United Nations Framework Classification for Resources
Sustainable management of all resources

David MacDonald, Chair, Expert Group on Resource Management
Workshop on UNFC Mexico Petroleum Pilot Project
Mexico City, 14 June 2019
The Problem of Classification

• How to Classify?
• By genre
• By artist
• By composer
• By instruments
• By tempo
• By date recorded
• By date purchased
Consistent classification and management of all resources

- Minerals
- Petroleum
- Renewables
- Uranium
- Injection
- Anthropogenic
UNFC Stakeholders

Governments
management of national resources

Creators of energy & mineral studies
to facilitate formulation of consistent and far-sighted policies

Financial community
to provide information necessary to allocate capital appropriately so reducing costs

Industry
to provide data and information necessary to deploy technology, management and finance to serve host countries, shareholders and stakeholders
Expert Group on Resource Management
A global community representing all users

Academia
Governments (UNECE and non-UNECE)
Industry
International organizations
Professional Societies & Associations
Financial Sector Incl. standard setters
The Economic and Social Council (ECOSOC) is at the heart of the United Nations system to advance the three dimensions of sustainable development – economic, social and environmental.

**ECOSOC Decision 2004/233**

Member States of the United Nations, international organizations and regional commissions to consider taking appropriate measures for ensuring worldwide application of the Framework Classification.
Why UNFC?

- The structure to understand and manage all resources in alignment to the SDGs.
- Applicable horizontally and vertically to all sectors
- Embeds all project risks and opportunities

UNFC promotes clear thinking and a shared vision
UNFC is a project maturity-based, resource-progression oriented tool for the management of resources.

UNFC provides a balanced view of socio-economic factors, technology and uncertainties involved in the classification of resources and provides a progression pathway for projects.

UNFC puts emphasis on figuring in social and environmental considerations at the centre of resource management.

UNFC is different from other resource classification and management tools in being responsive to requirements of the Global Agenda 2030, the aspirations of the society and the modern outlook of the industry.
UNFC approach

- Structured within overarching SDG framework
- Long-term policy making and planning
- Shorter-term actions - Make resource projects competitive through innovative approaches
- Efficient financial capital allocation
- Reduce environmental burden, carbon foot-print and negative public perception
- Increase collaboration globally
Growing applications of UNFC

1997 - SOLID FUELS AND MINERALS
2009 - OIL, GAS AND URANIUM
2016 - RENEWABLE ENERGY (GEOTHERMAL) AND INJECTION PROJECTS
2017 - BIOENERGY
2018 - ANTHROPOGENIC RESOURCES
2020 - INTEGRATED RENEWABLE RESOURCE CLASSIFICATION (GEOTHERMAL, BIOENERGY, SOLAR, WIND, HYDROPOWER)
Defining resources with UNFC

The 3 Criteria

- Socio-economic viability
- Project status and feasibility
- Geological knowledge/confidence
Numerical coding system based on the three criteria, sub-divided by categories:

**Economic and social viability**
- E1
- E2
- E3

**Field project status and feasibility**
- F1
- F2
- F3
- F4

**Geological knowledge**
- G1
- G2
- G3
- G4
• Degree of favourability of social and economic conditions in establishing the commercial viability of the project

• Includes consideration of market prices and relevant legal, regulatory, environmental and contractual conditions

• E1, E2 and E3 categories

• E1 is “best”

• Definitions should always be read in conjunction with supporting explanation
E axis category definitions

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Extraction and sale has been confirmed to be economically viable.</td>
</tr>
<tr>
<td>E2</td>
<td>Extraction and sale is expected to become economically viable in the foreseeable future.</td>
</tr>
<tr>
<td>E3</td>
<td>Extraction and sale is not expected to become economically viable in the foreseeable future or evaluation is at too early a stage to determine economic viability.</td>
</tr>
</tbody>
</table>

The phrase “economically viable” encompasses economic (in the narrow sense) plus other relevant “market conditions”, and includes consideration of prices, costs, legal/fiscal framework, environmental, social and all other non-technical factors that could directly impact the viability of a development project.
• The category definitions are the building blocks of the system:
  • Select the correct category for each of the three criteria

• These are combined (E, F, G) in the form of classes

• Class 111 means that the reported quantities have satisfied the definitions for:
  • E1, F1 and G1

• There are no constraints on combinations, but not all will be meaningful
UNFC – How it works

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Extraction and sale has been confirmed to be economically viable.</td>
</tr>
<tr>
<td>F1</td>
<td>Feasibility of extraction by a defined development project or mining operation has been confirmed.</td>
</tr>
<tr>
<td>G1</td>
<td>Quantities associated with a known deposit that can be estimated with a high level of confidence.</td>
</tr>
</tbody>
</table>

UNFC Class: 111
## UNFC using all sub-categories

### UNFC Classes defined by categories and sub-categories

<table>
<thead>
<tr>
<th>Extracted</th>
<th>Sales Production</th>
<th>Non-sales Production</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td><strong>Sub-class</strong></td>
<td><strong>Categories</strong></td>
</tr>
<tr>
<td>Total commodity initially in place</td>
<td>Commercial Projects</td>
<td>On Production</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approved for Development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Justified for Development</td>
</tr>
<tr>
<td>Known Deposit</td>
<td>Potentially Commercial Projects</td>
<td>Development Pending</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development On Hold</td>
</tr>
<tr>
<td></td>
<td>Non-Commercial Projects</td>
<td>Development Unclarified</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development Not Viable</td>
</tr>
<tr>
<td>Potential Deposit</td>
<td>Exploration Projects</td>
<td>[No sub-classes defined]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Additional quantities in place</td>
</tr>
</tbody>
</table>
Generic specifications

- Minimum standards for using UNFC
- Mandatory requirements
  - Use of numerical codes
  - Effective date
  - Clarity in aggregated estimates (provide disaggregated data as possible)
  - Aggregation should include proper justification
  - Basis of classification to be clear
  - Reference point to be mentioned.
  - Reclassification in case of suspension of a project
  - Include only potentially recoverable quantities.
  - Clarity in economic assumptions.
  - Use of SI units (or conversion factors to be given)
  - Provide documentation with sufficient details
UNFC advantages
A view in 3 dimensions

- Provides definitions, rules and guidelines
- Not a single resource project is the same

Each resource project needs a defined progression pathway
EGRM has a Working Group to examine the social and environmental aspects of the classification. Two guidance notes are available:

1. Accommodating environmental and social considerations in UNFC
2. Clarification of terminology and concepts related to UNFC
“Evaluators must possess an appropriate level of expertise and relevant experience in the estimation of quantities associated with the type of deposit under evaluation.”

Two guidance notes developed:

1. UNFC Specification for Evaluator Qualifications – **Top-level guidance**

2. Competent Person Requirements and Options for Resources Reporting – **Detailed guidance on generic requirements for public reporting and disclosures for all commodities**
In summary …

- **UNFC is a generic, principles-based system**
  - Applicable to both solid minerals and fluids
  - Uses a numerical coding system

- **Based on three fundamental criteria**
  - Economic and social viability
  - Field project status and feasibility
  - Geological knowledge

- **Each criterion is sub-divided into 3 or 4 defined categories**
  - Optional use of sub-categories for more granularity

- **Classes are defined by a combination of a single category or sub-category for each of the three criteria**
  - Numerical category or sub-category for E, for F and for G
  - Always quoted in same sequence: E – F – G
  - Axis letters can be dropped: e.g. Class 221
Recent publications
UNFC and Sustainable Resource Management

United Nations Framework Classification for Resources (UNFC) - a universally acceptable and internationally applicable scheme for the sustainable management of all energy and mineral resources.

Resource Management Week 2018
UNFC FOR SUSTAINABLE DEVELOPMENT
9th Session of the Expert Group on Resource Classification

23-27 April 2018
Thank you!

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