# Module 4: How producing digital devices impacts on natural resources and on people

In order to find and maintain "a safe and just space for people and planet",[1] we need to maximise the recapturing of materials through recycling and minimise mining or extraction.

## The need to use fewer primary materials to make digital devices

A digital device is made up of natural resources that must be extracted from the earth (called primary or "linear" materials) or recaptured (secondary or "circular" materials). The mining and extraction of natural resources for digital devices is unsustainable, and in many cases, has led to massive violations of human rights, including the right to a healthy environment.[2] Within a linear economy, natural resources that are extracted and used in digital devices do not have value beyond their use in that digital device. A key objective of circular economies is to significantly reduce the extraction of natural resources through repair and recycling, and increase the use of recaptured and recycled materials.

***What are "urban mines"?***

The term "urban mining" refers to the mechanical or chemical recovery of rare metals that can be found in e-waste.

## Mining, conflict minerals and extractives

Mining and extraction are considered the first process in the life cycle of a digital device. A mobile phone is composed of about 70 chemical elements (see Figure 13).[3] These include scarce minerals (called "rare earths"), a long list of alloys, plastics and many natural resources such as lots of water.[4]

As shown in the glossary of useful terms in Module 3, some of the minerals are what we call "conflict minerals". These minerals are extracted in conflict zones and are often sold illicitly to perpetuate armed conflict. Conflict minerals include tantalum, tin, tungsten and gold. These are sometimes referred to as the "3T's" or "the 3T's and gold".

In order to understand some of the worst impacts of mining and extraction of materials used in digital devices, it is important to define “extractivism”. Gudynas outlines three conditions that must be met for extractivism to be present:

- High volume or intensity in extraction
- Little to no processing of the raw materials or natural resources
- Exportation of 50% or more of the resources.[5]

Despite the popularisation of the term “extractive industries”, it is important to understand that extractivism does not constitute an industry, because the resources are exported as raw materials and do not undergo any process of assembly or manufacturing, to which the concept of “industry” refers.

Working conditions in mining and extraction have led to some of the worst violations of human and environmental rights. Precarious and inhuman working conditions, social problems and human rights violations are influenced, aggravated and masked by complex global supply chains for electronics. Case examples for this module, one from Mexico and the other from the Democratic Republic of Congo (DRC), highlight some of the specific challenges, risks and threats experienced by local communities that are working to resist the worst effects of extractivism.

## Artisanal and large-scale mining

The Raw Materials Information System (RMIS) developed for the European Union shows the impact of artisanal and small-scale mining. According to very rough estimates from the RMIS, artisanal and small-scale mining produces around 15% to 20% of global minerals, including 80% of all sapphires, 20% of all gold, and 20% of diamonds. It is also a major producer of raw materials strategic to electronics manufacturing, and accounts for 26% of global tantalum production and 25% of tin production.[6]

There is often a belief that artisanal and small-scale mining is more just and sustainable than large-scale mining. But recent research[7] and the case examples included here illuminate the complex challenges and risks posed by both artisanal and large-scale mining. While artisanal and small-scale mining is generally understood to be intimately connected with the livelihoods of local communities around the world, these activities are often controlled and heavily taxed by local elites, with very few paths for recourse when rights are violated.

Large-scale mining tends to be more focused on relations with national and global actors, with very weak links to local communities and the local economy around sites of mining and extraction. These differences result in artisanal mining and large-scale mining having very different relationships to conflict and the violation of human and environmental rights.

Mobile devices often rely on minerals that may be extracted in conditions of armed conflict and widespread human rights violations. Although many global initiatives are working to increase transparency and accountability within supply chains for minerals,[8] many of these initiatives do not question the logic and colonial history of extractivism in the global South.[9] As a result, many devices continue to be produced using conflict minerals.[10]

## What is being done?

More than 230 civil society organisations from around the world published a statement in September 2020 that called on the European Commission (EC) to re-evaluate its plans to obtain raw materials. The statement noted irregularities, lack of transparency mechanisms and a disregard for growing resistance by local communities. It called for the EC to implement policies that reduce consumption, promote recycling and contribute “a fair share of support to the nations of the global South to redress the continued extraction of wealth from the global South for Europe, which has taken place for centuries.”[11]

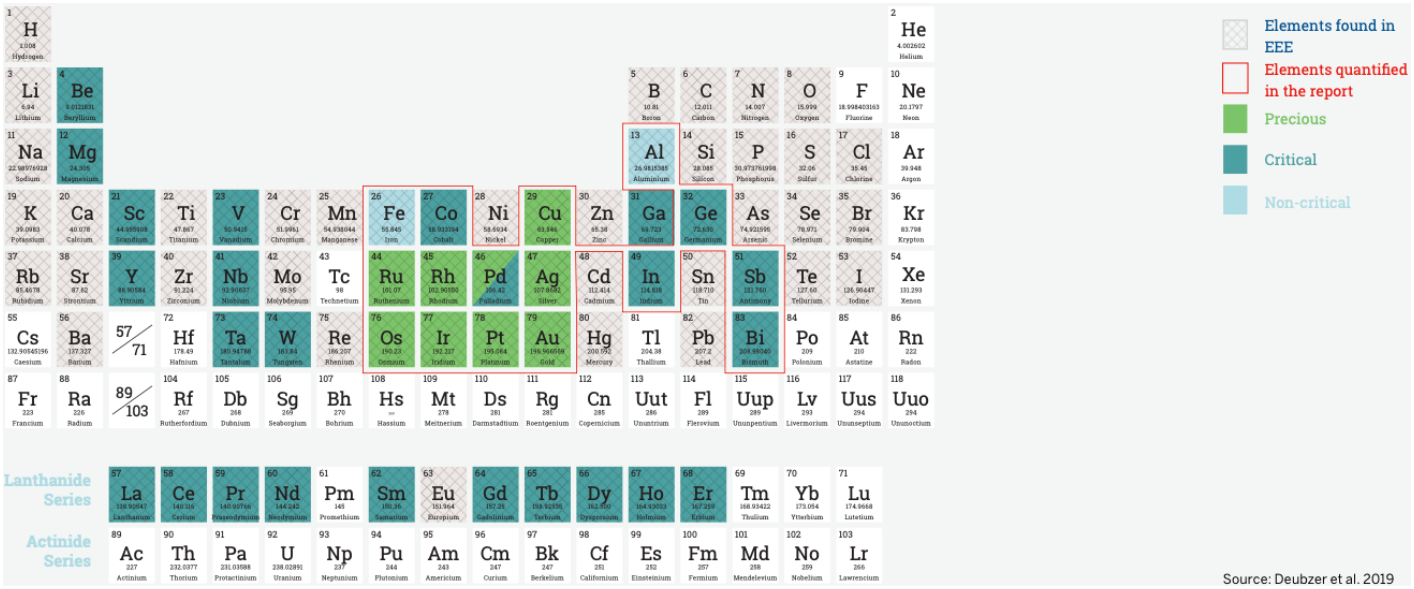


Figure 13: Elements found in electrical and electronic equipment (EEE) (Source: Global E-waste Monitor 2020)

The demand for cobalt, a key component in rechargeable batteries, is expected to soon surpass the available supply. More than 60% of all cobalt mining in the world is located in the DRC, and 90% of all cobalt miners in the country work in artisanal and small-scale mines, many of which have hazardous working conditions,[12] child labour and limited access to legitimate, transparent markets. The Fair Cobalt Alliance was set up to support the management of artisanal and small-scale mining, work to end child labour, and increase household incomes by investing in off-site community programmes and capacity building.[13]

Supply chain traceability auditing, and concepts such as “reasonable inquiry” – which excludes the need for an internal audit – and “due diligence” are intended to support institutional responses to the violations of rights in artisanal and small-scale mining and should allow the reliable determination of source minerals that enables greater transparency and accountability. Third party monitoring and evaluation organisations perform this work across the electronics supply chain. These include Electronics Watch, the Global Electronics Council, TCO Certified, and the GoodElectronics network, which has more than 100 member organisations globally.

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