

Sustainable strategies for development cooperation to reduce dependency on critical raw materials: The roles of governments, businesses, and civil society

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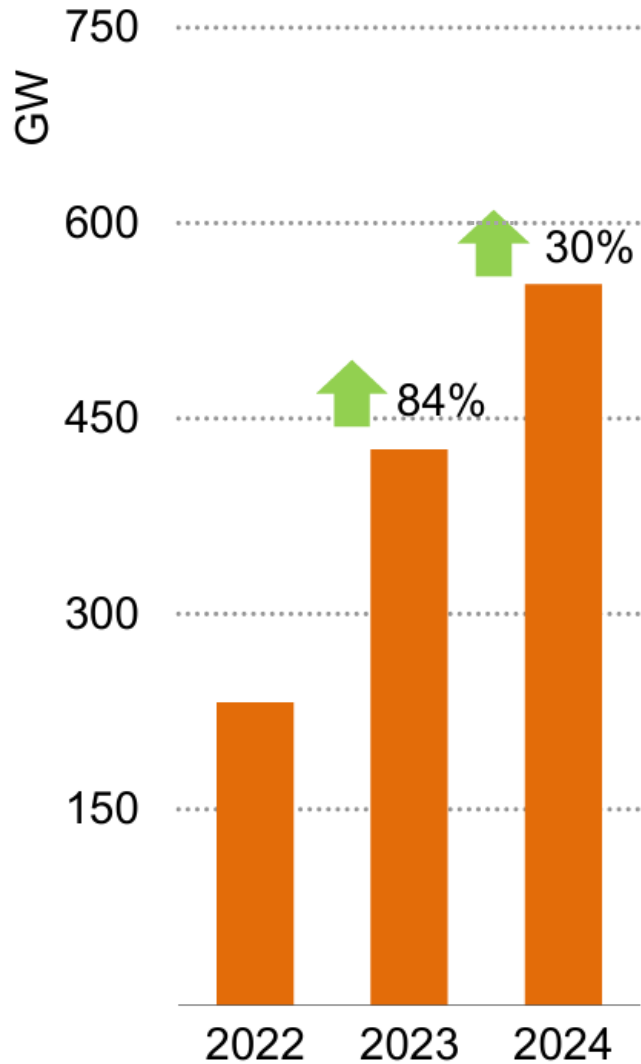


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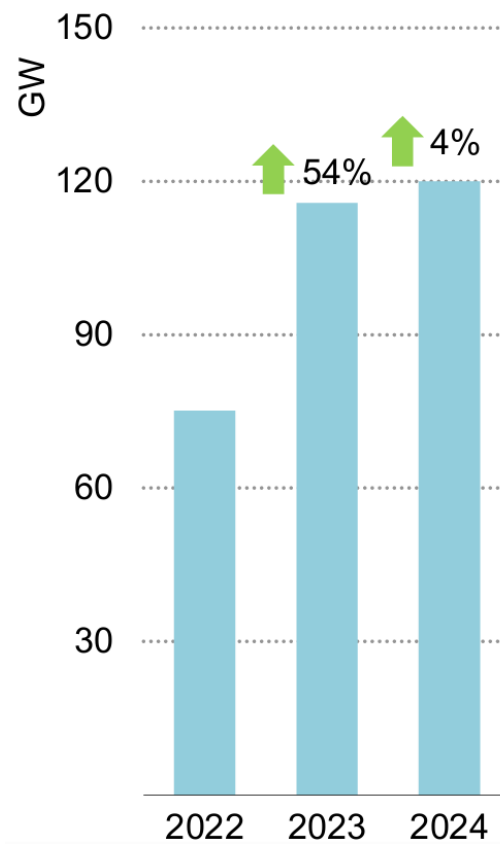


GREEN TRANSITION DEMANDS NEW TECHNOLOGIES

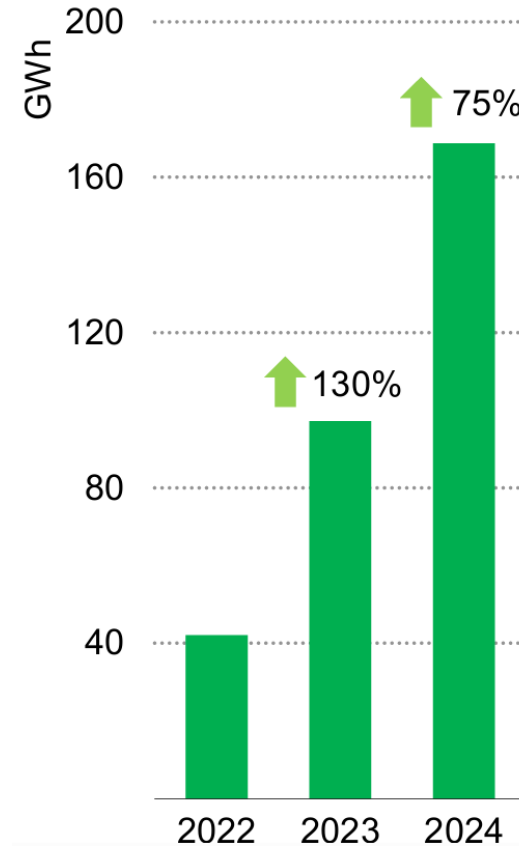
Solar PV



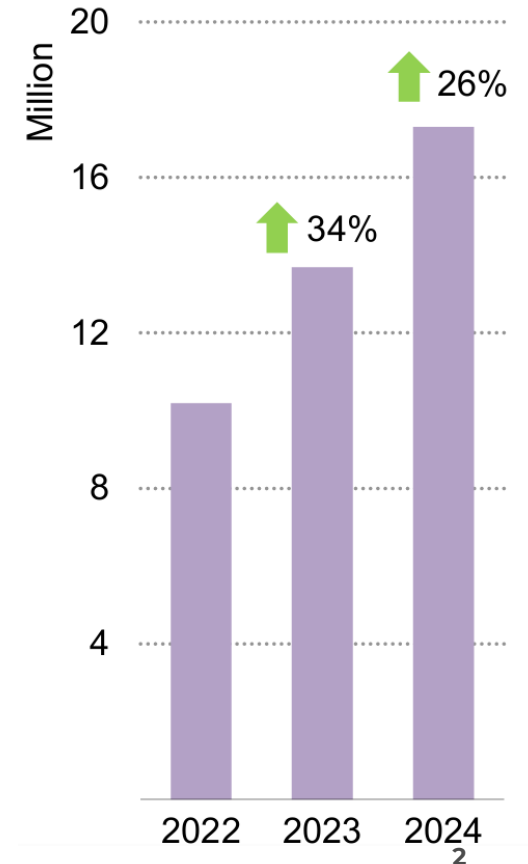
Wind



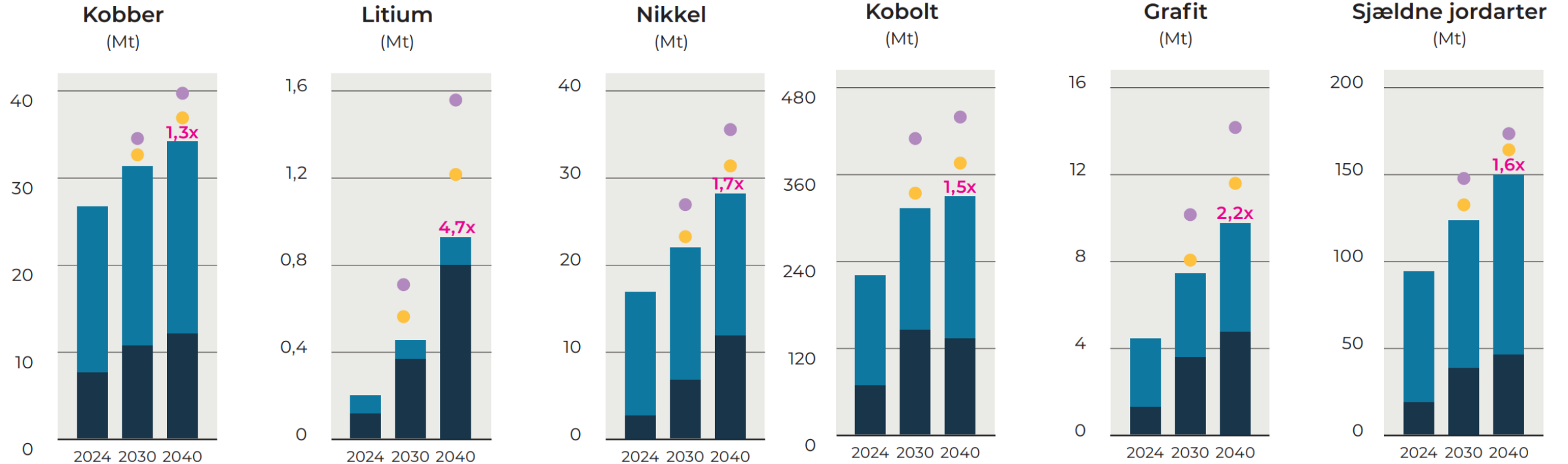
Battery storage



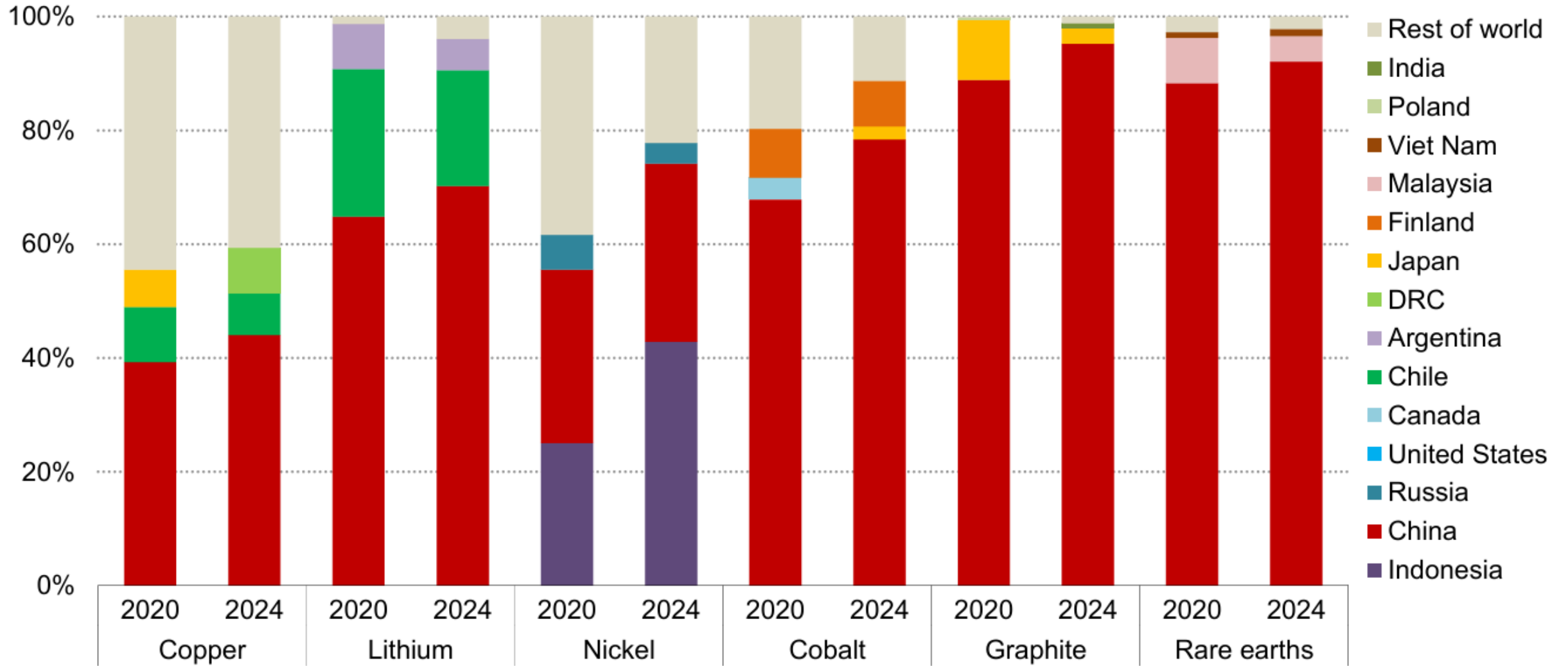
Electric cars



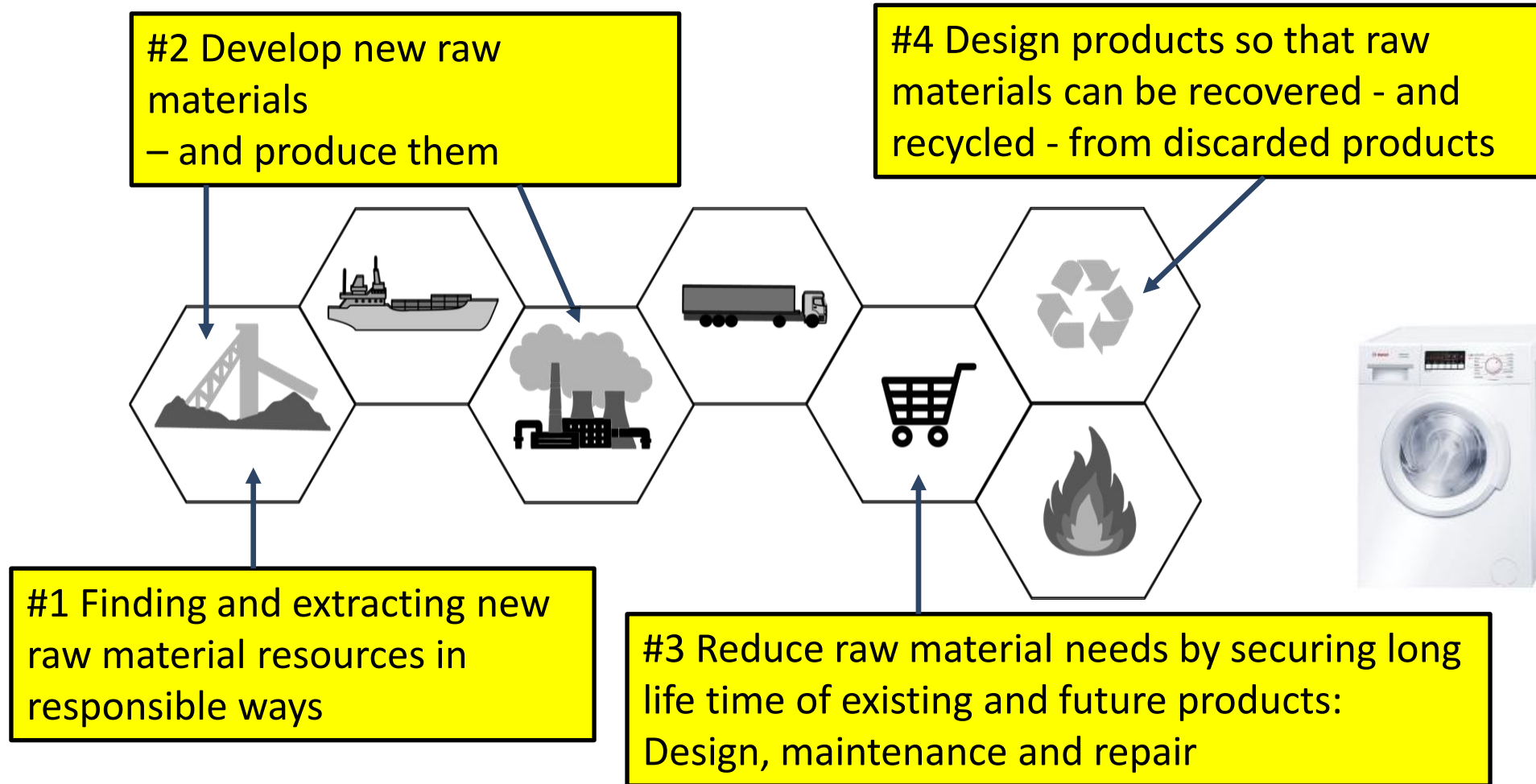
INCREASING DEMAND FOR CRITICAL RAW MATERIALS



CHINA DOMINATES MINERAL PROCESSING



FOUR ELEMENTS IN RAW MATERIAL STRATEGIES



BACKGROUND:

- EXPERT GROUP ON RAW MATERIALS IN DANISH SOCIETY OF ENGINEERS
- OWN RESEARCH

Anne Merrild Hansen , Head of Department, Department of Sustainability and Planning,

The Danish Center for Environmental Assessment, AAU Arctic

Per Kalvig , Mineral Geologist with expertise in critical raw materials and their supply chains.

Michael Søgaard Jørgensen , Associate Professor, Department of Sustainability and Planning, AAU

Louise Drue Andersen , Wind Segment Manager, Stena Recycling A/S

Tejs Vegge , Professor and Section Head for Autonomous Materials Development, DTU

Hamdi Ashur , Project Manager at COWI and member of IDA's executive board and leader of the group



#1 MINING AND SOCIAL CONDITIONS

- Forced relocation of people
- Contamination of agricultural land and water
- Social tensions around mines
- Health risks for workers and community
- New jobs and increased employment
- Increased investments in, for example, infrastructure, healthcare, crisis preparedness and schools
- Increased activity in relevant service industries

Recommendations:

- ✓ Introduce a Social Impact Assessment directive
- ✓ Demands to mining projects: Comply with international UN and OECD guidelines concerning indigenous people, humans rights and community involvement
- ✓ Ensure contributions to local development in mining areas: Employment. Health care, etc.

#2 AI AND MATERIAL INNOVATION

- Trial-and- error methods are inefficient and time-consuming.
- AI can be used to create more efficient materials
- AI can be introduced in the discovery phase of new material compositions
- AI can design materials in complex spaces, as well as test and improve material combinations

Recommendations:

- ✓ Create better access to venture capital for tech startups and spinouts of 3-7 million Euro per investment.

#3 PRODUCT LIFE TIME EXTENSION

- For every Dane, 22.4 kg of electronic waste is generated annually.
- By extending the life of products, the need for new materials can be reduced and values preserved.
- Mobile phones and televisions become **functionally obsolete**:
- *For every 10 new phones, 7-8 old ones are discarded.*
- White goods become **economically obsolete**:
- *35-45% of defective white goods are not repaired due to high inspection fees*

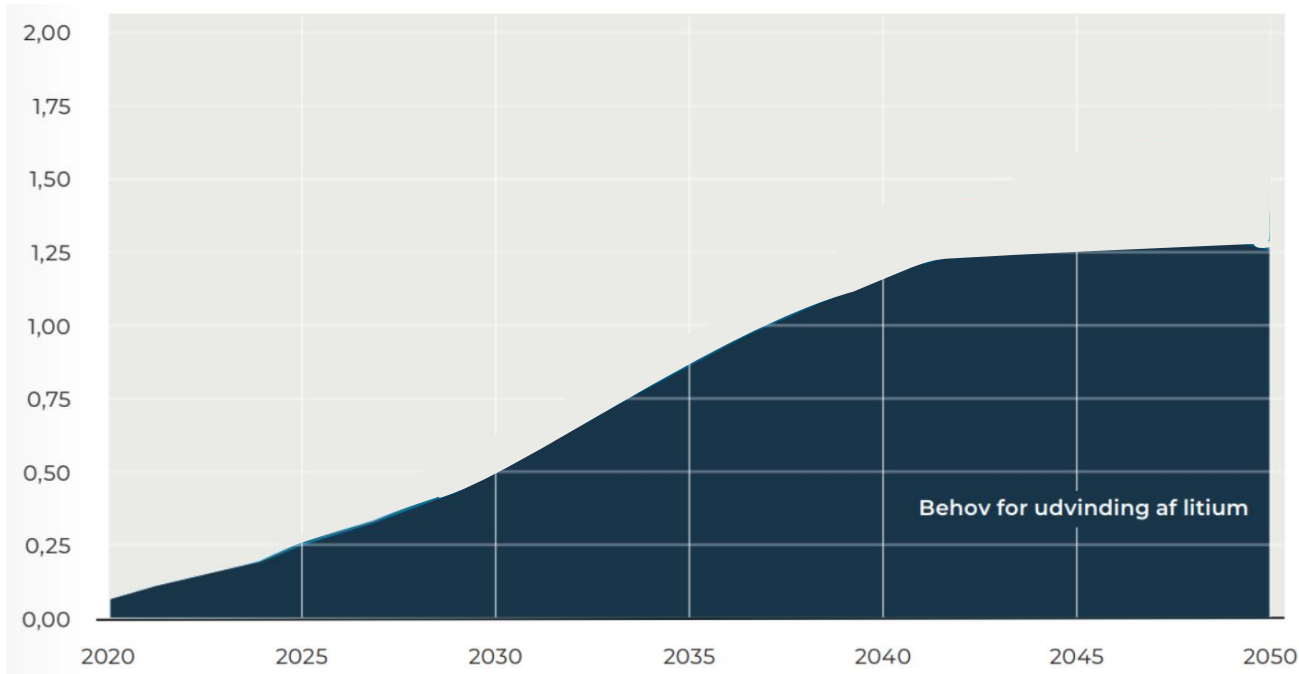
Risk of value destruction

- ✓ Inventory of products = economic value, resources and embedded climate impact:
- ✓ 9 million mobile phones, 2.5 million washing machines etc

Recommendations:

- ✓ Effective implementation of EU regulation
- ✓ Repair index including prices of spare parts
- ✓ Repair scheme as in France: Financing with funds from manufacturers and retailers => business options for local repair businesses
- ✓ Support civil society's repair initiatives

#4 WASTE RECYCLING



'Expensive' and 'dirty' recycled raw materials:

- ✓ Recycling a mobile phone only returns 2% of its climate impact
- ✓ Recycling a television only returns 3% of its climate impact
- ✓ Europe exports electronic waste to vulnerable countries

Recommendations:

- ✓ Create a strategy for Circular Economy with focus on **waste prevention**
- ✓ Introduce requirements in public procurement for **reused** products and **recycled** materials
- ✓ Strong national control with export of electronic waste and its processing

#5 SUMMARY

- Need for coordinated efforts between politicians, industry, NGOs and the research community
- Raw materials strategies should cover more than the construction sector
- Raw material strategy not just a question of new raw materials and increased supplies – important to preserve the value of current and future products
- Repair capacity and competence => Part of strategic autonomy

Recommendations:

- ✓ Create security for the financing of knowledge centers for raw materials
- ✓ Develop national raw material strategies using the four raw materials strategies
- ✓ Strong control with local and international mining projects