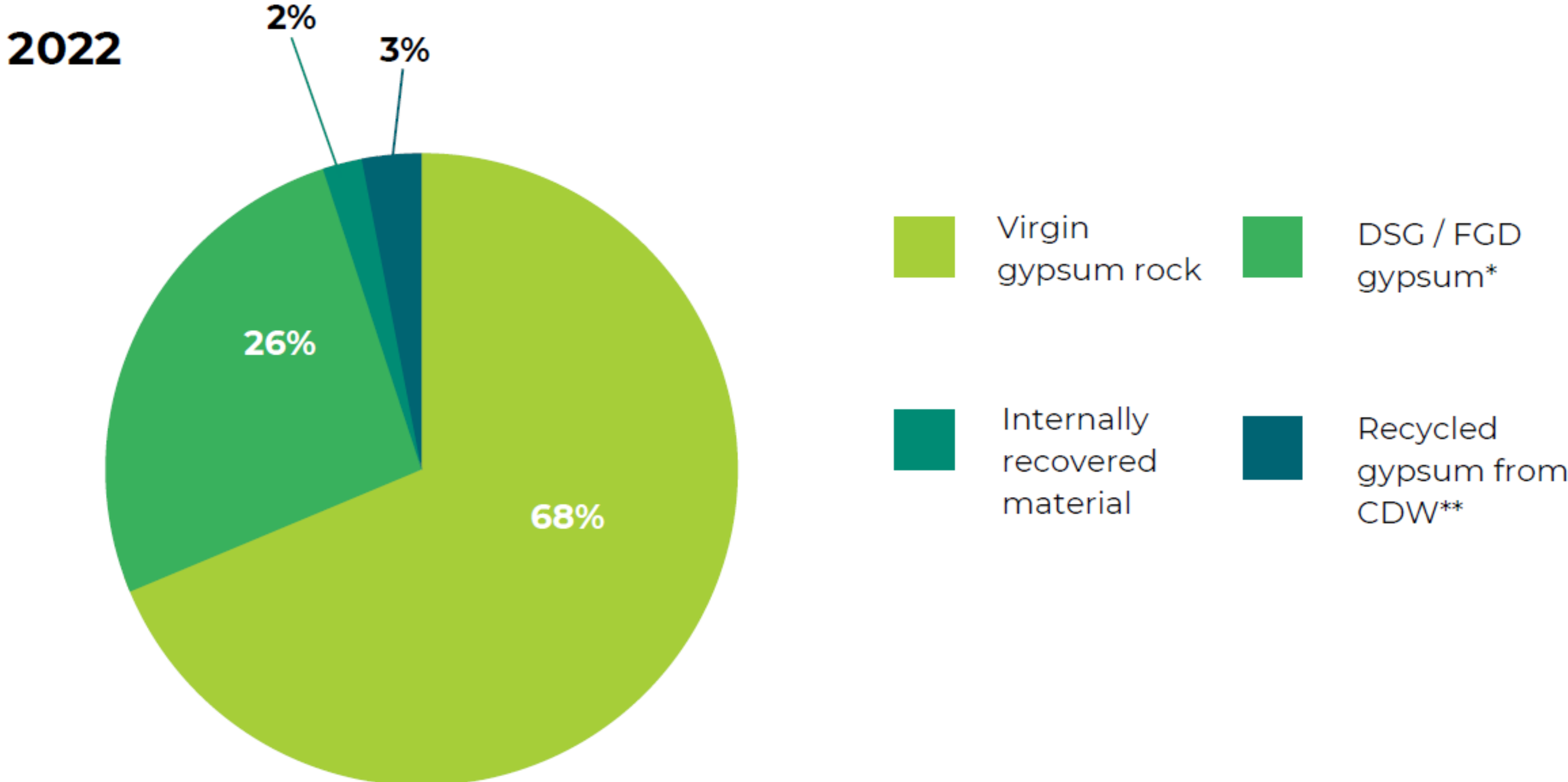
**Internally recovered
material*****
599,823 tonnes

*DSG/FGD gypsum: desulphogypsum / gypsum from flue gas desulphurisation of coal power plants
**Gypsum recycled from the construction, renovation or demolition phase, which is used by the gypsum industry
*** Gypsum material which has been recovered internally during the production phase

2022 annual survey



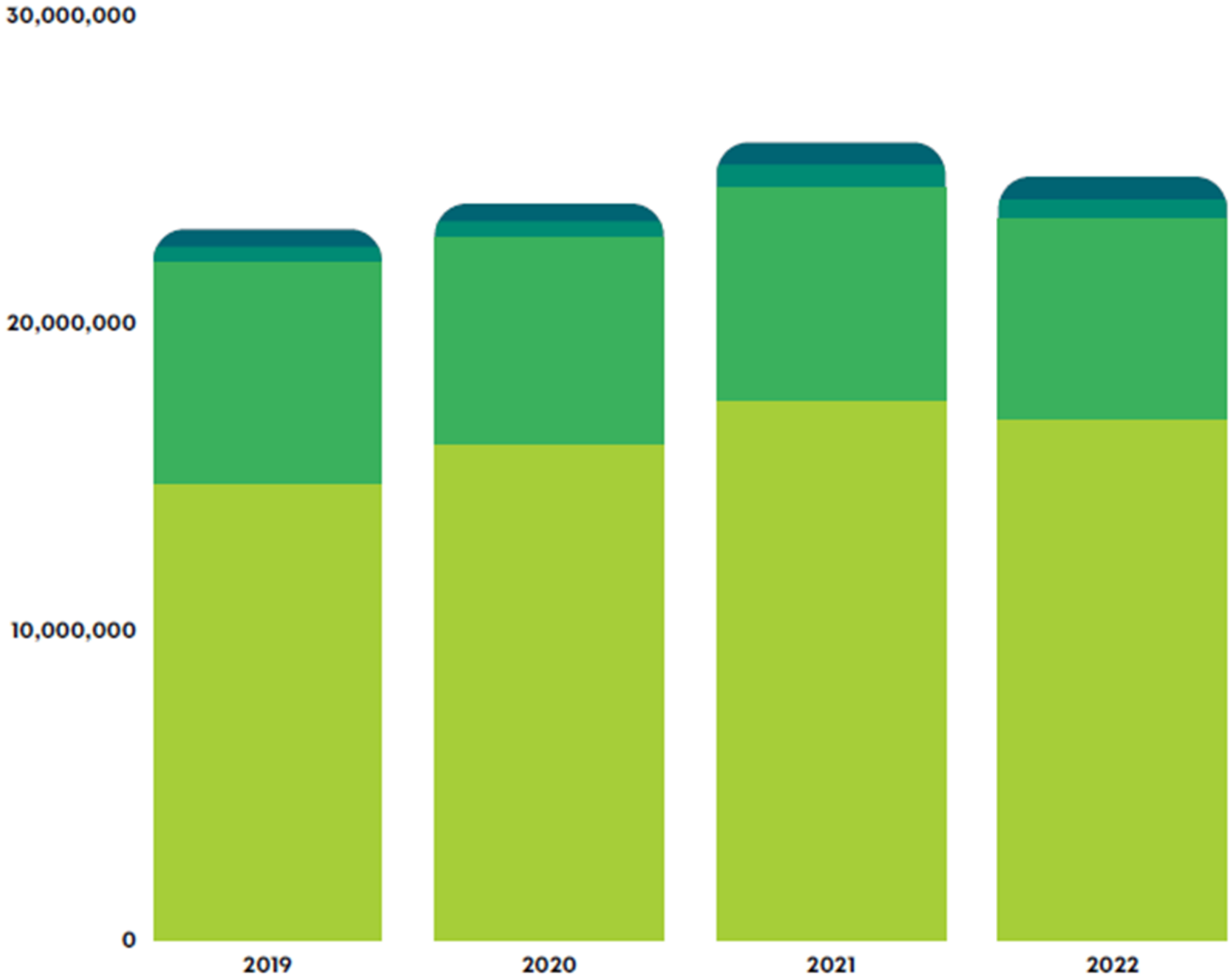
Primary & secondary raw material gypsum used by the European plaster and plasterboard industry



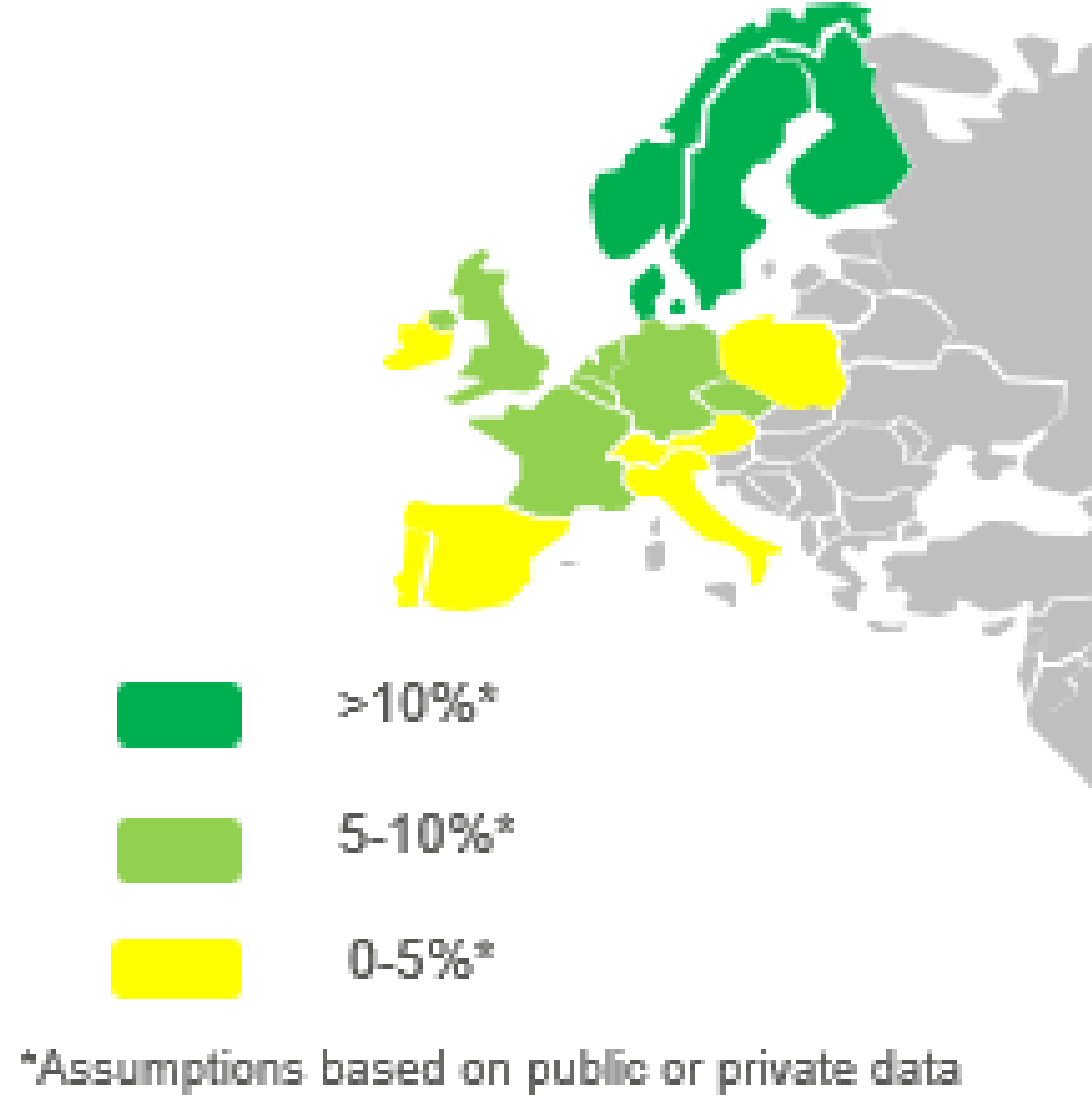
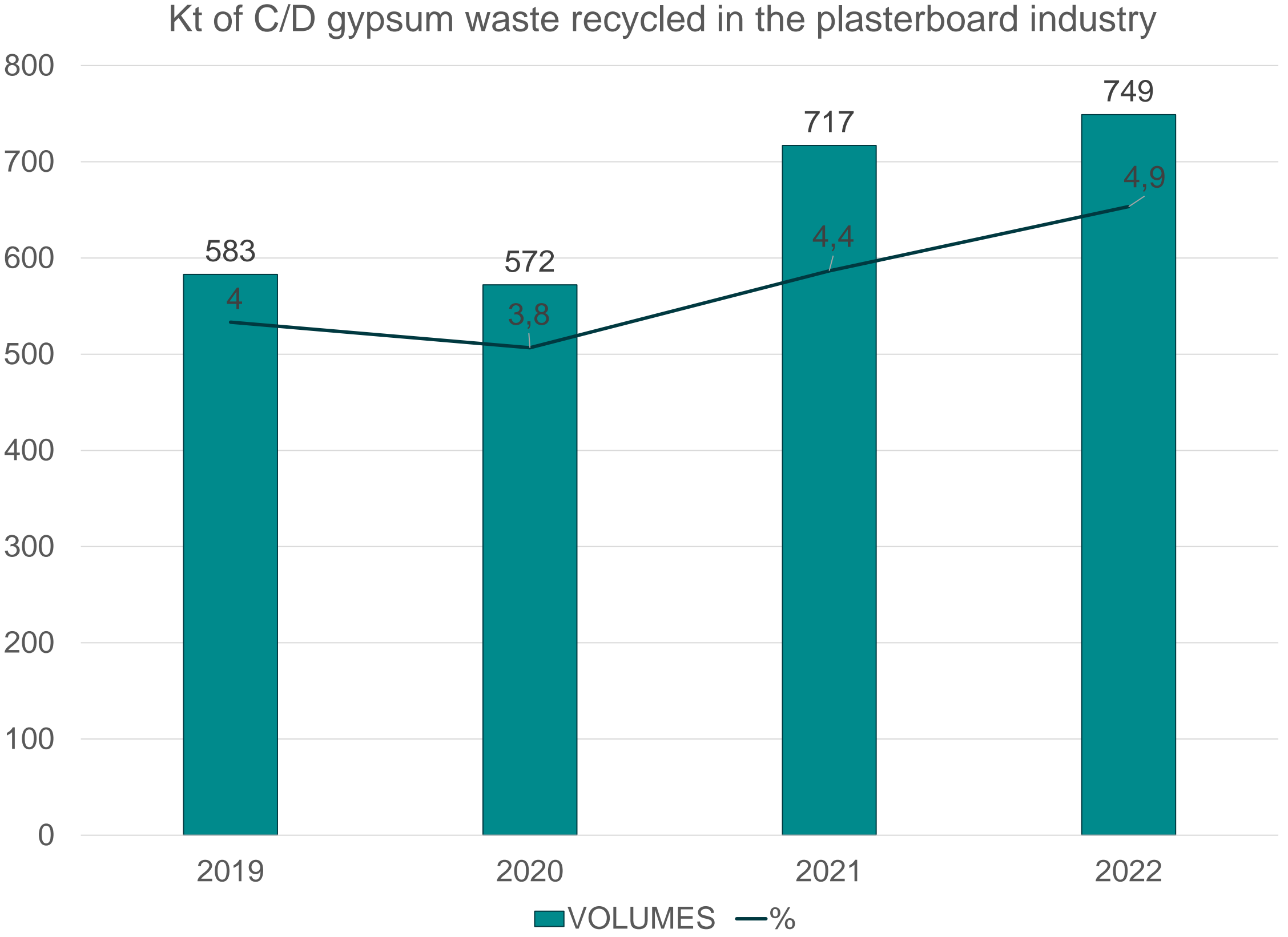
2022 annual survey

Comments

- Increasing trend of natural gypsum rock
- DSG decline set to accelerate in coming years



2022 annual survey

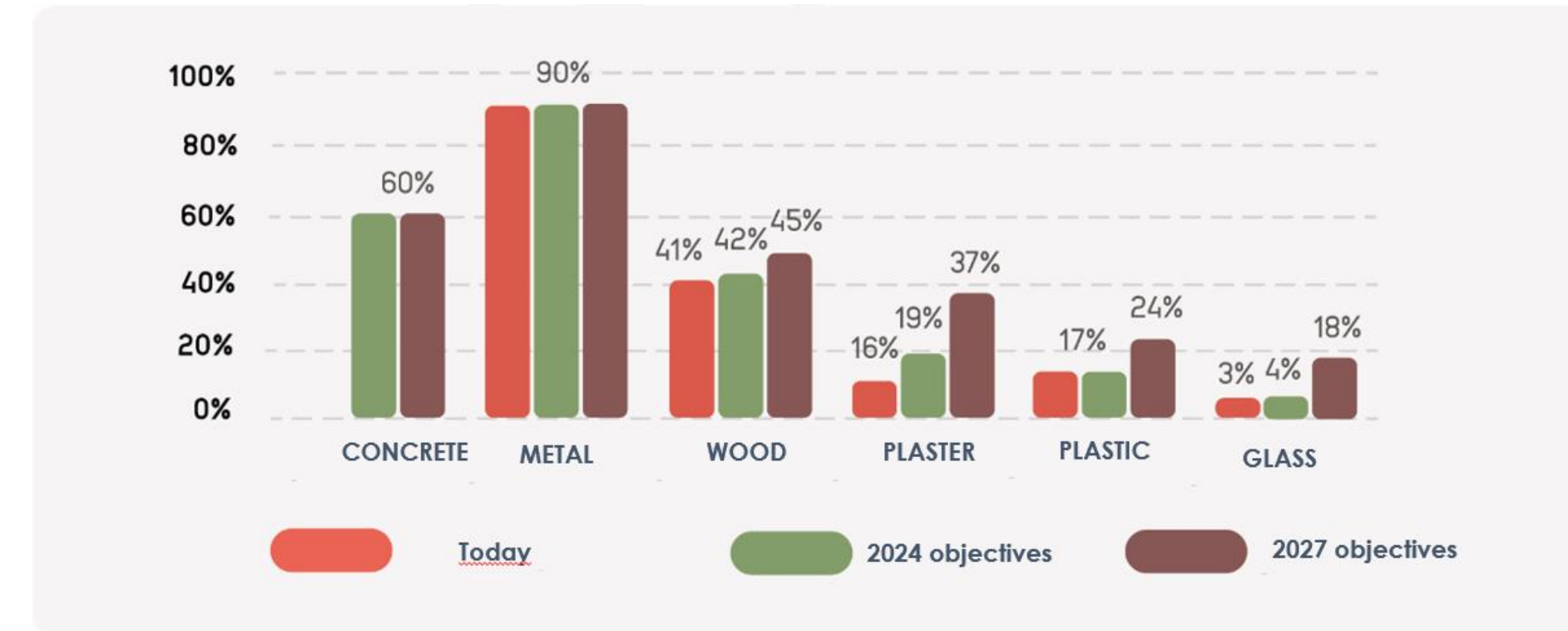


General comments

- ➔ Continuous progress over the last 4 years
- ➔ Still significant opportunities of progress
- ➔ Strong discrepancies between European MS, Nordic countries leading the way

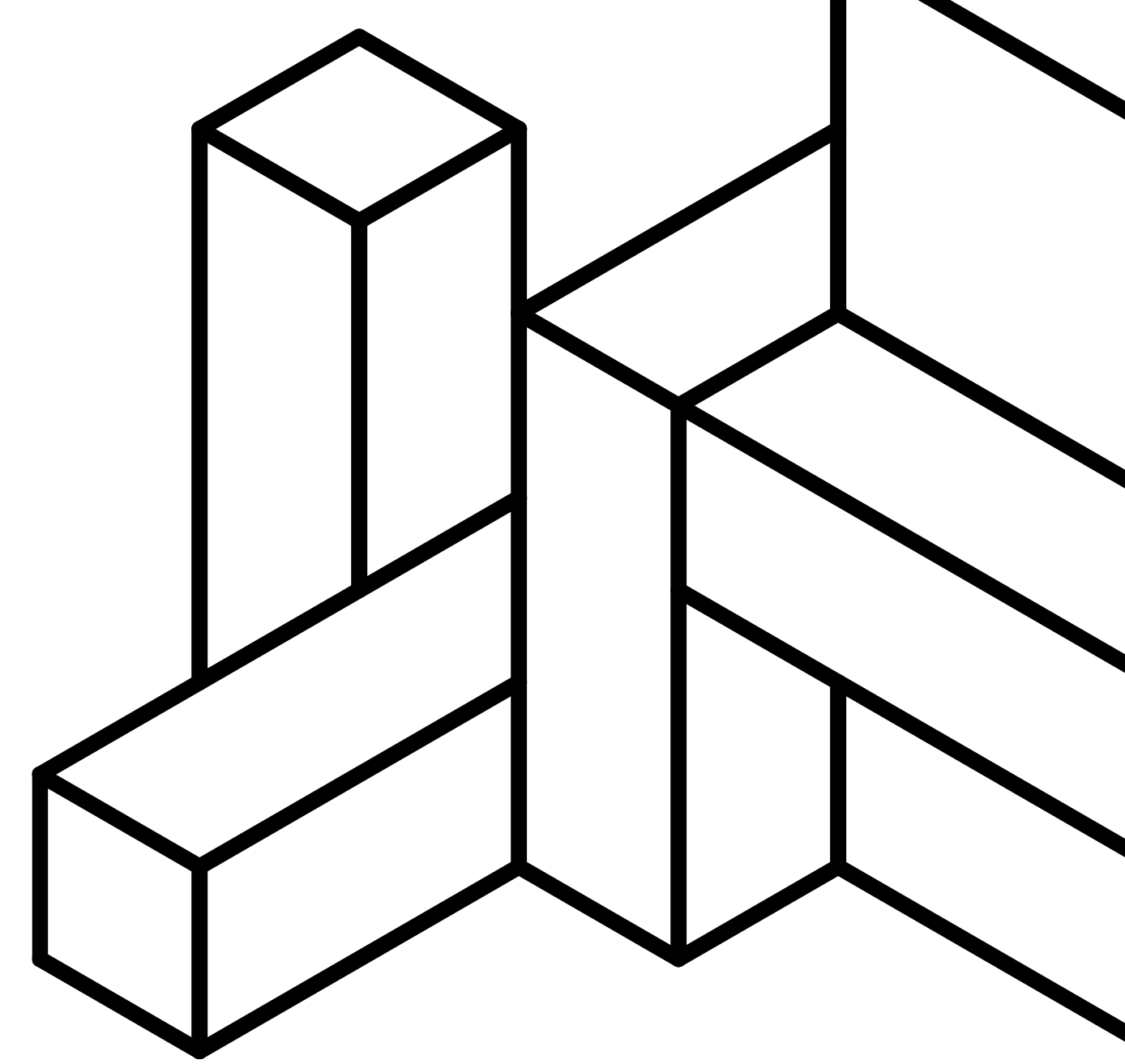
Regulatory trends in the EU Member States

- **Extended Producer Responsibility** (French scheme “*REP bâtiments*” starting 2023 – waste collection & treatment schemes to be set up & funded by product manufacturers)



- **Landfill bans** (Austria 2026)
- **Green Public Procurement** (e.g. Italy’s Minimum Environmental Criteria (*Criteri Ambientali Minimi*) – min. 5% recycled content in public building construction/renovation)
- **Waste Framework Directive:** By 31 December 2024, the Commission shall consider the setting of preparing for re-use and recycling targets for C&D waste and its material-specific Fractions (WFD)

Views from practitioners: Ambitions and challenges in gypsum recycling



Views from practitioners: Ambitions and challenges in gypsum recycling



Fernando Pardo
Saint-Gobain



Harald Schmitt
Knauf



Iryna Yermakova
Etex Group



Moderation:
Annita Papa,
Eurogypsum



Nicolas Clavelloux
SERFIM/Nantet



Ilaria Frealdo
Frealdo Asfalti srl



Maarten Hendriks
New West Gypsum



David Jörgens
REMONDIS/CASEA



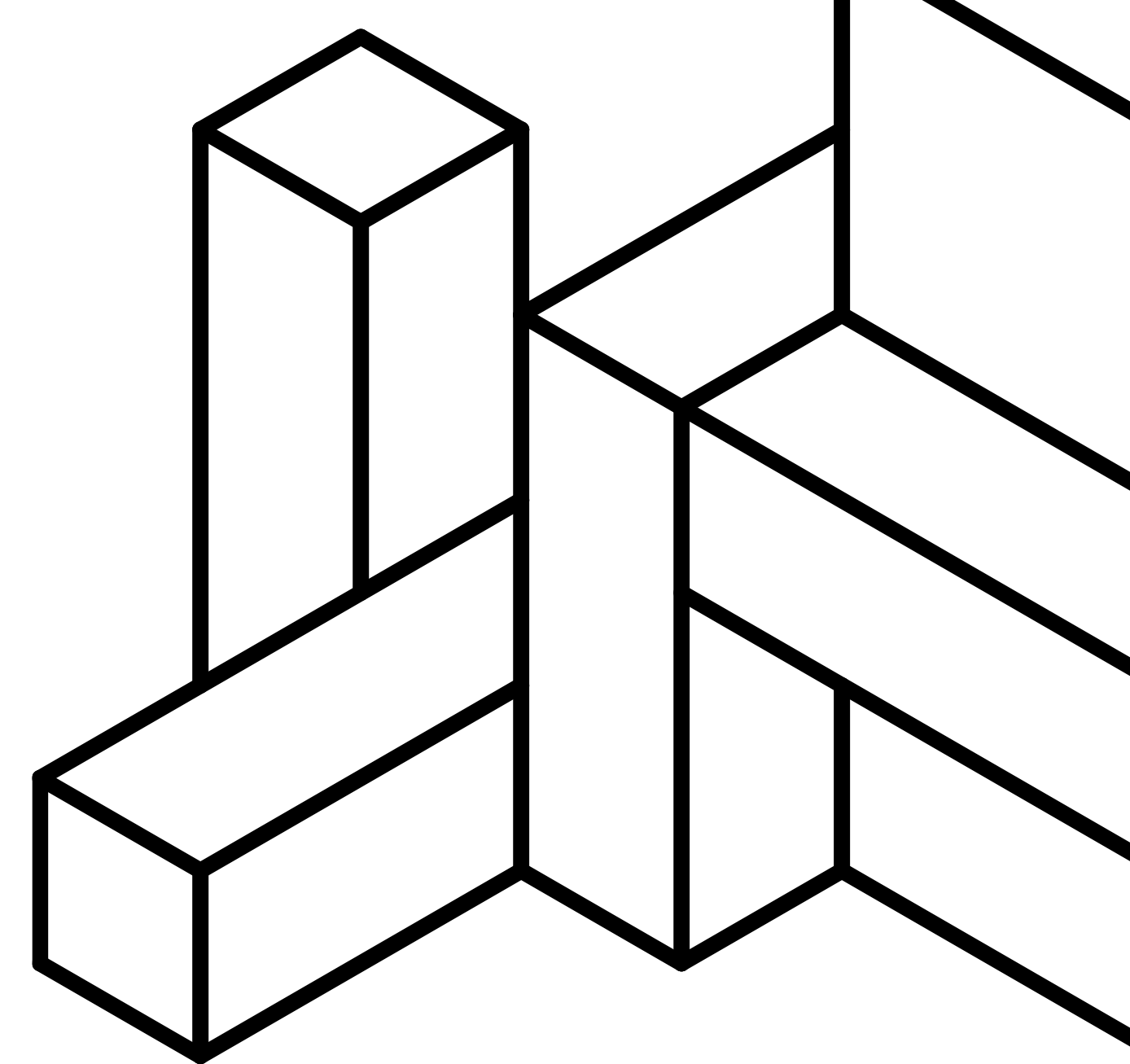
Coffee Break

We will resume at 15:05





The latest on gypsum recycling in Europe





EU Regulatory Framework

Sustainable finance taxonomy, initiatives on construction and demolition waste

Florian Flachenecker, European Commission DG Environment



EU initiatives on construction & demolition waste and gypsum

Florian FLACHENECKER | European Commission | DG Environment

6th European Gypsum Recyclers Forum | 16 November 2023

Policy context

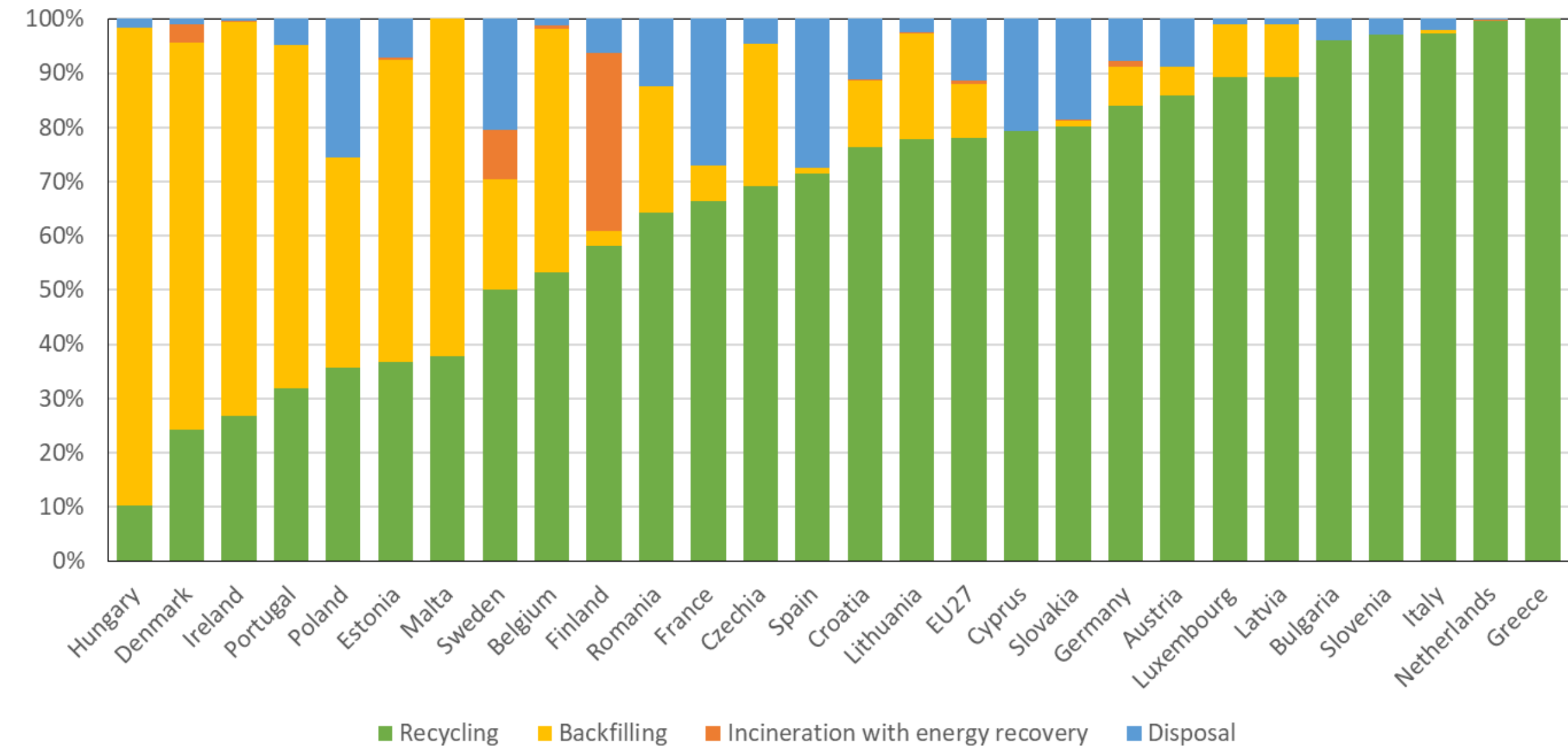
Circular Economy Action Plan

- Construction & buildings considered a key value chain due to circular and environmental potential
 - ~50% of all extracted materials
 - ~40% of the EU's total waste generation
 - 5-12% of national GHG emissions, of which 80% could be saved through material efficiency
- Key initiatives
 - Considering setting preparing for re-use and recycling targets for CDW and its material-specific fractions
 - Integrate life cycle assessment of Level(s) in public procurement and the EU Taxonomy
 - Revising the Construction Product Regulation
 - Promoting measures to improve the durability and adaptability of built assets in line with the circular economy principles for buildings design and developing digital logbooks for buildings
 - Promoting initiatives to reduce soil sealing, rehabilitate abandoned or contaminated brownfields and increase the safe, sustainable and circular use of excavated soils

Waste Framework Directive

- Waste prevention: Requires Member States to “encourage the re-use of products and the setting up of systems promoting repair and re-use activities” and “reduce waste generation”
- Preparing for re-use & recycling: “Member States shall take measures to promote selective demolition [...], and to ensure the establishment of sorting systems for construction and demolition waste at least for wood, mineral fractions (concrete, bricks, tiles and ceramics, stones), metal, glass, plastic and plaster”
- 2020 target: At least 70% by weight of non-hazardous construction & demolition waste (CDW) is prepared for re-use, recycling and other material recovery, including backfilling operations

Treatment of the mineral fraction of CDW across the EU in 2020



Source: JRC (forthcoming). Techno-economic and environmental assessment of construction and demolition waste management in the EU

Upcoming and ongoing initiatives on CDW

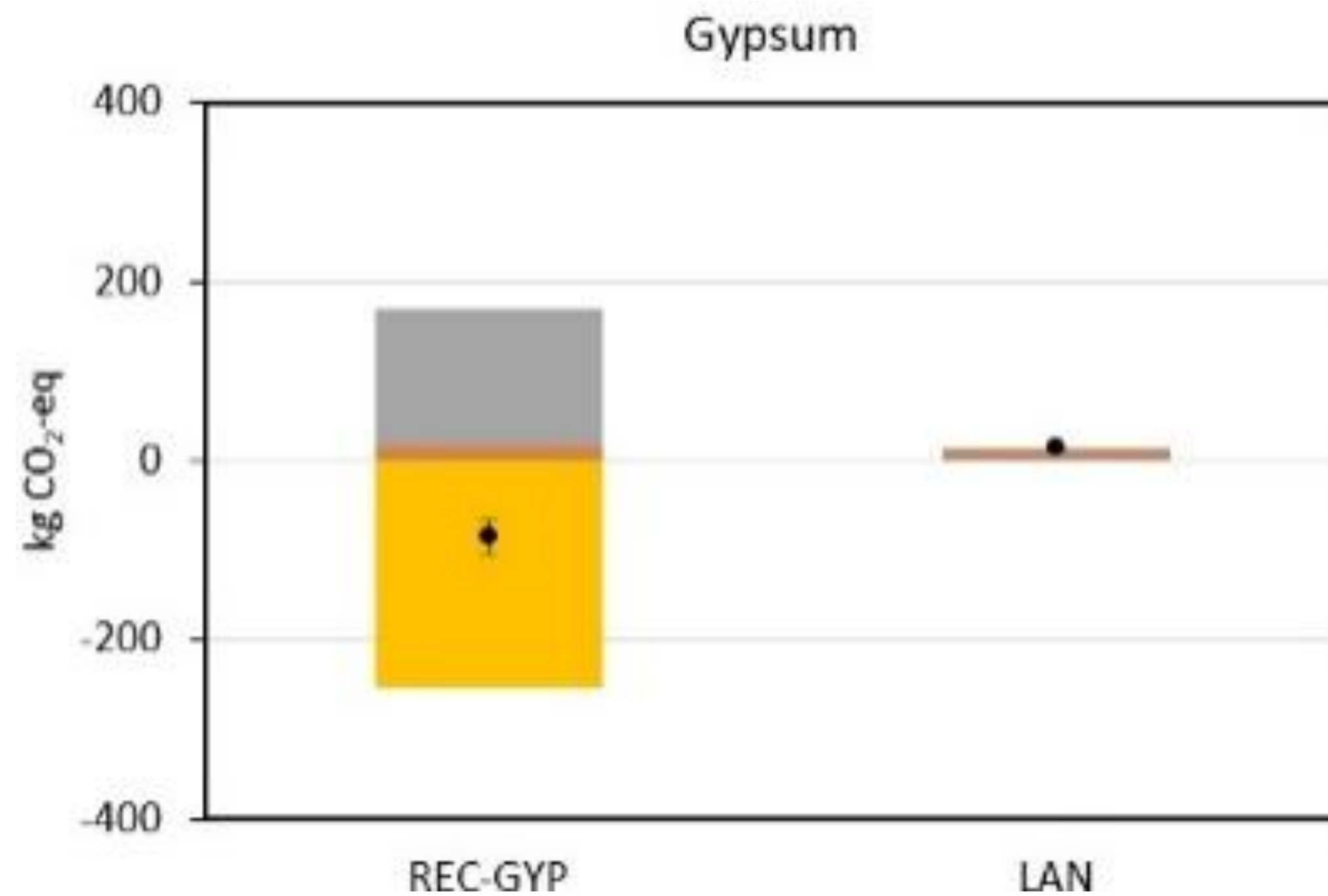
- Review clause – Article 11(6) WFD: *“The Commission shall consider the setting of preparing for re-use and recycling targets for CDW and its material-specific fractions”*
 - JRC report I: Overview of current situation by Member State and subset of material fractions (covering data gaps), 2050 projections, existing waste management technologies, life cycle analysis and costing (<https://data.europa.eu/doi/10.2760/772724>)
 - JRC report II: Forthcoming JRC work on remaining material fractions, but not on proposing targets
- Ongoing background analysis on EU-wide end-of-waste criteria for CDW
- Ongoing update of guidance documents: *EU Construction & Demolition Waste Management Protocol* and *Guidelines for the waste audits before demolition and renovation works of buildings*

Insights from forthcoming JRC study | gypsum

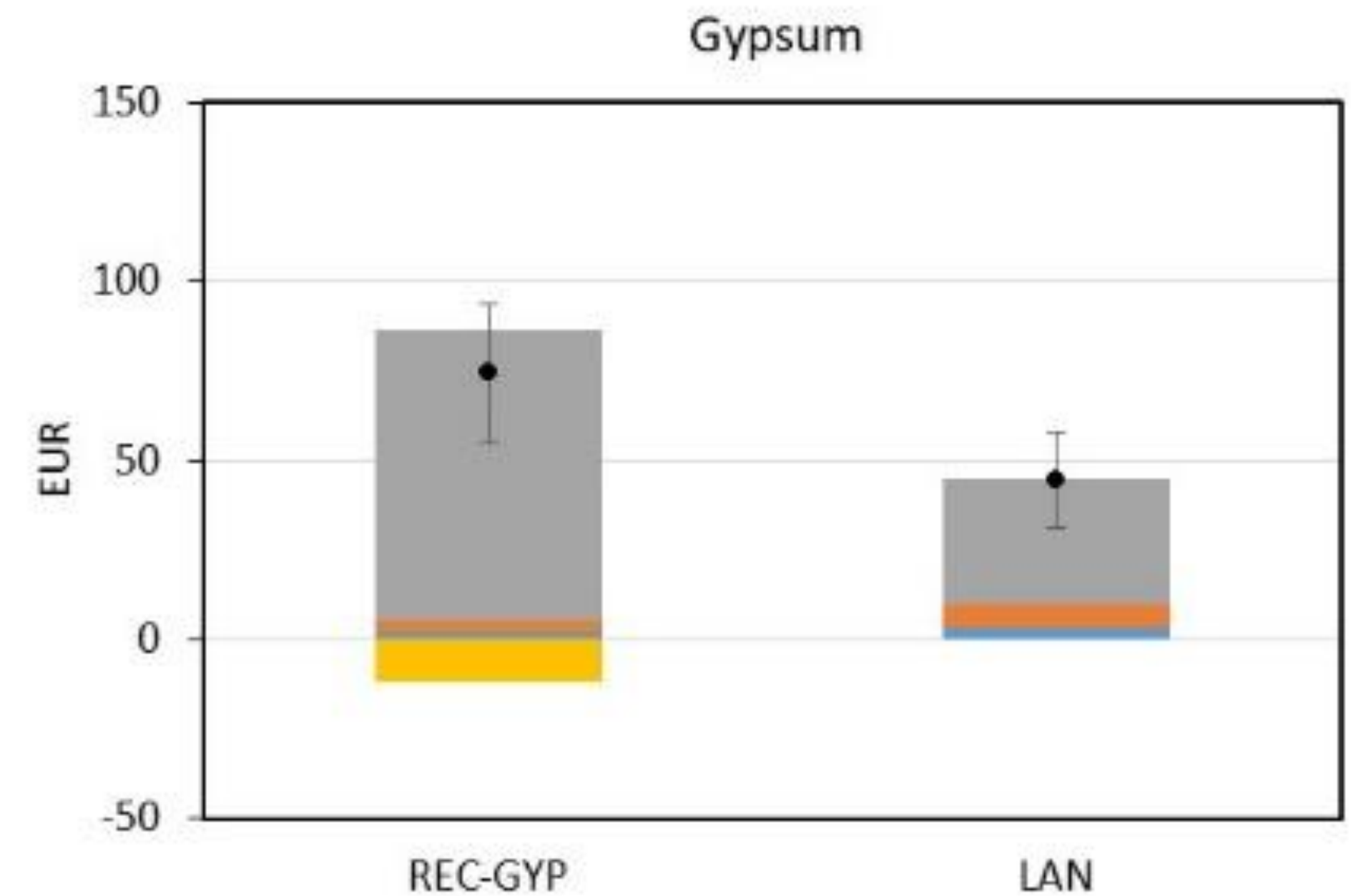
- Around 1.4% of CDW is gypsum waste, of which ~10% is recycled and ~90% landfilled
- Following conventional demolition, gypsum is generally landfilled, but plasterboards could be recycled into new plasterboards (up to 30% recycled content considered technically feasible), or used in cement production or as a soil improver (open loop)
- Selective demolition facilitates recycling to produce new plasterboard, but is labour-intensive and limited due to economic barriers including the relatively low market value of the secondary material
- The (preparing for) re-use potential of gypsum is currently very limited

Life cycle analysis & costing | gypsum

LCA climate impacts



LCC (conventional) financial impacts



Notes: REC-GYP: recycling of gypsum; LAN: landfilling

Source: JRC (forthcoming). Techno-economic and environmental assessment of construction and demolition waste management in the EU

EU Taxonomy

Logic and objectives

✓ Make a substantial contribution to at least one of the six environmental objectives



✗ Do no significant harm to any of the other environmental objectives



Meet minimum safeguards comply with international minimum safeguards

Climate change mitigation



Climate change adaptation



Circular economy



Water and marine resources



Pollution prevention and control



Biodiversity and ecosystems

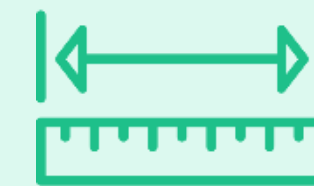


Defining environmental sustainability

Ultimately, it helps raise the needed investments to build a net zero, resilient and environmentally sustainable economy



A classification system
Provides clarity on what is an environmentally sustainable activity and under which circumstances.



A measurement tool
Measures the degree of sustainability of an investment and the degree of green activities of companies



A transition tool
Helps investors and companies to plan and report on the transition. It sets the objectives and the direction of travel for different economic activities

What it is not

Not a **mandatory list** to invest in

Not a rating of the **'greenness'** of companies

It does not make any judgement on the **financial performance** of an investment

What's not green is not necessarily **brown**

Selected criteria | renovation of buildings

70%

of non-hazardous CDW
prepared for re-use or
recycled

1

Treating CDW in accordance with waste legislation and the full checklist of the EU CDW Management Protocol

2

Excludes backfilling and naturally occurring materials in category 17 05 04

3

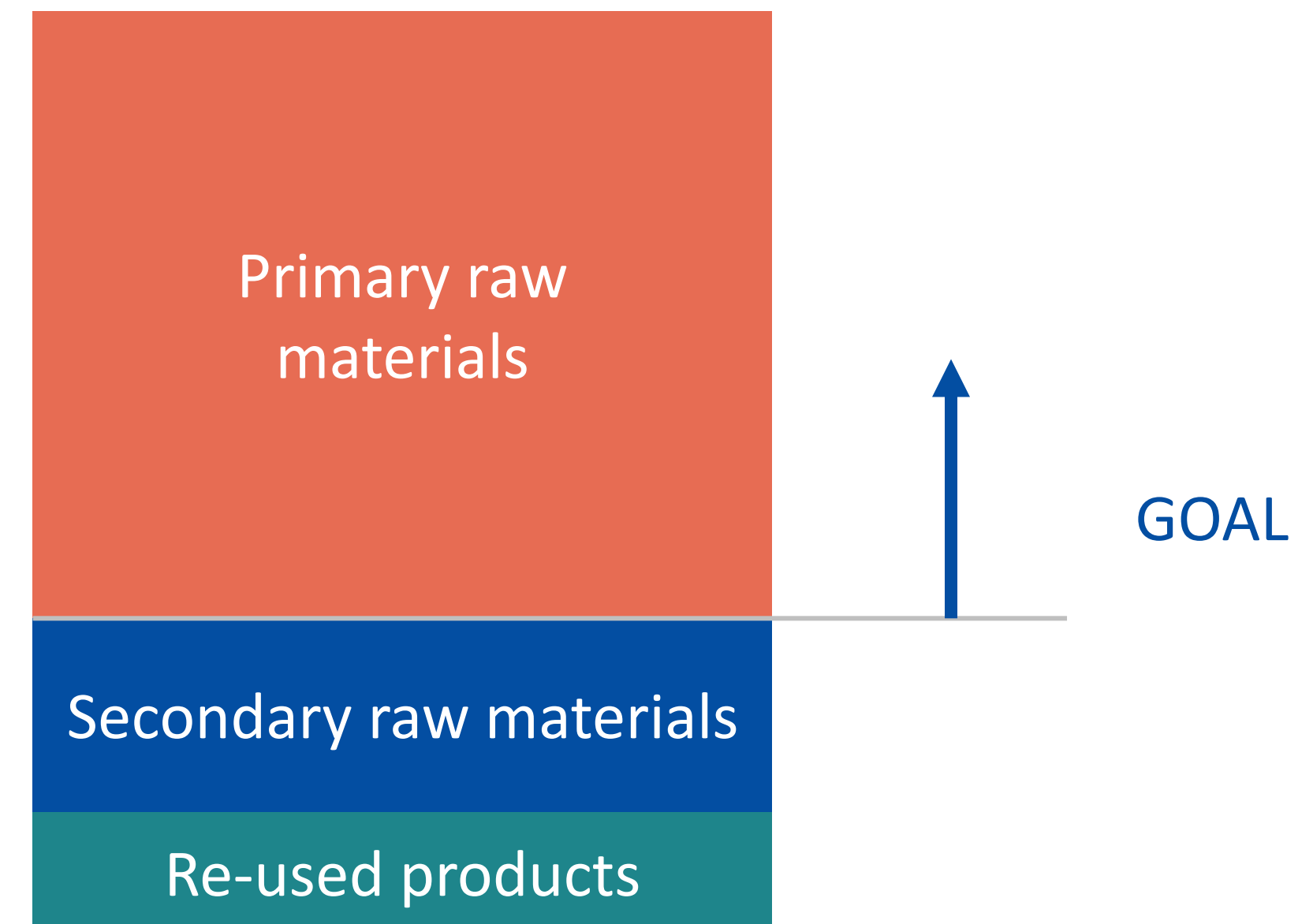
Reporting using Level(s) indicator 2.2 and Level 2 reporting format

Selected criteria | renovation of buildings

The waste hierarchy favours prevention (e.g. re-use), preparing for re-use and recycling



Focus on primary raw materials raises awareness and incentivises re-use, preparing for re-use and recycling



Selected criteria | renovation of buildings

Material categories	Maximum primary raw materials content
Concrete, natural or agglomerated stone	85%
Brick, tile, ceramic	85%
Bio-based materials	90%
Glass, mineral insulation	85%
Non-biobased plastic	75%
Metals	65%
Gypsum	83%

Applies to the **three heaviest** materials categories (in kg)

Thresholds are **lower** for the **construction of new buildings**, i.e. fewer primary raw materials are allowed

Thank you



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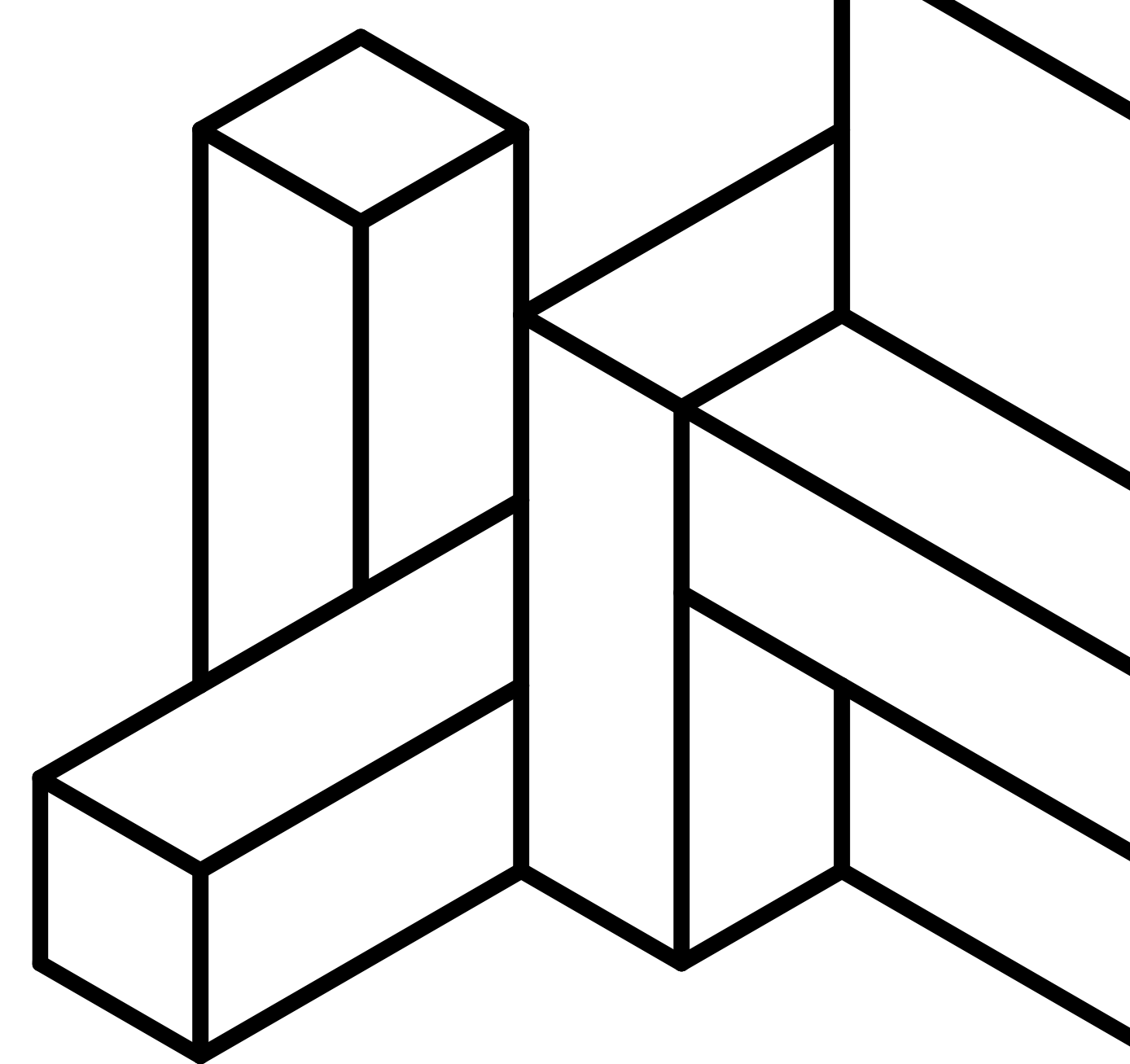


Extended producer responsibility: The French example

Rami Jabbour, Valobat



Eurogypsum's Quality Criteria for Recycled Gypsum. Towards End of Waste Status?



Xavier Meyer
EUROGYPSUM



Why an EoW status?

- Stop regulating the material as a waste
- Reduce administrative burden (transport, business license to store and handle the material, etc.)
- Change the image of the material from a waste to a valuable resource
- Accelerate circular practices

Purpose of the Quality Parameters

Recommended by Eurogypsum as to ensure the end-of-waste status to reprocessed gypsum from waste plasterboard and other plaster products in order for it to be processed into new plasterboard or other gypsum-based products.

The document provides a specification that can be adopted by reproprocessors for producing defined grades of reprocessed gypsum, to ensure they are procuring a material of consistent and verifiable quality.

Comments

Health, Safety and Environmental parameters

Determined on the basis of a comprehensive human health assessment carried out within the framework of the EU chemicals legislation REACH, and the good practices collected using the “Specification for the production of reprocessed gypsum from waste plasterboard” in the United Kingdom.

Assessment methods and minimum sampling are fixed in individual contracts signed with recyclers.



HSE* Parameter	Quality Criteria	Method used
Trace elements	Non-toxic	According to national legal requirements or by internal assessment
Radioactivity Index I	< 0,5	- Directive 2013/59/Euratom
Asbestos	None	ISO method (ISO 22262-2 (2014))1 and/or adequate national method required
Sulphur (primary)	Odourless/neutral	VGB, part 1, 8.9
Man Made Mineral Fibres (WHO dimension, excluding gypsum fibres)	0.1 w/w %	ISO method (ISO 22262-2 (2014)) and/or adequate national method required

Comments

Each company or production site remains free to set up different quality requirements in light of the necessities of their respective production processes.

This value is purely indicative, as strong differences can be encountered in natural gypsum depending on the local gypsum rock purity, contrary to the level of purity achievable via flue gas desulphurisation.

ITALY:

Assogesso suggesting alternative parameters to Italian Ministry for the Environment's law proposal (purity $\geq 70\%$)



Technical Parameter	Expressed as	Quality Criteria	Method used
Particle size		≤ 50 mm	VGB, part 2, A7
Free moisture		≤ 10 %	VGB, part 1, chapter 1
Purity of gypsum ¹	CaSO ₄ , 2 H ₂ O	≥ 80 %	VGB, part 1, chapter 2
Total organic content (TOC)		≤ 2.0 %	VGB, part 1, chapter 8.10 / EN 15936:2022
Magnesium salts, water soluble	MgO	< 0.1 %	VGB, part 1, chapter 8.1
Sodium salts, water soluble	Na ₂ O	< 0.04 %	VGB, part 1, chapter 8.2
Potassium salts, water soluble	K ₂ O	< 0.06 %	VGB, part 1, chapter 8.3
Chloride	Cl	< 0.01 %	VGB, part 1, chapter 8.8
pH		5 – 9	DIN EN ISO 787-9: 2019-06
Visible physical contaminants: Total glass, metal, plastic and any other non-stone fragments (excluding paper)		None	BSI, Annex E

Ongoing developments in EU Member States



• **AT :**

- Ministry working on the EoW quality criteria (publication expected for 12/2023)
- Anyone who wants to buy gypsum waste will be able to, but only the gypsum industry would receive the EOW status for the waste
- Asbestos detection limit 0.008%

• **NL :**

- Since 2020, recycled gypsum considered as a product instead of a waste when used for agriculture (fertiliser)!

• **IT :**

- Ministry working on the EoW quality criteria, use of the Eurogypsum proposed Quality Criteria.
- Control every 200t of recycled gypsum processed (reprocessing companies). All criteria should be respected to maintain the license to operate

• **DK :**

- Danish Environmental Protection Agency statement regarding hierarchy:
- 1. Gypsum waste must primarily be reused.
- 2. If not possible, the gypsum waste should be recycled, e.g. for the production of new gypsum boards or in cement production.
- 3. If not possible, it can instead be handled by someone else recovery, e.g. in compost.
- 4. In relation to use in compost, this must be done in accordance with a specific section 19 permit.



Moderation:
Annita Papa
Eurogypsum

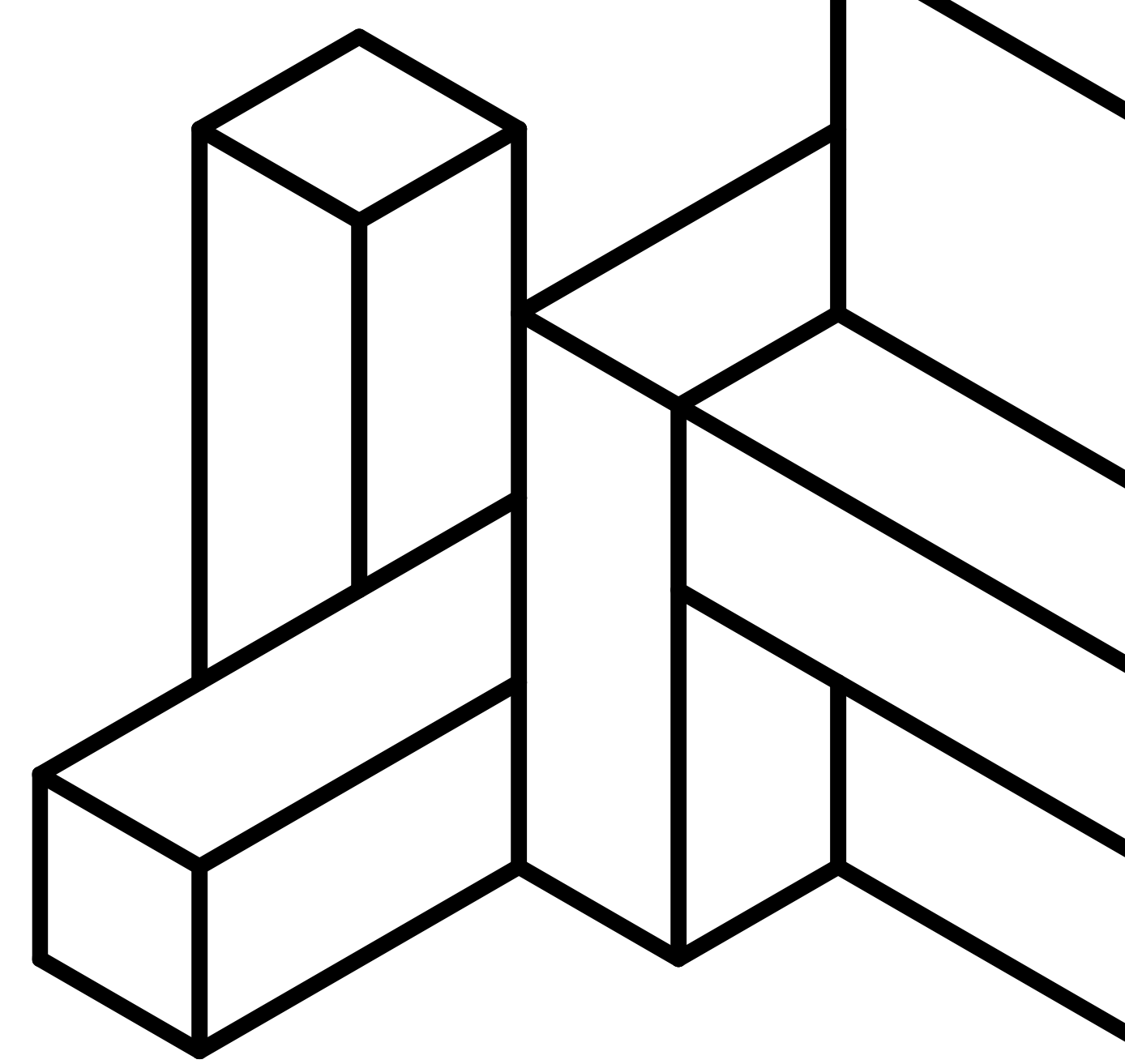
Reactions from the audience





Outlook: Gypsum recycling in North America

Stephen Meima
Gypsum Association



Gypsum Association Member Companies



Regular Members



Associate Member



Gypsum Association Staff



Stephen H. Meima, MBA, APR, LEED Green Assoc.,
Executive Director/CEO 301-277-8743
smeima@gypsum.org



Susan Hines, LEED Green Assoc.,
Director, Stewardship and External Affairs
301-277-8684 shines@gypsum.org



Vianney Herrera,
Operations Administrator,
301-277-8683
vherrera@gypsum.org



Michael Schmeida, MSc, LEED AP,
Director of Codes, Standards and Research
301-277-8742 mschmeida@gypsum.org



Greg Woolley, LEED Green Assoc.,
Technical and Market Advisor
301-277-8681
gwoolley@gypsum.org

Gypsum Association Focus Areas

- Technical information and assistance A/E/C value chain
- Standards development
- Building code activities
- Promotion: Industry, products, resources
- Education: Practical, continuing education credit
- Industry issues: Regulatory, legislative, market
- Safety & Health: Safety statistical program
- Government affairs
- Industry statistics





Gypsum Recycling in North America

- Status
- Challenges
- Opportunities

Gypsum Recycling – Panel discussion

- Share views on similarities and differences in gypsum recycling between Europe and North America.
- Discuss respective levels of support from local policy makers.
- Discuss potential for replication of each others' initiatives in their respective markets.

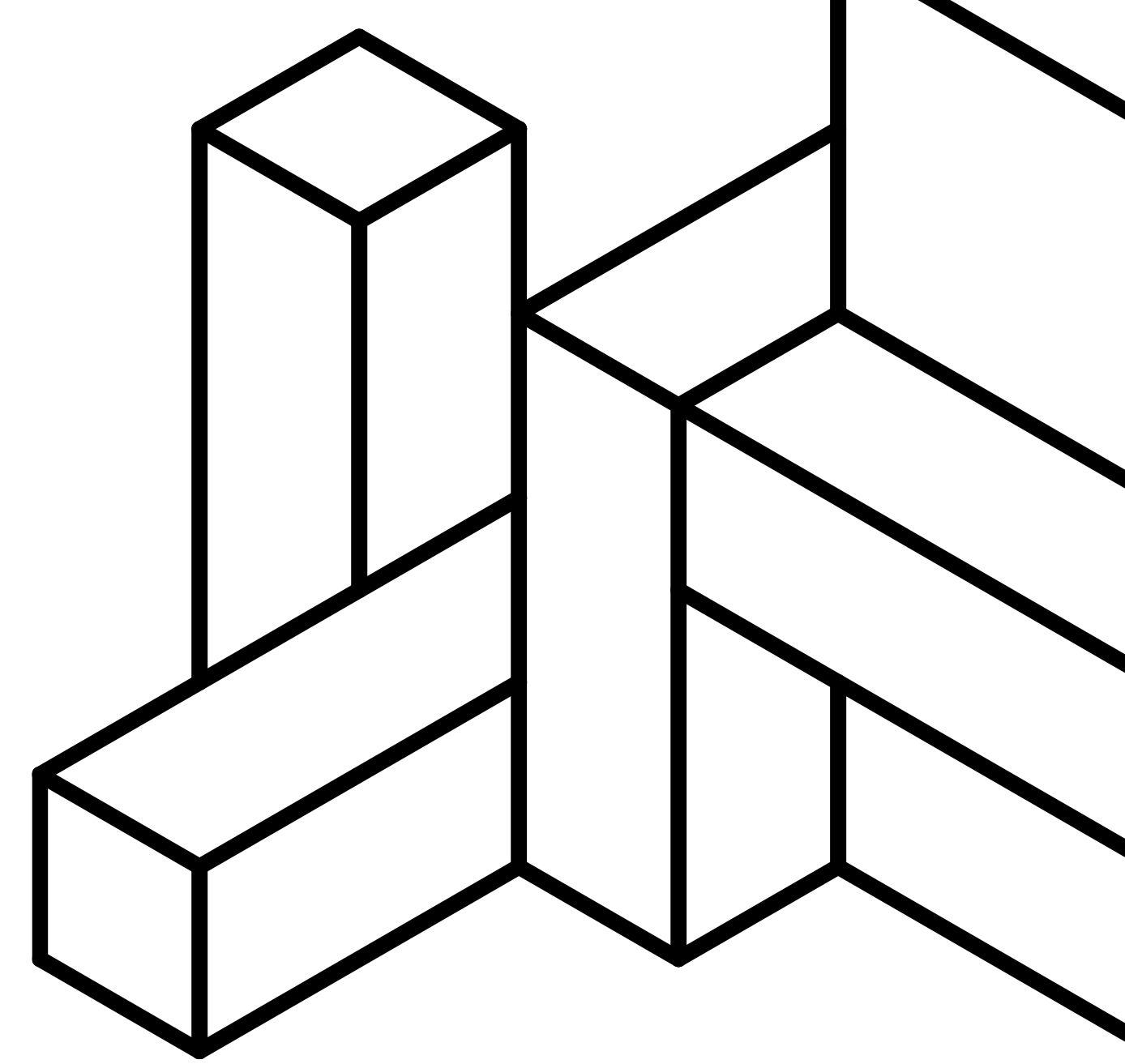
Can Europe and North America advance together?

- If so, how?
- If not, why?





Debate: How can Europe and North America advance together?



Debate: How can Europe and North America advance together?



**Maarten Hendriks,
New West Gypsum**



**Jean-Luc Marchand,
Eurogypsum**



**Stephen Meima,
Gypsum Association**



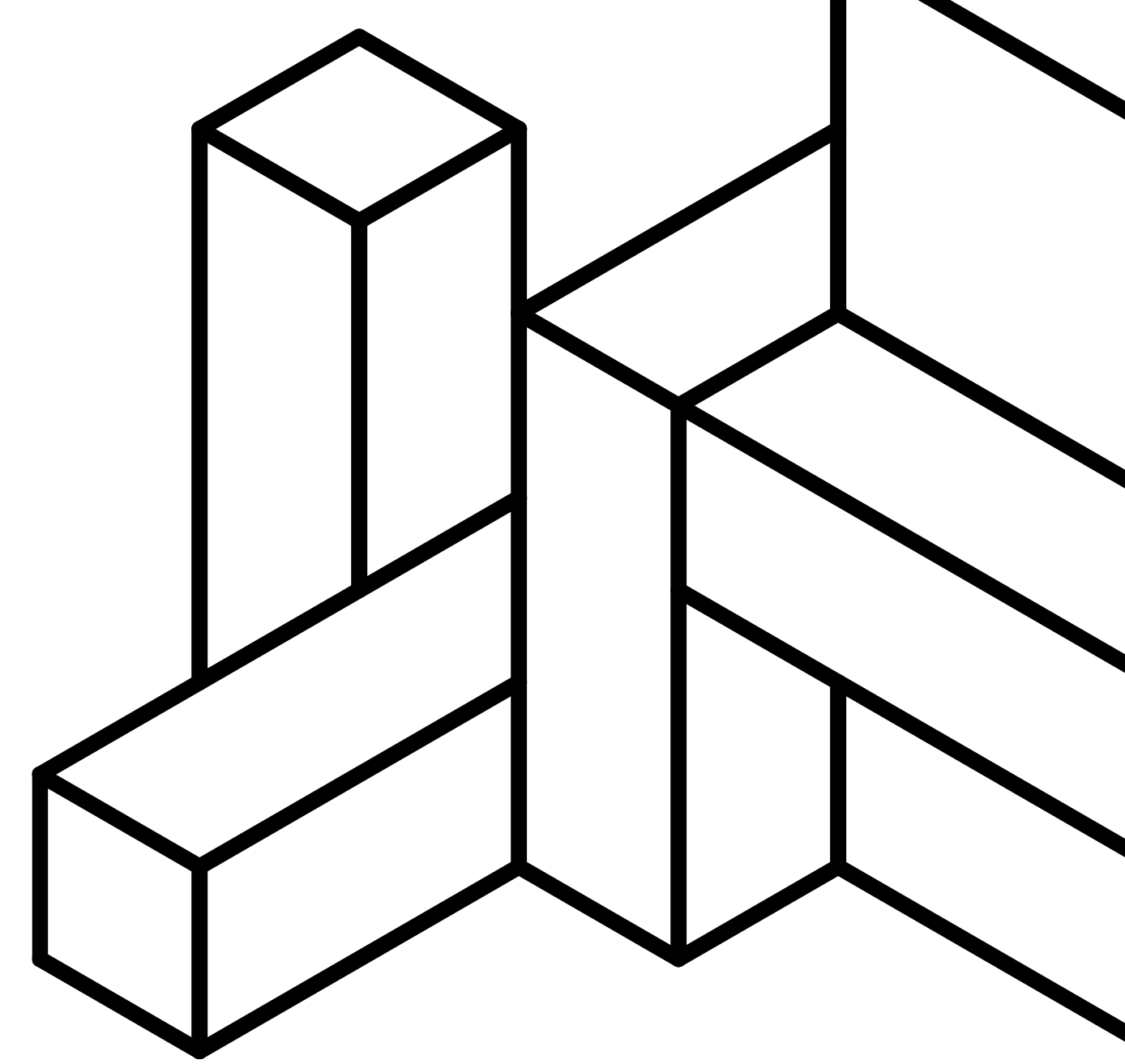
**Tim Mulso,
Beneficial Reuse
Management**



Moderation:
Tristan Suffys,
Eurogypsum



Closing words



Jörg Ertle
President, EUROGYPSUM