

# Futu

Future availability  
of secondary  
raw materials

# RaM



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,  
Education and Research EAER  
**State Secretariat for Education,  
Research and Innovation SERI**

EU Framework Programmes



**Funded by  
the European Union**

# WHERE ARE WE NOW?



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- The EU is too dependent on just one or a few countries. Russia is among the Top 3 global producers of 13 critical raw materials. Example: 42% of palladium is supplied by Russia.



- CRM Act ensures secure, sustainable and diversified supply of CRM.
  - >10% EU annual consumption for extraction
  - >40% EU for processing
  - >15% EU for recycling
  - <65% EU consumption of each strategic raw material at any relevant stage of processing from a single third country.
- *“Member States and private operators will have to investigate the potential for recovery of CRM from extractive waste in current mining activities [...]. Products containing permanent magnets will need to meet circularity requirements and provide information on the **recyclability** and recycled content.”*

# WHERE ARE WE NOW?

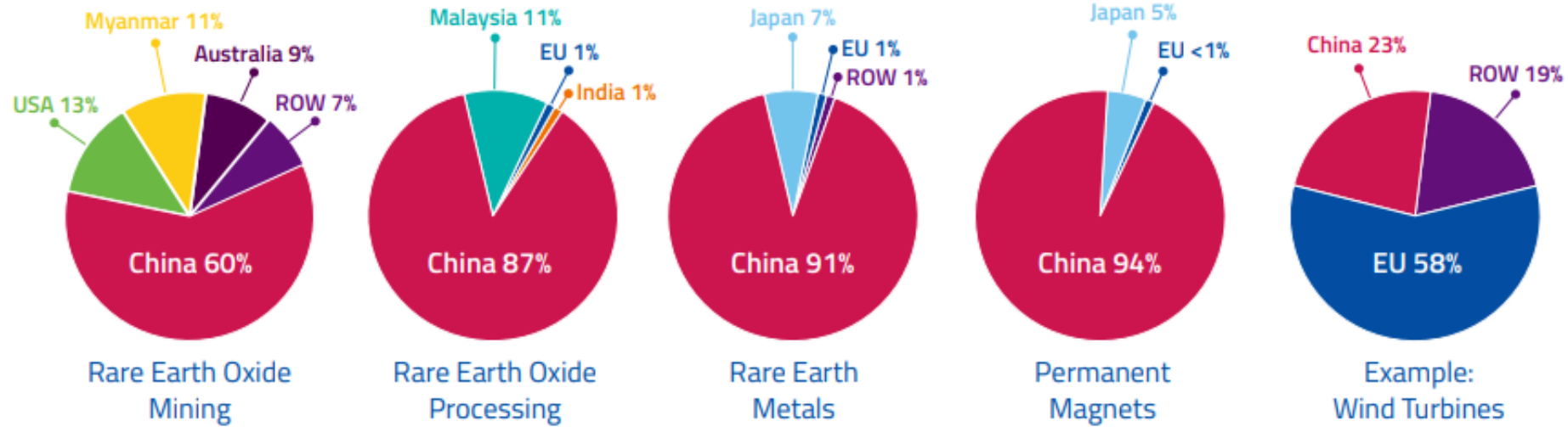


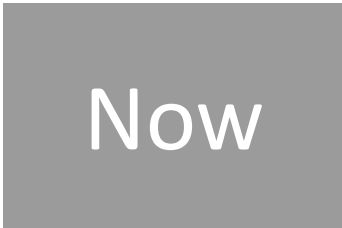
Fig. 3: From rare earths mining to wind turbine manufacturing: estimated market shares in 2019. Sources: Team analysis and Roskill 2018; Adamas Intelligence 2019; Peteves 2017; Carrara et al. 2020; IEA 2021; USGS 2021.

- The EU economy is vulnerable and insufficiently self-reliant.



# THE CASE FOR FUTURAM

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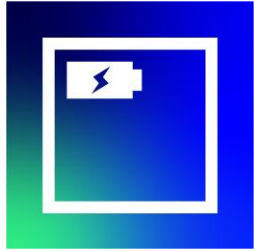
- No structured knowledge on availability and recoverability of secondary raw materials.
- UN Framework Classification for Resources applied to primary mining. The Classification and reporting applied to SRM projects (anthropogenic resources) is not harmonised.
- No central knowledge base.



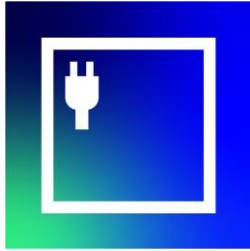
- Develop harmonised knowledge on the availability & recoverability of SRM within EU. Special focus on CRM. From now to 2050.
- Apply UNFC to SRM projects and foster consistency, transparency and comparability in classification and evaluation.
- Disseminate this information via SRM Knowledge Base. Dynamic visualisation tools.
- Estimate future demand and supply risks of SRMs and CRM.
- Three future pathways to 2050 covering six waste streams for EU 27+4.

# FUTURAM WASTE STREAMS

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Batteries



Electrical &  
Electronic  
Equipment



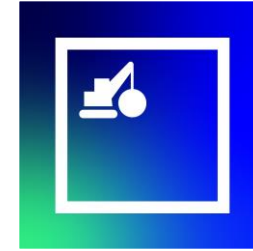
Vehicles



Slags &  
Ashes



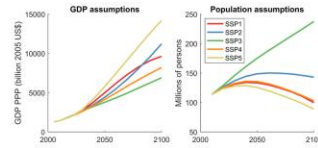
Mining Waste



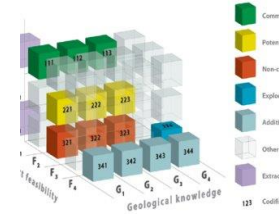
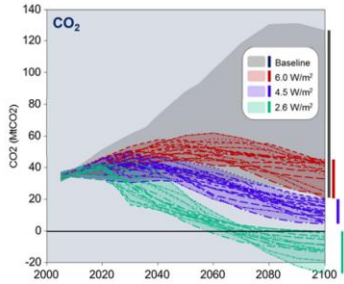
Construction &  
Demolition  
Waste



Taking on the worldwide  
societal challenge of  
electronic waste



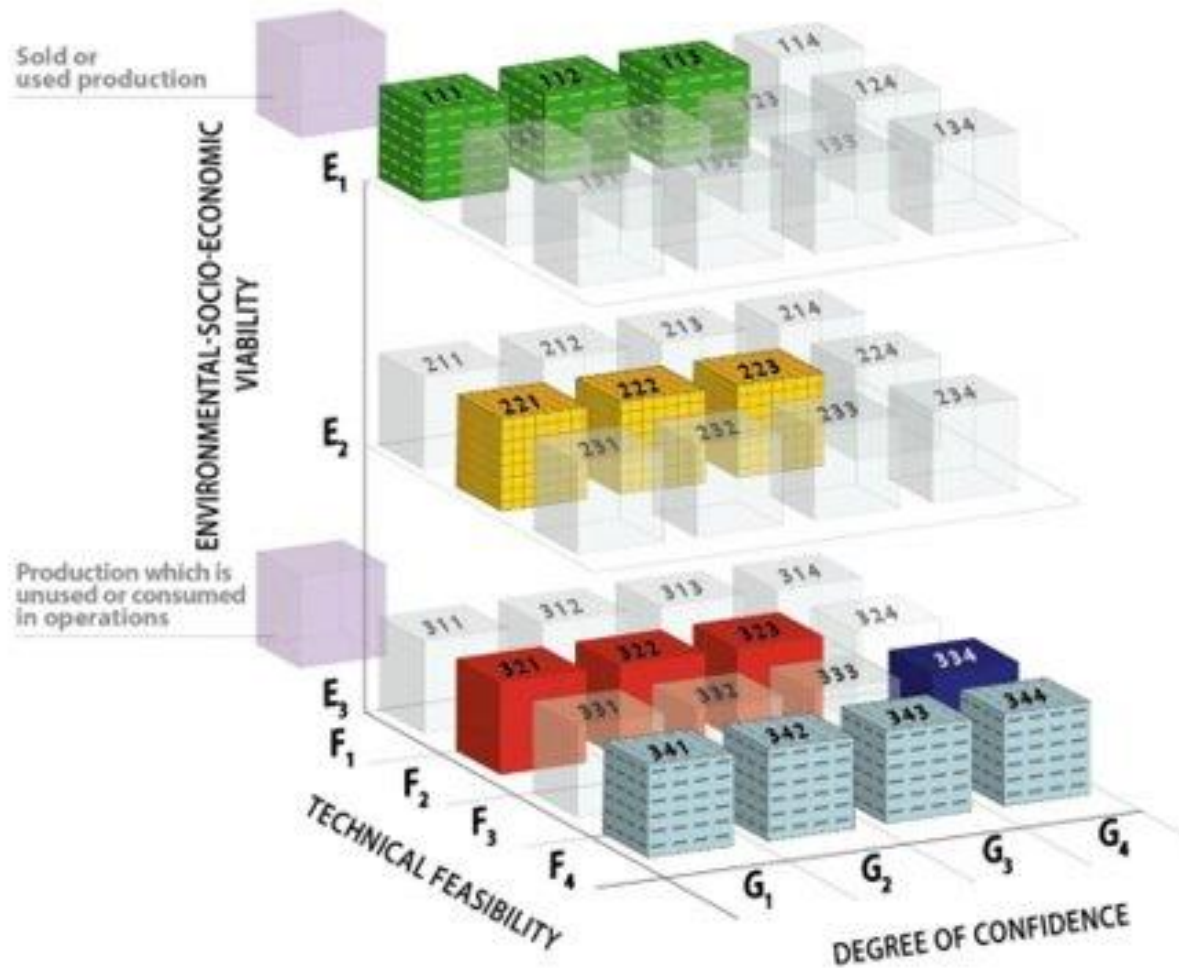
eurostat 



# Standing on the shoulders...

FutuRaM builds on the knowledge and results of previous projects and tools

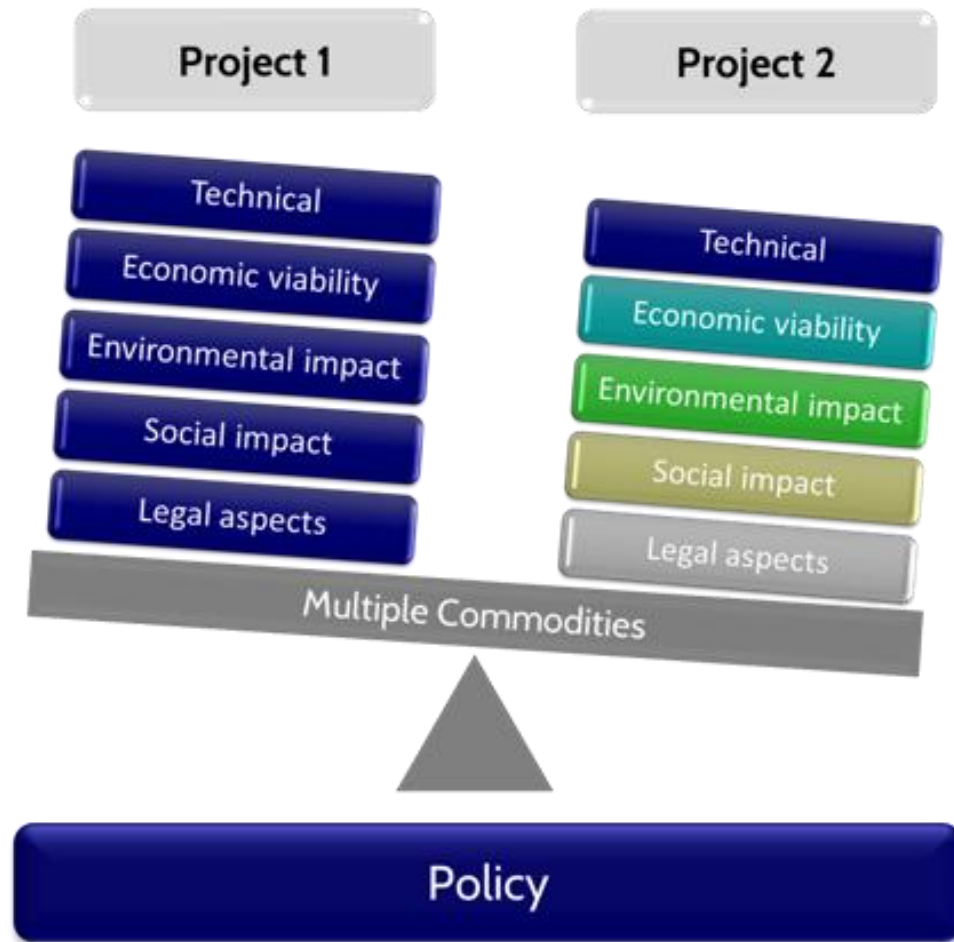
# UN FRAMEWORK CLASSIFICATION



A global standard for **communicating** recoverable quantities of materials based on the **maturity** of the recovery project, for all types of energy and materials, universally acceptable and internationally applicable.

Development and testing of UNFC for SRMs with 19 case studies (both site-specific and national) resulting in a methodology.

# UN FRAMEWORK CLASSIFICATION



Consistency

Transparency

Comparability



# FUTURAM SUMMARY

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4 years project  
June 2022 – May 2026

Sister organisation



**GSEU**  
GEOLOGICAL FOR  
SERVICE EUROPE



Consortium of 29 partners



Horizon Europe – Research and Innovation  
European Health and Digital Executive Agency (HaDEA)

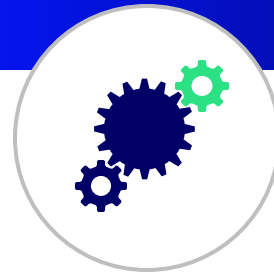
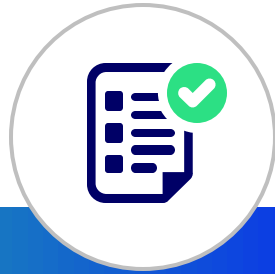
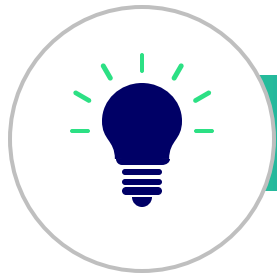
# ROADMAP

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Develop a consistent procedure to assess and classify SRM recoverability in line with the UNFC

Draft reporting standard for the attention of UNECE



Initial phase

Use case studies to test, develop, validate and demonstrate the procedure in line with UNFC

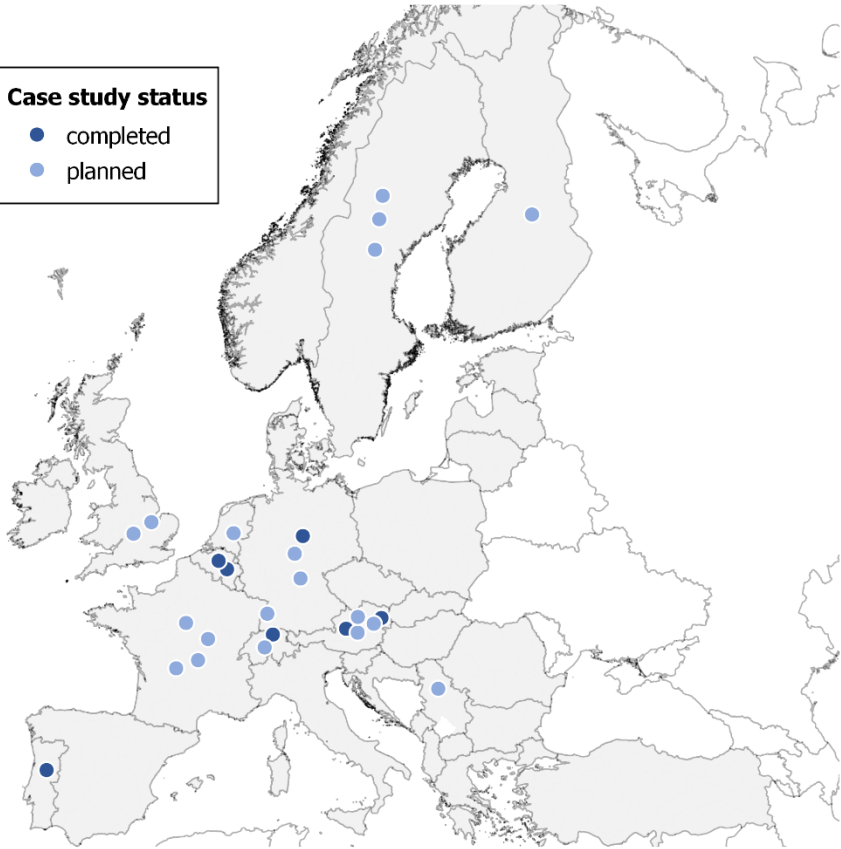
# CASE STUDIES



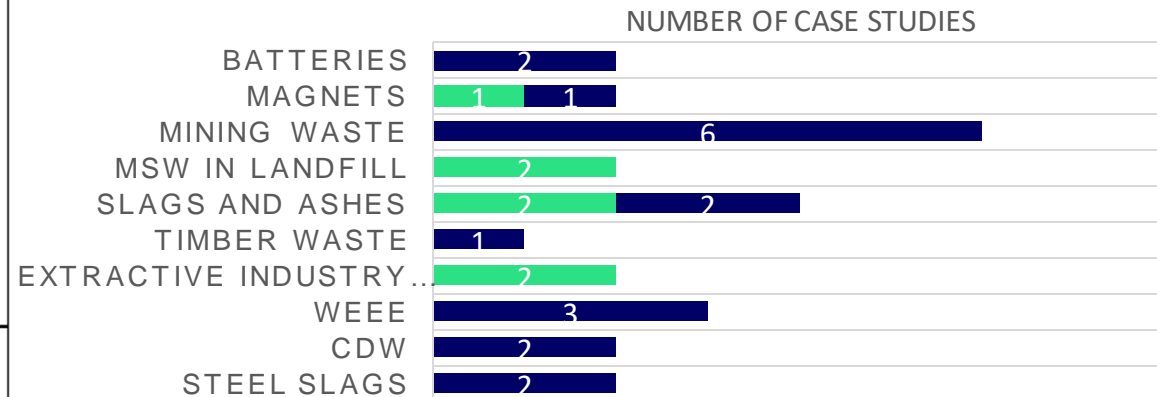
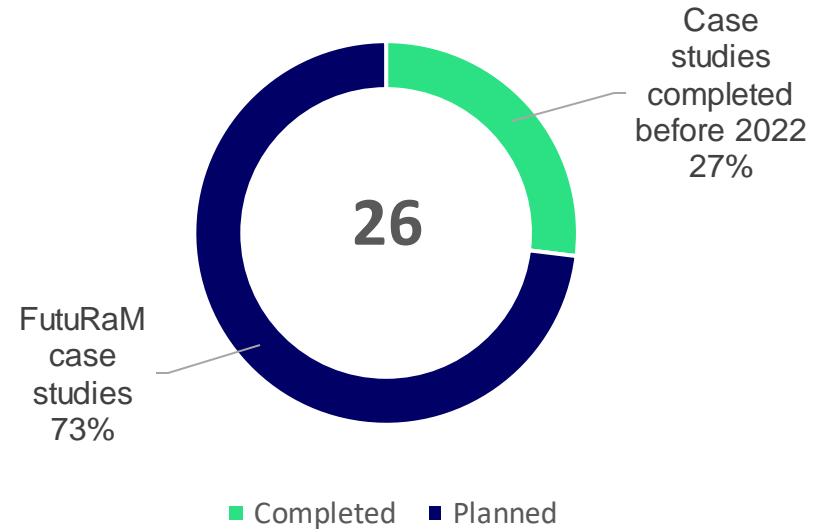
## Application of UNFC to anthropogenic resources in Europe

### Case study status

- completed
- planned



Data sources  
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Thank you

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