



PanAfGeo+

Partnerships and Capacity Building

The Pan-African Support to Geological Sciences and Technology

Snježana Miletić, Slavko Solar, Geological Survey of Slovenia/ICE-SRM EU

National AMREC/PARC – UNFC Workshop

Southern Sun Hotel, Pretoria, South Africa

12-13 May 2026

UNFC Online Exercise for Participants



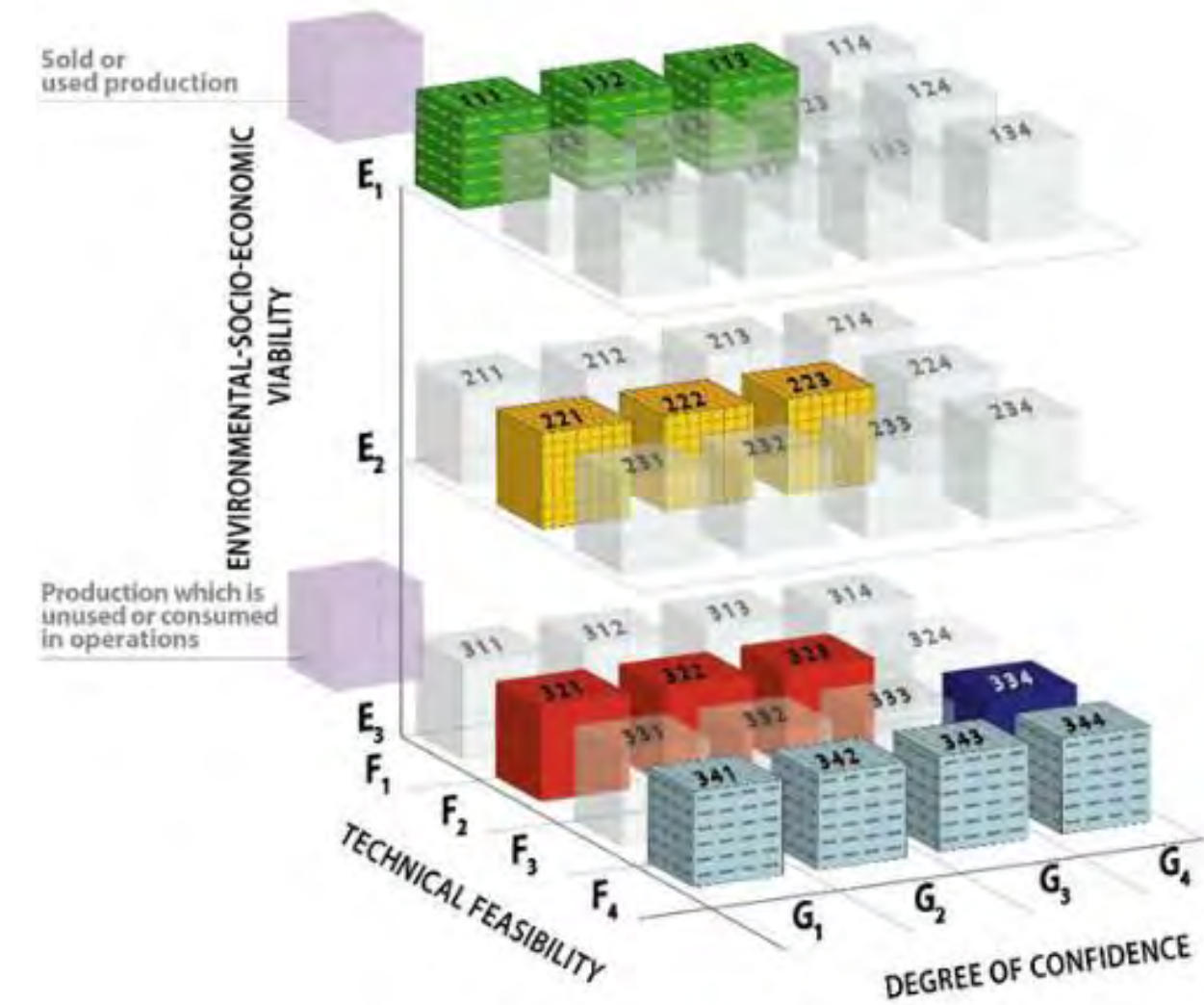
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Implemented by:



Lithium Extraction Project*

- Consider a lithium mining project in Italy, with a plan to extract lithium from high-quality Spodumene deposits. Given the defined benchmarks for Strategic Raw Materials outlined in the CRMA, this lithium extraction project holds strategic significance due to the increasing demand for lithium-ion batteries in electric vehicles and renewable energy storage systems. The project is in need to expediate the permitting process, therefore applying for Strategic Project.
- The Project Promoter has collected the relevant information for the UNFC classification tied to this project, based on the Strategic Project Form and the UNFC Controlling Factors and assigned them to the E, F, and G axes.



*Exercise after:

Training on UNFC Application to Strategic Projects in accordance with EU CRM Act / 6 June & 2 July 2024

Prepared by Ghadi Sabra, PhD Candidate, Politecnico di Torino, Italy

Lithium Extraction Project

E axis: The project was in ownership of an exploration permit, during which a Pre-Feasibility study, evaluation of the resource/reserve, environmental impact assessment, and operational plan were conducted. The project is currently preparing to apply for an extraction permit. Current plans and assessments suggest that the project's development could proceed forward in the foreseeable future. With regards to the economic aspect, the submitted business plan includes information on production sharing, royalties, taxation, market demand, and production costs. From an environmental standpoint, the project has issued a positive environmental impact assessment, compliant with the Italian regulation. Additionally, the project is initiating an application for mining wastes permits to be submitted for public enquiry. Land use planning is also under process. Given that the area is remote and historically centered on mining activities, social contingencies and opposition seem unlikely.

Q1: What is the correct UNFC category for the E axis?

- A. E1 B. E2 C. E3

Category	Definition	Supporting explanation for minerals
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 (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.
E3	Development and operation are not expected to become environmentally-socially-economically viable in the foreseeable future or evaluation is at too early a stage to determine environmental-socio-economic viability.	On the basis of realistic assumptions of future conditions, it is currently considered that there are not reasonable prospects for environmental-socio-economic viability of mining in the foreseeable future; or, environmental-socio-economic viability cannot yet be determined due to insufficient information (e.g. during prospecting and exploration). Also included are estimates associated with projects that are forecast to be developed, but which will be unused or consumed in operations (sub-economic ore, waste).



What is the correct UNFC category for the E-axis?

Lithium Extraction Project

E axis: The project **was in ownership** of an exploration permit, during which a **Pre-Feasibility study**, evaluation of the resource/reserve, environmental impact assessment, and operational plan were conducted. The project is currently **preparing to apply** for an extraction permit. Current plans and assessments **suggest** that the project's development could proceed forward in the foreseeable future. With regards to the economic aspect, the submitted business plan includes information on production sharing, royalties, taxation, market demand, and production costs. From an environmental standpoint, the project has issued a positive environmental impact assessment, compliant with the Italian regulation. Additionally, the project is initiating an application for mining wastes permits to be submitted for public enquiry. Land use planning is also under process. Given that the area is remote and historically centered on mining activities, social contingencies and opposition seem unlikely.

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E1	<i>Development and operation are confirmed to be environmentally-socially-economically viable.</i>	<i>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.</i>
E2	<i>Development and operation are expected to become environmentally-socially-economically viable in the foreseeable future.</i>	<i>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.</i>
E3	<i>Development and operation are not expected to become environmentally-socially-economically viable in the foreseeable future or evaluation is at too early a stage to determine environmental-socio-economic viability.</i>	<i>On the basis of realistic assumptions of future conditions, it is currently considered that there are not reasonable prospects for environmental-socio-economic viability of mining in the foreseeable future; or, environmental-socio-economic viability cannot yet be determined due to insufficient information (e.g. during prospecting and exploration). Also included are estimates associated with projects that are forecast to be developed, but which will be unused or consumed in operations (sub-economic ore, waste).</i>

Lithium Extraction Project

- F axis:** The project has completed the Pre-Feasibility study, but the project is still in the planning phase and hasn't commenced extraction operations since the developments await the extraction permit.

Category	Definition	Supporting explanation for minerals
	Technical feasibility of a development	Development or operation is currently taking place or, sufficiently detailed studies have been completed to demonstrate the technical

Category	Sub-Category	Sub-Category Definition
	F1.1	Production or operation is currently taking place:



What is the correct UNFC category for the F-axis?

Lithium Extraction Project

- F axis:** The project has completed the **Pre-Feasibility study**, but the project is **still in the planning phase** and **hasn't commenced extraction operations** since the developments await the extraction permit.

Category	Definition	Supporting explanation for minerals
F1	Technical feasibility of a development project has been confirmed.	Development or operation is currently taking place or, sufficiently detailed studies have been completed to demonstrate the technical feasibility of development and operation. A commitment to develop should have been or will be forthcoming from all parties associated with the project, including governments.
F2	Technical feasibility of a development project is subject to further evaluation.	Preliminary studies of a defined project provide sufficient evidence of the potential for the development and that further study is warranted. Further data acquisition and/or studies maybe required to confirm the feasibility of development.
F3	Technical feasibility of a development project cannot be evaluated due to limited data.	Very preliminary studies of a project indicate the need for further data acquisition or study in order to evaluate the potential feasibility or development. Additional exploration and investigation are required to confirm or to assess the technical feasibility of the project.
F4	No development project or mining operation has been identified.	Remaining quantities of product not developed by any project (not recoverable ore, at least not with available technology, too deep, groundwater issues etc.).

Category	Sub-Category	Sub-Category Definition
F1	F1.1	Production or operation is currently taking place.
	F1.2	Capital funds have been committed and implementation of the development is underway.
	F1.3	Studies have been completed to demonstrate the technical feasibility of development and operation. There shall be a reasonable expectation that all necessary approvals/contracts for the project to proceed to development will be forthcoming
F2	F2.1	Project activities are ongoing to justify development in the foreseeable future.
	F2.2	Project activities are on hold and/or where justification as a development may be subject to significant delay.
	F2.3	There are no plans to develop or to acquire additional data at the current time due to limited potential.
F3	F3.1	Site-specific studies have identified a potential development with sufficient confidence to warrant further testing.
	F3.2	Local studies indicate the potential for development in a specific area but requires more data acquisition and/or evaluation in order to have sufficient confidence to warrant further testing.
	F3.3	At the earliest stage of studies, where favourable conditions for the potential development in an area may be inferred from regional studies.

- Q2: What is the correct UNFC category for the F axis?**

A. F1.1 B. F2.1 C. F2.2 D. F3.1

Lithium Extraction Project

- **G axis:** The lithium reserves have undergone a detailed exploration campaign, and are well documented, with sufficient investigation measures and carried studies, including geochemical and geophysical analyses, to estimate the lithium quantities and quality (volumes and grades). There's also substantial geological knowledge about the area. The project has conducted a Pre-Feasibility Study, that includes reserves estimates signed off by a Competent Person. The reserve estimates are probable as per the PERC standards. The project is certain, with moderate degree of confidence, that the foreseen amount of produced lithium will be met. All supporting documents on the estimates have been submitted with the Strategic Project Application Form.

■ **Q3: What is the correct UNFC category for the G axis?**

- A. G1
- B. G2
- C. G3

G-Axis Categories Definitions (UNFC 2019 and UNFC Minerals Specifications)

Category	Definition
G1	Product quantity associated with a project that can be estimated with a high level of confidence
G2	Product quantity associated with a project that can be estimated with a moderate level of confidence
G3	Product quantity associated with a project that can be estimated with a low level of confidence

CRIRSCO Template			Corresponding UNFC Category ^c			UNFC Class
Public Report and Study Types ^a	Standard Definitions					
Feasibility Study or Life of Mine Plan ^b (for an operating mine)	Mineral Reserves	Proved	E1	F1	G1	Viable Projects
		Probable			G2	
Pre-feasibility Study ^d	Mineral Reserves	Proved	E2	F2	G1	Potentially Viable Projects
		Probable			G2	
Feasibility Study, Life of Mine Plan ^b (for an operating mine) or Pre-feasibility Study ^e	Mineral Resources (exclusive of Mineral Reserves)	Measured	E2	F2	G1	
		Indicated			G2	
		Inferred			G3	
Scoping Study report or other Public Report on a Mineral Resource estimate ^f	Mineral Resources	Measured	E2	F2	G1	
		Indicated			G2	
		Inferred			G3	
Public Report on exploration stage projects	Exploration Target		E3	F3	G4	Prospective Projects
	Exploration Results		Estimates not published			
Not applicable ^g	Estimates obtained from historical reports ^h					Non-viable Projects



What is the correct UNFC category for the G-axis?

Lithium Extraction Project

- **G axis:** The lithium reserves have undergone a detailed exploration campaign, and are **well documented**, with sufficient investigation measures and carried studies, including geochemical and geophysical analyses, to estimate the lithium quantities and quality (volumes and grades). There's also substantial geological knowledge about the area. The project has conducted a **Pre-Feasibility Study**, that includes reserves estimates signed off by a Competent Person. The **reserve estimates are probable** as per the PERC standards. The project is certain, with **moderate degree of confidence**, that the foreseen amount of produced lithium will be met. All supporting documents on the estimates have been submitted with the Strategic Project Application Form.

- **Q3: What is the correct UNFC category for the G axis?**

- A. G1
- B. G2**
- C. G3

G-Axis Categories Definitions (UNFC 2019 and UNFC Minerals Specifications)

Category	Definition
G1	Product quantity associated with a project that can be estimated with a high level of confidence
G2	Product quantity associated with a project that can be estimated with a moderate level of confidence
G3	Product quantity associated with a project that can be estimated with a low level of confidence

CRIRSCO Template			Corresponding UNFC Category ^e			UNFC Class
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Feasibility Study or Life of Mine Plan ^b (for an operating mine)	Mineral Reserves	Proved	E1	F1	G1	Viable Projects
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Pre-feasibility Study ^d	Mineral Reserves	Proved	E2	F2	G1	Potentially Viable Projects
		Probable			G2	
Feasibility Study, Life of Mine Plan ^b (for an operating mine) or Pre-feasibility Study ^c	Mineral Resources (exclusive of Mineral Reserves)	Measured	E2	F2	G1	
		Indicated			G2	
		Inferred			G3	
Scoping Study report or other Public Report on a Mineral Resource estimate ^f	Mineral Resources	Measured	E2	F2	G1	
		Indicated			G2	
		Inferred			G3	
Public Report on exploration stage projects	Exploration Target		E3	F3	G4	Prospective Projects
	Exploration Results		Estimates not published			
Not applicable ^g	Estimates obtained from historical reports ^h					Non-viable Projects

Lithium Extraction Project

Q4: What is the correct UNFC classification for this lithium mining project?

- A. E1.1;F1.2;G1 (Viable, Approved for Development)
- B. E2;F2.2;G2 (Potentially Viable, Development on Hold)
- C. E3.2;F2.2;G2 (Non-Viable, Development Unclassified)

UNFC Classes Defined by Categories and Sub-categories						
Total Products	Produced	Sold or used production				
		Production which is unused or consumed in operations				
	Class	Sub-Class	Categories			
			E	F	G	
	Known Sources	Viable Projects	On Production	1	1.1	1, 2, (3) ^e
			Approved for Development	1	1.2	1, 2, (3) ^e
			Justified for Development	1	1.3	1, 2, (3) ^e
		Potentially Viable Projects	Development Pending	2 ^b	2.1	1, 2, 3
			Development on Hold	2	2.2	1, 2, 3
		Non-Viable Projects	Development Unclassified	3.2	2.2	1, 2, 3
			Development not Viable	3.3	2.3	1, 2, 3
		Remaining products not developed from identified projects		3.3	4	1, 2, 3
	Potential Sources	Prospective Projects	[No Sub-classes defined]	3.2	3	4
		Remaining products not developed from prospective projects		3.3	4	4



What is the correct UNFC classification for this lithium mining project?

Lithium Extraction Project

Q4: What is the correct UNFC classification for this lithium mining project?

- A. E1.1;F1.2;G1 (Viable, Approved for Development)
- B. E2;F2.2;G2 (Potentially Viable, Development on Hold)
- C. E3.2;F2.2;G2 (Non-Viable, Development Unclassified)

UNFC Classes Defined by Categories and Sub-categories						
Total Products	Produced	Sold or used production				
		Production which is unused or consumed in operations				
	Class		Sub-Class	Categories		
				E	F	G
	Known Sources	Viable Projects	On Production	1	1.1	1, 2, (3) ^e
			Approved for Development	1	1.2	1, 2, (3) ^e
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Potential Sources	Prospective Projects	[No Sub-classes defined]	3.2	3	4	
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Conclusion

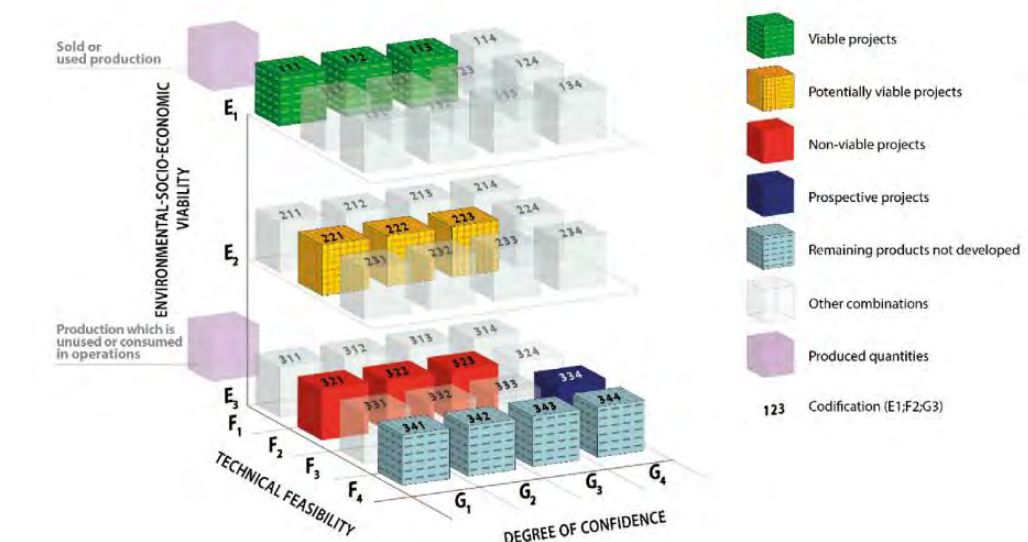
UNFC
Sub-Categories and
Classes provide more
resolution

https://unece.org/DAM/energy/se/pdfs/UNFC/publ/UNFC_ES61_Update_2019.pdf

UNFC Classes Defined by Categories and Sub-categories						
Total Products	Produced	Sold or used production				
		Production which is unused or consumed in operations				
	Known Sources	Class	Sub-class	Categories		
				E	F	G
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		Remaining products not developed from prospective projects		3.3	4	4

Questions? Comments ?

UNFC Categories and Examples of Classes



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Thank you
Merci
Obrigado

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