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## Materials for the European Green Deal

Wie innovative Materialien zu Klimaneutralität führen können



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## Materials to RePowerEU

Innovationen für die Wasserstoffwirtschaft

# Materials

# Technologies

# Sectors

Supply Risk  
(sorted largest to smallest)

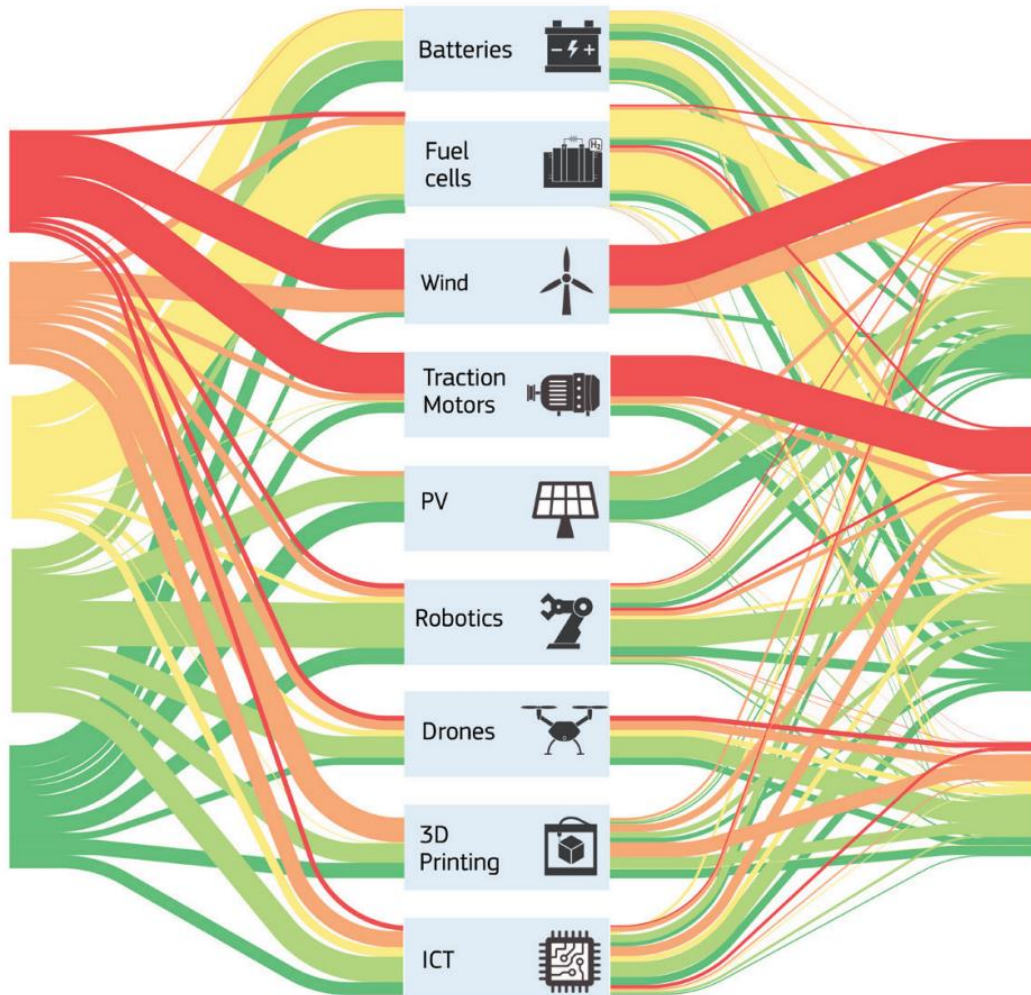
Very high	LREEs HREEs
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High	Magnesium Niobium Germanium Borates Scandium
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Moderate	Strontium Cobalt PGMs Natural graphite
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Low	Indium Vanadium Lithium Tungsten Titanium Gallium, Hafnium Silicon metal
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Very low	Manganese Chromium Zirconium Tellurium Nickel, Copper
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Renewables

e-mobility

Defence & Space



# Impuls 1: Chemistry matters !!

# Critical Raw Materials for the EU

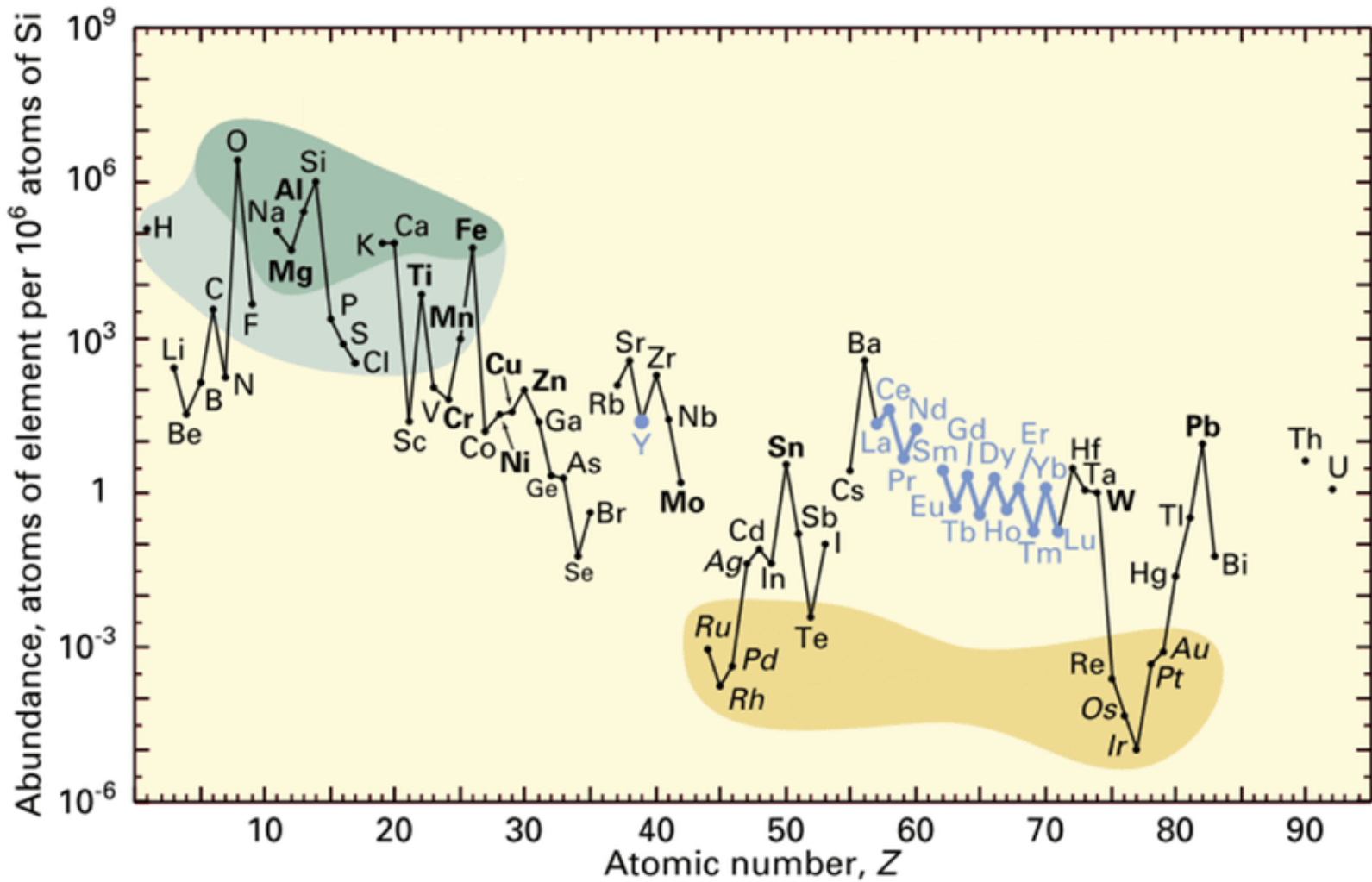
(reported by the European Commission)

1	1	H	2																	18	He
2	Li	Be											13	B	C	N	O	F		17	Ne
3	Na	Mg	3	4	5	6	7	8	9	10	11	12	Al	Si	P	S	Cl				Ar
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br				Kr
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I				Xe
6	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At				Rn
7	Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts				Og
			La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu				
			Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr				

- Listed as CRMs in 2011
- Listed as CRMs in 2014
- Listed as CRMs in 2017



# Impuls 2: Die Welt ist ungerecht

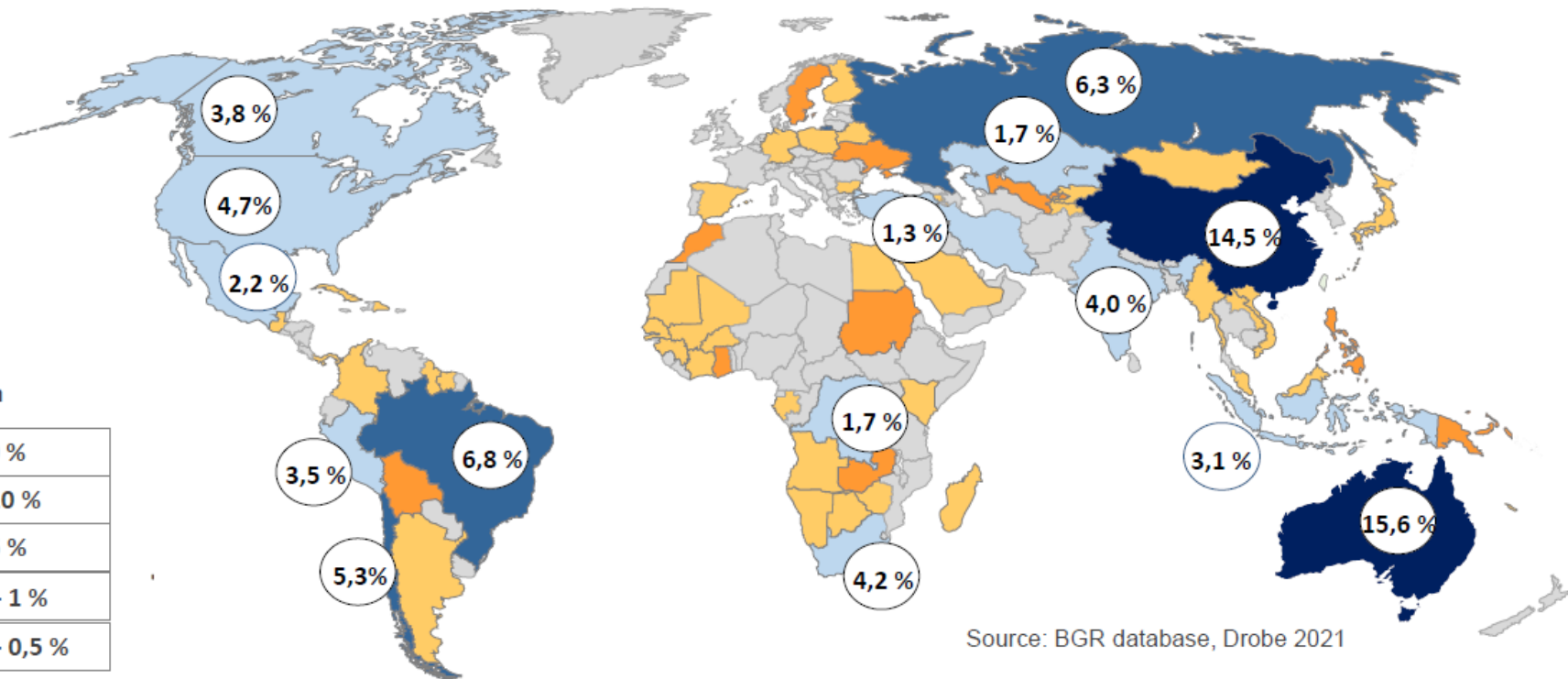




# Impuls 3: Mining ≠ Refining



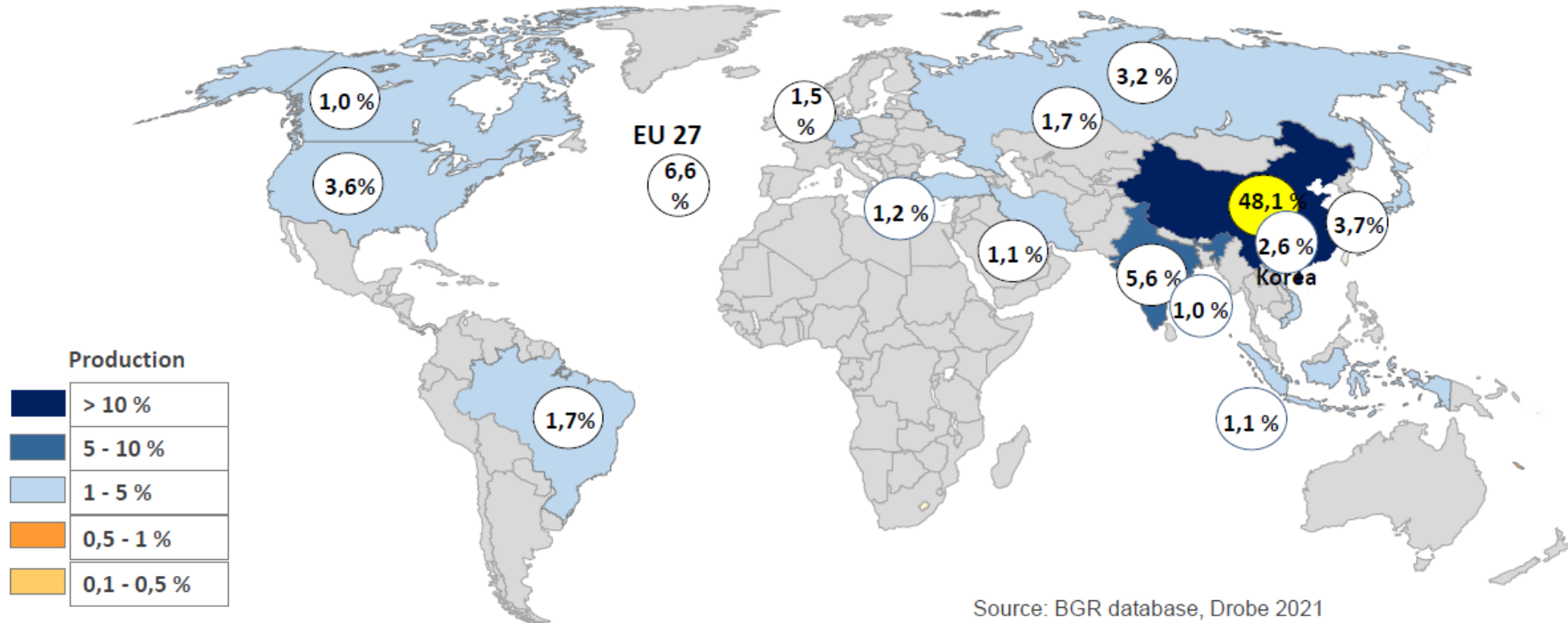
# Global Mining Capacities







# Global Refining Capacities



Source: BGR database, Drobe 2021

2024

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