

EUROPEAN
RAW MATERIALS
ALLIANCE

ERMA

UNFC classification viability # bankability

16 November 2023

Massimo Gasparon
Director of ERMA



Co-funded by the
European Union



The Critical Raw Materials Act

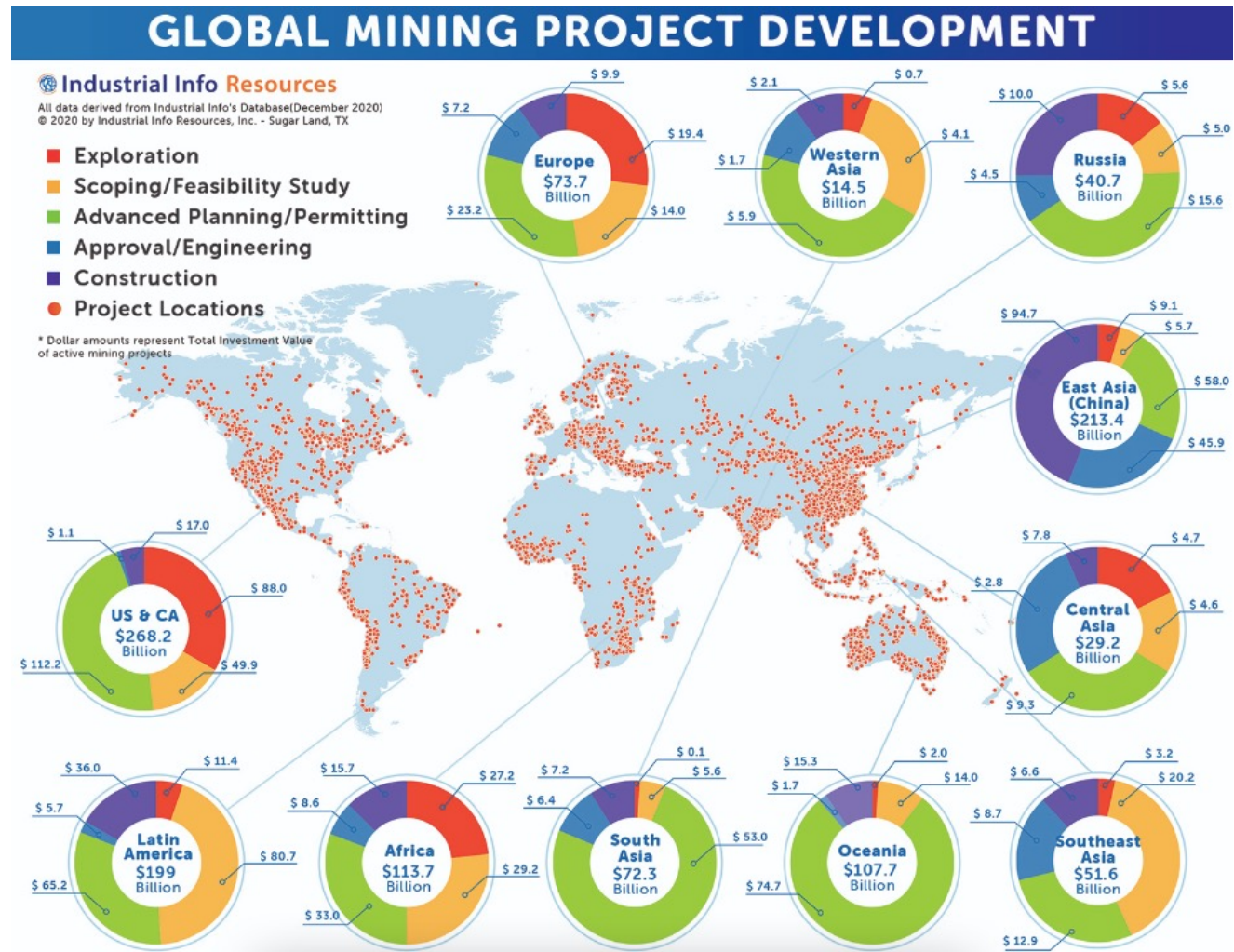
set very ambitious benchmarks for 2030 domestic capacity to diversify EU supply:

- at least 10% of the EU's annual consumption for **extraction**
- at least 40% of the EU's annual consumption for **processing**
- at least 15% of the EU's annual consumption for **recycling**
- **no more than 65%** of the Union's annual consumption of **each strategic raw material at any relevant stage of processing** from a single third country

Globally, exploration+FS account for around US\$ 400 M, 1/3 of total investment for mining development

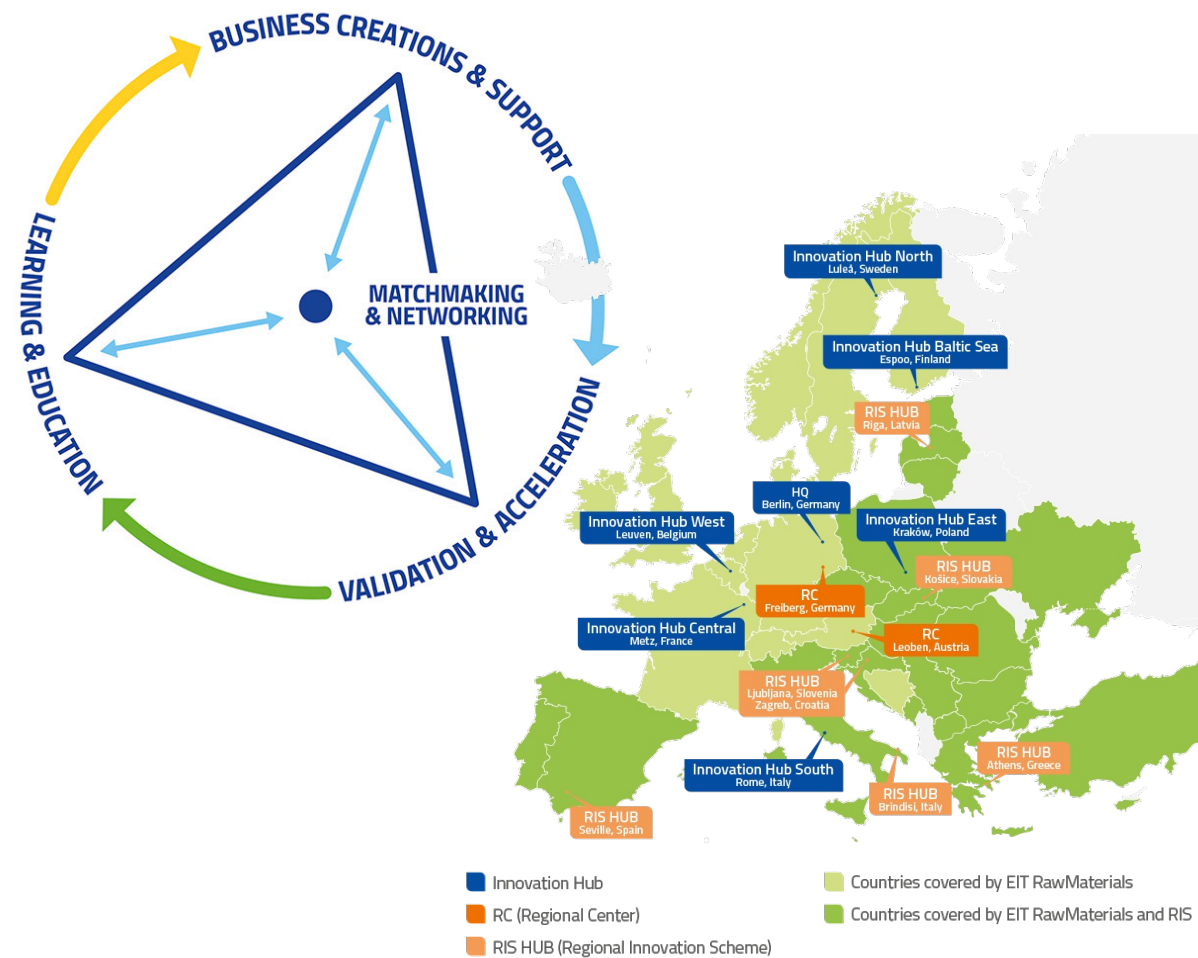
Europe is investing, but it will take a long time for projects to go into production (high risk due to disruptive technology)

www.e-mj.com/wp-content/uploads/2021/01/1-IIR-Global-Mining-Project-Development.jpg



EIT RawMaterials at a glance

- World's largest community in raw materials sector
- Coverage of entire raw materials value chain
- > 300 KIC partners, > 800 ERMA partners
- KIC partners from 22 European countries (+10 ERMA)
- 16 locations across Europe (4 more hubs by 2027)
- Headquarters in Berlin, Germany



European Raw Materials Alliance (ERMA): vision – workstreams - clusters

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 (> 750 partners)

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

Support international partnerships with B2B activities (Canada, Ukraine, Namibia, Kazakhstan, Argentina and others tba)

Clusters defined to date:

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

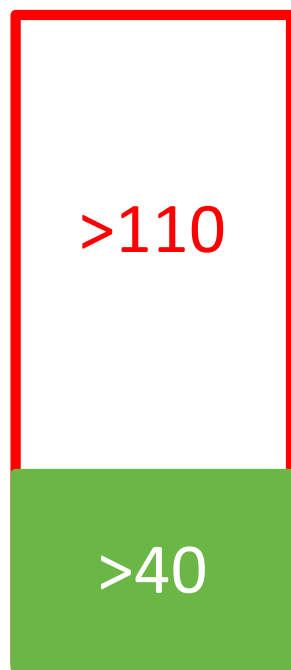
ERMA impact to date

- > 750 partners to date, strong policy drive
- REE Action Plan released on 30 September 2021
- Input into CRM Act (strategic significance and HE calls)
- Materials for Energy Storage and Conversion Action Plan released on 15 May 2023
- Around 150 investment cases screened, > 40 de-risked and at or near bankable stage, > € 16 billion investment value
- > € 45 million invested by EIT RawMaterials, > € 30 million company co-funding, 18 projects
- € 1.5 billion additional investment attracted by ERMA projects



ERMA UNFC classification process

>150 projects
screened



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
E2 F2.1 G3	Potentially viable
E3.2 F3.1 G3	Non-viable
E3.2 F3.1 G3	Non-viable

40% viability
subject to issue
of permits

ERMA UNFC classification process

18 July 2022

United Nations Framework Classification for Resources to Minerals – ERMA Project Assessment: [REDACTED]

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 2018](#)

UNFC assessment of project [REDACTED]

E axis score – E1.2

[REDACTED] 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. [REDACTED] 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. [REDACTED] main shareholders include [REDACTED]. In July 2022 the company announced that new shares (€ 146 million) would be issued to [REDACTED]. An additional € 104 million worth of shares would be made available to other investors, including [REDACTED]. The total investment need is € [REDACTED].

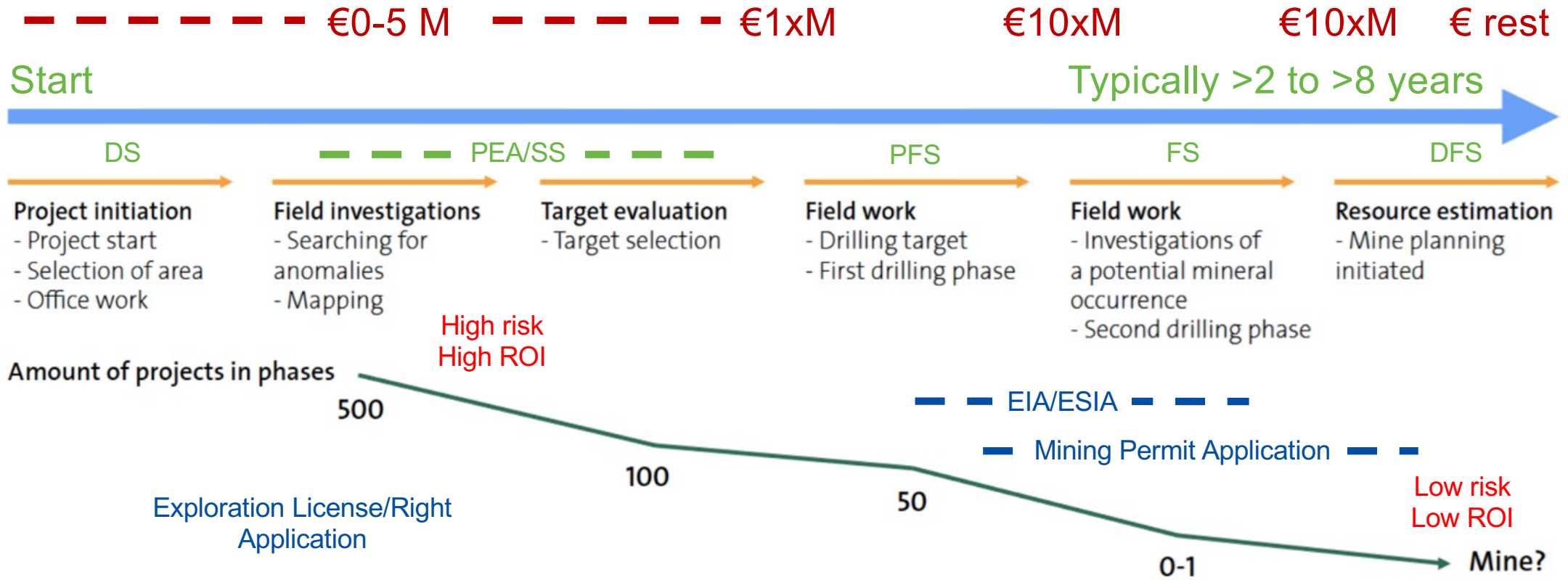
Annex I - Definitions of Categories and Sub-categories & Project-Specific Scores

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 (prospection, 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.	[REDACTED]
E2	Development and operation are expected to become environmentally-socially-economically viable in the foreseeable future.	Development and operation (prospection, 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.	[REDACTED]
E3	Development and operation	On the basis of realistic assumptions of future conditions, it is currently considered that there	[REDACTED]

Legal Framework - Mining Rights					
Mining rights have been secured	Mining rights have NOT been secured	It is not known if mining rights have been secured	Mining rights have been secured but the project is strongly opposed	Mining rights have NOT been secured and the project is strongly opposed	The project has local support
Regulatory Framework - Exploration Permits					
Exploration permits have been secured	Exploration permits have NOT been secured (process pending)	Exploration permits have NOT been secured (application has been rejected)	It is not known if exploration permits have been secured	Exploration permits have been secured but the project is strongly opposed	Exploration permits have NOT been secured and the project is strongly opposed
Regulatory Framework - Mining (exploitation, extraction) Permits					
Mining permits have been secured	Mining permits have NOT been secured (process pending)	Mining permits have NOT been secured (application has been rejected)	It is not known if mining permits have been secured	Mining permits have been secured but the project is strongly opposed	Mining permits have NOT been secured and the project is strongly opposed
Environmental Impact Assessment (EIA)					
EIA has not been initiated	EIA permit has been approved	EIA permit is being assessed	EIA permit has NOT been approved	Not applicable	This is predicted to be submitted by the end of 2022 or early 2023
Mining Waste and Water Management					
Relevant applications have been initiated	Relevant permits have been approved	Relevant permits are being assessed	Relevant permits have NOT been approved	Not applicable	see below
Others					
Relevant applications have been initiated	Relevant permits have been approved	Relevant permits are being assessed	Relevant permits have NOT been approved	Not applicable	c

Development of a mining project



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. **KYC (sanctions, beneficiaries, etc.)** and site visit should be included
3. *Easy to understand* – but not for potential investors; indication of development stage should be included; viability ≠ bankability
4. *Useful to identify next steps* – and advance the project towards full viability
5. *A starting point* – not the end of the process



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UPCOMING EVENTS – EXPERT FORUM

EIT RawMaterials

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