

METHODOLOGY FOR ESTABLISHING THE EU LIST OF CRITICAL RAW MATERIALS

*IRTC Round Table on "How Methodology determines what is critical"
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Background and purpose



Raw Materials Initiative EU Critical Raw Materials



First action of the EU raw materials policy action plan in 2008 to “Define critical raw materials for the EU”

- EU methodology was developed in 2010
- Based on 2014 assessment recommendations was revised in 2016
- Revision of the list every 3 years, last in 2017, next in 2020

Scope and principles



Raw Materials Initiative EU Critical Raw Materials CRM assessment 2017

Individual abiotic materials		
Aggregates	Hafnium	Rhenium
Aluminium	Helium	Scandium
Antimony	Indium	Selenium
Baryte	Iron Ore	Sulphur
Bauxite	Lead	Potash
Bentonite	Limestone	Silica Sand
Beryllium	Gold	Silicon Metal
Bismuth	Gypsum	Silver
Boron (Borates)	Lithium	Talc
Chromium	Magnesite	Tantalum
Kaolin clay	Magnesium	Tellurium
Cobalt	Manganese	Tin
Coking coal	Molybdenum	Titanium
Copper	Natural Graphite	Tungsten
Diatomite	Nickel	Vanadium
Feldspar	Niobium	Zinc
Fluorspar	Perlite	
Gallium	Phosphorus	
Germanium	Phosphate rock	
Platinum group metals (PGMs)		
Iridium	Platinum	Ruthenium
Palladium	Rhodium	
Rare earth elements (REEs)		
Light rare earth elements (LREEs)	Heavy rare earth elements (HREEs)	
Cerium	Dysprosium	Lutetium
Lanthanum	Erbium	Terbium
Neodymium	Europium	Thulium
Praseodymium	Gadolinium	Ytterbium
Samarium	Holmium	Yttrium
Biotic materials		
Natural Rubber	Natural cork	
Sapele wood	Natural Teak wood	

- ✓ Raw materials used for industrial applications at the EU level
- ✓ 78 minerals, metals/chemical elements, wood and natural rubber screened in 2017 (42 in 2011)
- ✓ Based on data, no predictions
- ✓ Thresholds, but no ranking order
- ✓ Comparability between exercises

Legend:	
Green boxes =	Materials covered in 2014 but not in the 2011 assessments
Orange boxes =	New materials covered in the 2017 assessment



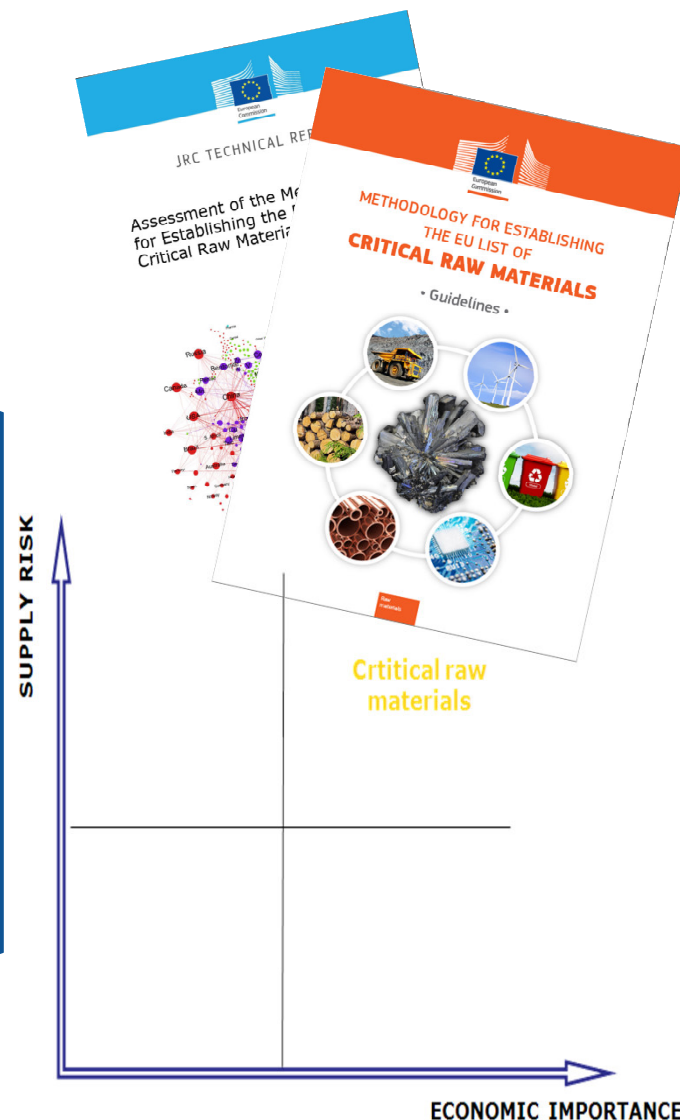
Economic importance

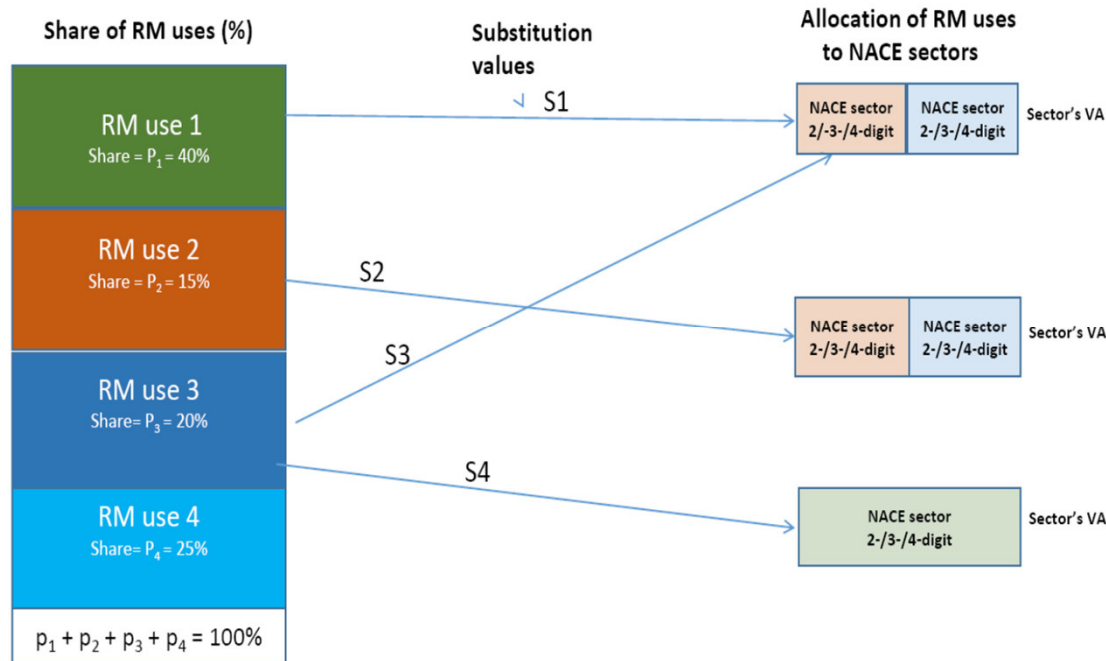
- Importance of a raw material per economic sector (NACE-2) & importance of the sector in the EU economy (value added)
- Substitution (technical and cost performance)

Supply risk

- Global supply and EU sourcing
- Market concentration (HHI)
- Governance performance (WGI)
- Import reliance
- Trade agreements and restrictions
- Substitution (production, criticality, co/by-production)
- End-of-Life Recycling Input Rate

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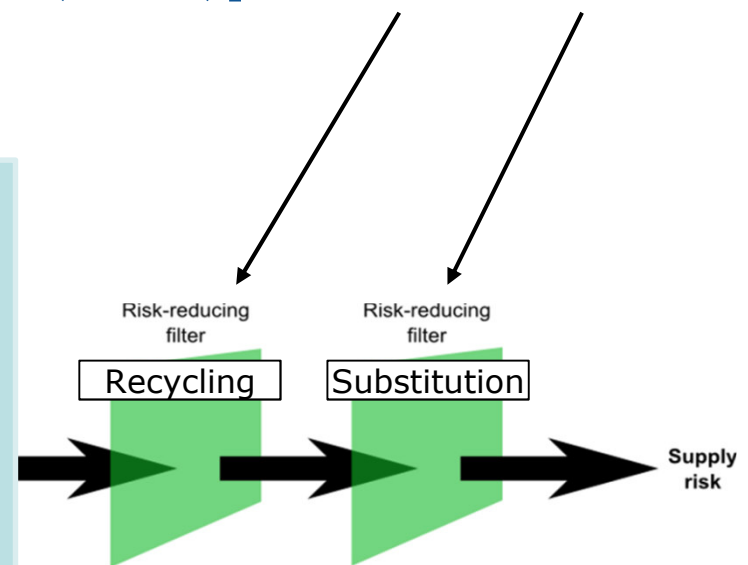
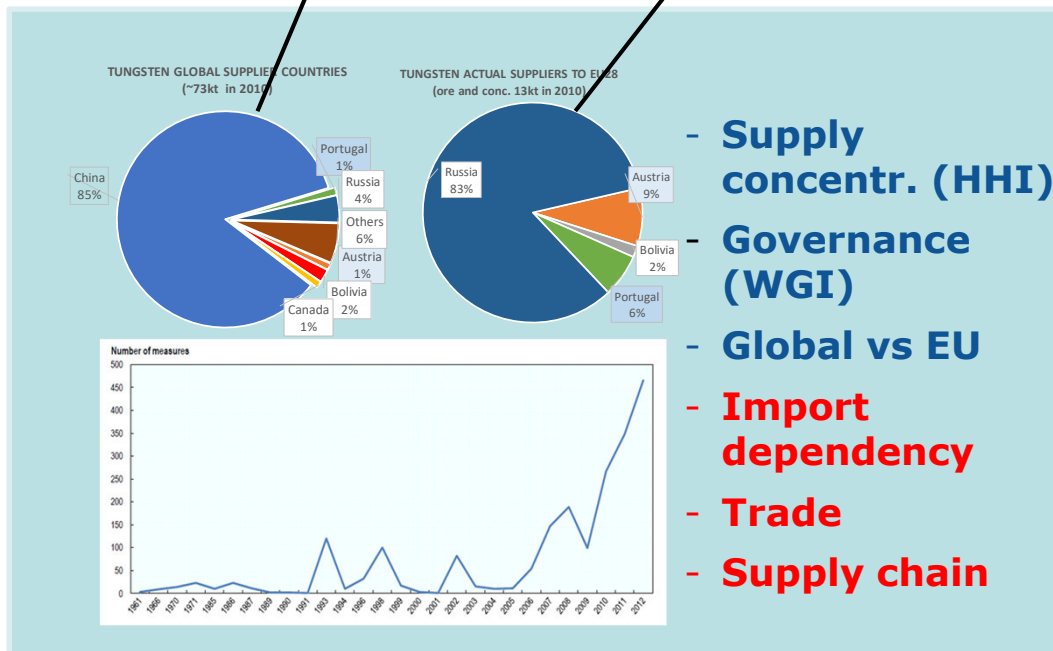
$$EI = \sum_s (A_s * Q_s) * SI_{EI}$$

1. allocation of RM uses to EU CPA products at 6-digit level)
2. NACE-2 at 2-digit level
3. RM-specific substitution performance index

Supply risk



$$SR = \left[(HHI_{WGI,t})_{GS} \cdot \frac{IR}{2} + (HHI_{WGI,t})_{EU\text{ sourcing}} \left(1 - \frac{IR}{2}\right) \right] \cdot (1 - EOL_{RIR}) \cdot SI_{SR}$$

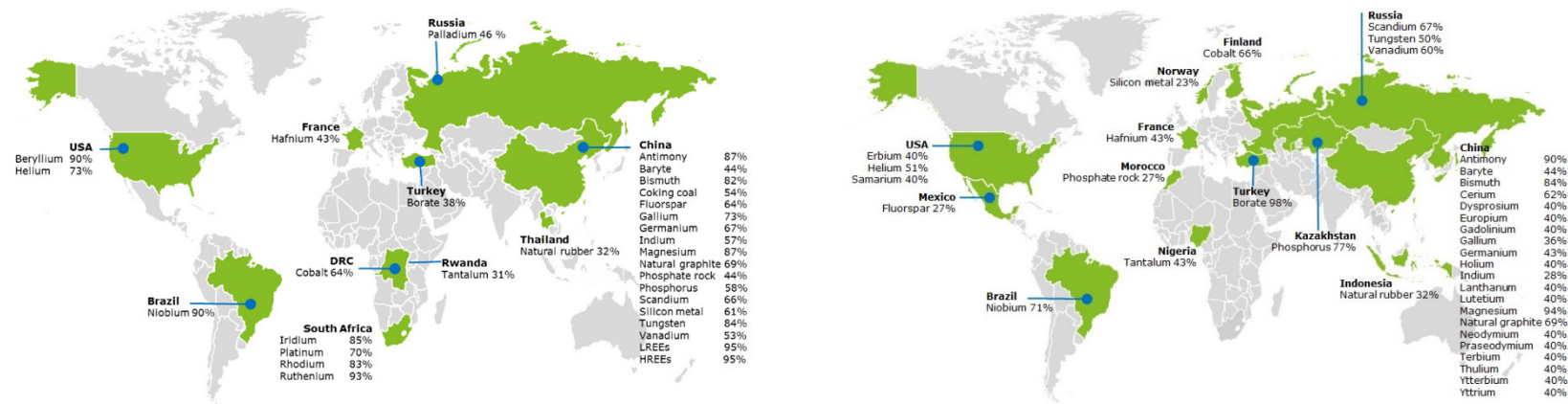


Unique features



Raw Materials Initiative EU Critical Raw Materials CRM assessment 2017

- Developed and driven by governmental departments
- Combines Global vs EU-specific information on risk



- Incorporates specific influences of trade restrictions vs mitigation of certain trade agreements
- Supply risk checked at extraction and refining stages
- Priority of data sources data
- Average of the data over the last 5 years
- Both thresholds on EI and S  must be reached

Results and implications



Raw Materials Initiative EU Critical Raw Materials CRM assessment 2017

2017 CRMs (27)		
Antimony	Germanium	Niobium
Baryte	Hafnium	PGMs
Beryllium	Helium	Phosphate rock
Bismuth	HREEs	Phosphorus
Borate	Indium	Scandium
Cobalt	LREEs	Silicon metal
Coking coal	Magnesium	Tantalum
Fluorspar	Natural graphite	Tungsten
Gallium	Natural Rubber	Vanadium

HREEs=heavy rare earth elements,
LREEs=light rare earth elements,
PGMs=platinum group metals

- ✓ Contributes to the implementation of the EU industrial policy
- ✓ Incentivises the EU production of CRMs
- ✓ Helps prioritise needs and actions (R&D, investment, circular economy)
- ✓ Helps negotiating trade agreements, drafting legislation, challenging trade distortion measures
- ✓ Useful for EU and national policy measures
- ✓ Builds into the EU Knowledge base - RMIS

Overall, improved methodology fulfils its objectives well and results make sense in the EU context.

There are some difficulties with

- data availability, in particular on recycling (EOL-RIR), specialty metals (e.g. scandium, gallium)
- data quality and priority (EU, intl., private)
- raw materials market shares / allocation of end-uses to sectors (e.g. in case of multiple allocation) - combining data from different sources
- combining trade and production data with reference to a single commodity (e.g. REEs) and/or stage in the supply chain

Outlook



Raw Materials Initiative EU Critical Raw Materials

- ✓ A new list in 2020
- ✓ Major work in 2019
- ✓ Streamlined approach
- ✓ Launch at the CRM event on 12 November 2018



Raw Materials Week 2018



12 - 16 November 2018 in Brussels, Belgium
eurawmaterialsweek.eu

- ❖ **6th annual High Level Conference of EIP on raw materials "Raw materials for low carbon and circular economy"** on 14 November
- ❖ Critical Raw Materials in our everyday life
- ❖ The EU Raw Materials Knowledge Base event
- ❖ EIT RawMaterials event
- ❖ EU-Canada Raw Materials Stakeholders Forum
- ❖ Horizon 2020 Infoday & and brokerage event
- ❖ Responsible supply of raw materials
- ❖ Raw Materials Industries and Natura 2000 / Biodiversity
- ❖ Forests for the future
- ❖ Copernicus for raw materials

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Raw Materials Week

European Innovation
Partnership on Raw Materials



Thank you!



Critical raw materials for the EU:

http://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en

Methodology for establishing the EU list of critical raw materials:

<https://publications.europa.eu/en/publication-detail/-/publication/2d43b7e2-66ac-11e7-b2f2-01aa75ed71a1/language-en/format-PDF/source-32064602>

Raw Materials Information System:

<http://rmis.jrc.ec.europa.eu/>

EU Raw materials, metals, minerals and forest-based industries:

https://ec.europa.eu/growth/sectors/raw-materials_en

EIP on Raw Materials:

<https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en>

Horizon 2020 - raw materials and calls:

<http://ec.europa.eu/programmes/horizon2020/en/area/raw-materials>

<https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/index.html>

Raw Materials Week 2018:

http://ec.europa.eu/growth/content/raw-materials-week-2017_en

EIT Raw materials:

www.eitrawmaterials.eu

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