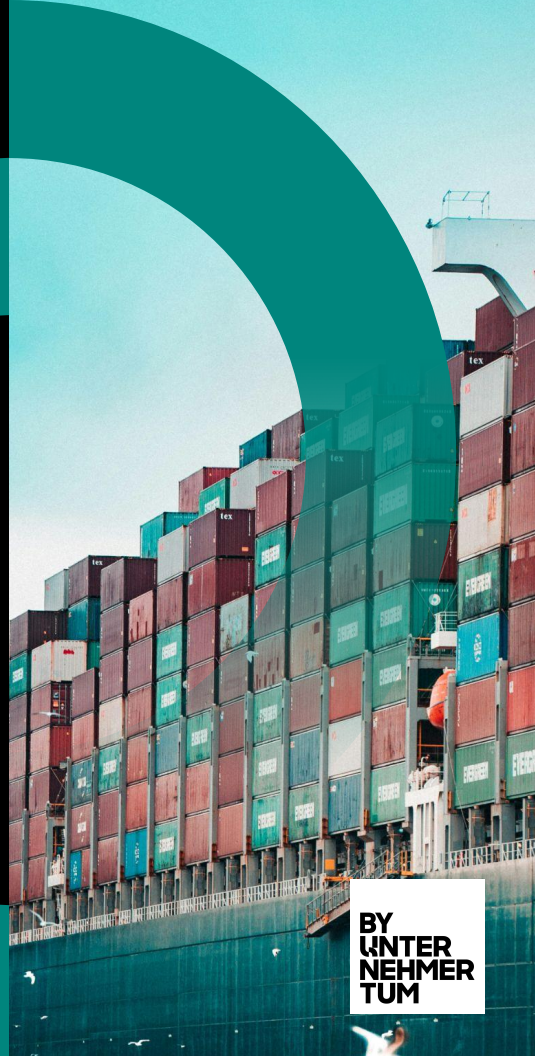
CIRCULAR REPUBLIC

What is Value in a Circular Economy?

POLYPROBLEM-Camp 2026 |
5 November 2026, Berlin



Together, we turn circularity into business reality

UNTERNEHMER TUM



As a Munich-based non-profit and part of UnternehmerTUM, **Europe's leading center for innovation and business creation**, CIRCULAR REPUBLIC leverages a unique ecosystem of 300+ corporates, 1,000+ startups, as well as researchers and investors. Backed by more than €2bn in venture capital invested annually, UnternehmerTUM brings together the capabilities, technologies, and infrastructure required to enable circular solutions at scale.

Transformation

CIRCULAR REPUBLIC enables organizations to develop a strategy that anchors circular economy at their core.

As part of a modular, needs-based program, internal teams of changemakers are built and equipped with the capacities, tools, and alignment needed to drive this transformation independently.

Co-Innovation

Circular value chains require collaboration across companies and industries.

As a neutral orchestrator, CIRCULAR REPUBLIC brings together industry leaders and further stakeholders from tech, academia and politics, to develop, test and scale solutions that no organization could build alone.

Ecosystem

Transformation accelerates when progress becomes visible - within companies, across industries, and on public stages.

Through different ecosystem formats, joint publications and partner storytelling, CIRCULAR REPUBLIC connects relevant actors, showcases success stories and inspires others to act.

In der heutigen Session

Impuls

- **Wie** sich das **Narrativ** verändert (für uns) hat…
- Warum Circular Economy kein **Selbstzweck** ist

Gruppenarbeit

- Welchen **Wert** schafft die CE, wer trägt die **Kosten**, und wie schließen wir die **Lücke**?



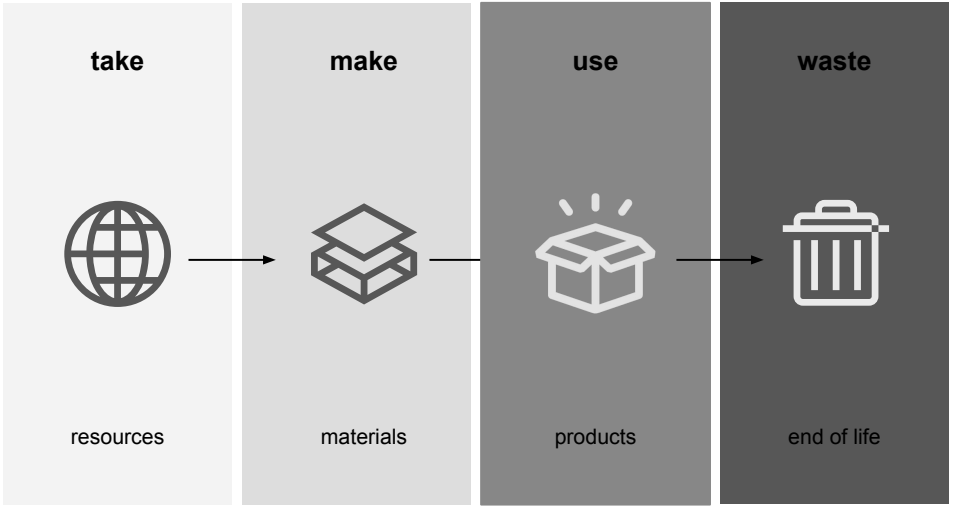
Take → Make → Use → Waste



Take → Make → Use → Waste



Unsere Wirtschaftsweise bringt den Planeten an seine Grenzen: Wir entnehmen, produzieren, nutzen und werfen Ressourcen weg.



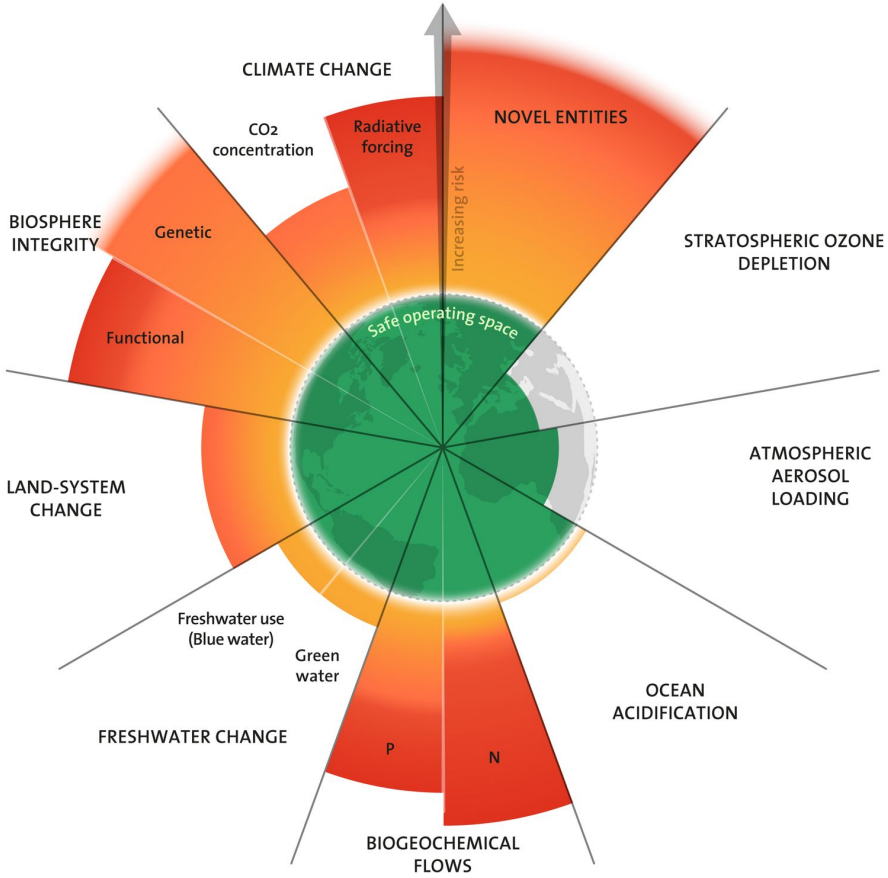
55% **of greenhouse gas emissions** caused by **resource extraction**

90% **of biodiversity loss** caused by **resource extraction**

Source: IRP Global Resources Outlook 2024

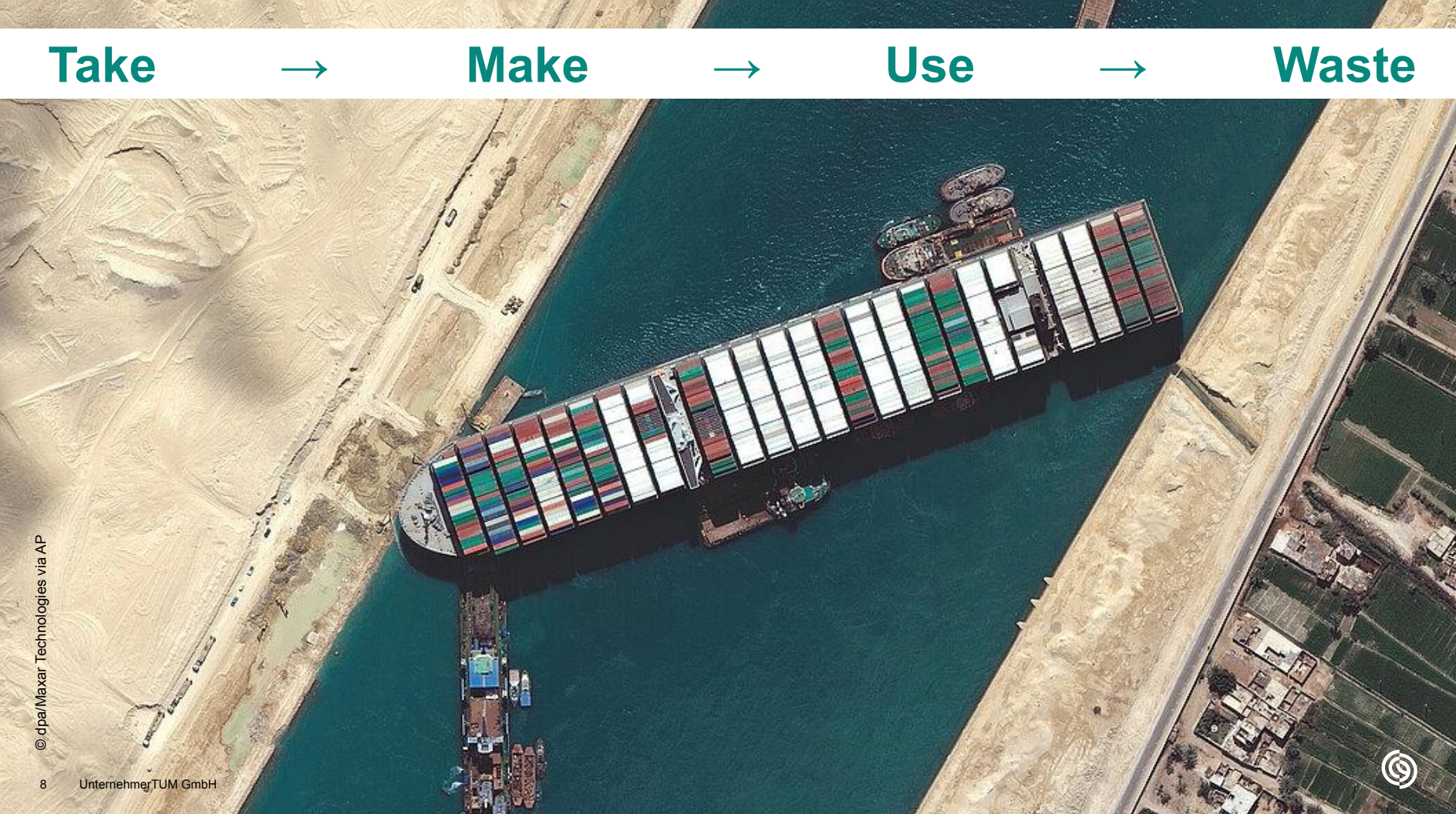
Der Ressourcenverbrauch erreicht in hohem Tempo die Belastungsgrenzen des Planeten.

Circularity kann ein Ausweg sein.



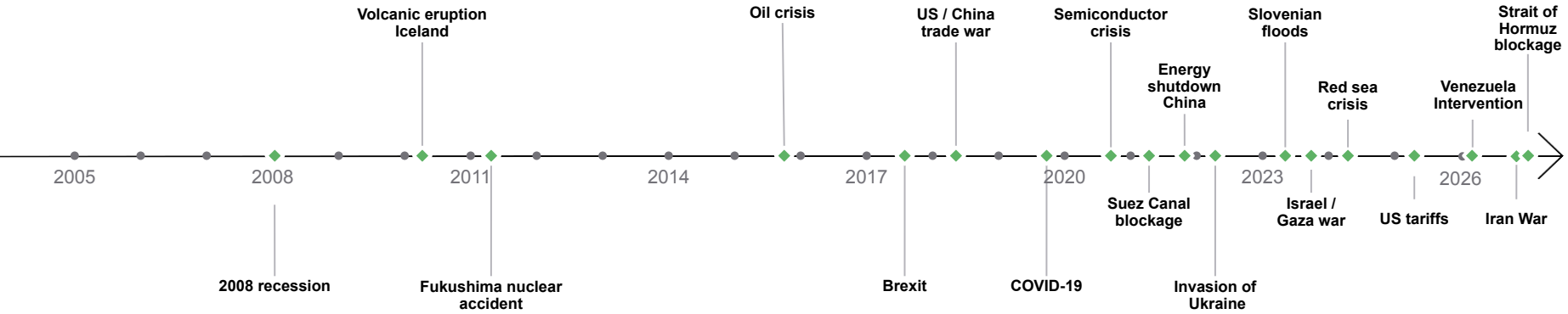
Sources: Stockholm Resilience Centre (2023); International Resource Panel - Resource Outlook (2019); United Nations (2017); Potsdam Institute for Climate Impact Research; World Food Program; European Commission (2021)

Take → Make → Use → Waste



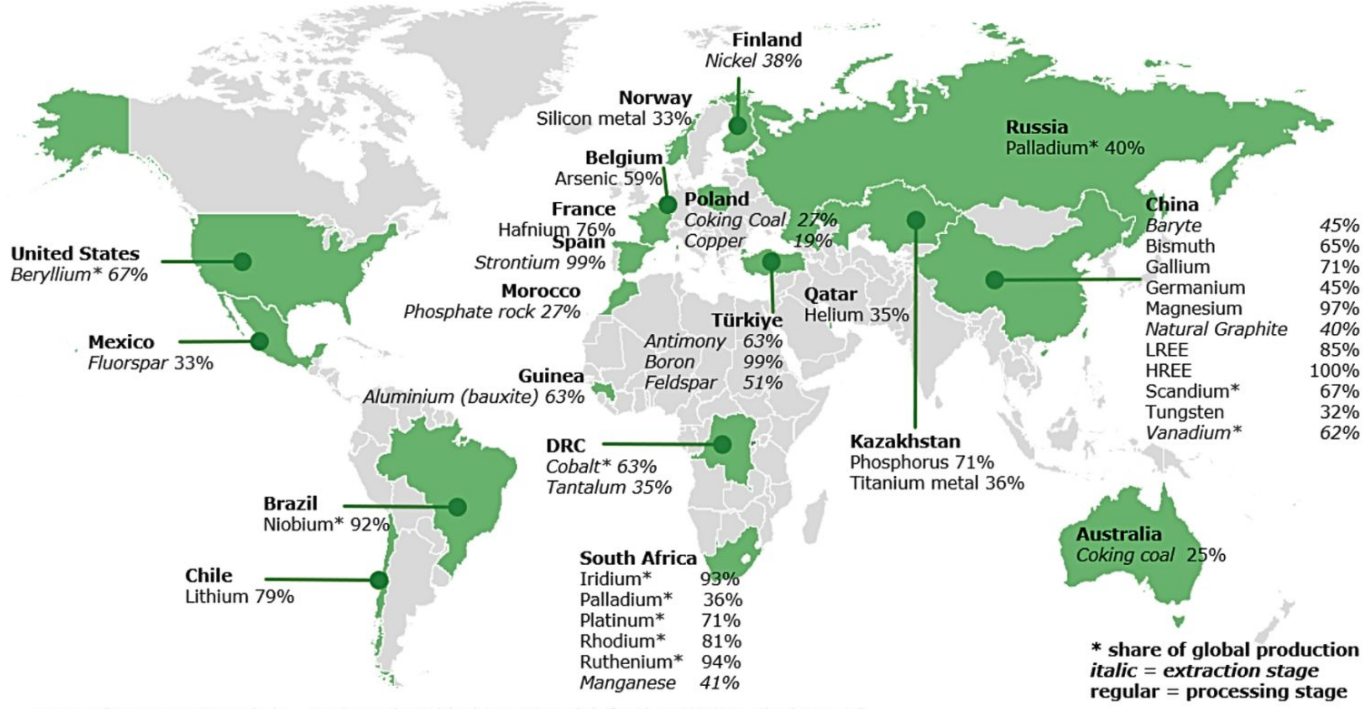
© dpa/Maxar Technologies via AP

Das Zeitalter der Polykrisen ist da,
und Europa ist darauf nicht vorbereitet.



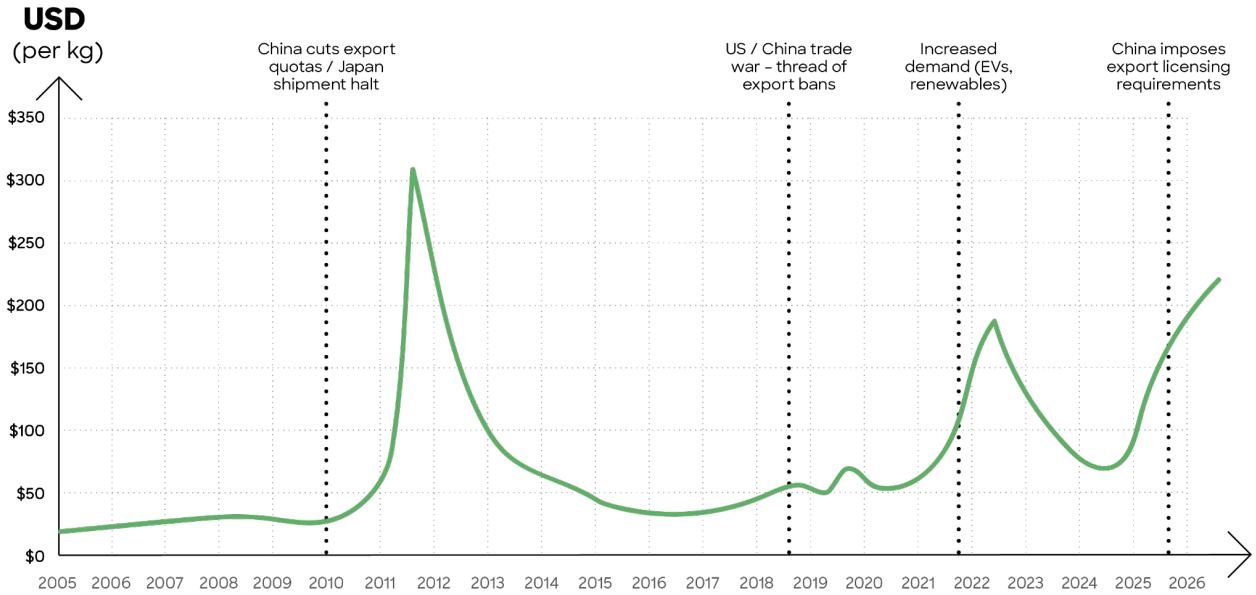
→ **Geopolitical crises with severe economic fallout are becoming more frequent and more extreme**

Europa ist bei kritischen Rohstoffen von Importen aus aller Welt abhängig



Source: "European Commission, Study on the Critical Raw Materials for the EU 2023– Final Report"

Die Abhängigkeit bei kritischen Rohstoffen macht Europa zum Spielball der Großmächte.





Neodymium (Nd)

> 85%

Import dependency on China for LREE. Essential for permanent magnets used in E-Motors and wind turbines.

Data Source: Strategic Metals Invest, "Neodymium Prices, Charts & Forecast,"; CIRCULAR REPUBLIC (2025) – Closing the Loop on REE Magents

Beispiel Case Study | Total material risk can be calculated to up to 1,600 EUR per vehicle

Battery

Costs	~10,000 €
Costs of critical materials	~ 7,500 €
Additional costs	~ 975 €

Electric engine

Costs	~ 900 €
Costs of critical materials	~ 470 €
Additional costs	~ 60 €

Fuel cell

Costs	*~ 10,000*
Costs of critical materials	*~ 6,700 €*
Additional costs	*~870 €*

Wire harness

Costs	~ 1,200 €
Costs of critical materials	~ 460 €
Additional costs	~ 55 €



Total opportunity for CE between

1,300€ - 1,600€

per car

Metals

Costs	~ 2,550 €
Costs of critical materials	~ 1,870 €
Additional costs	~ 245 €

Aluminium rims

Costs	~ 600 €
Costs of critical materials	~ 340 €
Additional costs	~ 45 €

Plastics

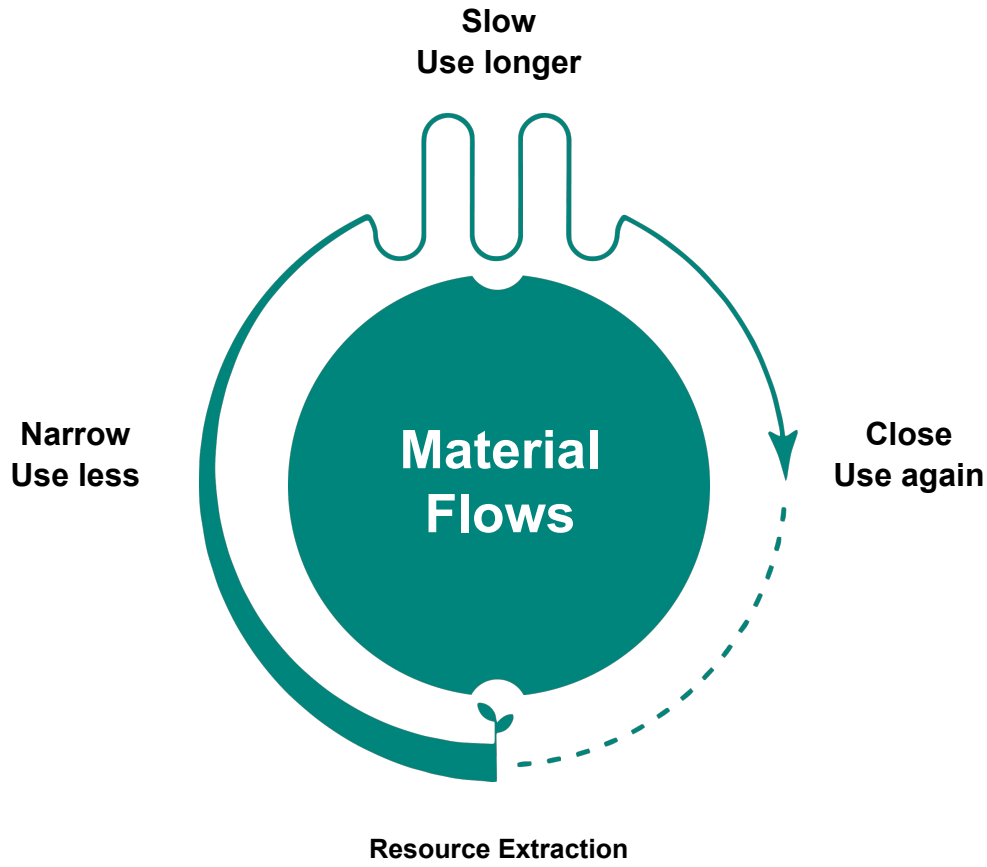
Costs	~ 225 €
Costs of critical materials	~ 70 €
Additional costs	~ 10 €

Semiconductors

Costs	~ 800 €
Costs of critical materials	~ 320 €
Additional costs	~ 40 €

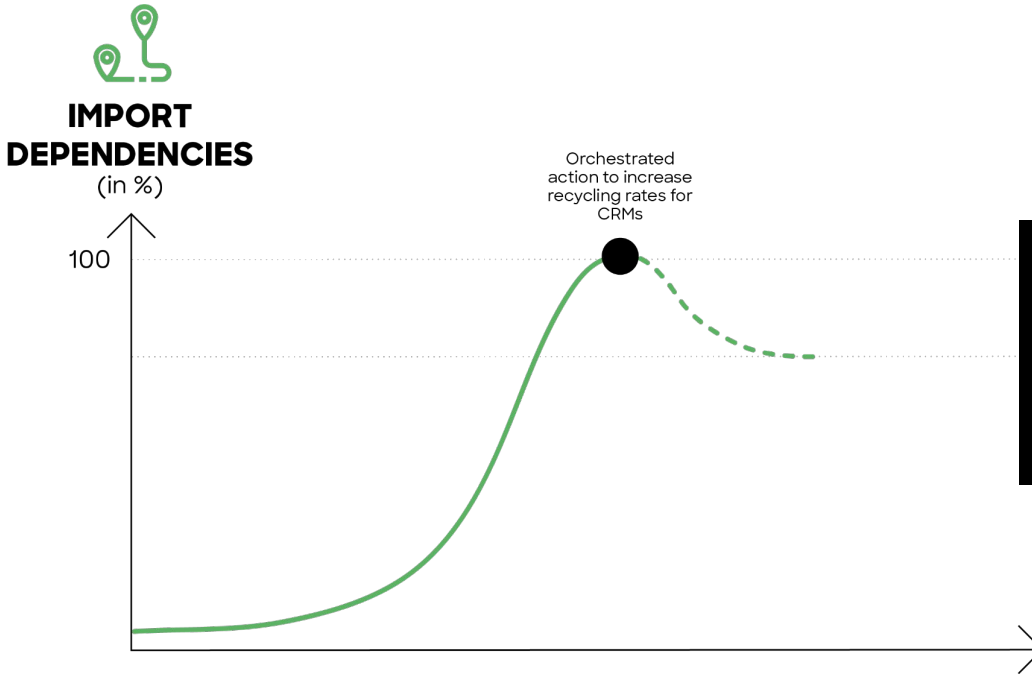
[1] Indicative for the event of a US – China conflict
Source: Porsche Consulting

Abhängigkeit von Primärrohstoffen UND **Umweltbelastung** lassen sich verringern, wenn wir **lokale Kreisläufe schließen**



Source: Based on Konietzko et al. 2020; Morseletto 2020

Kreislaufwirtschaft ist ein Absicherungsmechanismus gegen Liefer- und Preisrisiken.



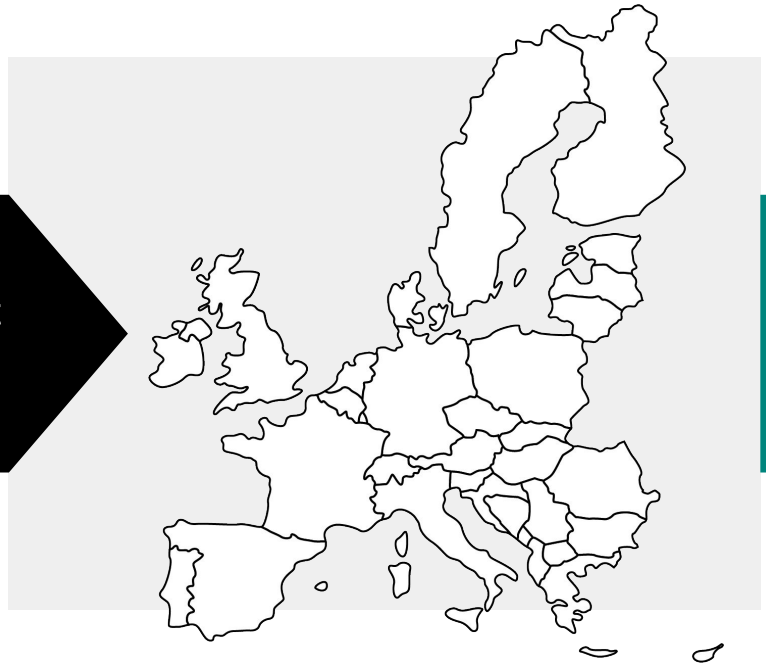
Potential of reducing the dependency on critical supply chains by up to

25%

Data Source: Critical Raw Materials Act, European Council, 2025

Und wir verlieren Rohstoffe: Am Beispiel der Permanentmagneten sieht man, wie jedes Jahr Tonnen wertvollen Elektroschrotts verloren gehen.

Importing Risk
16.000 tons of permanent magnets imported from China in 2021



Giving away value
Recycling rates for REE magnets are **< 1%** and large amounts are exports in form of e-waste

Data Source: CIRCULAR REPUBLIC (2025) – Closing the Loop for REE Magnets
Iattoni, G., et al. (2025) – 2050 Critical Raw Materials Outlook for Waste Electrical and Electronic Equipment in the European Union
EIT Raw Materials (2021) – Rare Earth Magnets and Motors

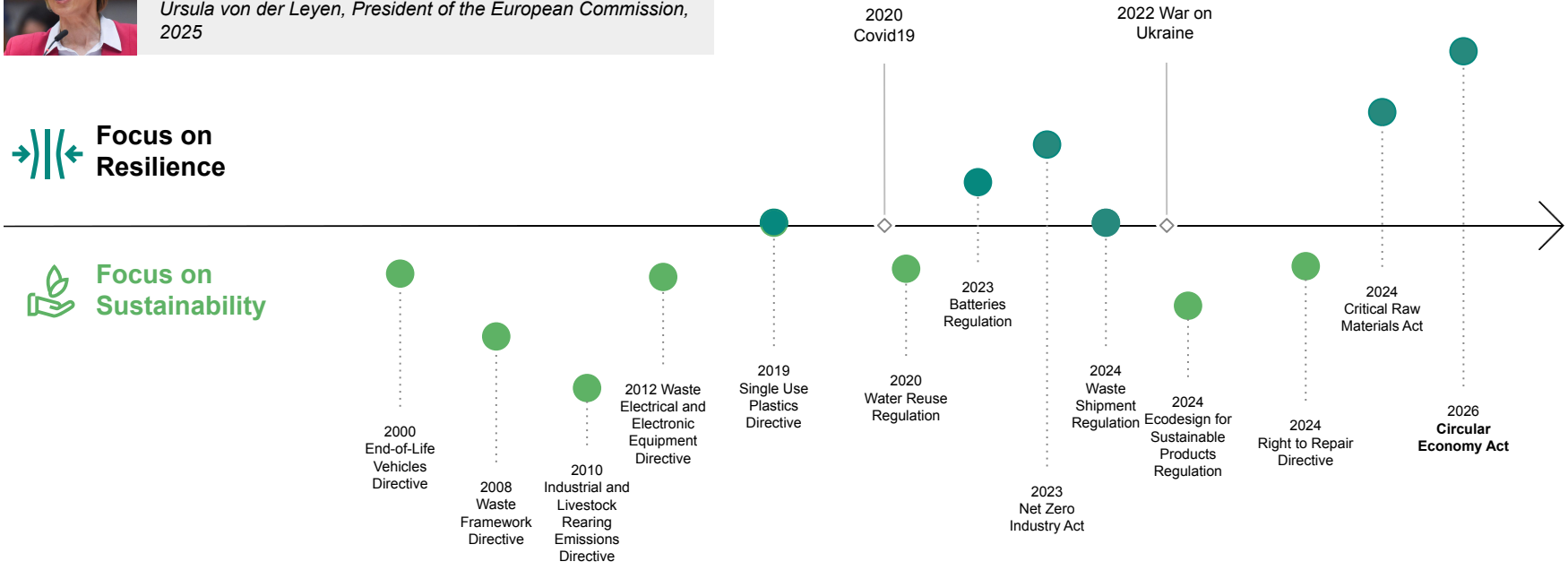
Take → Make → Use → Waste



Der Fokus der Gesetzgebung verschiebt sich von Nachhaltigkeit zu Resilienz



*"[...] we need a paradigm shift on **circular economy.**"*
Ursula von der Leyen, President of the European Commission, 2025



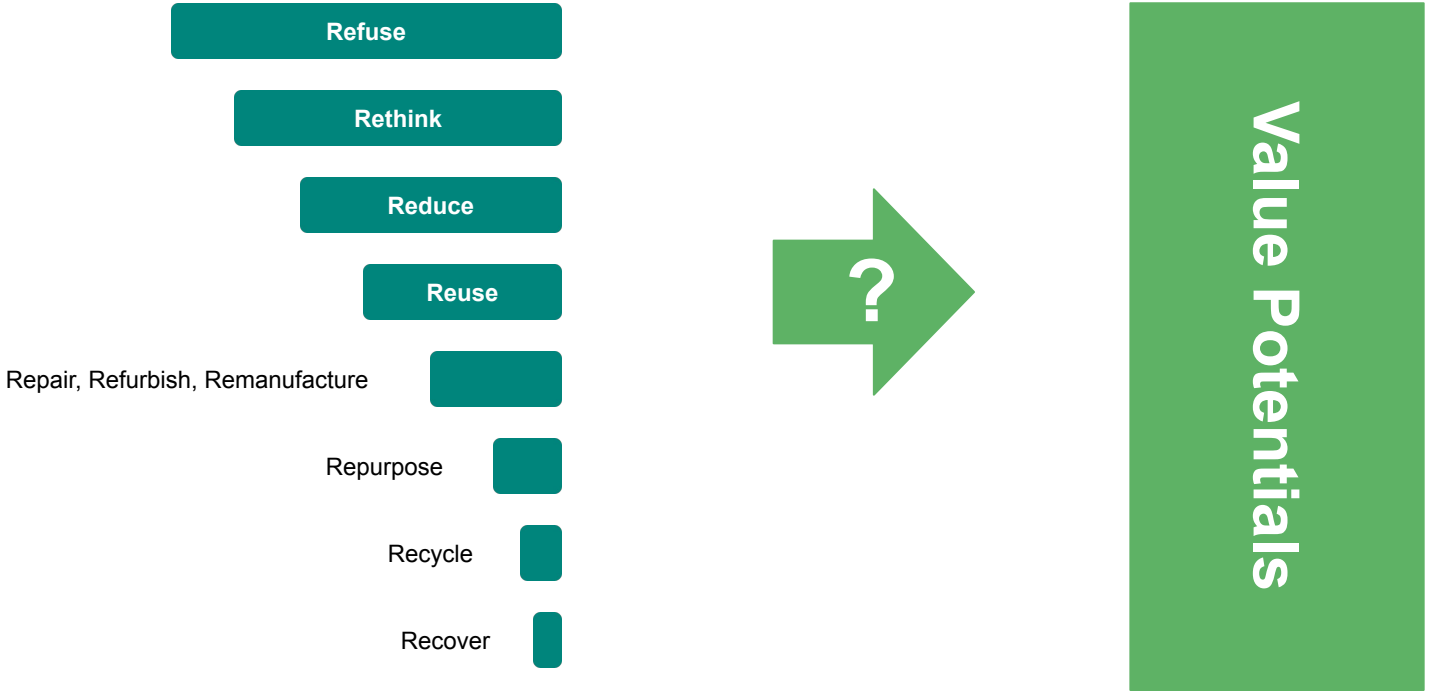
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Wertepools der Kreislaufwirtschaft: Wo echte Geschäftschancen verborgen liegen.

Kreislaufwirtschaft ist ein Mittel zum Zweck: Sie eröffnet Chancen für nachhaltige Wertschöpfung.



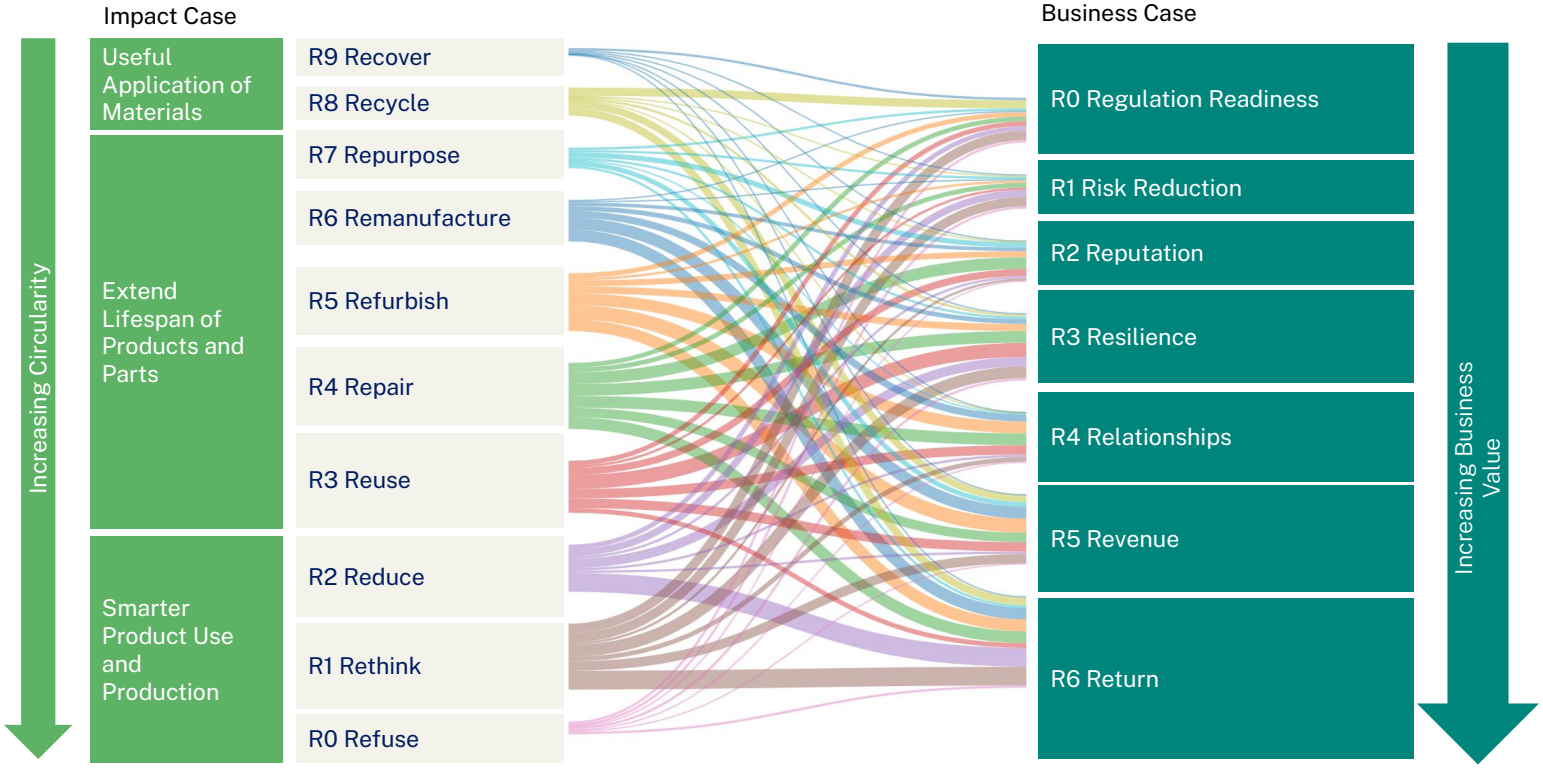
Wir müssen das Wertpotenzial der Kreislaufwirtschaft klar verstehen.



Welchen Wert schafft Circular Economy in eurer Organisation?



Kreislaufmaßnahmen tragen auf vielen Wegen zu den strategischen Zielen eurer Organisation bei



 Source: Binder & Braun 2025

Gruppenarbeit: Nehmt einen Fall aus eurer eigenen Arbeit. Wer trägt die Kosten, und wer bekommt den Wert?



Drei Fragen zu eurem Fall

1. **Wer trägt die Kosten, damit es funktioniert?**
2. **Wer bekommt welchen Wert (R0–R6)?**
3. **Wer bekommt Wert, ohne zu zahlen, und wie ließe sich das ändern?**



17 Minuten

Wo ist die größte Lücke in eurem Fall?



7 Minuten

Teilen im Plenum!

Let’s keep in touch.



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