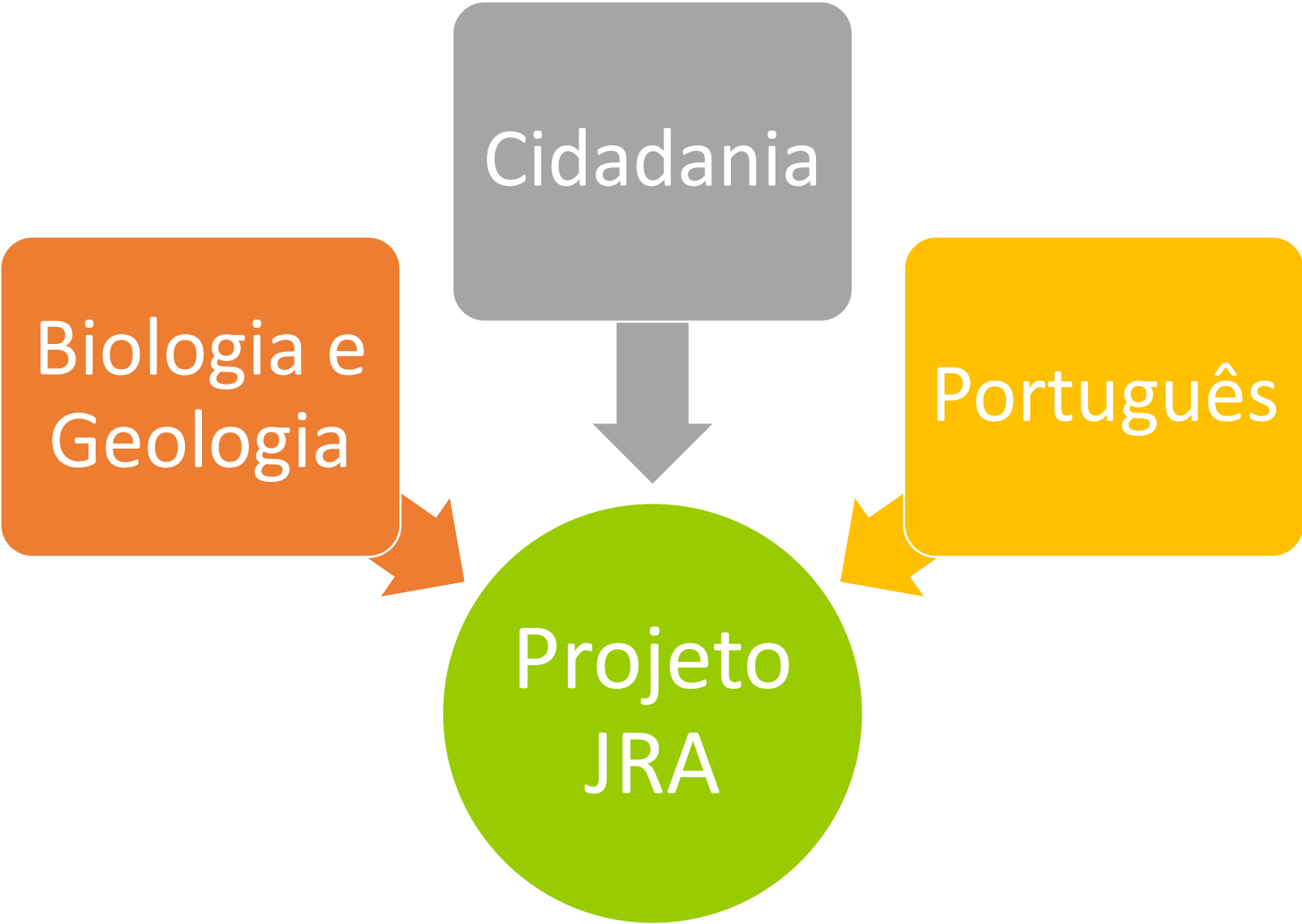




Agrupamento de Escolas  
São João do Estoril

The brochure cover features a green and white color scheme. On the left, a large white speech bubble contains two circular images: the top one shows a rural landscape with trees and a stone building, and the bottom one shows a person working with pottery. Below these images, the text reads: 'INVESTIGAÇÃO', 'JORNALISMO', 'SUSTENTABILIDADE', and 'REPORTAGEM'. On the right, there is a logo of a person holding a globe, the text 'Jovens Repórteres para o Ambiente', the title 'SEMINÁRIO nacional' in large blue letters, a graphic of green speech bubbles, and the event details: 'FUNDÃO', '17, 18 e 19', 'NOVEMBRO', and '2023'.



Cidadania

Biologia e  
Geologia

Português

Projeto  
JRA



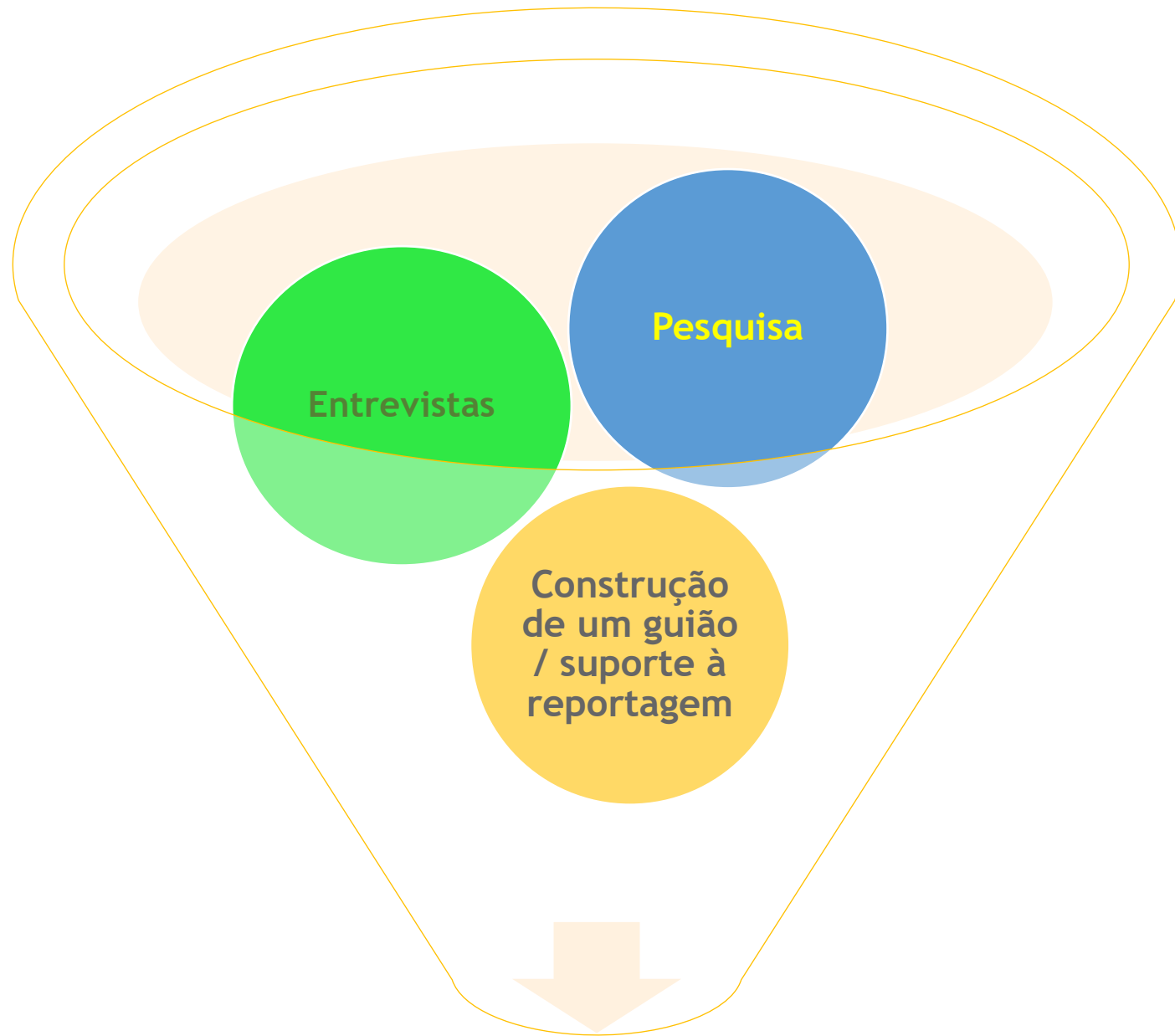


A Química do telemóvel



# Problema





**Videorreportagem**



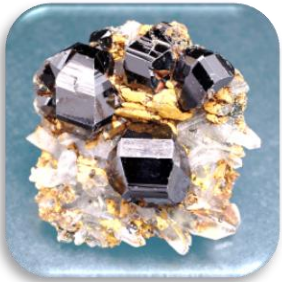
# Minerais no Palco: O Papel Crucial nos Telemóveis Modernos



Quartzo



Bauxite



Cassiterite



Esfarelite



Espodumena



Lepidolite



Grafite



Bastanaesite



Quartzo

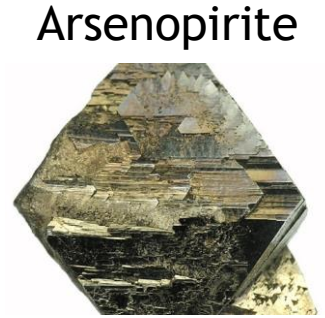
Eletrónica



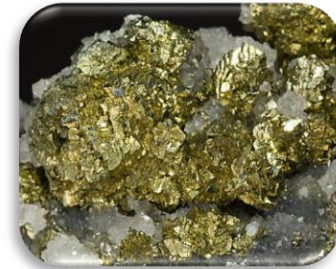
Volframite



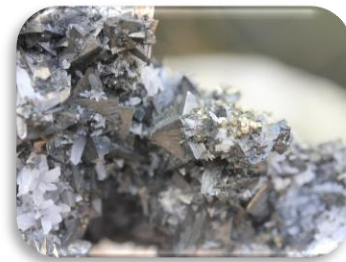
Tantalite



Arsenopirite



Calcopirite



Tetraedrite



Ecrã

Bateria

Altifalantes

# Minerais no Palco: O Papel Crucial nos Telemóveis Modernos



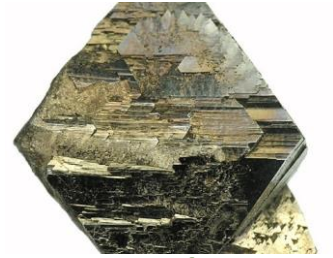
Sílica



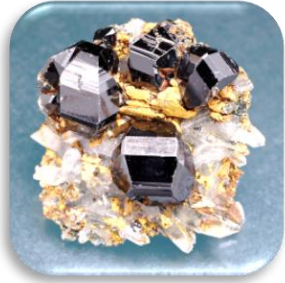
Alumínio  
Gálio



Tântalo



Arsénio



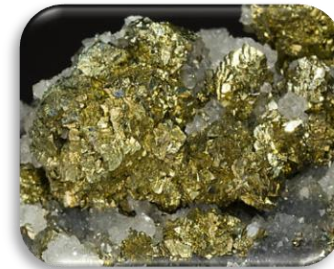
Índio  
Estanho



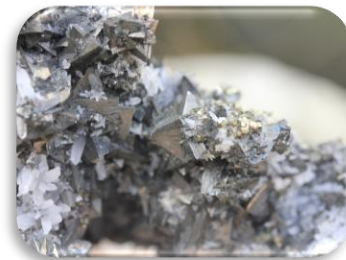
Índio  
Germânio



Tungsténio



Cobre



Prata



Lítio



Terras raras







Terras raras  
- Bastnaesite  
- Monazite

COLTAN:  
- Columbite  
- Tantalite



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	La-Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac-Lr	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo

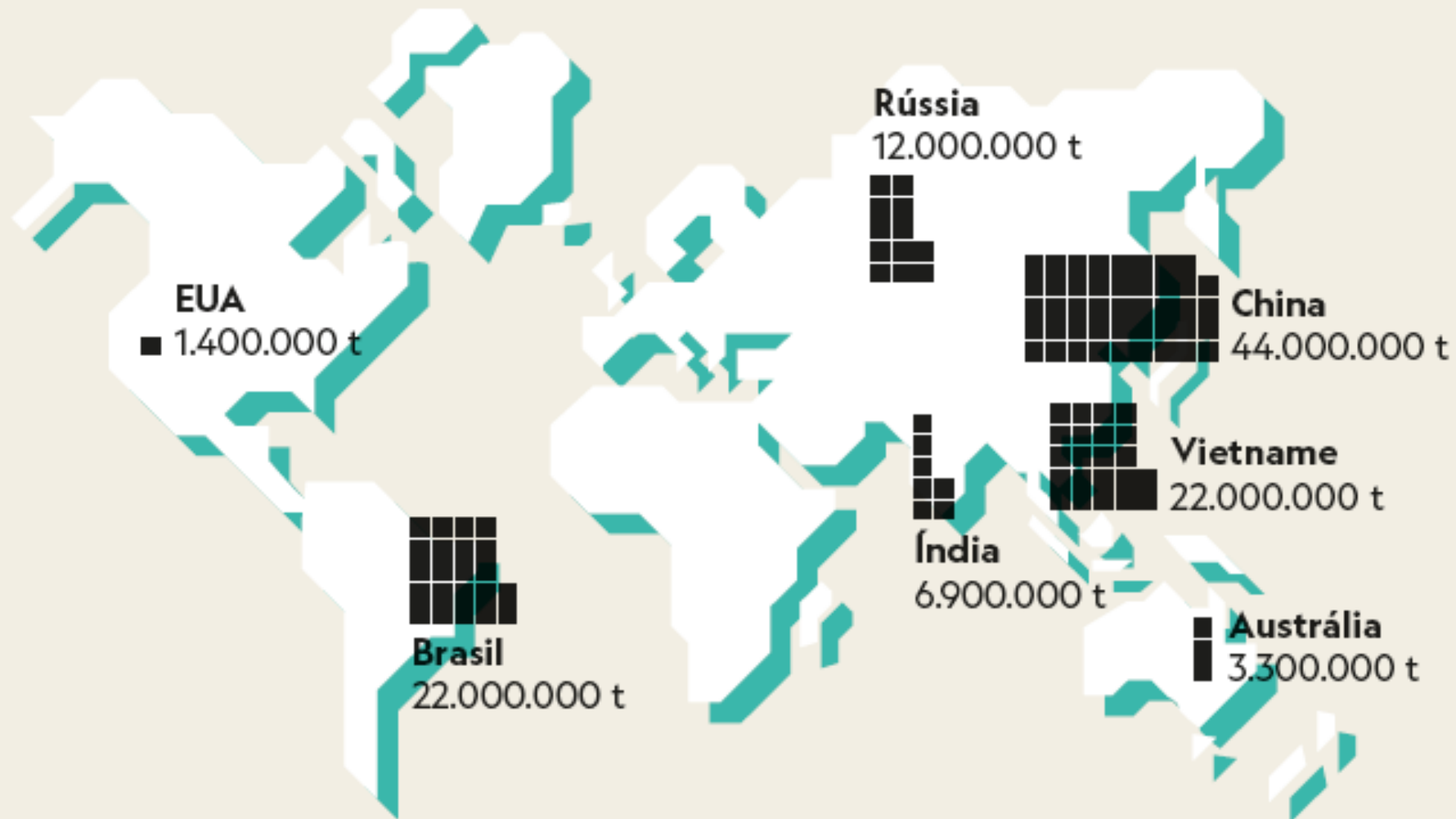
Lantanídeos

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----



# Principais reservas de terras raras

Números em toneladas (t)



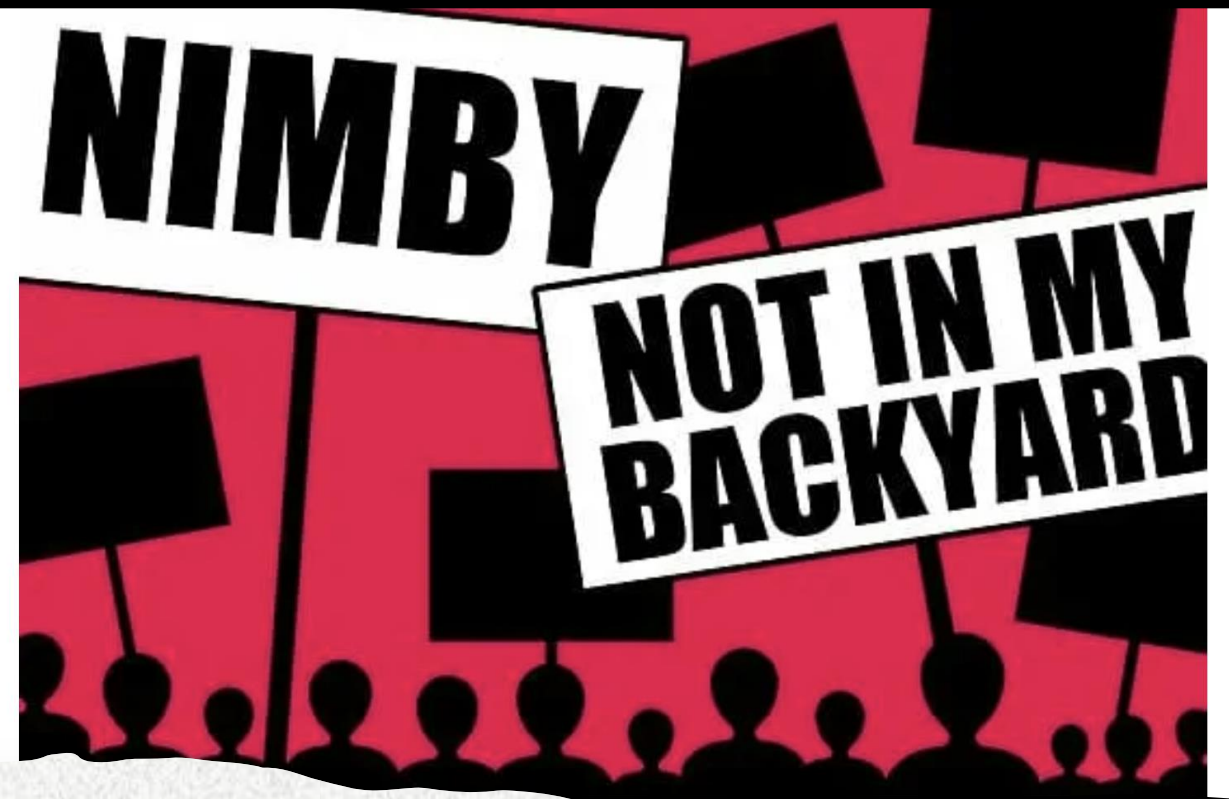
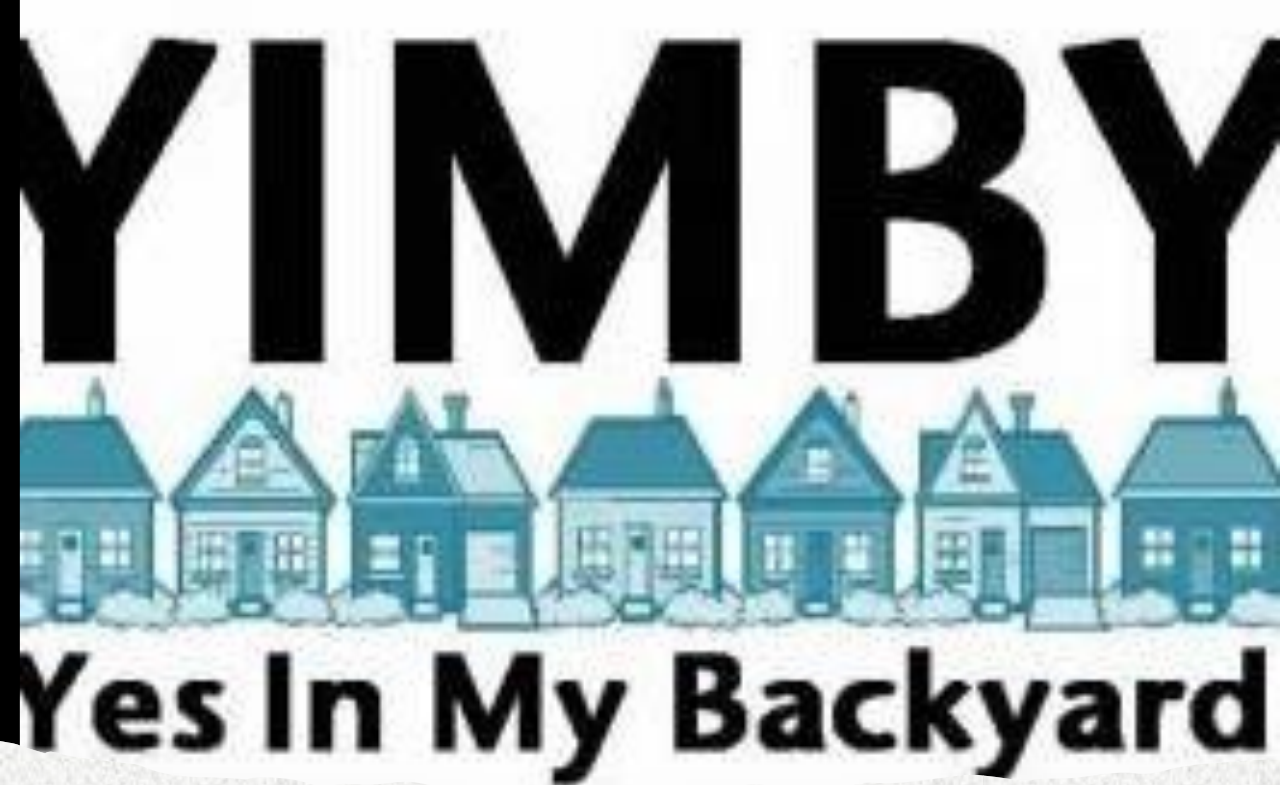
Aspectos sociais e ambientais



[https://www.lareserva.com/el\\_coltan\\_mineral\\_usado\\_en\\_nuevas\\_tecnologias](https://www.lareserva.com/el_coltan_mineral_usado_en_nuevas_tecnologias)

Minerais no Palco: O Papel Crucial nos Telemóveis Modernos





Debate: Recursos minerais:  
Explorar ou não explorar?



# Minerais no Palco: O Papel Crucial nos Telemóveis Modernos

- **Visita de estudo ao Cento de Ciência Viva do Lousal**

