

EUROPEAN
RAW MATERIALS
ALLIANCE

ERMA

Use of UNFC for ERMA projects

15 November 2022

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EIT RawMaterials is supported by the EIT,
a body of the European Union



EUROPEAN RAW MATERIALS ALLIANCE: VISION – WORKSTREAMS – CLUSTERS

Announced on 29 September 2020 by Commissioner Breton and VP Šefčovič (Action 1 of the EU Critical Raw Materials Action Plan); **kick-off 23 November 2020. Coordinated by EIT RawMaterials**

VISION: To **secure access to critical and strategic raw materials, advanced materials** and processing know-how for the EU Industrial Ecosystems

WORKSTREAMS

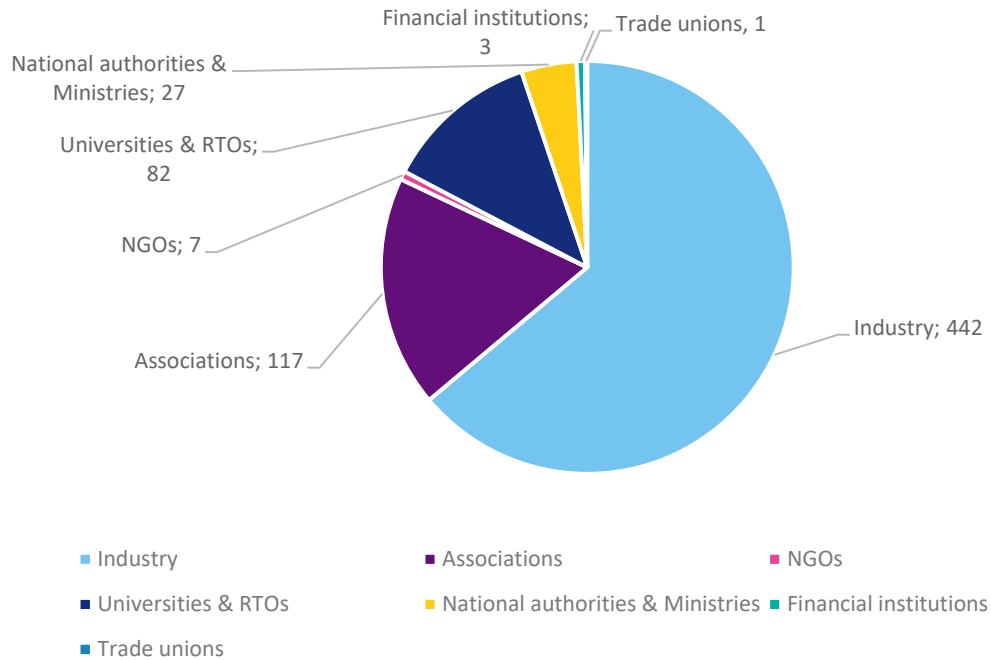
Stakeholder consultation processes – value chain specific, to identify regulatory bottlenecks (> 680 partners)

Raw Materials Investment Platform (> 30 bankable investment projects identified to date)

Clusters defined to date:

- 1. Rare Earth Magnets and Motors**
- 2. Materials for Energy Storage and Conversion**

ERMA PARTNER NETWORK

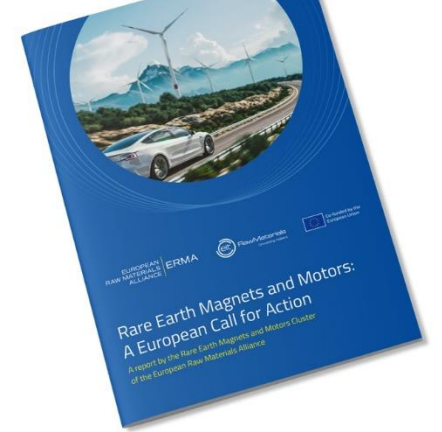


Current number of partners: 679, including

- **6 banks and investment funds** (including EIB and EBRD)
- **28 Government organizations from 18 countries** (Australia, Belgium, Canada, Denmark, Estonia, Finland, France, Greece, Greenland, Italy, Kazakhstan, Netherlands, Norway, Poland, Romania, Spain, Sweden, Ukraine)

ERMA Cluster 1: Rare Earths Magnets and Motors

- Nearly 400 members to date
- Cluster 1 Action Plan released in September 2021, contributed to the European Commission Annual Single Market Report 2022



ERMA Cluster 2: Materials for Energy Storage and Conversion

- Nearly 500 members to date
- Cluster 2 Action Plan to be released in 2022 (TBC)

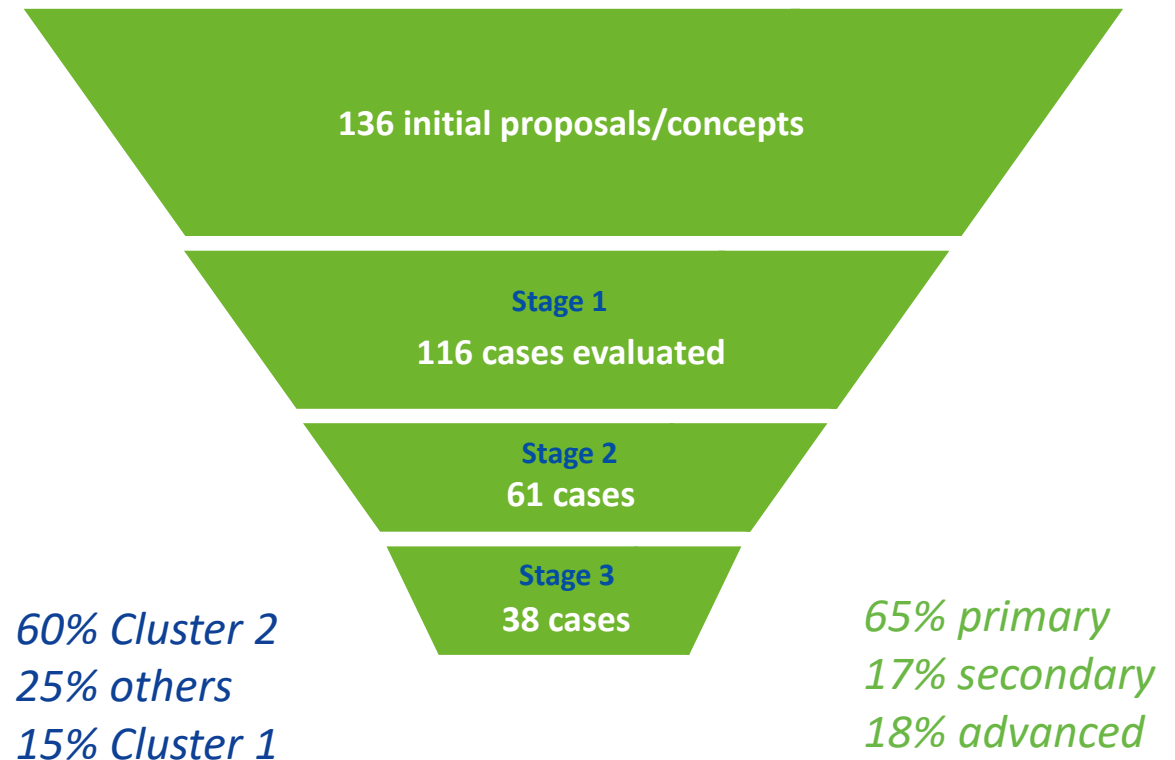


Raw Materials Act

ERMA INVESTMENT CASES - DEAL FLOW – November 2022

- 61 cases advanced to Stage 2 (project pitch)
- 38 have progressed to Stage 3
- From greenfield exploration to manufacturing, recycling and substitution
- Permitting is often the main challenge

TOTAL INVESTMENT NEED
IDENTIFIED TO DATE:
> € 14 billion



ERMA UNFC classification process



18 July 2022

United Nations Framework Classification for Resources to Minerals – ERMA Project Assessment: Lithium Kokkola (Keliber)

Outline of the UNFC framework¹

The United Nations Framework Classification for Resources (UNFC) is a resource project-based and principles based classification system for defining the environmental-socio-economic viability and technical feasibility of projects to develop resources. UNFC provides a consistent framework to describe the level of confidence of the future quantities produced by the project. The full description of the UNFC framework and classification process can be found in [UNFC Framework](#).

Products of the project may be bought, sold or used, including electricity, heat, hydrocarbons, hydrogen, minerals, and water. A Project is a defined development or operation which provides the basis for environmental, social, economic and technical evaluation and decision-making. UNFC has been designed to meet, to the extent possible, the needs of applications pertaining to:

- policy formulation based on resource studies;
- resources management functions;
- corporate business processes; and
- financial capital allocation

UNFC is a principles-based system in which the products of a resource project are classified on the basis of the three fundamental criteria of environmental-socio-economic viability (E), technical feasibility (F), and degree of confidence in the estimate (G), using a numerical coding system. Combinations of these criteria create a three-dimensional system (Figure 1). Categories (e.g. E1, E2, E3) and, in some cases, sub-categories (e.g. E1.1) are defined for each of the three criteria as set out and defined in Annex I. Annex I is also used to visualize the score assigned to your project – the relevant categories and sub-categories are shaded in green.

The first set of Categories (the E axis) designates the degree of favourability of environmental-socio-economic conditions in establishing the viability of the project, including consideration of market prices and relevant legal, regulatory, social, environmental and contractual conditions. The second set (the F axis) designates the maturity of technology, studies and commitments necessary to implement the project. These projects range from early conceptual studies through to a fully developed project that is producing, and reflect standard value chain management principles. The third set of categories (the G axis) designates the degree of confidence in the estimate of the quantities of products from the project.

The Categories and Sub-categories are the building blocks of the system, and are combined in the form of "Classes". For further clarity in global communications, additional UNFC Sub-classes are defined based on the full granularity provided by the Sub-categories.

¹ This section is a summary of the information provided in UNFC - United Nations Framework Classification for Resources - Update 2019

UNFC assessment of project Lithium Kokkola

E axis score – E1.2

Keliber Oy is a Finnish mining and chemical company that aims to be the first company in Europe to produce high-purity lithium hydroxide from its own ore reserves for the needs of the growing international lithium battery market. Keliber's known lithium reserves have been estimated to be among the most significant in Europe, with excellent potential for increasing ore reserves and discovering new deposits. Keliber's main shareholders include Finnish Minerals Group (26%) and Nordic Mining ASA (16%). In July 2022 the company announced that new shares (€ 146 million) would be issued to Sibanye-Stillwater. An additional € 104 million worth of shares would be made available to other investors, including FMG. The total investment need is €

Annex I - Definitions of Categories and Sub-categories & Project-Specific Scores

E-Axis Categories (UNFC (2019))

Category	Definition	Supporting explanation for minerals	Project Score
E1	Development and operation are confirmed to be environmentally-socially-economically viable.	Development and operation (prospecting, exploration, mine production, processing, sales-access to market, rehabilitation) are environmentally-socially-economically viable on the basis of current conditions and realistic assumptions of future conditions. All necessary conditions have been met (including relevant permitting and contracts) or there are reasonable expectations that all necessary conditions will be met within a reasonable timeframe and there are no impediments to the delivery of the product to the user or market. Environmental-socio-economic viability is not affected by short-term adverse conditions provided that longer-term forecasts remain positive.	
E2	Development and operation are expected to become environmentally-socially-economically viable in the foreseeable future.	Development and operation (prospecting, exploration, mine production, processing, sales-access to market, rehabilitation) are not yet confirmed to be environmentally-socially-economically viable but, on the basis of realistic assumptions of future conditions, there are reasonable prospects for environmental-socio-economic viability in the foreseeable future.	
E3	Development and operation	On the basis of realistic assumptions of future conditions, it is currently considered that there	

E1.2 F1.3 G2	Viable
E1.2 F1.3 G2	Viable
E1.1 F1.3 G1	Viable
E1.1 F1.3 G1	Viable
E1.2 F1.2 G1	Viable
E1.2 F1.2 G3	Viable
E1.2 F2.1 G2	Potentially viable
E1.2 F1.2 G1	Potentially viable
E1.2 F2.1 G1	Potentially viable
E2 F1.3 G1	Potentially viable
E1.2 F2.1 G1	Potentially viable
E2 F2.1 G1	Potentially viable
E2 F2.1 G2	Potentially viable
E3.2 F2.1 G1	Potentially viable
E1.2 F2.1 G1	Potentially viable
E2 F1.3 G1	Potentially viable
E1.1 F2.1 G2	Potentially viable
E1.2 F2.1 G2	Potentially viable
E2 F2.1 G3	Potentially viable
E2 F2.1 G2	Potentially viable
E1.2 F2.1 G2	Potentially viable
E2 F2.1 G2	Potentially viable
E2 F2.1 G3	Potentially viable
E2 F1.3 G1	Potentially viable
E2 F2.1 G3	Potentially viable
E2 F2.1 G3	Potentially viable
E3.2 F3.1 G3	Non-viable
E3.2 F3.1 G3	Non-viable

ERMA partner secures permit for lithium plant and raises €500 million in funding

ERMA is pleased to report on the recent success of one of its partners, Finnish mining and battery-chemical company Keliber, which constitutes both a significant permit approval and a windfall investment of €500 million.

Keliber recently acquired the environmental and building preparations for the operative phase can begin. Keliber's CEO

The company managed to raise €500 million for the project

The zoning for Keliber's Syväjärvi, Rapasaari and Outovesi and the Municipal Councils of Kaustinen and Kronoby. In Syv

INNOVATION FUND LARGE GRANTS – SECOND CALL (JULY 2022)

https://ec.europa.eu/clima/system/files/2022-07/LSC2_List_of_pre-selected_projects_6.pdf

17 projects selected (139 applications) (€ 1.8 billion)

(first call: 7 projects selected out of 311 applications, € 1 billion)

5	ReLieVe Recycling Li-ion Batteries for electric vehicles	Manufacturing	France	ERAMET SA (FR)	<ul style="list-style-type: none"> • ReLieVe offers an industrial scale response to Europe's major battery recycling and raw materials bottleneck. • The project will construct a Li-Ion recycling plant at the Dunkirk battery cluster for producing and refining black mass, providing access to a secondary source of battery raw material, located in
					<p>Europe, with limited associated country or logistics risks.</p> <ul style="list-style-type: none"> • The facility is a first-of-the-kind black mass recycling unit and will have a total treatment capacity of 50,000 tonnes of modules or scrap per year.

ERMA UNFC classification process – experience to date

1. *Highly versatile* – applies to primary, secondary, processing, manufacturing, recycling – early to late stage
2. *Simple and fast* – desktop ‘light due diligence’, but requires moderate knowledge of the project
3. *Easy to understand* – and well-regarded by potential investors, but stronger track record is needed
4. *Permitting is considered* – timing and requirements are accounted for
5. *Useful to identify next steps* – and advance the project towards full viability
6. *A starting point* – not the end of the process

UNFC GUIDANCE EUROPE

Guidance for the Application of the United Nations Framework Classification for Resources (UNFC) for Mineral and Anthropogenic Resources in Europe



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