Traceability of Mineral Value Chains

United Nations Resource Management System and United Nations Framework Classification for Resources

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2nd Session of the Team of Specialists (ToS) on Environmental, Social and Governance (ESG) Traceability of Sustainable Value Chains in the Circular Economy, 6 October 2022, Geneva
Transparent and traceable flows of minerals and monies will support *circularity* while *eliminating illicit flows* of both resources and funds.
Why it matters?

- Demand for responsible minerals
- Legislation for responsible sourcing, based on due diligence guidance and standards
- EU Conflict Minerals Regulation
- EU Mineral Supply Due Diligence Regulation
- OECD Due Diligence Guidance
- European Partnership for Responsible Minerals
In numbers

• Dominant role in the economies of **81 countries**
• Account for **25% of global GDP**
• Over **3 billion tons** are needed to achieve 2C
• Over **40 minerals** identified as critical
• Demand to increase by **a factor of 20** by 2035
Circularity Gap

92%
From commodities to services

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Model</th>
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<tbody>
<tr>
<td>Construction as a Service</td>
<td>CaaS</td>
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<tr>
<td>Container as a Service</td>
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<td>Crane as a Service</td>
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<td>(Edge) Compute as a Service</td>
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<td>Contact Center as a Service</td>
<td>CCaaS</td>
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<td>Contact Information as a Service</td>
<td>CIaaS</td>
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<td>Communications Platform as a Service</td>
<td>CPaaS</td>
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<td>Data as a Service</td>
<td>DaaS</td>
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<td>Desktop as a Service</td>
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<td>Drone as a Service</td>
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<td>Distribution as a Service</td>
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<td>Database as a Service</td>
<td>DBaaS [3]</td>
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<td>Exposure as a Service</td>
<td>EaaS</td>
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<td>EaaS [6]</td>
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<td>Electric Vehicle as a Service</td>
<td>EVaaS</td>
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<td>Function as a Service</td>
<td>Faas</td>
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<td>Farming as a Service</td>
<td></td>
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</tbody>
</table>
Resources as a Service

Leap frogging

Products → Commodity → As-a-SERVICE

Degradation → Branding, cost differentiation etc. → Growth
Product-focus to Outcome focus

A NEW WAY OF THINKING

Old Business Model

- product
  - channels
    - customer

New Business Model

- service
  - subscriber
  - experience
  - channels
Integrated and sustainable management of natural resources is critical to meeting universal needs.

Resources must be managed as a public good to achieve key SDGs.

UNFC and UMRMS provide the right information and tools to manage natural resources.
United Nations Resource Management System

State rights and responsibilities in the management of resources

Responsibility to the planet

Integrated and indivisible management of resources

Social contract on natural resources

Service orientation

Comprehensive resource recovery

Value addition

Circularity

Health and safety

Innovation

Transparency

Continuous strengthening of core competencies and capabilities.
Transparency

Supply chain transparency

Due diligence

Data quality

Competent and qualified assessments
UNRMS Subscriber Model
(FEW Nexus resource flow - generic)

S1, 2, 3, 4 = Subscription Type

Supply Chain Data Flow

Processor Block Data: Molecules & Money

Smart Contract

Processor (S2)

Hash

13:00 : 145623

- FEW resource type/ mix
- UNFC Code
- Tagging (block chain)
- Process technology
- Energy intensity
- RUE/ Land use efficiency
- Emissions
- Residues inventory/ valorisation pathway
- Onward transport
- Stakeholders

UNRMS Subscriber (S)
Traceability
Resource & finance flow tracking
Supply/ value chain

Smart Contract

Primary producer (S1)

12:00 : 12345

- Source (mine, well, aquifer etc)
- UNFC Code
- Tagging (block chain)/ GPS
- Orders/ contracts
- Extraction technology/ Recovery rate
- Handling, storage, shipment
- Energy intensity / emissions
- IF FARM – soil, climate, nutrient (RUE), yield

Smart Contract

Machine Learning/ AI

RESOURCE/ SERVICE MANAGEMENT

KPIs
- HACCP Integrity
- Resource Use Efficiency/
Mass Balance
- FEW Security
- Waste Reduction

Distributor (Value-Add) (S3)

17:00 : 468792

- Value-add service/ technology
- UNFC Code
- Tagging (block chain)/ GPS
- Customer engagement channels
- Energy intensity
- Transportation method/ emissions
- Loss/ waste prevention or valorisation pathway
- Stakeholders

Smart Contract

Distributor Block Data: Molecules & Money

Hash

18:00 : 792465

- Value-add service/ technology
- UNFC Code
- Tagging (block chain)/ GPS
- Customer engagement “last km”
- Energy intensity
- Transportation method/ emissions
- Loss/ waste prevention, reuse or valorisation pathway
- Stakeholders

Smart Contract

Fulfilmer (S4)

18:00 : 792465

- Value-add service/ technology
- UNFC Code
- Tagging (block chain)/ GPS
- Customer engagement “last km”
- Energy intensity
- Transportation method/ emissions
- Loss/ waste prevention, reuse or valorisation pathway
- Stakeholders

Smart Contract

Fulfilment Block Data: Molecules & Money

Hash

• Source (mine, well, aquifer etc)
• UNFC Code
• Tagging (block chain)/ GPS
• Orders/ contracts
• Extraction technology/ Recovery rate
• Handling, storage, shipment
• Energy intensity / emissions
• IF FARM – soil, climate, nutrient (RUE), yield

Smart Contract

Producer Block Data : Molecules & Money

Hash

12:00 : 12345

- Source (mine, well, aquifer etc)
- UNFC Code
- Tagging (block chain)/ GPS
- Orders/ contracts
- Extraction technology/ Recovery rate
- Handling, storage, shipment
- Energy intensity / emissions
- IF FARM – soil, climate, nutrient (RUE), yield

Smart Contract

Producer Block Data : Molecules & Money

Hash
UNFC and UNRMS - Systems approach to enabling the resource as a service paradigm through blockchain technologies

Sustainable management of critical raw materials required for the low-carbon energy transition

Resources as a Service: A catalyst to accelerate the energy transition, safeguarding climate action targets within the circular economy
Thank you!

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