# Study on Data Inventory for a Raw Material System Analysis

## Meeting Report – Third Expert Workshop

<table>
<thead>
<tr>
<th>Project</th>
<th>Study on Data Inventory for a Raw Material System Analysis: Roadmap and Test of the Fully Operational MSA for Raw Materials (Contract no.: 30-CE-0612154/00-04)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>Third Expert Workshop – Materials Niobium, Coking coal, Magnesite, Beryllium and Aggregates.</td>
</tr>
<tr>
<td>Date</td>
<td>11 December 2014</td>
</tr>
<tr>
<td>Location</td>
<td>DG Enterprise and Industry (DG ENTR), Avenue d'Auderghem 45, 1040 Bruxelles, Belgium</td>
</tr>
</tbody>
</table>
| Participants | **European Commission**  
- Slavko SOLAR – DG ENTR  
- Claudia WULZ – DG ENTR  
- Flor DÍAZ-PULIDO – DG ENTR  
- Patrice MILLET – DG ENTR  
- Alexis VAN MAERCKE – DG ENTR  
- Milan GROHOL – DG ENTR  

**Project team**  
- Charlotte PETIOT - BIO by Deloitte (BIO)  
- Alvaro DE PRADO TRIGO (BIO)  
- Mariane PLANCHON (BIO)  
- Jürgen GIEGRICH (IFEU)  
- Cassandra DERREZA-GREEVEN (IFEU)  
- Christoph LAUWIGI  
- Tomas HAK - Charles University Environment Center (CUEC)  
- Paul GOODMAN (ERA)  

**Experts**  
- Brian RICKETTS (Euracoal)  
- Aurelio BRACONI (EUROFER)  
- Henrike SIEVERS (BGR)  
- Mirona COROPCIUC (Euromines)  
- Thomas DRNEK (RHI)  
- Antony MCENEANEY (RHI)  
- Vasili NICOLETOPOULOS (Natural Resources GP)  
- Pilar PEREZ DE ASIS (Magnesitas de Navarra)  
- Michail TSOUKATOS (Grecian Magnesite)  
- Heleen VOLLERS (BeST)  
- Christophe LE PORT-SAMZUN (NGK BerylCo)  
- Stephen FREEMAN (Materion)  
- Peter MAEHLMANN (Tropag)  
- Michelle WYART-REMY (IMA-Europe AISBL)  
- Miette DECHELLE (UEPG)  
- Joseph MANKELOW (BGS)  
- Richard WRIGLEY (Beta Technology Ltd) |
Agenda

- General presentation of the project: context, objectives, tasks, timeline
- General presentation of the methodology for the Material System Analysis (MSA): list of parameters and main calculation steps
- Parallel working sessions: Discussion on data gathered on material flows and stocks for five materials (Niobium, Coking coal, Magnesite, Beryllium and Aggregates): description, preliminary results, method of calculation, data sources, data gaps, etc.
- Conclusions and next steps

Main points and comments that emerged from the plenary sessions

a) Outcomes of the project

- In response to questions regarding the final use of the outcomes of the project, the European Commission services clarified that the public database built during the project will be a basis for informed political discussions. The database will allow building knowledge on the flows of materials in the EU in order to help identifying key opportunities to secure supply of resources in the EU economy. Ultimately, the outcome of the project is to be a part of the future EU Knowledge Base on Raw Materials.

b) Transparency on methodology and results

- The public availability of the database is of great concern for some experts. They recommend including information regarding the general process for the development of the database and the limits and uncertainties of the data provided. In addition, they recommend giving details on the calculation of all the main results provided in the database (methodology, data sources, assumptions, reasoning and discussions with the experts that led to each main result).
- Experts underlined that facilitating the understanding of the calculation process and giving details on the robustness of the results will strengthen the acceptability of the database by the different users/stakeholders.
- The project team explained that the main data sources and the main assumptions used for calculation will be explained in a transparent manner. In addition, quality of results will be assessed with a qualitative score. Furthermore, after the different workshops, the project team will keep working with experts in order to have further checks, feedbacks and validation before publication of the MSA in the database.
- Nevertheless, confidential data provided by experts will be treated as such, and only aggregated data at EU-28 level will be published.

c) Quality and consistency of data sources

- Some experts warn about the fact that data taken from different sources or provided by different experts may not be consistent due to different definitions, scopes, methods for reporting.
- The project team is aware of this issue and will make its best to deliver the most reliable data which is possible to provide within this project, while remaining transparent regarding the limitations of the results. In addition, the project team will make recommendations to improve the quality of the data and update the database in the future.
d) **Reasons for inclusion of aggregates in the scope of this project**

- Some experts asked why the aggregates, which are not in the list of critical materials for Europe, were included in the scope of this project. They recommend explaining clearly the reason of this inclusion in the deliverables of this project.

- The European Commission services confirmed that aggregates are not classified as critical materials and explained that aggregates were including in the scope of this project for 3 main reasons: they are massively used, they are economically important and it is very challenging to have reliable data on these materials.

e) **Scope of the MSA for some specific materials with various sources**

- Regarding magnesite, experts pointed out that the scope of the primary raw materials taken into account in the MSA has to be specified. Indeed, natural magnesium carbonate will be included but other sources as for example sea water or brines could also be taken into account. Experts explained that the 2 approaches have advantages and drawbacks but no choice was made.

- The European Commission services explained that the choice should in any case be justified in a transparent manner. Further suggestions from experts (and in particular from Euromines which may gather several experts’ points of view) would be very useful before making the final decision regarding the scope of the magnesite MSA.

**Main points and comments that emerged from the working sessions**

a) **Niobium**

- Two experts attended the meeting to assist with the niobium MSA.

- Quite a lot of data had already been found but there are many gaps. The experts were able to confirm that the data used is reasonable although a possible error was identified with the Environmental Risk Supply values, which will require further research. In addition, Eurostat exports data for lithium niobate also appears to be incorrect as it is much too large.

- Beta Technology represents CBMM in the EU regarding the Raw Materials Initiative. CBMM is the largest producer of niobium in the world. Beta Technology will next discuss with CBMM to determine if they will be willing to provide any other information.

- Several political issues were discussed. Firstly, niobium being classified as a critical raw material has implications in Brazil as over 90% of niobium is from Brazil. CBMM are able to meet demand and can increase capacity if required. Another issue is how the Environmental Risk Supply and Governance risk of supply will be viewed in Brazil, as there are no supply risks. Also, the Environmental Risk Supply value is high for Brazil whereas CBMM’s environmental performance is considered as good.

- Finally, the experts underlined that obtaining accurate data for niche uses of niobium will be extremely difficult and maybe impossible. This is in part due to the complex multi-step supply chains where there is no data or very limited data for most of the steps.

b) **Coking coal**

- Two experts joined the working session on coking coal and gave valuable input to the work provided by the project team.

- The general procedure applied to develop the MSA on cocking coal was accepted by both experts.

- The first discussion regarding the scope of the coking coal MSA found a quick agreement, as every participant did not want to include detailed steel data into this MSA. The Experts strongly emphasized the fact that the relation between coking coal MSA and steel
production should be clearly stated, which corresponds with the suggestion of the project partners.

- After this first discussion, the group went through the individual parameters from the exploration phase to the use phase. As coking coal is fully converted during the use phase, it is not possible to trace this material beyond this life cycle.

- There were some comments regarding additional data sources and a commitment of data gaps with the hint that these data just do not exist. The experts were curious about the stock data, which is not possible to quantify on a European basis. The same applies to stock in waste data, so these numbers will be roughly estimated or left out.

**c) Magnesite**

- 6 key representatives of the magnesite industry attended the working session, which was very useful.

- Several topics which need further investigations were pointed out and it was agreed that Euromines would coordinate the further cooperation between the MSA project and magnesite firms.

- The reference element/substance/material for the MSA has to be determined: It might be magnesium (Mg) or magnesium oxide (MgO).

- Primary raw materials taken into account in the MSA should be specified: One or several raw materials can be included as long as it provides transparent and consistent information. The scope of the MSA will probably include natural magnesium carbonate and other sources for magnesia production (sea water, brines etc.). When appropriate and possible, production of synthetic magnesia and its further manufacturing, use of relevant products etc., will be accounted separately from similar production made of magnesia from magnesite.

- According to experts, data on production and processing are available but there are large discrepancies between databases, in particular between USGS and BGS. A list of references/data sources has to be determined in order to ensure consistency of data.

- Experts made several remarks on particular steps and/or parameters:
  
  - Exploration: The mass content of Mg in magnesite should be correctly identified as well as the Mg reserves in ROW.
  - Extraction: Data regarding the extraction waste disposed in situ and the stock in tailing in the EU should be identified and completed.
  - Uses: The refractory industry should be used as data reference. In this context the European Refractories Producers Federation (http://www.pre-europe.eu) should be contacted in order to identify relevant data regarding shaped and unshaped masses.
  - Recycling: Waste-related data should be identified (potentially from the European Refractories Producers Federation).

- It is likely that an internal meeting among Euromines, the magnesite producers and the project team will be organized in order to review the final draft MSA (Date/location: end of April 2015, Slovakia).

**d) Beryllium**

- Four experts joined the working session on Beryllium.
The working session was very efficient and fruitful in terms of quality check of preliminary results and new information provided. Experts that attended the session covered the first steps of the life cycle (exploration/extraction, processing/manufacture) and provided valuable information over entire chain of value of Beryllium.

Valuable inputs were provided about the resources and reserves of beryllium ores since the USGS data are considered by the experts as unreliable.

Experts validated the fact that the early stages of the value chain of Be take place outside EU (exploration, extraction, processing) and gave information about the imported quantities of the different types of intermediary products (Be alloys, ceramics, metal, etc.).

Experts also provided several inputs regarding parameters of group 2 and 3 (e.g. investment in exploration, industry structure, future demand, etc.).

Experts provided a full description of the uses of Beryllium, information about waste generation at the different life cycle steps and exports of waste to the extra-EU suppliers of Be.

Experts provided information about waste generation at the different life cycle steps and exports of waste to the extra-EU suppliers of Be.

The non-functional recycling of Be contained in Be alloys and ceramics (dilution into other materials) was discussed with the experts, as well as the functional recycling of Be contained in large pieces of Be metal.

Experts underlined that the fact that the global market of Beryllium is very small (about 440 t) does not account for the fact that Beryllium is critical. According to experts, Be criticality is only linked to its low substitutability. Indeed, Be is not scarce and the supply can largely meet the actual and future demand, which is not foreseen to grow significantly.

e) Aggregates

Three experts joined the working session on aggregates.

Experts underlined that there is a lack of harmonisation of the official statistics on aggregates. The EU project Minerals4EU is currently collecting data on reserves and resources of aggregates and a first draft will be available by March/April 2015.

The experts generally agreed with the method for calculating the crude rocks extracted and the quantities of aggregates that are processed for manufacture of intermediate products or for direct use in construction works.

BGS and UEPG report similar data for production of aggregates. BGS data are based on aggregation of Eurostat PRODCOM codes and UEPG data are based on data provided by UEPG members. The difference with the Eurostat COMEXT data might be due to the different codes in these two systems. It was suggested to use BGS or UEPG data for production of aggregates, and COMEXT data for exports and imports. Uncertainty regarding COMEXT data will not be a big issue because the exports and imports are very small compared to production.

The waste generated during extraction, processing and recycling of aggregate products cannot be accounted as waste, as it is mostly reused for restoration of quarries and construction sites. The flows of “waste” sent to recycling are mostly sent back to processing, where they are crushed again to be used in construction works. The majority of aggregates recycled are not used for manufacturing of intermediate products, but used directly in construction works.

Experts agreed that there is very little international trade of aggregates. It may not be zero because there may be some little trade in border regions such as Mediterranean region or Eastern Europe.
• Experts agreed that the supply of aggregates is done in local and regional markets. Therefore, the criticality indicators related to international trade are not applicable.

• Specific questions on the manufacturing and use phases can be addressed to some industrial associations not present in the workshop: BIBM, CEMBUREAU, EAPA...

Next steps

• The project should be completed in September 2015.

• The project team will keep working on the MSA of 22 materials until summer 2015.

• Interactions between the project team and the experts will continue in order to finalise the MSA of the five materials under study during this workshop.

• 2 other workshops will be organised in order to support the development of the MSA of the other raw materials under study. The objectives of these workshops will be the same as for this workshop: to check consistency and reliability of the preliminary results, to help to fill data gaps (to provide with complementary data sources, to propose methods for filling the gaps), to validate hypothesis, calculation methods and results, etc. The content and dates for the workshops are described below.

• At the end of the project, a final task will be to make recommendations on establishing and maintaining MSA.

<table>
<thead>
<tr>
<th>N°</th>
<th>Date</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop 4</td>
<td>11th March 2015</td>
<td>Magnesium, PGM, Germanium, Indium, Natural graphite</td>
</tr>
<tr>
<td>Workshop 5</td>
<td>27th May 2015</td>
<td>Tungsten, REEs, Borates, Chromium, Gallium, Cobalt</td>
</tr>
</tbody>
</table>