











Workshop on
Implementing the United Nations Framework
Classification for Resources (UNFC) in Southeast
Europe

Introduction to UNFC (2019)

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The United Nations

UN PRINCIPAL ORGANS GENERAL ASSEMBLY SECURITY COUNCIL **ECONOMIC AND** SOCIAL COUNCIL

SECRETARIAT

INTERNATIONAL COURT OF JUSTICE

TRUSTEESHIP COUNCIL⁶

Subsidiary Organs

- · Main Committees
- · Disarmament Commission
- · Human Rights Council
- · International Law Commission
- · Joint Inspection Unit (JIU)
- · Standing committees and ad hoc bodies

Funds and Programmes¹

UNDP United Nations Development Programme

- · UNCDF United Nations Capital Development Fund
- · UNV United Nations Volunteers

UNEP⁸ United Nations Environment Programme

UNFPA United Nations Population Fund

UN-Habitat⁸ United Nations Human Settlements Programme

UNICEF United Nations Children's Fund WFP World Food Programme (UN/FAO)

Research and Training

UNIDIR United Nations Institute for Disarmament Research

UNITAR United Nations Institute for Training and Research

UNSSC United Nations System Staff College

UNU United Nations University

Other Entities

ITC International Trade Centre (UN/WTO)

UNCTAD^{1,8} United Nations Conference on Trade and Development

UNHCR1 Office of the United Nations High Commissioner for Refugees

UNOPS1 United Nations Office for **Project Services**

UNRWA1 United Nations Relief and Works Agency for Palestine Refugees in the Near East

UN-Women¹ United Nations Entity for Gender Equality and the Empowerment of Women

Related Organizations

CTBTO Preparatory Commission Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization

IAEA^{1,3} International Atomic Energy Agency

ICC International Criminal Court

IOM¹ International Organization for Migration

ISA International Seabed Authority

ITLOS International Tribunal for the Law of the Sea

OPCW 3 Organization for the Prohibition of Chemical Weapons

WTO^{1,4} World Trade Organization

Subsidiary Organs

- · Counter-Terrorism Committee
- · International Tribunal for the former Yugoslavia (ICTY)
- · International Residual Mechanism for Criminal Tribunals
- · Military Staff Committee

- · Peacekeeping operations and political missions
- · Sanctions committees (ad hoc)
- · Standing committees and ad hoc bodies

Peacebuilding Commission

HLPF High-level political forum on sustainable development

Functional Commissions

- · Crime Prevention and Criminal Justice
- · Narcotic Drugs
- · Population and Development
- · Science and Technology for Development
- · Social Development
- · Status of Women

· Statistics

· United Nations Forum on Forests

Regional Commissions®

ECE Economic Commission for Europe

America and the Caribbean

ESCAP Economic and Social Commission for Asia and the Pacific

ESCWA Economic and Social Commission for Western Asia

Other Bodies

- · Committee for Development Policy
- · Committee of Experts on Public Administration
- Committee on Non-Governmental Organizations
- · Permanent Forum on Indigenous Issues

UNAIDS Joint United Nations Programme on

UNGEGN United Nations Group of Experts on Geographical Names

Research and Training

UNICRI United Nations Interregional Crime and Justice Research Institute

UNRISD United Nations Research Institute for Social Development

Specialized Agencies1,5

FAO Food and Agriculture Organization of the United Nations

ICAO International Civil Aviation Organization

IFAD International Fund for Agricultural Development

ILO International Labour Organization

IMF International Monetary Fund

IMO International Maritime Organization

ITU International Telecommunication Union

UNESCO United Nations Educational, Scientific and Cultural Organization

UNIDO United Nations Industrial Development Organization

UNWTO World Tourism Organization **UPU** Universal Postal Union

WHO World Health Organization

WIPO World Intellectual Property Organization

WMO World Meteorological Organization

WORLD BANK GROUP7

- · IBRD International Bank for Reconstruction and Development
- · IDA International Development Association
- · IFC International Finance Corporation

Departments and Offices®

EOSG Executive Office of the Secretary-General

DESA Department of Economic and Social Affairs

DFS Department of Field Support

DGACM Department for General Assembly and Conference Management

DM Department of Management

Humanitarian Affairs

DPA Department of Political Affairs

DPI Department of Public Information

DPKO Department of Peacekeeping Operations

DSS Department of Safety and Security **OCHA** Office for the Coordination of

ODA Office for Disarmament Affairs **OHCHR** Office of the United Nations

High Commissioner for Human Rights

OIOS Office of Internal Oversight Services **OLA** Office of Legal Affairs

OSAA Office of the Special Adviser on Africa

PBSO Peacebuilding Support Office SRSG/CAAC Office of the Special Representative of the Secretary-General for Children and Armed Conflict

SRSG/SVC Office of the Special Representative of the Secretary-General on Sexual Violence in Conflict

SRSG/VAC Office of the Special Representative of the Secretary-General on Violence Against Children

UNISDR United Nations Office for Disaster Risk Reduction

UNODC¹ United Nations Office on Drugs and Crime **UNOG** United Nations Office at Geneva

UN-OHRLLS Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island **Developing States**

UNON United Nations Office at Nairobi **UNOV** United Nations Office at Vienna

UNOP² United Nations Office for Partnerships

- 1 Members of the United Nations System Chief Executives Board for Coordination (CEB).
- 2 UN Office for Partnerships (UNOP) is the UN's focal point vis-a-vis the United Nations Foundation, Inc.
- 3 IAEA and OPCW report to the Security Council and the General Assembly (GA).
- 4 WTO has no reporting obligation to the GA, but contributes on an ad hoc basis to GA and Economic and Social Council (ECOSOC) work on, inter alia, finance and development issues.
- 5 Specialized agencies are autonomous organizations whose work is coordinated through ECOSOC (intergovernmental level) and CEB (inter-secretariat level).
- 6 The Trusteeship Council suspended operation on 1 November 1994, as on 1 October 1994 Palau, the last United Nations Trust Territory, became independent.
- 7 International Centre for Settlement of Investment Disputes (ICSID) and Multilateral Investment Guarantee Agency (MIGA) are not specialized agencies in accordance with Articles 57 and 63 of the Charter, but are part of the World Bank Group.
- 8 The secretariats of these organs are part of the UN Secretariat.
- 9 The Secretariat also includes the following offices: The Ethics Office, United Nations Ombudsman and Mediation Services. Office of Administration of Justice and the Office on Sport for Development and Peace

This Chart is a reflection of the functional organization of the United Nations System and for informational purposes only. It does not include all offices or entities of the United Nations System.

United Nations Economic Commission for Europe

UNECE



The United Nations Economic Commission for Europe (UNECE) was set up in 1947 by ECOSOC



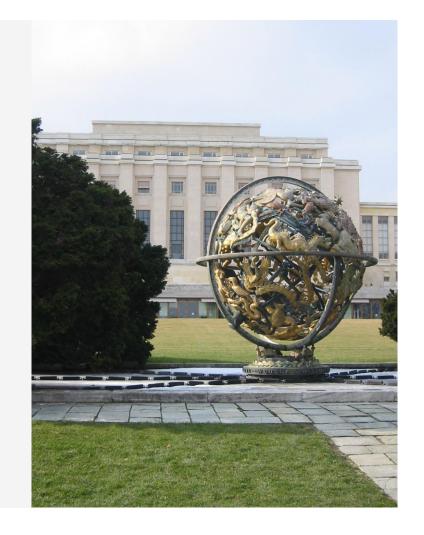
United Nations Economic Commission for Europe

UNECE

UNECE

UNECE aims to promote pan-European economic integration, within its 56 Member States in Europe, North America, and Asia – Yet, all interested UN Member States may participate in the work of UNECE.

Over 70 International professional organizations and other non-governmental organizations take part in UNECE



UNECE

Areas of Expertise



- Economic cooperation and integration
- Sustainable Energy (inc. sustainable resource management)
- Environment
- Housing and land management
- Gender, population
- Statistics
- Timber
- Trade
- Transport





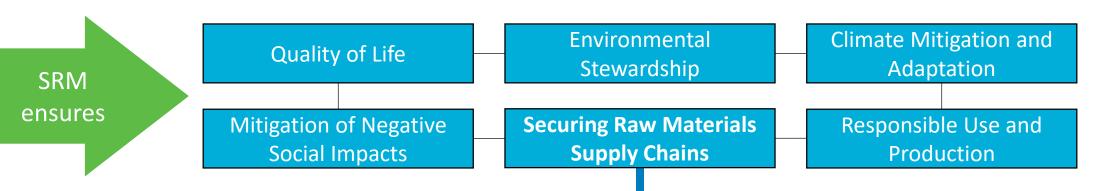
https://unece.org/sustainableenergy/sustainable-resourcemanagement

Introduction to UNFC (2019)



Sustainable Resource Management

- How can we ensure production of raw materials without compromising the environment, economic stability, and social equity?
- Sustainable Resource Management (SRM) balances the need for economic development with the preservation of the environment and the well-being of future generations. It is critical to deliver the UN Agenda 2030 and its Sustainable Development Goals



Begins with mapping and classifying raw materials based on relevant, consistent, transparent and comparable raw material information



Challenge of Classification – How?

How to Classify?

By genre

By artist

By composer

By instruments

By tempo

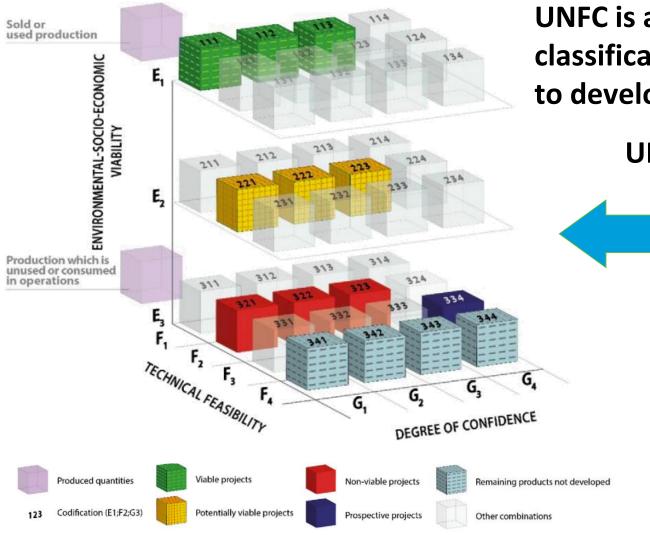
By date recorded

By date purchased





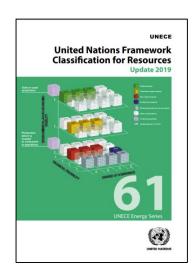
UNFC 2019 Generic – 3 Tier Framework



UNFC is a resource project- and principles-based classification system based on 3 fundamental criteria to develop resources

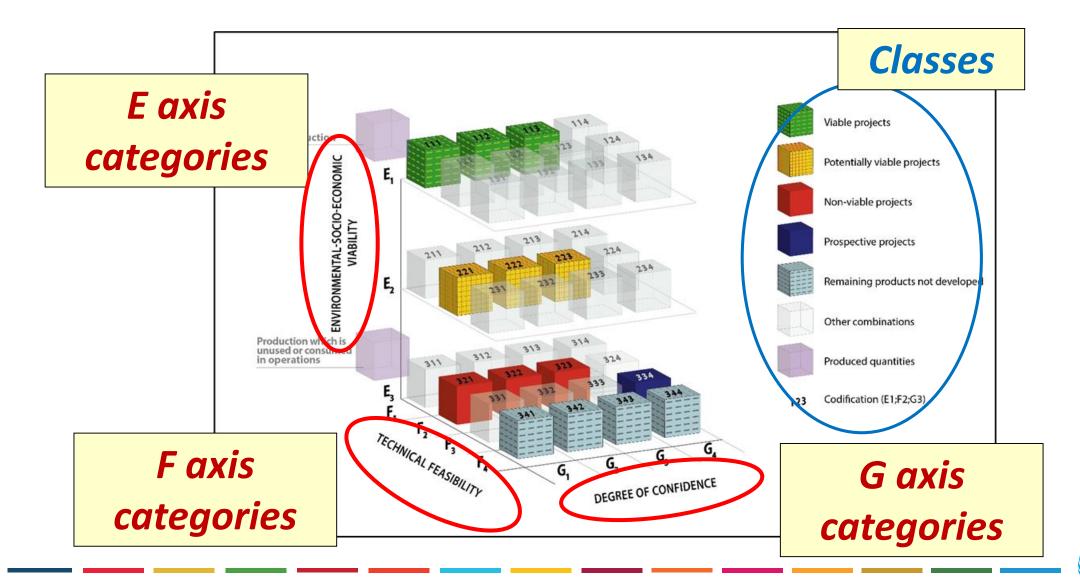
UNFC is based on 3 fundamental criteria:

- **E axis**: Environmental-socio-economic viability
- Faxis: Technical Feasibility
- G axis: Degree of Confidence





UNFC – Categories & Classes





UNFC Categories Definitions – E axis

- Degree of favourability of environmental social and economic conditions in establishing the viability of the project
- Includes consideration of market prices and relevant legal, regulatory, social, environmental and contractual conditions
- E1, E2 and E3 categories
- E1 is "best"
- Definitions should always be read in conjunction with supporting explanation

Category	Definition
E1	Development and operation are confirmed to be environmentally-socially-economically viable.
E2	Development and operation are expected to become environmentally-socially-economically viable 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.



UNFC Sub-Categories Definitions – E axis

Sub-Category	Sub-Category Definition		
E1.1	Development is environmentally-socially-economically viable on the basis of current conditions and realistic assumptions of future conditions.		
E1.2	Development is not environmentally-socially-economically viable on the basis of current conditions and realistic assumptions of future conditions, but is made viable through government subsidies and/or other considerations.		
No Sub-categories defined			
E3.1	Estimate of product that is forecast to be developed, but which will be unused or consumed in operations.		
E3.2	Environmental-socio-economic viability cannot yet be determined due to insufficient information.		
E3.3	On the basis of realistic assumptions of future conditions, it is currently considered that there are not reasonable prospects for environmental-socio-economic viability in the foreseeable future.		



UNFC Categories Definitions – F axis

- 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
- F1, F2 and F3 and F4 categories
- F1 is "best"
- Definitions should always be read in conjunction with supporting explanation

Category	Definition
F1	Technical feasibility of a development project has been confirmed.
F2	Technical feasibility of a development project is subject to further evaluation.
F3	Technical feasibility of a development project cannot be evaluated due to limited technical data.
F4	No development project has been identified.



UNFC Sub-Categories Definitions – F axis

Sub-Category

Sub-Category	Sub-Category Definition
F1.1	Production 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
F2.1	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.

F3.1	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.
F4.1	The technology necessary is under active development, following successful pilot studies, but has yet to be demonstrated to be technically feasible for this project.
F4.2	The technology necessary is being researched, but no successful pilot studies have yet been completed.
F4.3	The technology is not currently under research or development.

Sub-Category Definition



UNFC Categories Definitions – G axis

- Degree of confidence in the estimate of the quantities of products from the project
- Generally defined as discrete increments for solids (G1, G2, G3), but often defined as scenarios for fluids (G1, G1+G2, G1+G2+G3)
- G1, G2, G3 and G4 categories
- G1 is "highest confidence"
- Definitions should always be read in conjunction with supporting explanation

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 .
G4	Product quantity associated with a Prospective Project, estimated primarily on indirect evidence.

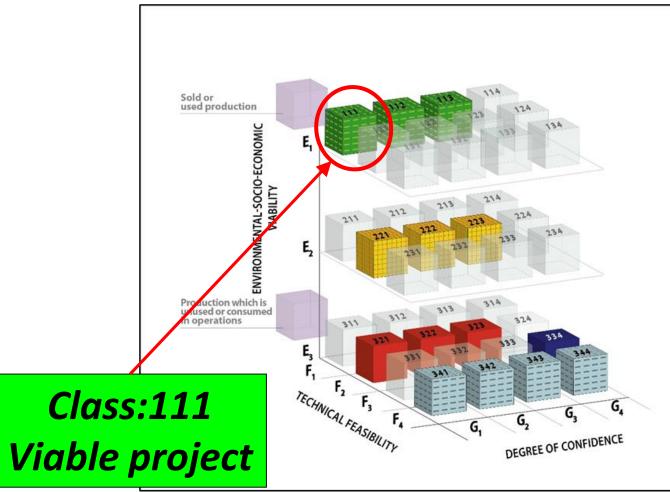


UNFC Sub-Categories Definitions – G axis

Sub-Category	Sub-Category Definition
G4.1	Low estimate of the quantities.
G4.2	Incremental amount to G4.1 such that G4.1+G4.2 equates to a best estimate of the quantities.
G4.3	Incremental amount to G4.1+G4.2 such that G4.1+G4.2+G4.3 equates to a high estimate of the quantities.



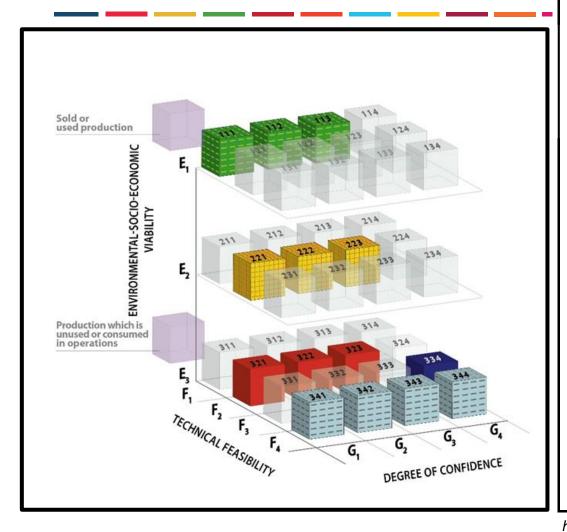
UNFC – How it works



Category	Definition			
E1	Development and operation are confirmed to be environmentally-socially-economically viable.			
Category	Definition			
F1	Technical feasibility of a development project has been confirmed.			
Category	Definition			
G1	Product quantity associated with a project that can be estimated with a high level of confidence.			



UNFC – 2D or 3D Representation



Total Products

Dundaged	Sold or u	ised prod	sed production			
Produced	Production which is unused or consumed in operations ^a					
	Class	Mir	Minimum Categories			
	Class	E F		G ^b		
The project's environmental-socio- economic viability and technical feasibility has been confirmed	Viable Projects ^c	1	1	1, 2, 3		
The project's environmental-socio-	Potentially Viable Projects ^d	2 ^e	2	1, 2, 3		
economic viability and/or technical feasibility has yet to be confirmed	Non-Viable Projects ^f	3	2	1, 2, 3		
Remaining products not identified	t developed from I projects ^g	3	4	1, 2, 3		
There is insufficient information on the source to assess the project's environmental-socio-economic viability and technical feasibility	Prospective Projects	3	3	4		
<u> </u>	Remaining products not developed from prospective projects ^g			4		

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



	peo		Sold or used production	on					
	Produced	Production which is unused or consumed in operations							
		Class	Class Sub-class		Categories				
		Class	Sub-class	Е	F	G			
			On Production	1	1.1	1, 2, 3			
		Viable Projects	Approved for Development	1	1.2	1, 2, 3			
	Non-V Proje Re fro		Justified for Development	1	1.3	1, 2, 3			
Total Products		Potentially	Development Pending	2 ^b	2.1	1, 2, 3			
otal Pr		Projects	Development On Hold	2	2.2	1, 2, 3			
Ĕ		Non-Viable Projects	Development Unclarified	3.2	2.2	1, 2, 3			
			Development Not Viable	3.3	2.3	1, 2, 3			
		Remaining p from identifi	roducts not developed ed projects	3.3	4	1, 2, 3			
		Prospective Projects	[No sub-classes defined]	3.2	3	4			
	Poten		roducts not developed ctive projects	3.3	4	4			

UNFC Classes Defined by Categories and Sub-categories

UNFC

Sub-Categories and Classes provide more granularity

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



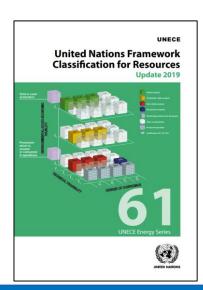
Resource Classification Stakeholders





UNFC – Documents Sequence

UNFC and Generic Specifications





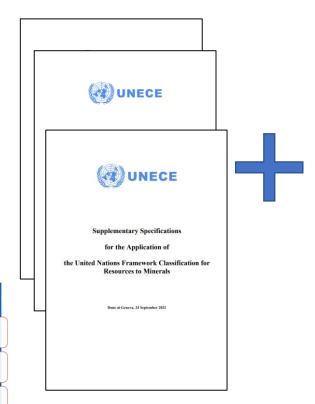
Principles

Rules

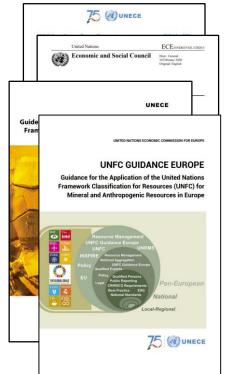
Guidelines

- 1. Definitions: Classification framework
- 2. Specifications: Application rules
- 3. Guidelines: Non-mandatory guidance

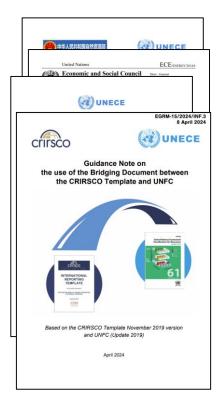
Supplementary Specifications



Guidance



Bridging Documents





GB/T 17766-1999			UNFC	
		级	亚级	
		E1 -	E1.1	
	1		E1.2	
经济	2M			
意义	25	E2		经济和社会
	3			活力
	>>		E3.1	
	3	E3	E3.2	
	≥ 5		E3.3	
		F1/F2		
	2			项目状态和
可行性评价阶段	3	7.7		技术可行性
		F3		
	$\geq \leq$	F4		
	1	G1		
抽质可靠程度	2	G2		州质认知程度

Law (2015) and Proposed New Book of	Results of	Mineral Resources			Mineral Reserves		
Regulations for Solid Mineral Raw Materials	Geological Exploration	Inferred	Indicated	Measured	Probable	Proved	
		Mineral Reserves					
Official Book of Regulations for Solid Mineral Raw	Potential	Potential			(inclusive of	Exploitation (inclusive of dilutions and losses during mining)	
Materials (1979)	D ₂ , D ₁	C ₂	Cı	В,А	Cı	В,А	
UNFC			Mineral 1	Resources	Mineral	Reserves	
	334	223	222	221	112	111	

UNFC-2009 Classification				CRIRSCO	Template	NEA/IAEA Classification			
UNFC Classes	UNFC Categories			CRIRSCO Classes and Sub-classes					
Class	Sub-Class	E	F	G	Class	Sub-Class	IAEA-NEA Categories		Status
Commercial Projects	On Production	1	1.1	1	Mineral Reserves	Proved	Reasonably Assured Resources (RAR)		Existing
				2		Probable			
	Approved for Development	1	1.2	1		Proved			Committee
				2		Probable			Committee
	Justified for Development	1	13	1		Proved			Planned
				2		Probable			Trestrictor.
Potentially Commercial Projects	Development Pending	2	21	1	Mineral Resources	Measured	Identified Resources	RAR	Prospective
				2		Indicated			
				3		Inferred		IR*	
	Development On I i	2	22	1		Measured		RAR	
				2		Indicated			
				3		Inferred		IR*	
						Development Unclarified			
					I UNF	Development		1975	

CRIRSCO	UNFC-2009 "minimum" Categories			UNFC-2009 Class	
Mineral	Proved	E1	F1	G1	Commercial Projects
Reserve	Probable			G2	Commercial Projects
Mineral Resource	Measured		F2	G1	Potentially Commercial Projects
	Indicated	E2		G2	
	Inferred			G3	
Exploration	E3	F3	G4	Exploration Projects	







6 key features

- User / requester dependent
- Uses Qualified Expert (instead of Competent Person) and Qualified Assessments
- Points out four key aspects that reinforce trust on estimations:
 - Qualified Experts must be objective and independent,
 - Have adequate and relevant professional qualifications and experience,
 - Endorse their reports, and
 - Provide sufficient transparent and material supporting detail to allow users
 of their reports to understand the inherent uncertainties involved.

UNFC

Competency Requirements



- Educational background and experience are aligned with requirements set out in other standards;
- Advances a statement to be signed by the Expert(s) who made the estimates;
- It does not exclude anyone

Annex

Template for a Statement of a Qualified Expert

[Date]

[Entity]

[Address]

I, [name] do hereby certify that:

I am [consultant/employee] of:

[Entity]

[Address]

- 2. I have made the estimates of resources as of [dates] set forth in the accompanying [table/report/public disclosure] with respect to the [project] of [Entity]. My examination included such tests and procedures as were considered necessary under the circumstances to render the opinion set forth herein. As of the date of this statement, to the best of my knowledge, information and belief, this Qualified Assessment contains all the scientific and technical information that is required to ensure that it is not misleading.
- I graduated with a [degree] from the [university] in [year]. In addition, I have obtained
 a [degree] from the [university] in [year].
- I am a [professional title] with the [Professional Association or Statutory Body/Government Authority].
- [alternatively] 4. I do not have a professional title and I am not registered with a Professional Association/Statutory Body/Government Authority for the following reasons: [stated reasons].
- I have worked as a [professional qualification] for a total of [years], during which time
 I have conducted reviews and audits on numerous projects covering [resources/commodities
 and deposit/reservoir types].
- 6. I have read the definition of a "Qualified Expert" set out in the United Nations Framework Classification for Resources and certify that by reason of my education, affiliation with a Professional Organisation and past relevant work experience, I fulfil the requirements to be a "Qualified Expert" for the purposes of the United Nations Framework Classification for Resources.

- I visited the [project] on [dates] (or, alternatively, [I have not visited the project because (explain reason)]).
- I am independent from the [organisation] that is the subject of the Qualified Assessment.
- [alternatively] 8. I meet the requirements of independence and objectivity of a Qualified Expert employed internally by [Entity] as set forth in the UNFC Guidance Note on Competency Requirements for the Estimation, Classification and Management of Resources (ECE/ENERGY/GE.3/2022/4).
- 9. I am not aware of any material fact or material change with respect to the subject matter of the resources estimates that is not reflected in the Qualified Assessment, the omission to disclose which makes the Qualified Assessment misleading.
- I consent to the filing of the Qualified Assessment with any authority and any publication, including electronic publication accessible by the public, of the Qualified Assessment.

[Date]		
"Signed"		

NOTE: Information on qualifications detailed in items 4 and 5 above should be provided on an "if not, why not" basis.

UNFC – Benefits



UNFC allows

consistent <u>comparison</u> within and across multiple commodities



Globally deployed and endorsed by the UN ECOSOC for application



Simple to use: 3 categories (E, F, G) lead to 3 basic classes (viable, potentially viable, non-viable)



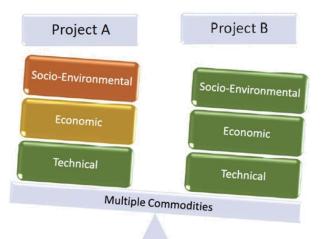
Combines all resources such as **energy**, **minerals and ground water** into one global classification system



Informs on **environmental**, **social** and **governmental issues** at **local**, **regional**, and **national level**

UNFC improves financial resilience through business process innovation

UNFC derives necessary social, environmental, and economic outcomes



UNFC speeds up decision-making, rendering it more rational, efficient, predictable, and safe. It makes information processing simpler as it integrates a resource management approach



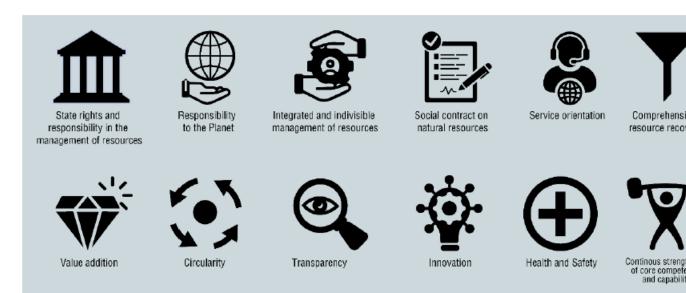
United Nations Resource Management System

UNRMS



UNRMS is the toolkit to tackle sustainability and technology challenges. It includes high-impact technologies that encourage efficient discovery and modelling of in-place resources and allow higher precision during recovery and processing.

United Nations Resource Management System: Principles



UNRMS

System for the integrated and sustainable management of resources

UNFC

Resource accounting based on maturity of projects

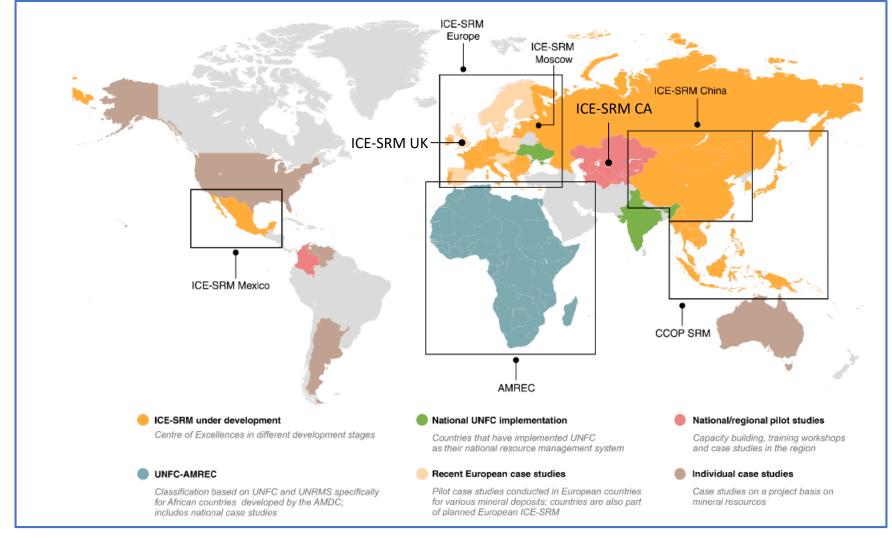
UNRMS Tool Kit Concepts:

- Clean Energy Index
- Service orientation in the use and reuse of resources
- Resource supply system
- Blockchain and machine learning/artificial intelligence model for resource management
- Critical raw materials dashboard

UNFC and UNRMS in the Minerals Sector

Global Outlook





Modified from

Bibliographical reference

BIDE, T.P., HORN, S. and GUNN, A.G. 2021. Overview of activities and policy related to critical raw material standards and resource management. *British Geological Survey Commissioned Report*, CR/21/124. 79pp.

Terms of Reference Criteria for Recognition ICE SRMs

Terms of Reference

Support global dissemination and adoption of UNFC and UNRMS through research, testing, consultation, education, and advocacy.

Engage in capacity-building, contribute to the development of UNFC and UNRMS, advocate for best practices, conduct outreach, and report annually on activities and progress.

Criteria for ICE-SRM Recognition

Mission

Promote UNFC and UNRMS globally, aligning with ECOSOC decisions and resolutions, and support sustainable resource management in line with the 2030 Agenda and the Paris Agreement.

Recognition Criteria

Commitment

Adhere to UNFC, UNRMS, and sustainable development goals Engage actively within the ICE-SRM Network

Structure

Must be a not-for-profit entity with government support

Standards

Innovate and maintain excellence in resource management Ensure transparency and compliance with UN norms

Competence

Demonstrate capability in sustainable resource management

Resources

Self-sufficient in financial, human, and physical resources

Operational Excellence

Proven ability to meet organizational and operational commitments



UNFC 2019 – Key Takeaways

- UNFC-2019 is a generic, project- and principles-based classification system
 - Applicable to solid minerals, anthropogenic resources, and a wide range of renewable and non-renewable resources
- Based on three fundamental criteria
 - Environmental-socio-economic viability
 - Technical feasibility
 - Degree of confidence
- Each criterion is sub-divided into 3 or 4 defined categories
 - Optional use of sub-categories for more granularity
 - Numerical category or sub-category for E, for F and for G (EFG is mandatory order)
 - Axis letters can be dropped: e.g. Class 221
- Consistent classification depends on careful application of category definitions
 - Definitions should always be read in conjunction with supporting explanation















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Europe

Thank you!

THE VIEWS EXPRESSED ARE
THOSE OF THE AUTHOR AND
DO NOT NECESSARILY
REFLECT THE VIEWS OF THE
UNITED NATIONS

Slavko Solar Economic Affairs Officer Sustainable Energy Division, UNECE

