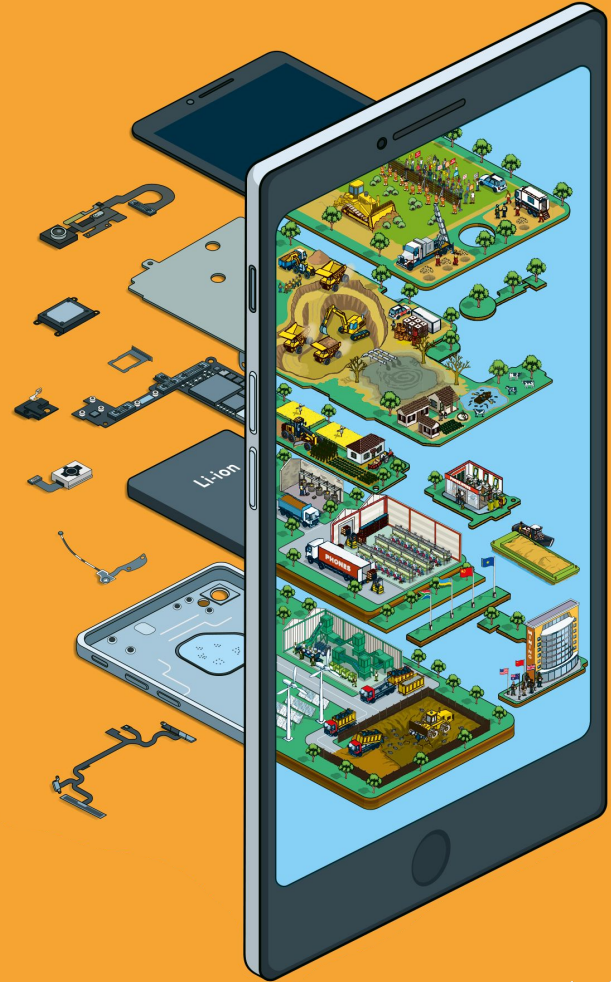


Ever wonder what is inside?

Inside the devices in your pocket, and
the appliances in your home, are
minerals and materials that are often
unknown.



Demand for critical raw materials



 EIT RawMaterials is supported by the EIT, a body of the European Union





Found in	CRM		Main global producers (average 2010-2014)	End-of-life recycling rate	Hazards in production / disposal	Top fact	Demand for renewables?
Connectors and springs - but being phased out	Beryllium	Be	United States (90%) China (8%)	0%	Inhalation of dust in processing previously linked to cancer in US	Most of the world's beryllium comes from one mountain in Utah	None yet
Batteries	Cobalt	Co	Democratic Republic of Congo (64%) China (5%) Canada (5%)	35%	Cobalt in Li-ion batteries presents a risk of 'thermal runaway' – dangerous fires	In increasing demand for electric car batteries – as is lithium, which Europe deems to have less supply risk	Electric vehicles 
Integrated circuits	Gallium	Ga	China (85%) Germany (7%) Kazakhstan (5%)	0%	Gallium is a byproduct of highly energy-intensive aluminium production	Used in semiconductors, LEDs and photovoltaic cells	Solar 
Batteries	Graphite	C	China (69%) India (12%) Brazil (8%)	3%	Inhalation of graphite dust can cause lung disease	Used on the negative electrode of a Li-ion battery	Electric vehicles 
Touch screen	Indium	In	China (57%) South Korea (15%) Japan (10%)	0%	Can cause lung disease in workers involved in processing	There are no Indium mines, it is found as a byproduct of zinc and other metal refining	Solar 
Metal alloy in casing	Magnesium	Mg	China (87%) United States (5%)	13%	Casting operations require precautions because of reactivity of magnesium with sand and water	Magnesium production has moved swiftly between provinces within China	None yet

Found in	CRM		Main global producers (average 2010-2014)	End-of-life recycling rate	Hazards in production / disposal	Top fact	Demand for renewables?
Microphone	Neodymium	Nd	China (95%)	3%	Can cause lung embolisms, especially during long-term exposure	Combined with iron and boron, Nd makes the strongest known permanent magnets	Wind
Camera	Rare earth elements (REE)	Dy Pr	China (95%)	6%	Rare earth elements are often found in close proximity to radioactive deposits and mining poses extra risks	Known as a 'rare earth elements' these minerals are actually quite abundant but their production is the most concentrated in China	Wind Electric vehicles
Microchips	Silicon metal	Si	China (61%) Brazil (9%) Norway (7%) US (6%)	0%	The silicon metal itself is not toxic, but the process of layering it and making chips creates hazardous chemical byproducts	Silicon Valley is still the area in the US with the highest concentration of federally-supervised environmental remediation sites	Solar
Microcapacitors	Tantalum	Ta	Rwanda (31%) Democratic Republic of Congo (19%) Brazil (14%)	1%	Artisanal mining of tantalum is the most dangerous kind – and still does occur in DRC	Commonly known as a 'conflict' mineral due to origin in troubled area in central Africa	None yet
Vibration motor	Tungsten	W	China (84%) Russia (4%)	42%	Artisanal mining of tungsten is the most dangerous kind – and still does occur in DRC	Because it retains strength at high temperatures, used to be used in light bulb filaments	None yet

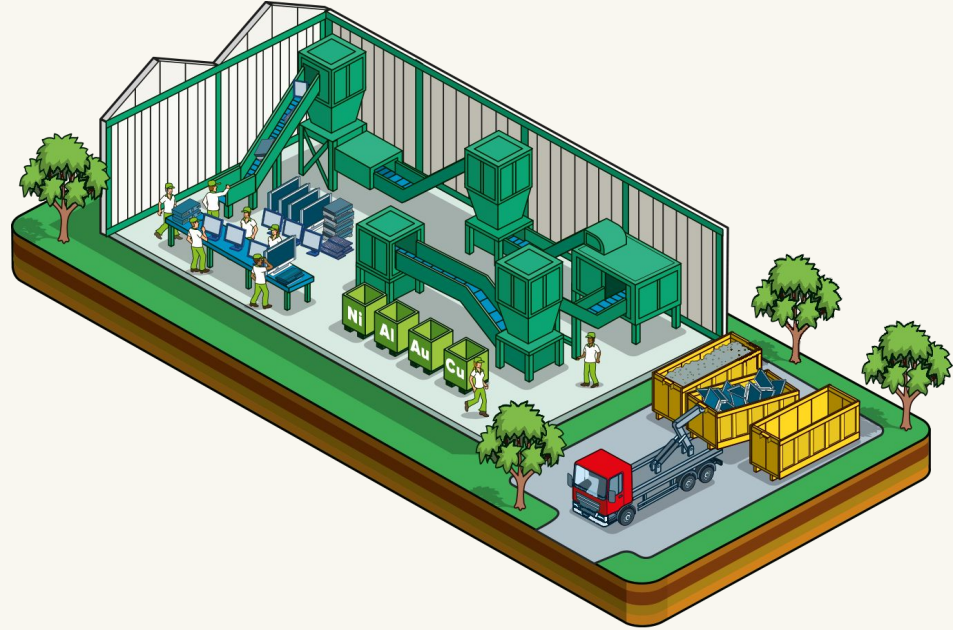
Impacts on people and planet

Mining processes require a lot of environmental management and there is a high cost associated with this, so it makes more economic sense for this to occur in other regions of the world.



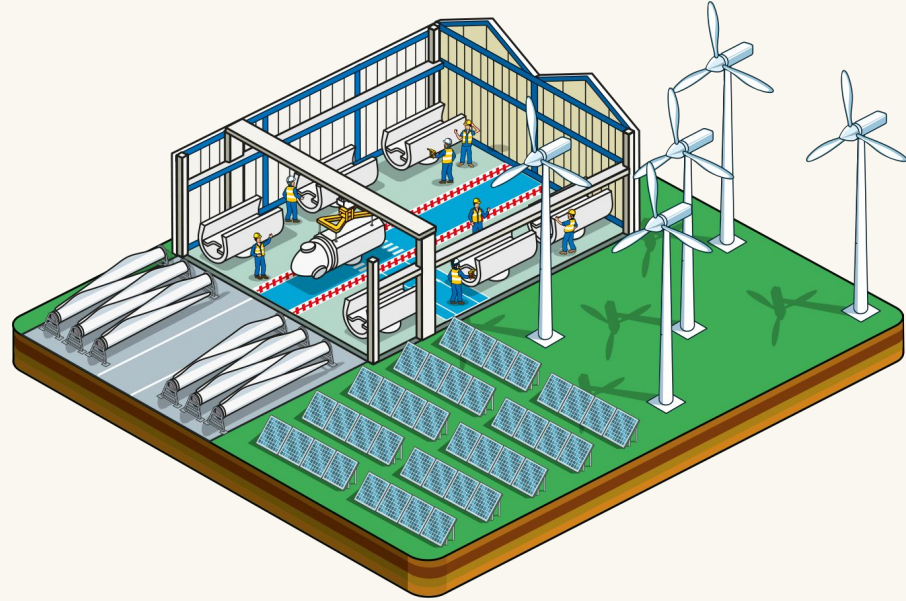
Recycling cannot keep up

Recyclers are constantly playing catch-up to an ever-faster cycle of new products, new materials and new technologies - having to invent new techniques and business models for processing dead devices.



Needed for renewable energy

In an age when we are moving away from fossil fuels, towards renewable energy, we must recognise that the same materials in our personal electronics are needed to scale up wind and solar energy production.





Using electronics for longer is the best way of easing demand for critical raw materials

Learn more at <http://rstrt.org/refer>

#RawElectronics
referproject.eu