SCRREEN
Solutions for CRitical Raw materials - a European Expert Network

Mining, processing, using – and being green, ethical and legal!?

Other considerations related to raw materials

This project has received funding from the EU's Horizon 2020 research and innovation programme under Grant Agreement No. 958211

The „Other Considerations“ Section of FS

1. Health and safety issues related to raw material (RM)
2. Environmental issues
3. Normative requirements related to mining/production, and use
4. Economic importance of RM for exporting countries
5. Social and ethical aspects
6. Research/development trends for low-carbon/green technologies
7. Other Research and development trends

Overview

Research and Development Trends

Guidelines and Agreements

Legislation and Compliance

Mining

Growing

Export

Processing

Use

End of Life

Environmental Impacts

Socioeconomic and Ethical Aspects

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Mining-related Accident Los Frailes, Spain

Source: Deutsche Welle

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Environmental Impacts of Mining/Growing

- Pollution of water, soil, air
- Destruction of ecosystems, landscapes
- Loss of Biodiversity
- Deforestation

Mining

Growing

Minerala mining, (illegal) small scale mining

Gold, tin, cobalt, tungsten, fluorspar …

Huge monoculture plantations

Natural teak, Sapele wood, natural rubber, …

Other Environmental Impacts

Life Cycle Assessments, Carbon Footprints, etc., of (mining/growing), processing, (use), EoL

Refining, production, disposal

Production of Li-ion batteries, disposal of lead-acid batteries in low-income countries, …

- Energy and water consumption
- Waste and emissions

Processing

Use

End of Life

Environmental Impacts

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Socioeconomic and Ethical Aspects

- Displacement of (indigenous) people
- Destruction of people's livelihoods
- Exploitation, slave work
- Corruption
- High dependence on exports
- Conflicts and crime

Mining

Growing

Share of exports in total export values (examples)

- Gold, Burkina Faso: 81 %
- Copper, Zambia: 74 %
- Iron ore, Mauretania, Australia: 55 %, 34 %
- Coking coal, Mongolia, Columbia, Australia: 28 %, 13 %, 12 %
- Cobalt, DR Congo: 22 %
- Natural cork, Bosnia Herzegowin: 15 %
- Platinum, South Africa: 13 %

Conflicts (examples)

- DR Congo, Westsahara (phoshate), Myanmar (Teak wood), …
- Citizens' resistance against mining in EU: Spain (feldspar), …
- Trade: China (REE, silicon (metal)

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Normative Requirements, Guidelines, Initiatives

- Responsible Mining Initiative
- Copper Mark Standards for responsible production practices
- Global Platform for Sustainable Natural Rubber, etc.

- EU Conflict Mineral Regulation: Tin, tantalum, tungsten, gold
- Forest Law Enforcement Governance and Trade (FLEGT)

Mining

Growing

Import

- REACH Regulation: SVHC, Annexes XIV, XVII
- CLP: Classification and labeling
- RoHS, ELV (Cd, Cr^{6+}, Hg, Cd, …)
- Minamata Convention (Hg)
- …

Processing

Use

End of Life

Occupational health and safety, emission/immission limits, waste legislation

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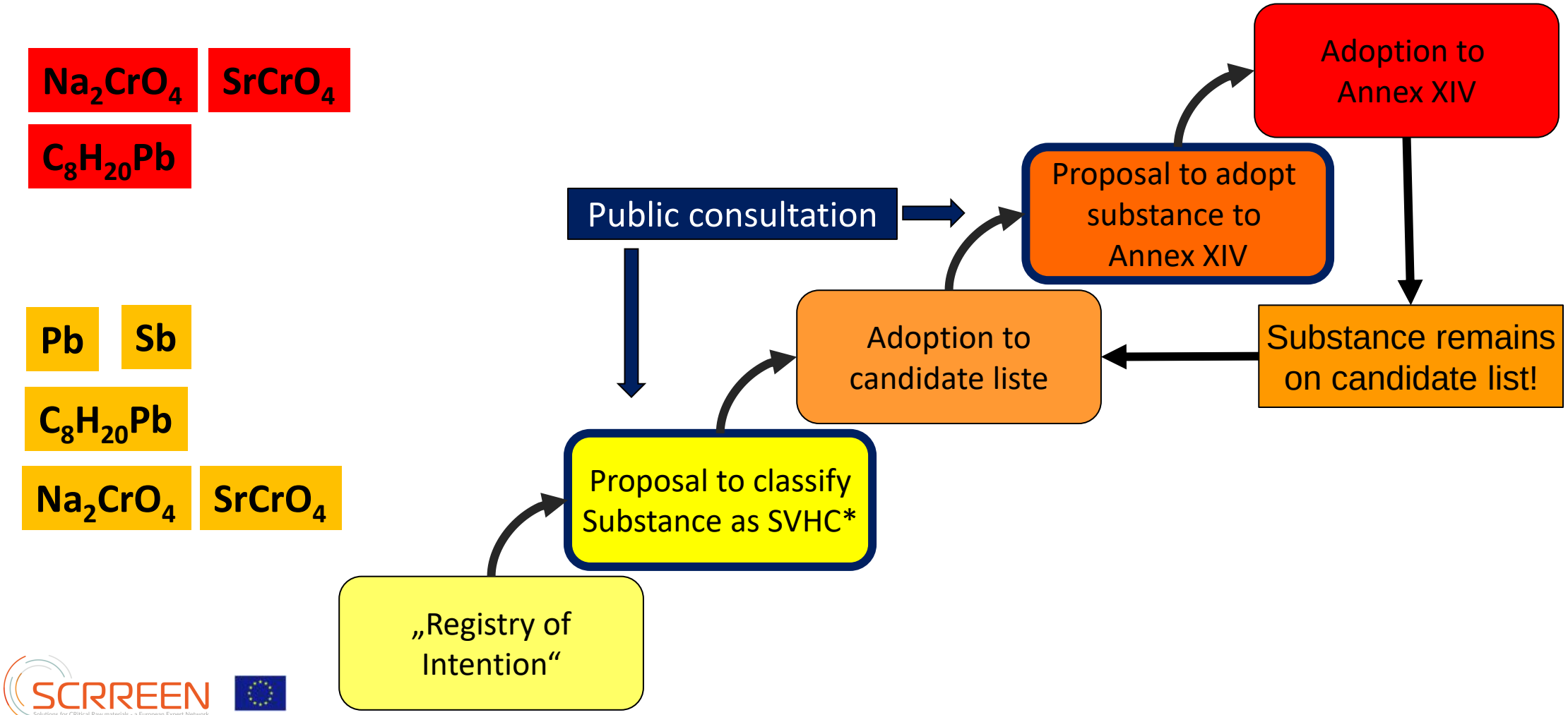
Criteria for Adoption to REACH Annex XIV

Substance is

- classified as carcinogenic, mutagenic or reprotoxic (CMR) category 1 or 2;
- (very) persistent, (very) bio-accumulative and toxic (PBT); or
- an endocrine disruptor

The Way to Annex XIV



Normative Requirements, Guidelines, Initiatives

- **Green Deal, Circular Economy Action Plan**

  → Sustainable Product Initiative

Mining

Growing

Import

Production

Use

End of Life

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EU Sustainable Product Policy: EcoDesign

Material Efficiency Indices for Energy-related Products

Recycled Content:

$$\frac{Mass\ of\ recycled\ materials\ in\ product}{Total\ mass\ of\ product}$$

Produktion

Repairability-Index

Use

End of Life

Recyclability-Index:

$$\frac{Mass\ of\ materials\ recyclable\ from\ product}{Total\ mass\ of\ product}$$

End-related Remark:

Thank you for your attention!