

UNEXMIN

AN AUTONOMOUS UNDERWATER EXPLORER FOR FLOODED MINES

UNEXMIN
THE STORY YOU'RE NOW ALL A PART OF

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INSTEAD OF THE INTRO...

- WHERE THEY RIGHT?



BACKGROUND

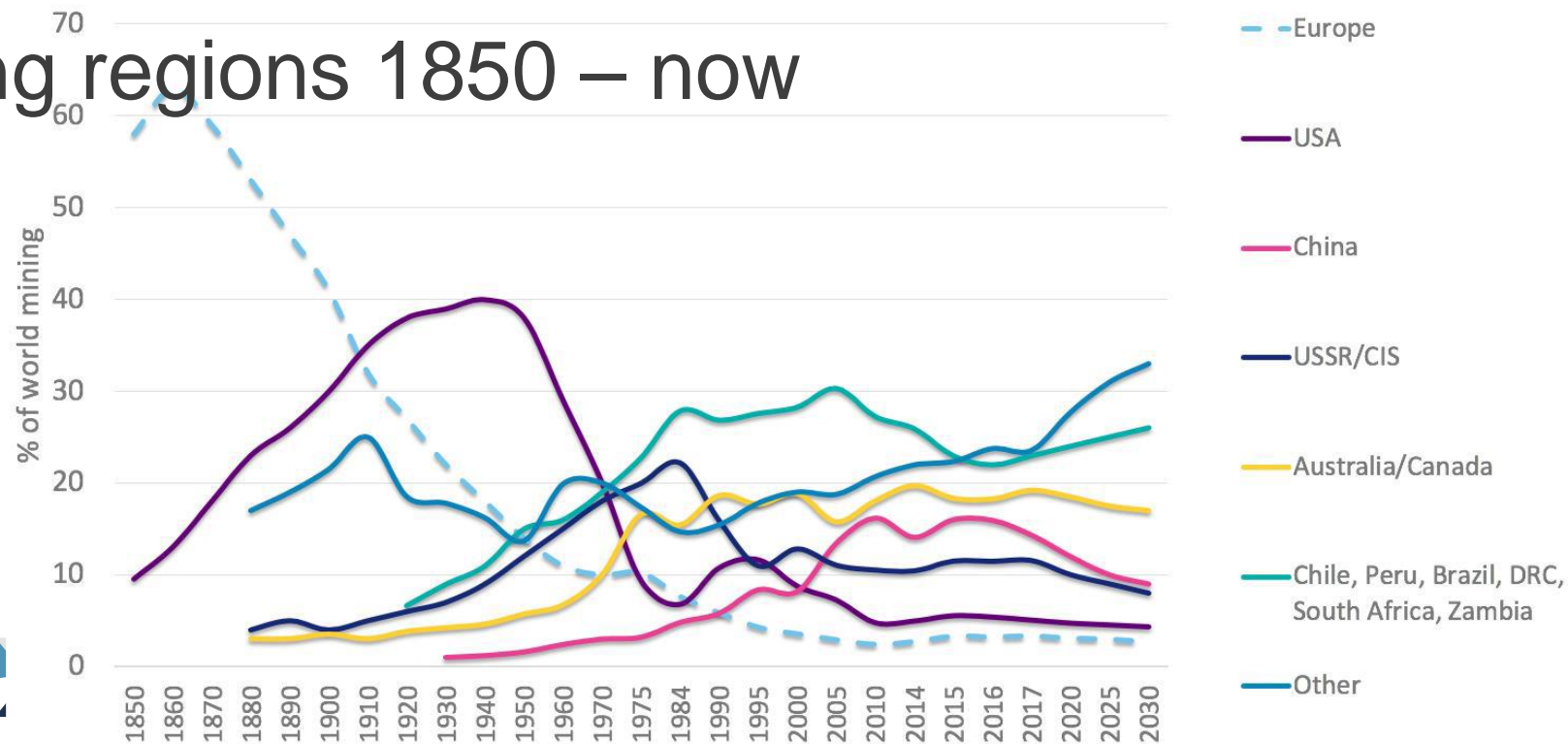
- WHY?
- HOW?
- WHERE?

WHY?

Historical aspect

- Europe's strong mining tradition & dependent industry

- Mining regions 1850 – now



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WHY?

- European economy is one of the biggest consumers of the raw materials (RM), but at the same time exploits only a small portion of commodities it needs to sustain the economy and jobs (indirectly 1 million jobs depend on mining industry)
- Despite the fact that the Europe needs the RM for the energy transition and minimising climate crisis, it tackles the challenge of RM too slowly

WHY?

Canada – Co, Pd, Ge
USA – REE, Te

Canada
Co Pd Ge
USA
REE Te

Chile/Argentina – Li

Chile
Li
Argentina
Li

Finland – Ge
Sweden – Te

Finland
Ge
Sweden
Te

DRC – Co
Zimbabwe – Pt
RSA – Pt, Pd, V

Democratic Republic of the Congo
Co
Zimbabwe
Pt
South Africa
Pt Pd V

Russia – Pt, Pd, V
Kazakhstan – Ga
Japan – In, Te
Korea – Ga, In
PRC – REE, Ge, Ga, In, Co, V

Russia
Pt Pd V
Kazakhstan
Ga
Japan
In Te
Republic of Korea
Ga In
China
REE Ge Ga In Co V

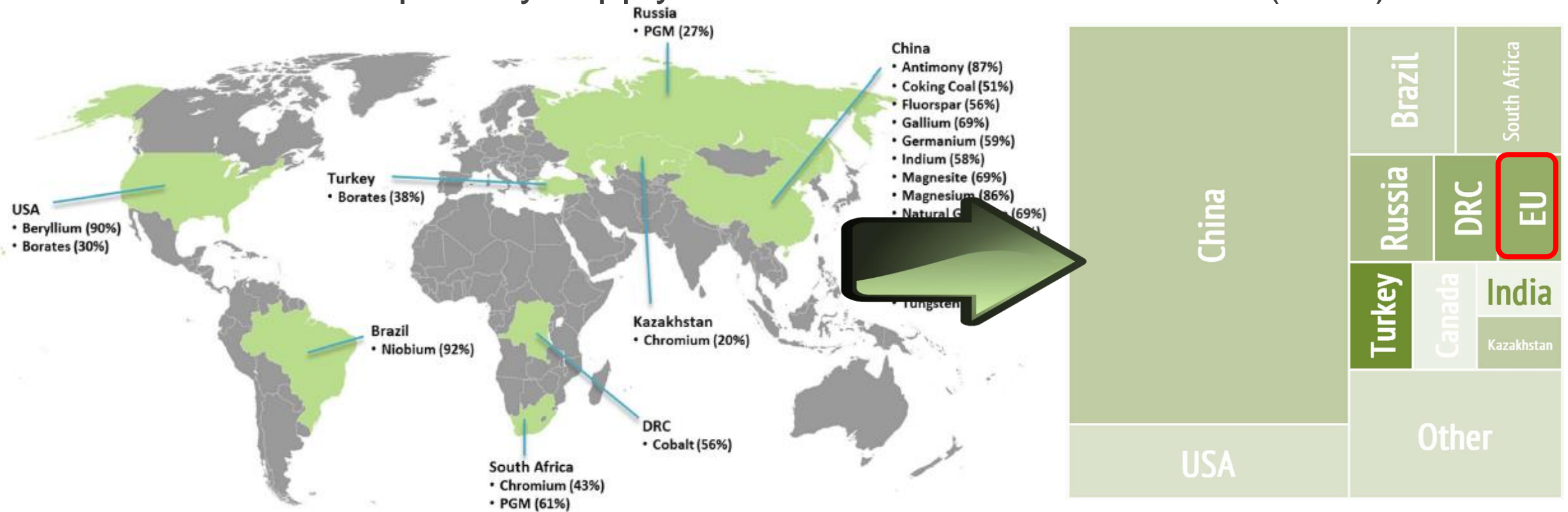
Australia – REE, Li

Australia
REE Li

Source: <http://energiesysteme-zukunft.de>

WHY?

World primary supply of the 20 critical raw materials (2014)



Commodity Table

- **Coking Coal**
- **Natural Graphite**
- **Natural Rubber**

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo

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



HOW?

- How to access the potential of the (partially) flooded mines?
- UNEXMIN developed a solution → UX-1 robot... more on that in later presentations.



CONCLUSION

- Going back to the first slide... were the Pink Panther and his friend right? Is the development representing a threat to the modern society?
- YES, if we stick to the current „Brown economy“...
- NO, if we manage to successfully transit to the „Green economy“...



CONCLUSION

So, which path will we choose?

CONCLUSION

**Thank you and enjoy the
UNEXMIN conference!**

(& prepare your swimming suits!)

Marko Komac, EFG



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INVITED SEPAKERS

- **Daniel Cios**, DG GROW; Topic: *European policy context (Policymakers)*
- **Marcin Sadowski**, EASME; Topic: *Aim of the call of proposal (Policymakers)*
- **Helmut Mischo**, TU Freiberg; Topic: *Future exploration in mining*
- **Norbert Zajzon**, Uni Miskolc; Topic: *UNEXMIN- Aim and outcomes of UNEXMIN project*
- **Claudio Rossi**, UPM; Topic: *ROBOMINERS*