

## 5<sup>th</sup> European Gypsum Recyclers Forum 26 May 2021

### Annexes to the conclusions and recommendations

## Annex I: Key take-aways from speakers' presentations and interventions

**Xavier Meyer** (Leader, Eurogypsum's Circular Gypsum Working Group):

- Gypsum can be deconstructed, reprocessed and reused in buildings forever. Closing the loop is possible but there are still challenges.
- In 2019, around 600,000 tonnes of recycled gypsum from construction and demolition waste was used in plasterboard production process in Europe; with no significant progress from 2018. The recycled volume remains low compared to the potential. There are important discrepancies across European countries, with Nordic countries performing better on recycling rates.
- Key drivers to promote recycling, from the Nordic experience, are the respective competitiveness of recycled materials vs. virgin gypsum; market demand for circular economy; early sorting of waste; and the management of the risk of presence of asbestos traces in recycled gypsum.
- Technical barriers to high recycled content include the presence of residual paper in recycled gypsum, mineral and hydrophobic particles.
- To encourage gypsum circularity, it is recommended to foster the economic competitiveness of the recycling route, to have harmonised waste legislation across the EU, and to promote deconstruction vs. demolition, including early sorting on site.

**Fulvia Raffaelli** (Head of Unit, European Commission's DG GROW):

- The construction ecosystem is crucial to achieve Europe's carbon neutrality objective. The sector accounts for 50% of extracted materials and 35% of EU's total waste generation.
- Policies looking at the demand side (Renovation Wave, Resilience & Recovery Funds...) focus on energy efficiency of buildings, while it is also important to look at resources.
- Lifecycle approach considerations are crucial. Tools are being developed to make the sustainability performance of products more visible and comparable, e.g. via the revision of the Construction Products Regulation (CPR), which will be proposed by the end of 2021. The mandatory inclusion of sustainability criteria in all construction product standards, such as on

carbon footprint or recycled content, is currently contemplated as part of the CPR revision.

- The uptake of more sustainable products or options should also be promoted at building design (or renovation) stage. The definition of sustainability criteria at building level is a major initiative with the Level(s) programme.
- Deconstruction is crucial to ensure the quality of the recycled material, with the EU Protocol on the management of construction and demolition waste or the audit for pre-demolition works.
- The Waste Framework Directive's targets for the recycling of construction and demolition waste will be revised in 2025. Studies will be launched to support this revision.
- It is important to have a business case for companies to go circular. The environmental impact should not be moved from one side to another side of the life cycle, hence the importance of keeping the information on the characteristics of a product throughout the life cycle.
- While the environmental impact of construction products will become more visible and comparisons will be enabled between competing materials, it is important to keep a material-neutral approach in policy, given the varied architectural traditions across Europe and the needs to ensure a proper management of space in urban areas.

**Klaus Birk** (Vice Chair, Nordic Gypsum Forum):

- In Denmark, a partnership on Circular Gypsum was proposed by the industry in summer 2020, to increase quantities of recycled gypsum; achieve a favourable legal framework; and ensure the traceability and quality of gypsum waste.
- Actions included certification of handling gypsum waste, mapping the volumes of gypsum waste, and looking at procurement practices.
- A Danish government's climate partnership with the building industry in 2020 included increasing the recycling of materials.
- On the legal framework, Denmark has relevant legislation for recycling, but they are mainly based on volumes. A value-based approach was promoted by the partnership. Furthermore, further emphasis was asked for on closed loop recycling. Local taxes on deposits can also help.
- Quality standards have been developed for recycled gypsum, which waste handling companies can follow. Contractors are asked to screen for value before demolishing – not only volumes. A certificate is being developed to show that the gypsum waste is going into closed loop recycling.
- The data collection showed that 140,000 tonnes of gypsum waste was generated every year; half of the potential still being unused.
- The City of Copenhagen's circularity handbook refers to gypsum and the City includes specific requirements in tenders to promote closed loop recycling.
- Increasing the costs of deposits for recyclable materials could help.

**Davide Tonini** (Scientific Policy Officer, EU Joint Research Centre):

- The EU Waste Framework Directive stipulates that the Commission should consider the setting of preparing for re-use and recycling targets for construction and demolition waste (CDW) and its material-specific fractions by end 2024. This is also announced in the 2020 Circular Economy Action Plan.
- Therefore, the Commission's Joint Research Centre coordinates a project to provide environmental and techno-economic assessments, to inform the Commission's work on this matter. The project started in January 2021 and will end in March 2022.
- This project aims to gather better knowledge on the composition of CDW in Europe, the current recycling and recovery practices, practical drivers and barriers to the management and treatment of CDW individual material fractions.
- The expected outcomes of the project include guidance on whether targets for individual materials would be useful, what materials should be prioritised, what would be the environmental improvement potential, and how such individual material fraction targets should be set.
- Data is currently looked for on the material composition of buildings, life cycle dataset for recycling technology for the individual fractions, as well as the quality of material recycled and the costs. Contributions from stakeholders are welcome as soon as possible [details available on Mr Tonini's slides].

**Raphaël Gas** (Director of Recycling, Serfim):

- Waste from building has been collected for sorting and recycling since 1997, starting with rubble, metals, cardboard, and progressively extending to other materials.
- The plaster recycling industry really kicked off in France in 2010.
- EU and national regulations have facilitated the uptake of recycling.
- In 2020, 95% of the gypsum waste collected by Serfim is already sorted at source. Gypsum waste comes from demolition, construction and renovation works (50%) as well as community dumping (50%).
- The past two years have shown an acceleration in the development of gypsum recycling, due to a sharp rise in landfill prices and increased awareness by economic operators and the public at large.
- Remaining obstacles to higher recycling rates in France are: waste shipments to Spain at very low prices; the lack of competitiveness for recycled material vs. virgin raw material; the need for high-performance material preparation tools providing quality control and guarantees to the users of recycled materials; the perceived risk of asbestos presence.

- Practical solutions enacted by Serfim to avoid asbestos include: ban on asbestos presence in received waste; request for asbestos diagnosis for demolition sites; air analysis at sites to detect and count asbestos fibres; random sampling and weekly analysis on a delivery which is isolated before processing.

**Maarten Hendriks** (Managing Director Europe, New West Gypsum Recycling):

- New West Gypsum Recycling (NWGR) has been processing 270,000 tonnes of recycled gypsum in Europe in 2020.
- Considering constraints for wallboard production and based on 35% maximum recycled gypsum content in production, up to 1,120,000 tonnes of recycled gypsum could be processed to cover Germany's yearly wallboard production.
- For cement production, constraints are lower and up to 100% of recycled content may be applied. Up to 1,500,000 tonnes of recycled gypsum could be processed to cover Germany's yearly cement production.
- However, only 600,000 tonnes are currently available per year.
- While cement supply may be easier and more profitable for recyclers, wallboard production remains the only option in the long term, as it is the only model for closed loop recycling. It is important not to break the loop.

**David Jörgens** (Head of Mineral Materials, REMONDIS Southwest):

- In Germany too, volumes of recyclable gypsum materials are unfortunately still shipped to countries with lower landfill prices.
- There is an increasing demand for recycled gypsum in Germany.
- 40-45,000 tonnes of recycled gypsum per year are currently processed by REMONDIS in Germany.
- Recycling is in a clear distorted competition with cheaper applications, e.g. as utilisation in Czech Republic.
- Improving selective deconstruction and the sorting at sites would help increasing recycling volumes.
- Better control of existing specifications by the authorities is needed, e.g. on waste shipments to lower rated applications than recycling.
- REMONDIS has started a project together with PricewaterhouseCoopers (PwC), the focus of which is an expert opinion that deals specifically with the volume outflow of recyclable gypsum waste into routes subordinate to recycling (e.g. utilisation or dismantling in neighbouring countries). The report also makes concrete proposals on how the legal framework can be further tightened. Stricter regulations are needed here to avoid distorted competition, e.g. between recycling in Germany and soil utilisation in the Czech Republic.

## Annex II: Questions from the audience and elements of answer

Due to the webinar's tight schedule, a number of questions from the audience were unfortunately left unanswered. The table below reproduces all questions submitted during the event, as well as some elements of answer proposed by Eurogypsum's Circular Gypsum Working Group Leader.

<b>Question / Comment</b>	<b>Author</b>	<b>Elements of answer by Eurogypsum</b>
Relating to the presence of asbestos and other contaminants, could it be possible to blend FGD gypsum with recycled gypsum to dilute any contaminants? Hence preserving natural gypsum and utilising secondary material and recycling.	Peter Archer (PGE, Poland)	<i>Blending FGD gypsum with recycled gypsum waste would in our view not alter the composition of the secondary material as regards potentially dangerous substances.</i>
Is the phase-out of coal-fired power plants (source of FDG gypsum) also a driver for increased gypsum recovery from post-consumer residues?	Ulrich Kral (Umweltbundesamt, Austria)	<i>The industry's practice of recycling gypsum started before the setting of Europe's climate neutrality objectives and national decisions on the phase-out of coal-fired power plants.</i>  <i>However, the anticipated reduction of FGD gypsum volumes subsequent to this phase-out is certainly a supplementary driver to encourage and speed up gypsum recycling.</i>
Do we expect to see any improvement in recycling rates achieved in 2020? When will we have those figures?	Stephen Hemmings (Etex, UK)	<i>The impact of the Covid-19 crisis on the gypsum recycling rates is still uncertain. Eurogypsum will collect 2020 figures in the coming months; they should be available by the autumn of 2021 and presented at the next European Gypsum Recyclers Forum.</i>

<p>In Portugal we have an enormous quantity of residues from plasterboard resulting from construction and demolition and it is very expensive to deposit it in waste locals, but nobody invests in the separation of paper from gypsum in order to favour the resulting gypsum in a new production process. Not only in plasterboard production; it could be also incorporated in gypsum plasters production.</p>	<p>Maria Teresa Freire (Sival, Portugal)</p>	<p><i>This is a clear example of a situation where strict waste disposal regulations are not sufficient to drive market towards recycling. Waste recyclers have possibly not found a sufficiently solid business case in Portugal. We would encourage you to contact gypsum waste recycling companies active in other countries to discuss about the potential in Portugal.</i></p>
<p>Is cheap virgin gypsum rock still cheap when you factor in the environmental costs (such as landfill, CO2 emission during quarrying etc)?</p>	<p>Sebastian Pfleiderer (Geologische Bundesanstalt, Austria)</p>	<p><i>The situation very much differs among European countries, depending on factors such as the local availability of natural gypsum, the price of landfill, the local energy mix, etc. This is also one of the reasons why recycling has been more popular in Northern than in Southern Europe.</i></p>
<p>Are we driving for regulation to include only recycled gypsum from construction and demolition, or on regulation to reduce virgin mined natural gypsum?</p>	<p>Peter Archer (PGE, Poland)</p>	<p><i>The European gypsum industry is committed to achieving the most sustainable and efficient use of resources, in the interests of providing products for a sustainable built environment. Considering the constraints imposed by an anticipated growth in demand and an ever-decreasing availability of FGD gypsum in the coming decades, the industry will continue to push for increased use of recycled gypsum, both through the industry's own initiative and supporting regulation</i></p>

		<p><i>wherever needed. However, the volumes are not expected to match in a foreseeable future. Therefore, an increase in the sustainable supply of virgin mined natural gypsum can be realistically anticipated.</i></p>
Question to @Fulvia: Could Green Public Procurement help promote circular practices in construction? Former GPP criteria for wall panels have been discontinued unfortunately. Will they be replaced / renewed?	Tristan Suffys (Eurogypsum, Belgium)	<p><u>Fulvia Raffaelli's answer in the chat:</u>  <i>@Tristan, yes GPP can play a role to promote and support the uptake of more sustainable materials. the idea would be sustainability criteria that we could use as a common reference in different context: e.g. EU taxonomy criteria, GPP...</i></p>
At what level are the landfilling cost for gypsum based waste in Denmark or is it banned to go to landfill?	Jörg Ertle (Etex, Germany)	<p><u>Answer from Klaus Birk (NGF):</u>  <i>It is not banned to landfill gypsum waste in Denmark. There is a specific category (minerals) for gypsum waste. Unfortunately, the cost of landfilling is only ~€ 125-150 per tonne.</i></p>
A recycler should not build the business on favourable legislation, an economically viable solution should be the driver.	Maarten Hendriks (New West Gypsum Recycling, The Netherlands)	<p><i>We agree that a sound business case should be the basis for a recycling activity. Favourable legislation can support the trend but should not be the decisive factor.</i></p>
By when can we expect to have a full ban of cheap landfill options within EU member countries?	Jacques Mutschler (Etex, France)	<p><i>As pointed out by Fulvia Raffaelli, the European Commission cannot impose such a ban, at least in the current legal framework. However, the Commission has been consulting stakeholders on issues faced e.g. with waste shipments across EU Member States and intends to adopt a proposal to update the EU</i></p>

		<i>Waste Shipment Regulation in 2021.</i>
A full ban of (cheap) landfilling is only reasonable for recyclable waste such as recyclable plaster board waste.	Jörg Demmich (Knauf, Germany)	<i>This is an important point of clarification, referring to the previous question raised by J. Mutschler.</i>
I have a question about FGD-gypsum. In 2021, can EU achieve 100% use of FGD-gypsum? If not, what percentage can EU achieve ? is all the used FGD-gypsum going to gypsum wallboard construction?	Gehui Zhang (Tsinghua University, China)	<i>While we do not have exact figures, we estimate that approximately 40-50% of the FGD gypsum produced in Europe is used in the manufacturing of plaster, plasterboard and other plaster products. The rest is primarily used for other applications (e.g. cement manufacturing).</i>
What is the source of 60 Mto cement production in Germany?	Peter Graner (Pegra Consulting, Germany)	<u><i>Jörg Demmich's answer in the chat:</i></u> <i>In Germany 34 Mt were produced only in 2019.</i>