



FORAM
TOWARDS A WORLD FORUM
ON RAW MATERIALS

GLOBAL COOPERATION ON RAW MATERIALS

Outcomes Stakeholder Consultation



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Deliverable D.2.2

Report on Outcomes Stakeholder Consultation and Options for Better International Cooperation

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Purpose

This document presents the report on outcomes stakeholder consultation and options for better international cooperation. The aim was to put into dialogue target stakeholders such as international agencies, regulators and policy makers, research centers, universities, training centers, SMEs, large companies and not for profit organizations active in social and economic development, environmental protection and potential end-users for a potential World Forum on Raw Materials, such as investors in technology and market makers. The dialogue revolved around the need for fair and unrestricted access to raw materials and for joint and coherent approaches towards raw materials supply, policy and investment. The document is intended for both internal readers and the public and is under the responsibility of Work Package 2 (WP2). Amendments, comments and suggestions should be sent to the WP2 leader: Jelena Vidovic, Jelena.vidovic@eurogeosurveys.org.



Executive Summary

One of the major objectives of the FORAM project is to start dialogues among the stakeholders that revolve around the need for fair and unrestricted access to raw materials and for joint and coherent approaches towards raw materials supply, policy and investment. The stakeholders are invited to share experiences about their needs, threats, priorities and preferences with the aim to initiate exchanges and interactions that facilitate raw materials trade and for better coordination of relevant raw material initiatives and actions.

FORAM Stakeholders Panel gathers extensive network of contacts representing major raw materials communities extending all over the world: Europe, Asia, Africa, Australia, North and South America. It has relevant coverage related to the entire raw material value chain, with predominance in exploration, mining and processing of primary raw materials. There are five groups of FORAM stakeholders addressing the most important issues in raw material sector today: 1. Innovation, Security of Supply and Growth, 2. Resource Efficiency, Environmental and Social Aspects, 3. Policies, Legal and Financial Frameworks, 4. International Cooperation and Outreach, 5. Research, Capacity building and Education.

In order to bring together the worldwide network of stakeholders and facilitate the dialogue among them, web-videoconference services were used. The main outcomes from the stakeholders dialogues are as follows: despite the availability of various raw materials data systems, there is still the need for harmonization between them; the focus of most of the existing data systems is on primary raw materials; there is a lack of information as well as technologies for extracting secondary raw materials, so developments in this area is needed; there is a global interest to share the data and the knowledge and to enhance the international cooperation on governance of the raw materials; in most areas of Europe policies are available, but there is a need for appropriate regulatory and financial frameworks to implement them; legislations and financial frameworks should help achieve a “closed loop recycling” and circular economy; there is need to implement responsible sourcing in all sectors of the value chain and to incentivize the companies to practice or maintain these values; the Sustainable Development Goals of the United Nations should be integrated in mining sector to overcome negative reputation. Main discussion topics and outcomes from the videoconferences were used as a basis for the format and content of the Pilot Event, where FORAM stakeholders continued with face-to-face discussions.

According to FORAM Stakeholders, the World Forum on Raw materials could be an inventory of country databases and initiatives on raw materials, but also sharing platform of best practices and innovations; it could foster data harmonization; stimulate the development of circular economy; foster dialogue between science and society or science and politics; establish a working group with the main task to develop a data format for reporting raw materials extraction and provisions for both primary and secondary raw materials.

1. Introduction

One of the major objectives of the FORAM project is to reach out to stakeholders to get to know their needs, expand the network and explore synergies with relevant projects, initiatives, actions, policies or strategies including those in the areas of education, knowledge sharing, research, industry, markets and trade. Relevant international organizations were involved and consulted during the process of structuring and clustering the Stakeholders Panel, building upon the expressions of interest for the Advisory Board that were already collected during the process of drafting the proposal. These include the European Commission services concerned, the Organisation for Economic Cooperation and Development (OECD); UN Organizations such as the United Nations Environment Programme (UNEP) and its International Resources Panel (IRP), the United Nations Economic Commission for Europe (UNECE), the United Nations Educational, Cultural and Scientific Organisation (UNESCO), the United Nations Economic Commission for Africa (UNECA), the World Bank Group (WB), the International Study Groups, the G7 and the Columbia Center on Sustainable Investment through the CONNEX initiative, the International Institute for Sustainable Development (IISD) through the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development, the Knowledge Innovation Community on Raw Materials of the European Institute for Technology (EIT RM), the European Investment Bank (EIB), the World Trade Organisation (WTO), the European Technology Platform on Sustainable Mineral Resources (ETP SMR) and the International Council on Mining and Metals (ICMM). Furthermore, stakeholders from G20 Member countries and from countries with which the European Commission has Industrial Policy Dialogues in place were approached.

2. Consulting and making the stakeholders interact, and creating ownership

The focus of this task was to start dialogues among the stakeholders that revolve around the need for fair and unrestricted access to raw materials and for joint and coherent approaches towards raw materials supply, policy and investment. The stakeholders were invited to share experiences about their needs, threats, priorities and preferences with the aim to initiate exchanges and interactions that facilitate raw materials trade and for better coordination of relevant raw material initiatives and actions. To be in line with the scope and requirements of the call for proposals, this task was organized under the form of a test case and was planned to be just a preparation for a possible future operational dialoguing platform: the exchanges and interactions did not go in depth and will did not aim at providing specific recommendations. The ultimate scope was to make this huge, diverse, multicultural, multilevel international communities of experts and stakeholders to start, a structured dialogue oriented towards the search for solutions to overcome existing difficulties and obstacles in worldwide access to raw materials. Options for better international cooperation were identified, discussed with relevant target groups and in close consultation with the Advisory Board.

3. Preparation

3.1. Setting up the EU-based platform of Stakeholders

A EU-based platform of Stakeholders was set up during the first year of the project, which was described and reported in already submitted deliverable D.2.1. The aim of this task was to identify target stakeholders such as international agencies, regulators and policy makers, research centers, universities, training centers, SMEs, large companies and not for profit organizations active in social and economic development, environmental protection and potential end-users for a World Forum on Raw Materials, such as investors in technology and market makers. Advisory Board from the G20 countries and from third countries active in the mining and other raw materials sector, Consortium Partners and EGS Third parties have provided the list of potential stakeholders coming from their extensive contact networks.

Approximately 1,700 contacts were initially collected. After removing duplications and selecting the most relevant ones, 850 remained. Until now approximately 180 have agreed to be part of the network (full list is given in already submitted deliverable D2.1, Appendices B-F). However, building up a network of contacts is a continuous process and we plan to invite new stakeholders constantly until the end of the project. FORAM Stakeholders Panel gathers extensive network of contacts representing major raw materials communities extending all over the world: Europe, Asia, Africa, Australia, North and South America, with European predominance. It has relevant coverage related to the entire raw material value chain, with predominance in exploration, mining and processing of primary raw materials. Furthermore, FORAM Stakeholders Panel represents a heterogenous group of stakeholders covering various sectors, mainly in research and industry.

3.2. Clustering of the stakeholders

In the project proposal it was planned to set up a relatively simple structure, which will naturally evolve during the duration of the project. The most important topics in raw material sector today were obtained at first from the results of questionnaire for stakeholders and afterwards by gathering suggestions from FORAM Consortium partners and EGS third parties. In order to obtain the most appropriate clustering of stakeholders, a matrix approach was used, by opposing the most important topics in raw material sector today at the one side and the entire raw materials value chain at the other side.

3.3. Defining target groups within Stakeholders Panel

Suggestions from FORAM Consortium partners and EGS third parties, together with the results from questionnaire were used to define target groups. Following the first step of matrix approach, all together five groups were defined. The topics are defined as described in the submitted deliverable 2.1. The distribution of stakeholders between the groups was done in a way that each target group has members - stakeholders covering entire value chain.

Five groups of stakeholders were defined, that pivot around the following topics:

1. Innovation, Security of Supply and Growth,
2. Resource Efficiency, Environmental and Social Aspects,
3. Policies, Legal and Financial Frameworks,
4. International Cooperation and Outreach,
5. Research, Capacity building and Education.

The scope of each Stakeholders Target Group is to participate in diverse, multicultural, multilevel international and structured dialogue of communities of experts and stakeholders, oriented towards the search for solutions to overcome existing difficulties and obstacles in worldwide access to raw materials, with an emphasis on the particular topic of respective target group. The stakeholders are invited to share experiences about their needs, threats, priorities and preferences with the aim to initiate exchanges and interactions that facilitate better governance and sustainable access to raw materials and for better coordination of relevant raw material initiatives and actions.

Details about the scope, mission, vision and roles of each of stakeholders target group, as well as the roles within stakeholders target groups, its leaders, observers, affiliated project partners, Linked Third Parties, Advisory Board members and associated stakeholders are described in detail and listed in the deliverable D2.1.

4. Stakeholders dialogues - Videoconferences

In order to bring together the worldwide network of stakeholders and facilitate the dialogue among them, web-videoconference services were used. There were two rounds of videoconferences, one in February and the other in May 2018, with the aim to collect feedback and updates, get to know their needs, expand the network and explore synergies with relevant projects, initiatives, actions, policies or strategies including those in the areas of education, knowledge sharing, research, industry, markets and trade.

4.1. First round of stakeholders' dialogues – Videoconferences in February 2018

The first round of Stakeholders videoconferences was organized in February 2018. There were in total 5 videoconferences, corresponding to above defined target groups. The participants of the videoconferences were project partners, Linked Third Parties and stakeholders. Project partners and Linked Third Parties attended all the conferences, so the major change in terms of participants among the conferences were stakeholders. The dialogues revolved around the need for fair and unrestricted access to raw materials and for joint and coherent approaches towards raw materials supply, policy and investment; the stakeholders were invited to share experiences about their needs, threats, priorities and preferences with the aim to initiate exchanges and interactions that

facilitate raw materials trade and for better coordination of relevant raw material initiatives and actions.

Main discussion topics can be summed up in the following questions:

- Where are the gaps in the area of raw materials knowledge management?
- In which part of the value chain do you see the urgent need for new policies and legislations?
- How to insure the inclusion of social and environmental standards in different sectors of the value chain?
- How to enhance international cooperation and outreach on this area?

4.2. Second round of stakeholders dialogues – Videoconference in May 2018

A second round of videoconferences for combined groups was held in May 2018. After the first round of videoconferences for five target groups in February 2018, this was the last online meeting with the main objectives to share the outcomes of the previous calls with the stakeholders, continue with the discussions on how to increase international cooperation on raw materials and to know about stakeholders' recommendations and expectations from the FORAM 18 Pilot Event. For this occasion, all five target groups were put together and discussion was focused on the need and format of the World Forum of Raw Materials and the format and content of the pilot event.

Main discussion topics can be summed up in the following questions:

- Which type of issues should the World Forum on Raw Materials address?
- What is the best format for the World Forum on Raw Materials?
- What are your expectations of the Pilot Event?

5. Outcomes of the stakeholders' dialogues

5.1. Outcomes from the 1st round - February 2018

The outcomes from the 1st round of the stakeholders dialogues are presented following four main questions listed in the chapter 4.1. of this document. The minutes from these meetings are given in Appendices A-E.

5.1.1. Knowledge Management

- Despite the availability of various raw materials data systems (e.g. USGS, BGS, RMIS JRC, IGF, ...), there is still the need for harmonization between them
 - The RMIS database hosted by JRC can be a good solution towards sharing and harmonizing the data

- The focus of most of the existing data systems is on primary raw materials, developments in the area of secondary materials is needed (e.g. ProSUM project)
- Lack of databases in less developed countries, e.g. need in Latin America and Africa
 - With reference to the METS 2018 Conference in Madrid, it was mentioned that in countries such as Peru and Chile there are very good quality and comprehensive databases, even better than the European ones. The challenge is again the availability and the harmonization of these data.
- Global interest to share the data and the knowledge by various means including webinars, online platforms or repositories
- Need for more research and advancements in mineral deposit models
- Lack of information as well as technologies for extracting secondary raw metals (e.g. from mining tails)
- Data quality in the downstream stage of the production process is not good enough

5.1.2. Policies

- In most areas policies are available (at least in Europe), there is a need for appropriate regulatory and financial frameworks to implement them
- Involve experts from relevant industries into the decision-making process from the beginning
- Key role of intergovernmental agencies in policy making process
- Interest/need for an UN-based convention/regulation on e.g. supply-chain transparency, social and environmental standards and policy frameworks
- Challenge of biased (anti-mining) policy making based on insufficient or erroneous evidences
- “Level playing field” concept should be considered and applied in fiscal policies of all countries to attract investors
- Need for legislations and financial frameworks to achieve a “closed loop recycling” and circular economy

5.1.3. Responsible Sourcing and Corporate Social Responsibility

- Need to implement responsible sourcing in all sectors of the value chain
- Important role of key stakeholders in the value chain (in particular producers/manufacturers) to promote the concept
- Integrating circularity in the existence of the businesses
- Need to incentivize the companies/businesses to practice or maintain these values
- Social licence to operate: involvement of communities

- Need to integrate Sustainable Development Goals of the United Nations in mining sector to overcome negative reputation/opposition to this sector (for more information about SDGs please visit <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>)
 - Strong governmental control and regulations are needed to require the companies to implement the SDGs and more importantly to monitor the process,
 - Importance of a global reporting system to avoid free-riders
- Need for more certification schemes to improve responsible mining and sourcing practices

5.1.4. International cooperation and outreach

- There is a global interest to “break the silos” and enhance the international cooperation on governance of the raw materials. This can be done by either:
 - Loose cooperation between the existing actors by sharing networks or web-based platforms
 - Close cooperation between existing main actors under the umbrella of an international agency such as UN or OECD
 - Establishment of regional forums (e.g. Latin America)
 - Establishment of a new international forum e.g. a World Forum on Raw Materials. In this case the most important topics to discuss would be the funding opportunities and the political will for establishing such new forum.
- There is a need for awareness raising in various levels:
 - Public
 - Key stakeholders in the value chain
 - Authorities
- Need for capacity building and education also in all levels

5.2. Outcomes from the 2nd round - May 2018

The outcomes from the 2nd round of the stakeholders dialogues are presented following four main questions listed in the chapter 4.2. of this document. After the introduction round on future challenges, the discussion was focused on three main questions about which the participants were invited to give their comments and recommendations. The minutes from these meetings are given in Appendix F.

5.2.1. Which type of issues should the World Forum on Raw Materials address?

- A platform to share and give the access to the data and information: e.g. inventory of country databases on raw materials
- Fostering data harmonization

- Make statements or recommendations to politicians on how the raw materials sectors worldwide can work together in a sustainable way
- Dialogue/outreach between science and society or science and politics: the diverse technological progress will have an uncertain influence on society. This can be inspired by intangible factors such as political leadership. Dialogue between science and society is needed to find out how to overcome the negative impacts, how to manage the supply and demand of the raw materials in a global scale and in a way that it can bring prosperity for all and protects individuals and weaker groups from the negative impacts. Data availability is a critical issue, it is also important to know how to use this data in a meaningful way.
- Engagement of mining, industry or manufacturing community into the dialogue: this will lead towards more transparency
- Promote interaction and networking between different disciplines and sectors of the raw materials
- Developing a common and joint language on raw materials by involving and connecting national and international stakeholders
- Performing voluntarily based and market driven stakeholder consultations to facilitate the communication between different groups
- Sharing best practices and innovations (e.g. for substitution of critical raw materials)
- Broaden the view of raw materials scenarios developed by INTRAW project from a European scale to a global scale
- Awareness raising and education for all sectors and levels of the raw materials value chain, more specifically educating stakeholders from one specific sector (e.g. industry) about the challenges or issues in the other sectors
- Making a database of initiatives and databases on mineral raw materials. There is many information at the mine and smelting level that need to be captured and synthesized. Although there are initiatives such as "[Responsible Jewelry Council](#)", "[Responsible Minerals Initiative](#)" or "[Aluminum Stewardship Initiative](#)", these are working on areas specific to their industries and there is a need for a more generalized solution.
- Performing a coordinating mechanism between all available initiatives (e.g. initiatives that have mapped in the frame of the WP1 of the FORAM project).
- Considering the sustainability issues related to the production of the raw materials, from mining to the final product, as a critical point for discussions (i.e. lack of data on life cycle inventories of the raw materials). By connecting the raw materials source to the end user more transparency can be achieved.

- Contribute to diminish the barrier between waste and materials and stimulate the development of circular economy. Digitalization is a key challenge that will lead the industries and can also lead to unsustainable future if it does not consider circular economy principles.
- Establish a working group with the main task to develop a data format for reporting raw materials extraction and provisions for both primary and secondary raw materials. This can be a standard protocol and a starting point toward a globally harmonized reporting system and will lead to comparability of data between different countries, different mines as well as between provision of primary and secondary raw materials. Such a reporting system can be a basis for regular updating on primary data (e.g. use of materials, quality aspects and LCA of products) and can also be used to improve the statistics of the countries (e.g. production, environmental or sustainability statistics).
- Making the bridge between real market economy and the academic aspiration that would lead to a sustainable world. It might not be easy to translate this vision into an action but this is an important point to consider.
- Going beyond the scope of the Forum and as an ultimate goal, consider finding the answer to the key question “what is the sustainable level of the global mineral extraction?” In order to provide orientation towards safe operation mining, assess the overall global extraction of minerals and have a standard method in measuring footprints of countries, it is necessary to exchange with other bodies and expert groups such as e.g. IRP, IPBES or CBD to tackle these issues.

5.2.2. What is the best format for the World Forum on Raw Materials?

- Before defining the format, it is essential to have a clear definition of the actions and tasks of the Forum
- Workshop or working session format
- Stakeholder consultations
- An informal/international network
- A non-profit organization
- Voluntary organization like IATI (International Aid Transparency Initiative) where the stakeholders have the interest to be involved in discussions and therefore in decision-making process. In this case the industry will also feel the need to be involved.
- The best of existing initiatives
- Cooperation with other relevant EU projects to explore the best format

5.2.3. Expectations of the Pilot Event



Participants were invited to express their expectations from the Pilot event:

- Space for face-to-face discussions and sharing ideas
- Possibility of having working groups
- Interesting to see what the outcome of three workshops would be
- Collecting ideas on how to continue the project
- Discussion on how to continue the cooperation
- Networking and knowing new people

Conclusions

Main discussion topics and outcomes from the videoconferences were used as a basis for the format and content of the FORAM pilot event.

During the first round of videoconferences in February 2018, the discussion focused on four main discussion topics (listed in the chapter 4.1). Following the outcomes of the videoconferences, these topics were reevaluated and two of them merged together. Consequently, the discussion in May 2018 focused on three main questions, given in the chapter 5.2. These three questions were basis of the format for the three workshops held at the Pilot Event in Nancy: WS 1. Knowledge Management (WHAT: SCIENCE), WS 2. Policies and Strategies (WHY: SOCIETY) and WS 3. International Cooperation (HOW: ROADMAP).



Appendix A. Minutes from the videoconference – TG1, February 2018

Stakeholder Consultation, Target Group 1: Innovation, Security of Supply and Growth

Date: Wednesday 21 Feb. 2018

Time: 16:00 – 17:00 CET

Videoconference

Objective of the Videoconference

The objective of the meeting is to continue the stakeholder process and to start the dialogue among the stakeholders within the Target Group 1 “Innovation, Security of Supply and Growth” to prepare FORAM 18 Pilot Event.

Group Leader: UNI KASSEL, BGR

Observer: EGS, WRFA

Agenda

- Opening and Welcome
- Introduction of Participants/Stakeholders: Name, Organization, Motivation
- Introduction to FORAM
- Introduction to Target Group 1
- Discussion
 1. Opportunities and Challenges for Sustainable Growth in the Global Raw Material Sector, such as
 - Growing demand from material intensive sectors
 - High investment cost and technological challenges
 - Continuing difference in demand and supply
 - Decreasing grade of primary raw material, growing complexity of secondary raw material
 2. Priorities and Strategies for Innovation along the Value-Chains, such as
 - Optimization of global material flows by enhanced cooperation and closing material loops from extraction to recycling
 - Technological, digital and social innovations for extraction, processing and recycling
 - Development of new business models and infrastructure
 - Life-cycle wide and systems thinking

3. Capacity and Role of a Global Knowledge Base on Raw Material

- Information about global raw material are limited and scattered amongst different organisation and regions
- Harmonize and standardize data collection across countries and regions
- Develop instruments for regular measurement and monitoring of global raw material extraction, use and recycling

- Preferences, Topics and Recommendations for FORAM 18 Pilot Event
- Conclusion and Outlook

Participants:

Mr. Jose Maria Anguiano, Mexico

Ms. Britta Bookhagen, Federal Institute for Geosciences and Natural Resources, Germany

Ms. Ileana Boschini, Ministerio de Ambiente y Energía, Costa Rica

Mr. Nelson Cristo, Assimagra, Portugal

Mr. Zeljko Dedic, Croatian Geological Survey, Croatia

Mr. Pedro Delgado, Geological Survey of Spain, Spain

Mr. Levi Farrand, Geological Survey of Sweden Mr. Bas de Leeuw, WRF, Switzerland

Mr. Gus Gunn, British Geological Survey, UK

Ms. Corina Hebestreit, Euromines, Belgium

Mr. Ferenc Madai, University of Miskolc, Hungary

Mr. Boris Malyuk, Geoinform, Ukraine

Ms. Shahrzad Manoochehri, WRF, Switzerland

Mr. Bas de Leeuw, WRF, Switzerland

Mr. Clemens Mostert, University Kassel, Germany

Ms. Jelena Vidovic, EuroGeoSurvey, Belgium

Ms. Professor Frances Wall, University of Exeter, UK

Minutes: UNI KASSEL, BGR, EGS

The meeting started at 16:00 with the opening and welcome of participants.

The presentation of all participants followed a short introduction to FORAM: objectives, partners, timeline, approach and pilot event. The FORAM 18 pilot event will take place on 27 June 2018 in Nancy, France, back to back with the World Materials Forum. All participants will receive the official invitation within the next two weeks. There will be a registration link in the invitation letter and the organizers will ask for a timely registration so that the logistics can be arranged in advance. Prior to the discussion, the stakeholder dialogue and the objective of the Target Groups was introduced.

The stakeholder dialogue is currently structured into five different working groups. Target Group 1 covers the topics innovation, security of supply and growth. The suggested topics for discussion were: opportunities and challenges for sustainable growth in the global raw material sector, priorities and strategies for innovation along the value-chains and the capacity and role of a global knowledge base on raw material.

During the discussion, current initiatives from companies e.g. Apple Inc. or Volkswagen AG were addressed to buy long-term contracts for certain materials directly from the suppliers for the first time. The focus is currently on cobalt where the price has quadrupled during the last months. This could lead to a game change along the complete supply chain and strongly influence existing markets. In this context, the importance of responsible supply was highlighted from the mining up to the manufacturing sector. There are currently no incentives for companies to receive a premium for becoming or being a responsible supplier. In addition, the issue of supply chain assurance is becoming more and more important. An example is IRMA Initiative for Responsible Mining Assurance (www.responsiblemining.net).

It was also mentioned that the raw material sector is in a difficult situation at the international level. As an example, the non-metal (open-pit) mining activities in Costa Rica are currently under pressure especially due to legislation and environmental issues. In addition, financial situation in Costa Rica is hard, as foreign investments in mining sector are not safe. Good-practice examples were presented from Portugal to overcome environmental concerns regarding mining activities by involving all relevant parties on the local and regional level and by strengthening the cooperation that can be shared with other countries. Hungary is good example of a country that is not a “mining giant” but has numerous ongoing projects related to the electronic waste and the alternative use of coal reserves, with extraction of rare elements not only directly from coal but also from the sediments.

The importance of critical raw materials and technology metals on the one hand and the knowledge gap especially regarding the mineral deposits models of on the other hand was pointed out. It is therefore necessary to intensify the research on mineral deposits models to secure long-term supply, as without these models exploration companies do not know where to look and how to look.

Regarding the sourcing of secondary material there are currently not sufficient recycling capacities available especially for high-tech metals on global scale. Additionally, more products have to be collected at their end of the life phase (for example electronic consumer products), to achieve closed loop recycling. There are ongoing projects trying to improve recycling technology for example in the electronic waste sector. Further research projects try to recycle the mining waste for example to produce geo-polymers.

It was mentioned that especially for the extraction of primary raw materials a lot of information and data are available also on global and regional level. Examples are the International Study

Groups (IGS), which regularly organize an exchange of information on non-ferrous metals or the RMIS Raw Materials Information System (<http://rmis.jrc.ec.europa.eu>) of the European Commission. There are also commercial database available, who are regularly reporting production figures of mining activities (e.g. annual books in Britain). However, there are still many information missing like on secondary raw material, data on unused extraction or on certain commodities. Currently many EU Horizon 2020 research projects are looking at the issues of standardizing and collecting data. Also, the foundation of the International Raw Materials Observatory (INTRAW), as a new independent not-for profit organization, set up to support research & innovation on mineral raw materials was also mentioned. It was pointed out that many undeveloped countries still have a lack of information on raw materials.

Finally, it was pointed out that there are differences in international standards and that this issue should be taken into account for the planned pilot event. So far, the engagement of China in FORAM is rather low, as China is more active in bilateral initiatives.

The meeting ended at 17:10 with the conclusion and outlook.

The slides of the presentation are attached to these minutes.

Main Findings:

The challenges for sustainable growth in the raw material sector cover the complete value chain from mineral deposit models for exploration, pressure on mining activities due to regulatory and environmental issues, supply security for material intensive industries or the need for more collection and recycling capacities. There are innovations, good practice examples and findings from the stakeholders that can be presented at FORAM 18 pilot event e.g. responsible mining assurance, stakeholder involvement, new recycling solutions or research on data collection.

Appendix B. Minutes from the videoconference – TG2, February 2018

Stakeholder Consultation Target Group 2: Resource Efficiency, Environmental and Social Aspects

Date: Tuesday 27 Feb. 2018

Time: 16:00 – 17:00 CET

Videoconference

Objective of the Videoconference

This videoconference was held in the frame of the Work Package 2 of the FORAM project: “Stakeholder Consultation”. The objective of the meeting was to start the dialogue among the FORAM stakeholders by focusing on the topic of **Target Group 2 “Resource Efficiency, Environmental and Social Aspects”**. Outcomes and recommendations will be used to prepare for the FORAM 18 Pilot Event.

Participants:

Name of the participant	Organization	Country	Connection to FORAM
Peder Jensen	UN Environment, IRP	France	Advisory Board
Pascal Leroy	WEEE Forum	Belgium	Advisory Board
Carlo A. Grados Gomez	Peru Bio-Economy Solutions	Peru/Germany	Stakeholder Network
Edson Ribeiro	Belo Horizonte, Minas Gerais	Brazil	Stakeholder Network
Mathis Wackernagel	Global Footprint Network	USA	Stakeholder Network
Željko Dedić	Croatian Geological Survey	Croatia	Linked Third Party
Levi Farrand	Geological Survey of Sweden	Sweden	Linked Third Party
Boris Malyuk	GeoInform Ukraine	Ukraine	Linked Third Party
Katalin Sari	Geological and Geophysical Institute of Hungary	Hungary	Linked Third Party
Gloria Prieto	Geological Survey of Colombia	Colombia	Consortium Partner
Arnold Tukker	UL-CML	Netherlands	Consortium Partner
Nabeel Mancheri	UL-CML	Netherlands	Consortium Partner
Jelena Vidovic	EGS	Belgium	Consortium Partner
Bas de Leeuw	WRFA	Switzerland	Consortium Partner
Shahrazad Manoochehri	WRFA	Switzerland	Consortium Partner

Chair and moderator: Arnold Tukker (University Leiden - CML)

Minutes: WRFA, UL-CML, EGS

Agenda

Agenda of the meeting was presented and followed in form of PowerPoint presentation which is given as Annex A to this minutes.



Opening and welcome

Arnold Tukker (UL-CML) thanked the participants and started the meeting with presenting the agenda and the introduction of the participants.

Introduction to FORAM

Jelena Vidovic (EGS) continued with giving an overview of the FORAM project, its main objectives, involved partners, approach and expected impact (Annex A – Slides 2-9). The main objective of the FORAM project is to develop a network of international experts and stakeholders that will together advance the idea of a World Forum on Raw Materials. To achieve this goal, the project has set up a Stakeholder Network composed of 170 experts from relevant organizations, coming from G20 and other countries active in the non-energy abiotic raw materials sector.

In order to initiate an efficient dialogue, Stakeholders have been clustered into five target groups and a videoconference has been organized for each group. List of target groups are summarized in Annex A – Slide 10.

The next step in the FORAM stakeholder consultation process is to organize a Pilot Event to deepen the insights from the dialogue by means of face-to-face discussions, build connection between people and create or strengthen the ownership for improving global cooperation. FORAM 18 Pilot Event will be held on 27 June 2018 in Nancy, France (Annex A – Slide 11).

Discussion

The discussion session was started with an introduction to the topic given by Arnold Tukker (Annex A – Slide 13). This target group will focus on resource efficiency and environmental and social aspects of raw materials. After presenting the general definitions of resource efficiency and circular economy, it was emphasized that it is not only EU that is focusing on these topics but there is a global interest. For example, other important economic blocks e.g. China and Japan have circularity agenda in their policies. Even if this concept is still not very well developed in the USA, there is a massive programme called REMADE set up by the US ministry of energy in order to make the American industry more resource efficient (<https://www.manufacturingusa.com/news/remade-institute-redefines-manufacturing-sustainable-future>).

Europe has a number of important legislative and programming activities but there are still obstacles that do not help the transition towards circular economy. By giving a reference to the work of Paul Ekins and Mathis Wackernagel (Global Footprint Network), Arnold Tukker emphasized on the fact that scarcity of resources is not a problem rather the impact that the use of these resources will have on the environment. For example, the rare earth crisis in 2011 was not actually a scarcity crisis, the problem was that China became a monopolist and needed their resources for themselves. In 30-40 years unless we do not set up political goals and targets to be translated to legislations, the “take, make waste business model” will thrive. This transition needs time, so we

need to start now. The discussion continued by focusing on two major areas: -) Resource efficiency and circularity and -) Social aspects and supply chain transparency.

1. Resource efficiency and circularity

The discussion focused on the following points/questions:

- What can business do within current market conditions? What is the role of novel, circular PSS (product service system) businesses?
- What supporting policies can be thought of?
- What are the needs for improved monitoring of material flows?

Recommendations received:

- What does it mean at the end to be more circular? Global Footprint Network reported on Najer Electric which is a major efficiency driving industry. The recognition of this company is that their business case is aligned with reducing resource dependency. In other words, their goal is not only to be circular but to be resource efficient through the existence of their company.
- Recovery of critical raw materials is identified as a societal challenge by the EU and there are all sorts of policies around this topic (e.g. Strategic Implementation Plan, Raw Materials Initiatives), therefore there is a need for **appropriate regulatory and financial frameworks** to implement these policies. For example, in electronic waste (WEEE) markets, the existence of regulatory frameworks and more importantly financial incentives is essential to help the recyclers recover the critical raw materials. Although the required recovery technologies are in place, these will not be implemented by the businesses without extra incentives and no progress can be made.
- One of the main challenges **in many countries** is the **lack of knowledge and awareness about the circular economy and resource efficiency**, therefore people or local communities will not be able to support the policies or cannot exercise pressure on companies or governments. The situation in Peru was given as an example. Capacity building and information campaigns are needed.
- Although capacity building for individuals is an essential step towards resources efficiency in every society, it is extremely difficult to persuade millions of people to change their behaviour. Therefore, the best approach might still be **through key stakeholders in the value chain**, e.g. large companies that can influence the consumers towards buying more sustainable products.
- The need for raising awareness is not limited to normal citizens and communities but is essential for authorities. For examples the focus of many economists is on “growing forever” without considering the challenge of supply. There should be more attention to the “**physical economy**”.
- It would be very valuable to put a **stronger narrative on circular economy in a butterfly diagram** to help place the various resource stories in a more consistent way. It is important to explain how the biological and non-biological world relate to each other or how the renewable and non-renewable world can interlink.

- In the area of monitoring of materials flow, there is still a need for an **ultimate database of the physical metabolism** between different industry sectors, products, product compositions or product stocks with compositions. Such a database will make it possible to look into the interlinkages and relations between different sectors. Organizations such as OECD and UN Environment IRP can play a major role in developing such a database. IRP has recently published a materials flow database on their website (<http://www.resourcepanel.org/global-material-flows-database>). This database will be updated every year and therefore it is interesting for modellers and developers to know what kind of additions are required for further improvements.

2. Social aspects and supply chain transparency

As an introduction to the topic, Arnold Tukker mentioned the following issues:

- Even for many major metals, mined in developed countries, the social license to operate is often an issue for mining companies,
- Certain materials are mined in countries that do not have well developed policy or enforcement systems, or simply cannot exercise control. Examples are conflict minerals, artisanal mining, the use of child labour, etc.
- Supply chain transparency can be one answer to influence such issues for the better but is not always easy to implement and can have unwanted side effects.

The discussion about these topics continued by focusing on the following questions:

- How to ensure inclusion of social and environmental standards in supply, production, quality, reporting and monitoring?
- What can businesses do within current market conditions?
- What supporting policies can be thought of?

Recommendations received

- **International Resource Panel (IRP)** has some work going on **mineral resources governance** in which they also look into the above mention issues. This project will have some knowledge products that are scheduled to be published around the end of this year.
- There is an increasing interest, at least in the western countries, in having a kind of **international UN-based regulation** within this area. Although it is not easy to define, many of these countries are trying to explore what should a regulation at this level be. The focal point for such an international debate around mineral resources governance will be at the UN Environment Assembly happening in March next year. Successful international agreements such as the ADR treaty (European Agreement concerning the International Carriage of Dangerous Goods by Road) can be considered and used as an example while drafting new regulations on mineral resources governance.



- It is essential for all businesses to maintain the **corporate social responsibility** principles and standards even when they are operating in other countries (example of Columbia was given). Social responsibility incentives along the supply chain are needed to make the companies with subsidiaries in developing countries respect the social values and rules that they apply in e.g. Europe.

Conclusion and next steps

Jelena Vidovic thanked the participants for their contributions and announced that the recommendations received during this call will be considered while setting up the agenda for the FORAM 18 Pilot event.

- To continue and follow up on these discussions, FORAM project partners are considering organizing a second round of videoconferences in April 2018 (details to follow),
- Minutes of this videoconference, related PPT and a summary of recommendations will be shared with the participants.



Appendix C. Minutes from the videoconference – TG3, February 2018

Stakeholder Consultation Target Group 3: Policies, Legal and Financial Framework

Date: Thursday 22 Feb. 2018

Time: 16:00 – 17:00 CET

Videoconference

Objective of the Videoconference

This videoconference was held in the frame of the Work Package 2 of the FORAM project: “Stakeholder Consultation”. The objective of the meeting was to start the dialogue among the FORAM stakeholders by focusing on the topic of **Target Group 3 “Policies, Legal and Financial Framework”**. Outcomes and recommendations will be used to prepare for the FORAM 18 Pilot Event.

Participants

Name of the participant	Organization	Country	Connection to FORAM
Harry Parker	CRIRSCO	USA	Advisory Board
Harikrishnan Tulsidas	UNECE	Switzerland	Advisory Board
Carlos Busquets	Responsible Business Alliance	USA	Stakeholder Network
Carlo Cormio	SERENGEO SRL	Italy	Stakeholder Network
Greg Radford	IGF Secretariat	Canada	Stakeholder Network
Edmund Sides	Private consultant in resource geology	UK	Stakeholder Network
Ronald Arvidsson	SGU	Sweden	Linked Third Party
Boris Malyuk	GeoInform Ukraine	Ukraine	Linked Third Party
Jelena Vidovic	EGS	Belgium	Consortium Partner
Bas de Leeuw	WRFA	Switzerland	Consortium Partner
Mathias Schluep	WRFA	Switzerland	Consortium Partner
Shahrazad Manoochehri	WRFA	Switzerland	Consortium Partner

Chair and moderator: Bas de Leeuw (WRFA)

Minutes: WRFA, EGS

Agenda

Agenda of the meeting was presented and followed in form of PowerPoint presentation which is given as Annex A to this minutes.

Opening and welcome

Bas de Leeuw (WRFA) thanked the participants and started the meeting with presenting the agenda and the introduction of the participants.



Introduction to FORAM

The meeting was continued with giving an overview of the FORAM project, its main objectives, involved partners, approach and expected impact (Annex A – Slides 2-9). The main objective of the FORAM project is to develop a network of international experts and stakeholders that will together advance the idea of a World Forum on Raw Materials. To achieve this goal, the project has set up a Stakeholder Network composed of 170 experts from relevant organizations, coming from G20 and other countries active in the non-energy abiotic raw materials sector.

In order to initiate an efficient dialogue, stakeholders have been clustered into five target groups and a videoconference has been organized for each group. List of target groups and the date of videoconferences are summarized in Annex A – Slide 10.

The next step in the FORAM stakeholder consultation process is to organize a Pilot Event to deepen the insights from the dialogue by means of face-to-face discussions, build connection between people and create or strengthen the ownership for improving global cooperation. FORAM 18 Pilot Event will be held on 27 June 2018 in Nancy, France (Annex A – Slide 11).

Discussion

Discussion session was started with an introduction to the topic. Mineral policies are cross-cutting issues strongly influenced by other policy areas such as environmental, foreign, trade, research and technological policies and are defined and implemented in different levels from regional to global. The requirements for achieving a sustainable mineral policy were presented (Annex A – Slide 13-15)

The focus of this discussion is on one hand on the huge and complicated maze of policies and frameworks that are already existing, and on the other hand on the areas that new policies are needed:

- What are the key policies, legal and financial frameworks that you would recommend being linked with the FORAM project?
- In which part of the value chain do you see the urgent need for new policies and legislations?
- How to ensure inclusion of social and environmental standards in supply, production, quality, reporting and monitoring?

Recommendations received about primary raw material (mining) sector

- When talking about the influence of other policy areas on mineral policies, it is important to highlight the growing influence of **social and sustainability policies**. Any policy related to mining should consider **SDGs** and has a reference and connection to these goals. The importance of the social licence to operate was emphasised and it was said that sustainability is the pivotal point of mining today.
- It is important to underline that mineral policies should be **economically sustainable** otherwise there would not be any extraction or exploitation of raw materials.

- At the moment there is a strong legal framework in Europe, with three major types of legislation. When making **European wide legal frameworks**, it is essential to consider: 1) the differences between the existing major types of legislations in Europe, and 2) the availability, sufficiency and transparency of information needed for the users (i.e. industry).
- Another important issue to consider when talking about mineral policies is the differences in **mineral ownership** frameworks in different countries (There was an example given of UK, where only gold and silver are state minerals and others are private). Depending on the new technologies and innovations in the future (e.g. electric vehicles), there might be an increasing interest for new mineral commodities that their ownership has not be defined or classified yet.
- Mining, in general, is becoming an industry with **negative reputation**. The opposition to mining has changed from small civil society organizations to a larger national level where some countries have banned mining even though it is bringing financial benefits. Some of the reasons behind this negative reputation are valid but some seem to be influenced by the popular mood. Therefore, there is a need for a **comprehensive examination** to see what is happening in the ground and how can mining industry overcome this negative reputation.
- The attitude towards mining sector is strongly influenced by the amount of knowledge on the issue. It is seen that close to operational mines, there is a strong positive attitude towards the mining where people have more knowledge and understanding about both positive and negative aspects of the mining operations. But by going closer towards cities, the attitude becomes more negative. Steps towards **improving public knowledge and basic school education** on different aspects of mining should be taken.
- One of the main challenges in mining sector is that there is **not sufficient and appropriate expertise and knowledge** within the authorities, decision makers and law makers when defining policies for mining sector. It is essential to involve experts from relevant areas in the process of decision making because without sufficient knowledge laws and regulations might be either too chaotic and complicated to implement or they might not serve their real purpose at all.
- In many countries the **understanding of governments** on what the mining companies are doing is very weak. For example, a lot of governments have policies to grant a mining licence for a certain period of time. This means that the company will take the best ore during that time with the view that their licence might not be renewed. What is lacking here is policies for stock piling low grade materials rather than mixing them with the mine wastes. So that when the license expires the owner or the government can use those materials for further operation. This is an area where strengthened knowledge at the governmental level is needed. **Intergovernmental bodies** might be able to find solutions for this problem.
- In some cases, political bodies have their own anti-mining political agendas and the presentations or evidences that they show are one-sided or even erroneous. This can cause substantial delays in mining activities. Improvements in standards for these bodies can be

useful so that the evaluations are performed in an objective manner. This is an issue that can be observed in various degrees around the world.

- At the other hand, some countries bring policies that promote mining; eg. Turkey, where mining makes only 3% of the economy, but the government aims to increase it to 10-15% in the next 5 years.

Recommendation received about secondary raw materials and recycling sector:

- Mining waste is still an issue, but it should be treated as a resource. The **recovery of energy and materials from mining waste** and utilization of these tailings into other forms is a growing opportunity for mining industry to reduce environmental impacts. A good example is the Zero Waste Mining initiative developed by the Canadian Mining Innovation Council (<http://cmic-ccim.org/our-approach/>) which aims at finding solutions to transfer mining waste into a resource.
- Geological Survey of Italy and SERENGEIO srl. have been working on a project on **remining** to create a database on mine sites and their waste. The challenge facing the remining is that most of the secondary raw materials in the mine tails are not well characterized in terms of content and are not easy to recover. This challenge has been also reported in UK and some other countries (with reference to the COST project, MINEA Network, <http://www.minea-network.eu/index.php>).

Can a World Forum on Raw Materials contribute to these issues?

- If the extraction of the raw materials happens on a **global scale** and is not concentrated or limited to certain regions, then we will get rid of some of the bad practice users or at least get a stronger leverage on them.
- It is important **not to overregulate in Europe**. The essential requirement is that the regulations should allow the companies to function. This will also lead to not taking all the resources from Africa, Latin America or China. There would be less risks for every partner involved and a move towards **more stable global economy**.

Conclusion and next steps

Bas de Leeuw thanked the participants for their contributions and announced that the recommendations received during this call will be considered while setting up the agenda for the FORAM 18 Pilot event.

- Minutes of this videoconference, related PPT and a summary of recommendations will be shared with the participants
- To continue and follow up on these discussions, FORAM project partners might organize a second round of videoconferences in April 2018 (details to follow).

Appendix D. Minutes from the videoconference – TG4, February 2018

Stakeholder Consultation Target Group 4: International cooperation and outreach

Date: 23 February 2018

Time: 16:00 – 17:00 CET

Videoconference

Participants:

Jelena Vidovic, EuroGeoSurveys (host)

Vitor Correia, European Federation of Geologists (moderator)

Isabel Fernandez, European Federation of Geologists

Anita Stein, European Federation of Geologists

Armando E Alatorre, Professor, Instituto Politécnico Nacional, Mexico
Bas de Leeuw, World Resources Forum

Boris Malyuk, State Geological Information Fund of Ukraine

Cathryn Bjerkelund, Geological Survey Canada

Paula Morais, University of Coimbra, Portugal

Szilvia Banyacski, Mining and Geological Survey of Hungary

Isabel Lazaro, Universidad Autónoma de San Luis Potosí | UASLP · Instituto de Metalurgia, Mexico

Nathalie Ross, Natural Resources Canada

Sean Rogers, University of Calgary, Canada

Zeljko Dedic, Croatian Geological Survey, Croatia

Opening and welcome

EFG President Vitor Correia welcomed the participants and asked them to introduce themselves in a short round-the-table.

Introduction to FORAM

To provide the stakeholders with the context necessary for the discussions, Vitor Correia presented an overview on the FORAM project.

FORAM's objectives are to: Develop and set up an EU-based platform of international experts and stakeholders in the field of raw materials; advance the idea of a World Forum on Raw Materials; enhance the international cooperation on raw materials policies and investments.

Vitor Correia informed the participants that the project's pilot event will be held on 27 June 2018 in Nancy, France, back-to-back with the World Materials Forum.

FORAM has defined the following steps to set up a World Forum on Raw Materials:

1. Identifying existing EU and global initiatives (done);

2. Setting up a stakeholder network, structuring it in target groups and involving them into a global dialogue (ongoing);
3. Developing a strategic position by analysing the global raw materials policy context;
4. Testing the feasibility of a World Forum on Raw Materials during the pilot event;
5. Cooperating with other relevant projects.

The impacts expected to arise from these efforts are to boost international cooperation in the field of raw materials and to develop and maintain relationships.

In total five stakeholder target groups have been set up:

Target Group 1: Innovation, Security of Supply and Growth (Lead: UNI Kassel)

Target Group 2 - Resource Efficiency, Environmental and Social Aspects (Lead: UL-CML)

Target group 3: Policies, Legal and Financial Frameworks (Lead: WRFA)

Target Group 4: International Cooperation and Outreach (Lead: EFG)

Target Group 5: Research, Capacity building and Education (Lead: UNU)

Introduction to Target Group 4

To set the context for the first discussion round, Vitor Correia presented an example in the field of water that can be considered as a benchmark for the raw materials sector: 2013 has been declared by the United Nations as the International Year of Water Cooperation. Vitor Correia highlighted that today, five years later, global water scarcity and pollution persist despite the efforts made by the UN and other international bodies and that the cooperation in the field of water is still not happening as it was expected. He emphasised that raw materials are another crucial resource for humanity. Cooperation in the field of raw materials refers to the peaceful management and use of raw materials among various players and sectors and at distinct levels. This is something that has never happened before since competition has always been the driver for the management of raw materials.

Vitor Correia asked the participants if they think the cooperation in the field of raw materials will happen in the future and if they can identify the need for a World Forum on Raw Materials?

Armando E Alatorre stated that establishing such a forum would be very helpful and that it was a revolutionary idea.

Boris Malyuk underlined his interest in joining such an organisation.

Paula Morais stated that she was positive about the idea of having a World Forum on Raw Materials, but that its objectives and goals should be defined very clearly.

Szilvia Banyacski also supported the need for establishing this kind of organisation.

Isabel Lazaro expressed her concerns that in general mining companies make profits and need competition for their business, that's why she was sceptical about the success of cooperation

schemes in the field of raw materials. However, she mentioned that she has been involved in some good experiences promoting cooperation rather than competition.

As a matter of conclusion, Vitor Correia summarised the views of the participating stakeholders that some type of cooperation is needed, but maybe not necessarily in form of an organisation.

In the second discussion round, Vitor Correia asked the participants to reflect on the format the international cooperation in the field of raw materials should adopt. He presented the following questions as a guideline for the discussion.

a - Which format should the cooperation take? A standalone, new organisation, an agency like the IEA, a partnership between existing organisations or a (web-based) information network of relevant initiatives?

b - Should it be led by national governments or an international body like the UN, the OECD or the EC? Or by a business association, a research institute or an existing independent multi-stakeholder organisation?

c - Who should be involved? Who should pay for it? What should be the next step?

Armando E Alatorre emphasised that the question of the organisation's financing was the most important one. The type of organisation can be defined once this question is clarified. He particularly underlined that if the money comes from private sources, it may be more difficult to handle it as wished. He expressed his concern about 'rich' countries having the control over this organisation for the same reasons.

Cathryn Bjerkelund informed the participants that she preferred to provide her opinion at a later stage, because it was the first time she was involved in the discussions.

Paula Morais was not sure she had enough information to answer the question, but nevertheless presented her opinion. She stated that an organisation can never represent everybody and that some experienced bodies like the UN already exist. If the organisation aims to share information only, it could be set up under the UN's umbrella. If it is supposed to be more active, another independent body should be up. She underlined the difficulty of being independent depending on where the funds come from.

Boris Malyuk agreed with Armando and Paula that it is easier to use existing institutions like the UN or the EC as an umbrella. He stated that national governments are often not fully aware of international challenges.

Szilvia Banyacski underlined that the organisation should be open for everybody and that it should be financed by its members (this can also include companies and universities) to keep it as an independent body.

Isabel Lazaro agreed that the main difficulty was where the funds come from and underlined that some initiatives have failed because of this, notably in the field of water. Normally the one who invests the most, also wants to be the one in charge. Thus, the most important issue is to ensure

secure source of funding. An organisation like the UN could help to create awareness and provide guidance on how the cooperation can be successful. As a good example for cooperation, she mentioned the Australian Mineral Industries Research Association (AMIRA) that is convincing industry to get together and solve problems in a joint approach.

Zeljko Dedic agreed on the idea to establish something like the IEA that has been set up in the field of energy. He underlined that big discrepancies exist between countries. Croatia, for instance, does not have many raw materials and that its interest to be involved in such organisation would be in the first place to exchange practices. Accordingly, the interests and priorities of each country can vary a lot. He stated that this kind of organisation should be funded by national governments.

For the third round of discussions, Vitor Correia asked the participants to reflect on the topics to be addressed during the pilot event in Nancy. He presented three potential clusters of issues:

1. What – Science: What knowledge exists, in what format and what are the gaps?
2. Why – Society: is there sufficient political attention? Has the business case been made?
3. How – Roadmap: What organisation format would result in more efficient international cooperation?

He asked the participants what the pilot event should focus on and which format should be chosen for the discussions (scientific talks vs. full day discussion panels)?

Zeljko Dedic stated that all three clusters were important but that he recommended to focus on the discussion of the roadmap.

Isabel Lazaro agreed that all three clusters were important but provided some additional suggestions on what the clusters should include. In the societal cluster, the social license to operate should be discussed. She expressed that communities are often not involved in the discussions. Society is often not well informed on how things have improved and can be achieved without too much environmental impact. If communities don't have this knowledge, they will always oppose to mining although economic development is not only relevant for mining companies and industries, but also for the communities close to the mines. She stated that the topic of mining wastes and recycling should also be addressed.

Jelena Vidovic commented that the topics of the social license, education and mining waste have also been raised in the other stakeholder discussions held earlier this week.

Boris Malyuk agreed with Zeljko Dedic on the need to focus on the roadmap.

Armando E Alatorre agreed that all three clusters were very important, but he especially agreed with Isabel Lazaro on the importance of the social license to operate. He underlined the need to inform people that the world in that we live today would not exist without raw materials. People should be aware that these raw materials need to be extracted somewhere and necessarily this



FORAM

needs to happen in someone's back yard. People need to get aware that they are part of a world and that they need to apply a global point of view.

Paula Morais underlined that the decisions taken by society always need to be based on facts, knowledge and thus on science. Both work together. Parts of society's fears need to be clarified and science plays a significant role here. There is always an interaction between science and society and vice-versa. Once these topics have been addressed, the roadmap can be addressed.

Szilvia Banyacski also underlined the importance of the social license to operate.

Closing words

Project coordinator Bas de Leeuw thanked the participants for the many important contributions that were provided and said that he was looking forward to the pilot event.

Vitor Correia thanked the participants for their time and the insights provided and closed the meeting.



Appendix E. Minutes from the videoconference – TG5, February 2018

Stakeholder Consultation Target Group 5: Research, Capacity Building and Education

Date: 20 February 2018

Time: 16:00 – 17:00 CET

Videoconference

Group Leader: United Nations University

Observer: World Resources Forum

Minutes: United Nations University

Objective of the Videoconference

In the first year of the FORAM project, the project has reviewed the existing national and international initiatives, programmes and policy documents. It has set up a Stakeholder Network composed of more than 170 experts from relevant organizations, coming from G20 and other countries active in the raw materials sector. Based on the outcomes of a Questionnaire that was filled in by the Stakeholders during the first year of the project, and the feedbacks received from our consortium partners, the project defined five Stakeholders Target Groups. For each Stakeholder Target Group a consultation has been organized. This objective of the stakeholder consultation is to share experiences, to explore partnerships and to engage the stakeholders into a structured dialogue on Research, Capacity building and Education.

Agenda

- Opening and Welcome
- Introduction to FORAM
- Introduction to Research, Capacity Building and Education
 - Examples of Education related to raw materials
 - Examples of Capacity Building related to raw materials
 - Examples of Research related to raw materials
- Discussion
 1. What exists in the field of Research, Capacity building and Education? (done by you or someone else)
 2. How can we centralize and share materials (curricula, concepts, approaches) to increase dissemination & access?
 3. Where do you see the gaps? And where do you see the priorities?
- Preferences, Topics and Recommendations for FORAM 18 Pilot Event
- Conclusion and Outlook

Participants

Abani Samal, Geologist, GeoGlobal, USA

Wilson Sandoval Romero, Geologist? La Unidad de Planeación Minero Energética- UPME, Colombia

Barbara Reck, Dr., Yale School of Forestry & Environmental Studies, Advisory Board of the FORAM Project

Diana Ponce de León Gil, Geologist, IGME - Geological and Mining Institute of Spain, Spain

Željko Dedić, Geologist, Croatian Geological Survey, Croatia

Eva Anahi Soto Lopez

Dominique Guyonnet, French Geological Survey

Freddy Guzman

Rigoberto Ruiz, Mexican Geological Survey

Jose Luis Lee Moreno, Mexican Geological Survey

Miguel Sanchez, Mexican Geological Survey

Enrique Spinosa, Mexican Geological Survey

Diego Gomez, Mexican Geological Survey

Gabriel Fernando, Mexican Geological Survey

Raul Cruz, Mexican Geological Survey

Clemens Mostert, University Kassel, Center for Environmental Systems Research

Susan Van den Brink, Programme Associate, United Nations University

Shahrazad Manoochchri, Dr, Project Manager, World Resources Forum Association

Federico Magalini, Dr, Project Manager, United Nations University

Bas De Leeuw, Managing Director, World Resources Forum Association

Isabel Pino, Senior Scientific Officer, EuroGeoSurveys

Jelena Vidovic, Scientific Officer, EuroGeoSurveys

Boris Malyuk, State Geological Information Fund of Ukraine

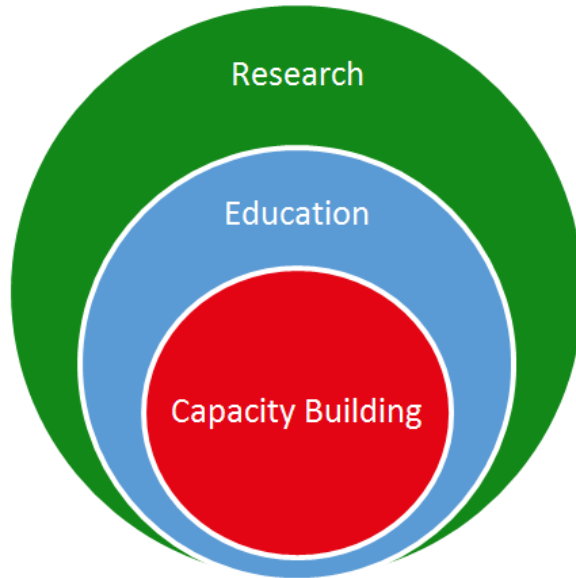
Zoltán Horváth, Geological and Geophysical Institute of Hungary

Introduction FORAM

In the introduction of the stakeholder consultation the FORAM project has been presented. The objectives, the project partners, the timeplan & milestones, the approach and the expected impact. Furthermore, the other target groups in the stakeholder network were discussed, as well as well as the goals and objectives of the stakeholder groups.

Introduction to Research, Capacity Building and Education

In the introduction to the discussion, the three topics research, education and capacity building were introduced and described as three distinct and complementary areas.



Three pillars Research, Education and Capacity building.

For each pillar some examples were discussed related to raw materials. For the pillar Research, raw materials study groups and expert groups were discussed as well as European Union funded Research projects, such as the ProSUM project and the MinFuture project.

For the pillar education, programmes for students were described, as well as initiatives for education outside school, such as the [E-waste academy Scientist Edition](#) and the SusCritMat Winterschool. Finally, public dissemination tools, such as documentaries were discussed. As example was given a [documentary](#) by the BBC on the power of super elements.

For the pillar capacity building, examples were given of face-to-face training programmes related to raw materials, such as the E-waste Academy Managers Edition (EWAM), the BBC Business Bootcamp and the DOTCOM Waste project face-to-face training and toolkit. Furthermore, e-learning and online training examples were given, such as webinars.

Discussion

For the discussion, three questions were posed to the participants:

1. What exists in the field of Research, Capacity building and Education? (done by you or someone else)
2. How can we centralize and share materials (curricula, concepts, approaches) to increase dissemination & access?
3. Where do you see the gaps? And where do you see the priorities?

In the discussion the pillars of research, capacity building and training were discussed. Stakeholders gave some examples of their daily work, as well as identified gaps and needs. The majority of the stakeholders are from Europe and Latin America. Therefore, it was also discussed how to improve sharing of knowledge and capacity between the two regions.

Sharing of knowledge and capacities

Several stakeholders expressed interest to share their knowledge and data. For example stakeholders from the Geological survey of Mexico gave examples of research and training activities. Most of the work done by the Mexican Geological survey is directed at mineral exploration, but they also do research and capacity building in some areas. The training is mostly on the job, and is about several aspects of geosciences. They can assist other stakeholders with technical information. The Mexican Geological Survey has also developed a database called GeoInformEx, in which you can search the mineral resources of Mexico and other topics. The database can be accessed worldwide and they would be happy to share it with EU. The coordinator of the Association of the Geological Surveys in Latin America also discussed their activities in research and capacity building. These can also be shared. In the discussion it was mentioned there is currently a gap in data, as well as in education in Central America. Therefore, more research and capacity building in this region is needed. It was also discussed there is a need to share guidelines and methodologies for data, to find common methodologies. This will also harmonise the data. A representative by the University of Yale is one of the customers of data. They do research and analysis, and are therefore interested in data generated by the other participants.

The formats to share data that were discussed are either through a platform or website, or through webinars. One of the stakeholders suggested to develop a platform or a website to share data globally. This could be a repository, including different methodologies, information, databases. It was suggested it would be good if FORAM project could support something like this. In addition to sharing data, the suggestion was made to share data and experiences in webinars. These could be accessed globally.

Education

A goal of the pilot event and cooperation between stakeholders should be also to further discuss how to teach and educate people globally on raw materials. For example through Master and PhD programs. Building the new generations, and to give them the needed tools, that would help them contribute to the sustainable use of resources in the future. Initiatives for this should be organised worldwide. Education programmes can also be shared online.

Collaboration

The participants are interested in the FORAM project and pilot event. A forum could strengthen relationships and collaboration between the EU and Latin America, as many resources of Latin

America are not explored, and they would be interested to know how EU could help in their exploration.

Conclusion and Outlook

In the conclusion participants were thanked for their participation. Some other comments that were made included:

- Presentations will be shared with the participants.
- The upcoming stakeholder consultation. After the call invitations will be send for the other consultations that will take place this week.
- It was suggested the project would be interested to reveice any ideas, feedback or suggestions by email.
- On the FORAM website there is the mapping of initiatives, where the stakeholders' initiatives can also be added. <http://www.foramproject.net/index.php/mapping-of-initiatives/>

Outcomes of the Stakeholder Dialogue

The main outcomes of the stakeholder panel on Research, Education and Capacity building, are that there is a high interest to share knowledge and data, and that there is a need for it to be facilitated on a global level. This can be, for example, through a platform (website) that hosts a repository of data and methodologies, or through online webinars. Furthermore, there is a need to discuss how to share education programmes globally and to strengthen international cooperation, particularly between the EU and Latin America.

Appendix F. Minutes from the videoconference TG1-TG5, May 2018

Stakeholder Consultation 2nd Round of Videoconferences, TG1-TG5

Date: Monday 14 May 2018

Time: 14:00 – 16:00 CET

Objective of the Videoconference

This videoconference was held in the frame of the Work Package 2 of the FORAM project: “Stakeholder Consultation”. After the first round of videoconferences for five target groups in February 2018, this was the last online meeting with the main objectives to share the outcomes of the previous calls with the stakeholders, continue with the discussions on how to increase international cooperation on raw materials and to know about stakeholders’ recommendations and expectations from the FORAM 18 Pilot Event.

Participants:

Name of the participant	Organization	Country	Connection to FORAM
Carlo Cormio	SERENGEO SRL	Italy	Stakeholder Network
Eveliëne Dils	VITO	Belgium	Stakeholder Network
Eberhard Falck	Independent consultant, Director INTRAW International Raw Materials Observatory	France	Stakeholder Network
Karlo Grados Gomez	Peru Bio-economy Solutions	Germany	Stakeholder Network
Christopher Keane	American Geosciences Institute	USA	Stakeholder Network
Isabel Lazaro	Universidad Autónoma de San Luis Potosí	Mexico	Stakeholder Network
Jose Luis Lee Moreno	Geological Survey of Mexico	Mexico	Stakeholder Network
Ferenc Madai	Miskolc University	Hungary	Stakeholder Network
Paula Morais	University of Coimbra	Portugal	Stakeholder Network
Edmund Sides	Independent consultant in resource geology	UK	Stakeholder Network
Karl Vrancken	VITO	Belgium	Stakeholder Network
Steven Young	University of Waterloo	Canada	Stakeholder Network
Britta Bookhagen	Geological Survey of Germany (BGR)	Germany	Linked Third Party
Pedro Delgado	Geological Survey of Spain (IGME)	Spain	Linked Third Party
Levi Farrand	Geological Survey of Sweden (SGU)	Sweden	Linked Third Party
Zoltán Horváth	Mining and Geological Survey of Hungary (MFGI)	Hungary	Linked Third Party
Stefan Bringezu	University Kassel	Germany	Consortium Partner
Blažena Hamadová	MinPol GmbH	Austria	Consortium Partner
Nabeel Mancheri	Leiden University (UL)	Netherland	Consortium Partner
Joao Marques	Gondwana Empreendimentos e Consultorias	Mozambique	Consortium Partner
Clemens Mostert	University Kassel	Germany	Consortium Partner
Asja Mrotzek-Bloess	Clausthal University of Technology (TUC)	Germany	Consortium Partner

Vitor Correia	European Federation of Geologists (EFG)	Belgium	Management Committee
Bas de Leeuw	World Resources Forum (WRF)	Switzerland	Management Committee
Shahrzad Manoochehri	World Resources Forum (WRF)	Switzerland	Management Committee

Chair and moderator: Vitor Correia (EFG)

Minutes: Shahrzad Manoochehri (WRFA)

Agenda

Agenda of the meeting was presented and followed in form of PowerPoint presentation which is given as Annex A to this minutes:

- Opening and welcome
- Insights from the first round of Stakeholders’ videoconferences
- Challenges
- Discussion
- Expectations on the FORAM Pilot Event
- Update on the organization of the Pilot Event

Opening and welcome

Vitor Correia (EFG) thanked the participants and started the meeting with presenting the agenda and introduction of the participants.

Insights from the first round of the Stakeholders’ videoconferences

In the first round of Stakeholder videoconferences, which were held in February 2018, five target groups were defined, and the stakeholders were involved into discussions focusing mainly on the following topics:

- Where are the gaps in the area of raw materials **knowledge management**?
- In which part of the value chain do you see the urgent need for **new policies and legislations**?
- How to insure the inclusion of **social and environmental standards** in different sectors of the value chain?
- How to enhance **international cooperation and outreach** on this area?

Vitor Correia presented the outcomes of the online discussions around each topic and emphasized on some of the most important aspects (Annex A – Slides 5-9). Furthermore, he invited the participants to give their comments on these points:

Knowledge Management:

- Despite the availability of various raw materials data systems (e.g. USGS, BGS, RMIS JRC, IGF, ...), there is still the need for harmonization between them
 - The RMIS database hosted by JRC can be a good solution towards sharing and harmonizing the data
- The focus of most of the existing data systems is on primary raw materials, developments in the area of secondary materials is needed (e.g. ProSUM project)
- Lack of databases in less developed countries, e.g. need in Latin America and Africa
 - With reference to the METS 2018 Conference in Madrid, it was mentioned that in countries such as Peru and Chile there are very good quality and comprehensive databases, even better than the European ones. The challenge is again the availability and the harmonization of these data.
- Global interest to share the data and the knowledge by various means including webinars, online platforms or repositories
- Need for more research and advancements in mineral deposit models
- Lack of information as well as technologies for extracting secondary raw metals (e.g. from mining tails)
- Data quality in the downstream stage of the production process is not good enough

Policies:

- In most areas policies are available (at least in Europe), there is a need for appropriate regulatory and financial frameworks to implement them
- Involve experts from relevant industries into the decision-making process from the beginning
- Key role of intergovernmental agencies in policy making process
- Interest/need for an UN-based convention/regulation on e.g. supply-chain transparency, social and environmental standards and policy frameworks
- Challenge of biased (anti-mining) policy making based on insufficient or erroneous evidences
- “Level playing field” concept should be considered and applied in fiscal policies of all countries to attract investors
- Need for legislations and financial frameworks to achieve a “closed loop recycling” and circular economy

Responsible Sourcing and Corporate Social Responsibility:

- Need to implement responsible sourcing in all sectors of the value chain
- Important role of key stakeholders in the value chain (in particular producers/manufacturers) to promote the concept

- Integrating circularity in the existence of the businesses
- Need to incentivize the companies/businesses to practice or maintain these values
- Social licence to operate: involvement of communities
- Need to integrate Sustainable Development Goals of the United Nations in mining sector to overcome negative reputation/opposition to this sector (for more information about SDGs please visit <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>)
 - Strong governmental control and regulations are needed to require the companies to implement the SDGs and more importantly to monitor the process,
 - Importance of a global reporting system to avoid free-riders
- Need for more certification schemes to improve responsible mining and sourcing practices

International cooperation and outreach:

- There is a global interest to “break the silos” and enhance the international cooperation on governance of the raw materials. This can be done by either:
 - Loose cooperation between the existing actors by sharing networks or web-based platforms
 - Close cooperation between existing main actors under the umbrella of an international agency such as UN or OECD
 - Establishment of regional forums (e.g. Latin America)
 - Establishment of a new international forum e.g. a World Forum on Raw Materials. In this case the most important topics to discuss would be the funding opportunities and the political will for establishing such new forum.
- There is a need for awareness raising in various levels:
 - Public
 - Key stakeholders in the value chain
 - Authorities
- Need for capacity building and education also in all levels

Future Challenges

As an introduction to this agenda point and while presenting the cover page of The Economist, 1st issue 2017, Vitor Correia, focused on three types of future challenges that the raw materials policies and investments are encountered with:

- Policy and Society: Political changes can occur within a short period of time, such as the current trend from liberalism toward nationalism which is happening around the globe. The changes in political frameworks have a direct effect on policies, investments and international cooperation on raw materials.

- Climate change: As an example, the challenge or scarcity of water supply in many countries can have direct impact on the operation of the mining companies and this might raise more problems in the supply of raw materials in future.
- Resource scarcity boosted by new technologies and materials: We are using almost all elements in the periodic table for new technologies and this will have a direct effect on the supply of and consequently the cooperation on the raw materials.

Discussion

After the introduction round on future challenges, the discussion was focused on two main questions about which the participants were invited to give their comments and recommendations. Summary of comments are given below:

a) Which type of issues should the World Forum on Raw Materials address?

- A platform to share and give the access to the data and information: e.g. inventory of country databases on raw materials
- Fostering data harmonization
- Make statements or recommendations to politicians on how the raw materials sectors worldwide can work together in a sustainable way
- Dialogue/outreach between science and society or science and politics: the diverse technological progress will have an uncertain influence on society. This can be inspired by intangible factors such as political leadership. Dialogue between science and society is needed to find out how to overcome the negative impacts, how to manage the supply and demand of the raw materials in a global scale and in a way that it can bring prosperity for all and protects individuals and weaker groups from the negative impacts. Data availability is a critical issue, it is also important to know how to use this data in a meaningful way.
- Engagement of mining, industry or manufacturing community into the dialogue: this will lead towards more transparency
- Promote interaction and networking between different disciplines and sectors of the raw materials
- Developing a common and joint language on raw materials by involving and connecting national and international stakeholders
- Performing voluntarily based and market driven stakeholder consultations to facilitate the communication between different groups
- Sharing best practices and innovations (e.g. for substitution of critical raw materials)

- Broaden the view of raw materials scenarios developed by INTRAW project from a European scale to a global scale
- Awareness raising and education for all sectors and levels of the raw materials value chain, more specifically educating stakeholders from one specific sector (e.g. industry) about the challenges or issues in the other sectors
- Making a database of initiatives and databases on mineral raw materials. There is many information at the mine and smelting level that need to be captured and synthesized. Although there are initiatives such as "[Responsible Jewelry Council](#)", "[Responsible Minerals Initiative](#)" or "[Aluminum Stewardship Initiative](#)", these are working on areas specific to their industries and there is a need for a more generalized solution.
- Performing a coordinating mechanism between all available initiatives (e.g. initiatives that have mapped in the frame of the WP1 of the FORAM project).
- Considering the sustainability issues related to the production of the raw materials, from mining to the final product, as a critical point for discussions (i.e. lack of data on life cycle inventories of the raw materials). By connecting the raw materials source to the end user more transparency can be achieved.
- Contribute to diminish the barrier between waste and materials and stimulate the development of circular economy. Digitalization is a key challenge that will lead the industries and can also lead to unsustainable future if it does not consider circular economy principles.
- Establish a working group with the main task to develop a data format for reporting raw materials extraction and provisions for both primary and secondary raw materials. This can be a standard protocol and a starting point toward a globally harmonized reporting system and will lead to comparability of data between different countries, different mines as well as between provision of primary and secondary raw materials. Such a reporting system can be a basis for regular updating on primary data (e.g. use of materials, quality aspects and LCA of products) and can also be used to improve the statistics of the countries (e.g. production, environmental or sustainability statistics).
- Making the bridge between real market economy and the academic aspiration that would lead to a sustainable world. It might not be easy to translate this vision into an action but this is an important point to consider.
- Going beyond the scope of the Forum and as an ultimate goal, consider finding the answer to the key question "what is the sustainable level of the global mineral

extraction?” In order to provide orientation towards safe operation mining, assess the overall global extraction of minerals and have a standard method in measuring footprints of countries, it is necessary to exchange with other bodies and expert groups such as e.g. [IRP](#), [IPBES](#) or [CBD](#) to tackle these issues.

b) What is the best format for the World Forum on Raw Materials?

- Before defining the format, it is essential to have a clear definition of the actions and tasks of the Forum
- Workshop or working session format
- Stakeholder consultations
- An informal/international network
- A non-profit organization
- Voluntary organization like IATI ([International Aid Transparency Initiative](#)) where the stakeholders have the interest to be involved in discussions and therefore in decision- making process. In this case the industry will also feel the need to be involved.
- The best of existing initiatives
- Cooperation with other relevant EU projects to explore the best format

Updates on the organization of the Pilot Event

Shahzad Manoochehri (WRFA), presented updates about the schedule, logistics and program of the FORAM18 Pilot Event. All necessary information is available on Pilot Event’s website (<http://www.foramproject.net/index.php/pilot-event/>).

Expectations of the Pilot Event

Participants were invited to express their expectations from the Pilot event:

- Space for face-to-face discussions and sharing ideas
- Possibility of having working groups
- Interesting to see what the outcome of three workshops would be
- Collecting ideas on how to continue the project
- Discussion on how to continue the cooperation
- Networking and knowing new people

Vitor Correia and Bas de Leeuw thanked the participants for their contributions and announced that the minutes and the PPT that was presented during this conference call will be shared with the participants within next days.