PROPOSALS FOR REDUCING THE CONSUMPTION OF CRITICAL MINERALS

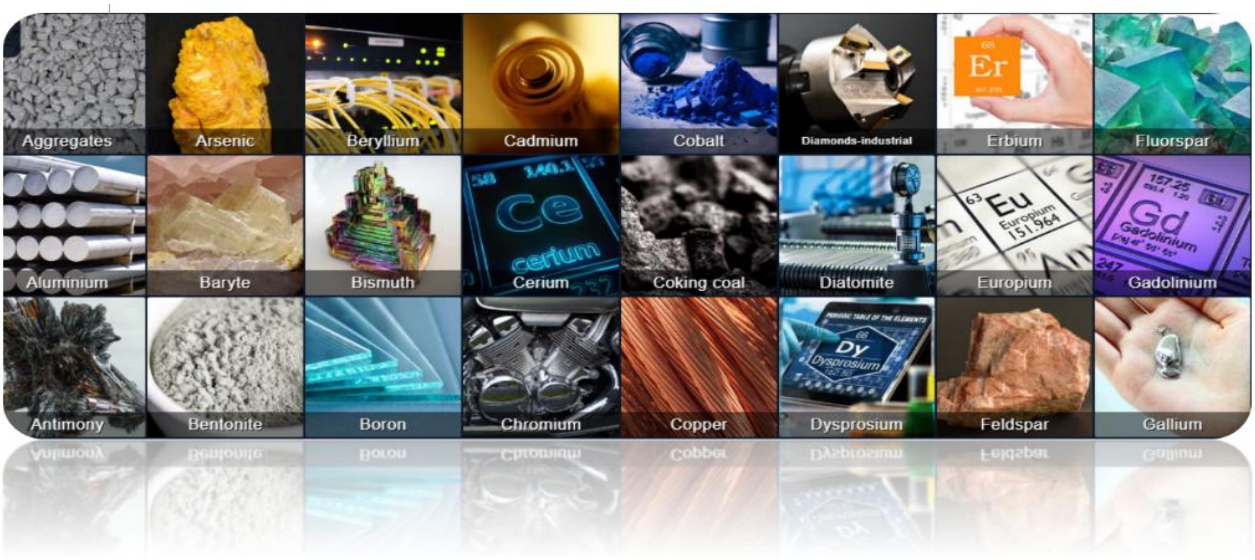


Foto credit: Red Muqui

Introduction

The climate crisis has motivated countries in the Global North to accelerate decarbonization and energy transition processes in line with their own "country-situation" assessments. These transitions are, however, often disconnected from the realities, priorities and structural challenges facing countries in the Global South. Technologies such as electromobility, renewable energies and energy efficiency have acquired a central role in this process, but such solutions require an enormous amount of minerals and metals – copper, lithium, cobalt, manganese, magnesium, and so on – the extraction of which has a profound social and environmental impact on the territories of the South.

This can clearly be seen in the fact that the European Union, with less than 6 percent of the world's population, consumes between 25 percent and 30 percent of all global metals. Germany, in particular, is one of the main drivers of this demand[1]. Against this backdrop, one question is increasingly being asked in different arenas, from European and Latin American civil society to international forums and academic spaces: Is a "just" energy transition really possible for the countries of the South unless the consumption of raw materials in the North is structurally reduced?

This study forms part of that debate by considering the situation from the viewpoint of the South. It seeks to raise the profile of the voices, proposals and concerns of communities and social actors in Peru, one of the world's main suppliers of the strategic minerals (in particular, copper) needed for the energy

[1] PowerShift (2023). Metals for the energy transition. Why we should address a raw materials transition together with the energy transition. https://power-shift.de/wp-content/uploads/2023/05/Metals-for-the-energy-transition_web_230507.pdf

transition. Through an exploratory analysis of data from 2024, it offers proposals aimed at bridging the gap between the EU's growing demand for metals and the socio-environmental impacts this has on Peru, and at building pathways towards a post-extractive transition.

This paper is particularly aimed at organizations and policymakers interested in promoting a North-South dialogue that goes beyond technocratic frameworks. A dialogue that questions the current model of accumulation and places the need to structurally reduce the consumption of metallic raw materials, in particular in the Global North.

CHAPTER 1. CRITICAL RAW MATERIALS IN THE GLOBAL CONTEXT

1.1. What are they and why are they important?

Minerals have acquired a strategic focus in the context of the energy transition, driven largely by the countries of the Global North and emerging powers such as China[2] and India. They are referred to as “critical raw materials” or “transition minerals” because of their key role in the development of technologies such as renewable energy, energy storage, digitization, national security and electric vehicles[3].

Their importance lies in two factors: on the one hand, their use is essential if we – in the case of Europe – are to move towards an economy less dependent on fossil fuels[4]; on the other, their supply faces high risks due to the geographical concentration of these materials, geopolitical tensions and adverse environmental and social conditions.[5] This has made access to these resources not only an economic but also a political and national security issue for the EU and other hegemonic powers.

In this context, Peru is in danger of remaining a supplier of minerals such as copper, lithium, and other minerals on the EU's list of critical raw materials. Growing pressure on these resources, coupled with fragile regulatory frameworks and historical inequalities, is

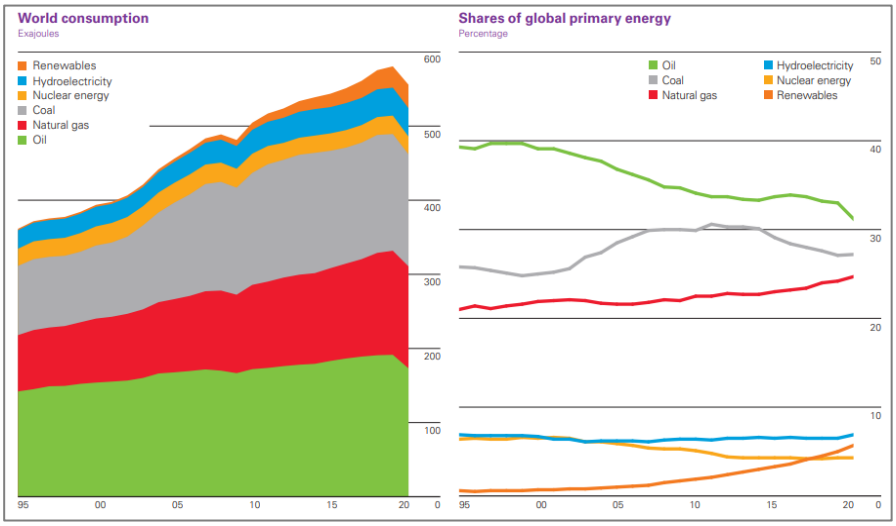


Figure 1. Global energy consumption and shares of global primary energy.

Source: BP, 2021

[2] Plazuelos and García (2008). Transición energética de China: perfiles y propulsores internos. Review of World Economics. http://www.redalyc.org/articulo.oa?id=86613723007

[3] European Commission (2023). Study on the critical Raw Materials for the EU. https://op.europa.eu/en/publication-detail/-/publication/57318397-fdd4-11ed-a05c-01aa75ed71a1

[4] Reducing the EU’s dependence on imported fossil fuels. https://commission.europa.eu/news-and-media/news/focus-reducing-eus-dependence-imported-fossil-fuels-2022-04-20_en

[5] Id.3.

increasing the risk of extractivism becoming entrenched within the country.

The Study on Critical Raw Materials for the EU (2023) contains a list of 32 minerals: such as bauxite, rare earths, germanium, natural graphite, tungsten, cobalt or nickel; This list includes minerals that are mined in Peru: arsenic, magnesium, manganese, antimony, bismuth, copper; and the country has lithium reserves that are not yet being mined.

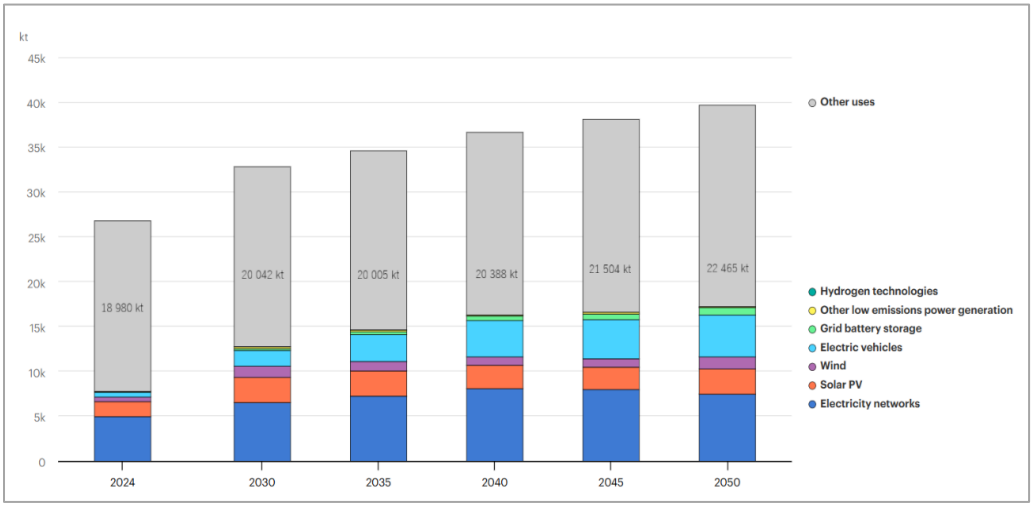


Figure 2. Projected global copper demand to 2050: Demand in conventional sectors and additional demand from renewable technologies (announced pledges scenario). Source: International Energy Agency, 2025

1.2. Increasing global demand for minerals

To understand how the energy transition is changing global mineral demand, it is helpful to look at the evolution of global energy consumption from 1995 to 2020 (Figure 1) [6]. Over this period, the main energy sources continued to be oil, natural gas, coal, nuclear energy, hydroelectricity and renewable energies. The latter is reliant on strategic minerals such as lithium, copper and others, for which demand has shown a steady increase since 1995, driven by the energy transition.

Figure 2[7] shows that, under a scenario of announced pledges, global copper demand in 2050 will reach approximately 22 million metric tonnes, and this is taking into account only traditional uses ("Other Uses"), i.e. applications such as construction, industrial machines, and so on. If you also include demand specifically for renewable energy technologies such as electric vehicles, battery storage, electricity grids, solar panels, and hydrogen, this figure doubles to over 40 million metric tonnes.

The figure 3 gives the projected demand for strategic minerals to 2050 for each type of technology. It is particularly relevant for the Peruvian case to observe how copper (in orange) and manganese (in purple) cut across almost all the technologies analysed, from batteries to electricity grids.

[6] BP (2021). Statistical Review of World Energy 2021. 70th edition. https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2021-full-report.pd

[7] International Energy Agency (2025). Total supply & demand for key minerals. https://www.iea.org/data-and-statistics/data-tools/critical-minerals-data-explorer

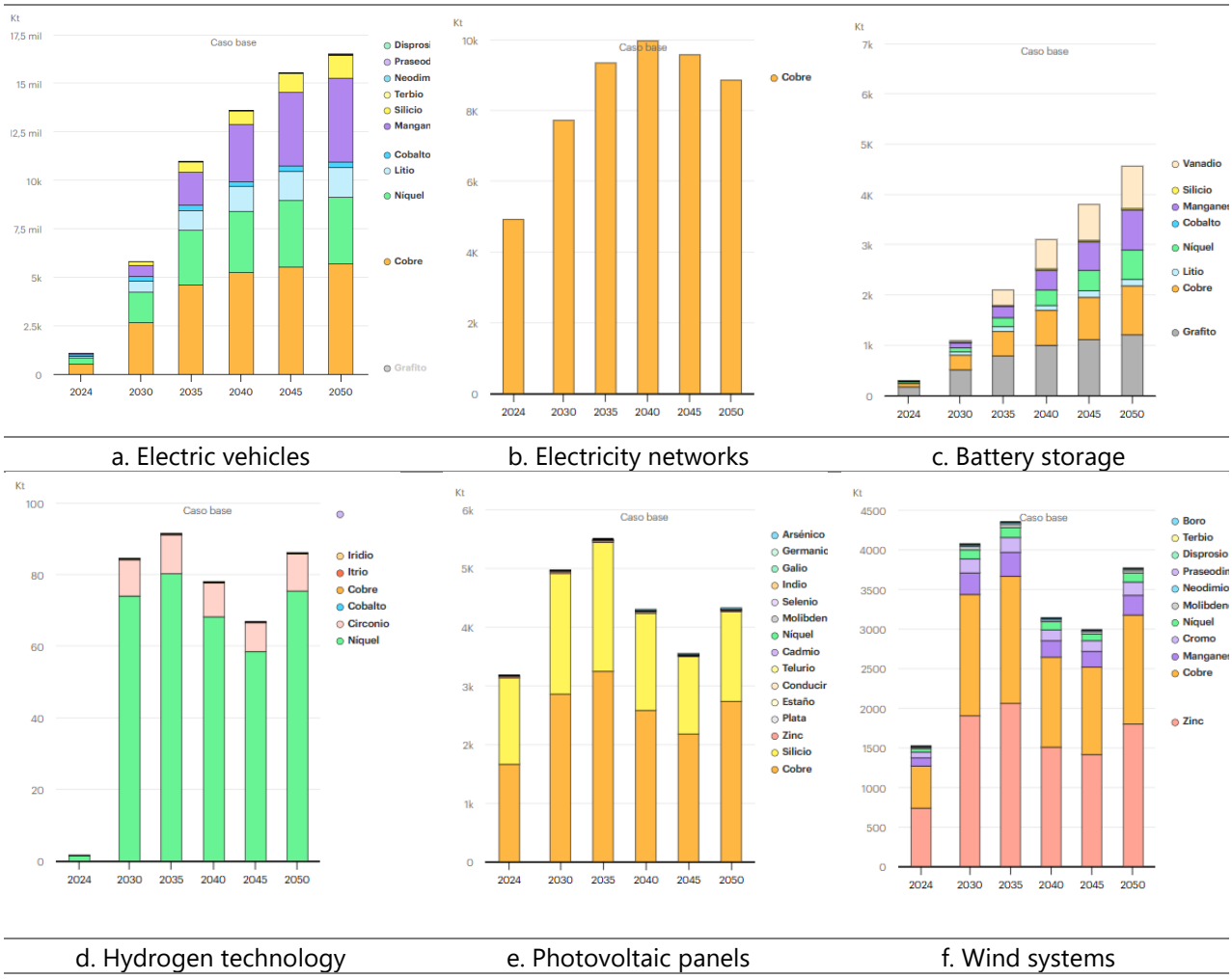


Figure 3. Projected mineral demand to 2050 for renewable and clean technologies.

Source: International Energy Agency (IEA), 2025.

In the electric vehicle sector alone (Figure 3a), the demand for copper in a scenario of announced pledges would increase from 496.7 kilotonnes (kt) in 2024 to 5,676.5 kt in 2050[8], a growth of more than 850 percent. This increase will put further pressure on the territories where these minerals are being extracted. According to EU estimates, the consumption of metallic raw materials in key industrial sectors will continue to increase over the coming decades[9]. This has prompted aggressive mineral insurance strategies, including bilateral partnerships, investments with producing countries and the promotion of regulatory frameworks such as the EU's Critical Raw Materials Act (CRMA)[10].

[8] Id. 7

[9] Carrara et al. (2023), Supply chain analysis and material demand forecast in strategic technologies and sectors in the EU - A foresight study, Publications Office of the European Union. https://dx.doi.org/10.2760/386650

[10] European Union (2024). European Critical Raw Materials Act. https://ec.europa.eu/commission/presscorner/detail/en/ip_23_1661

1.3. Peru in the face of global pressure

Among the minerals for which demand will soar are copper, lithium, nickel and cobalt, all essential for batteries, wind turbines, electricity infrastructure and storage technologies. In the case of copper – particularly relevant to Peru – this growth is occurring against a backdrop of high socio-environmental conflict, changes in territorial dynamics and an expansion of informal, artisanal and small-scale mining[11].

A recent Bloomberg report illustrates this situation well: in the community of Pamputa, in Apurímac, former Quechua farmers now work in the Apu Chunta mine, extracting copper from concessions granted to the Las Bambas mining company. In this area, copper worth an estimated US Dollar 300 million is extracted annually[12]. The transition from agriculture to mining appears to some as an economic opportunity, but it comes with profound costs: it erodes traditional agricultural systems, weakens food security and sovereignty, degrades ecosystems, and jeopardises ways of life. Not all communities benefit; those that seek to maintain traditional agriculture are often displaced even by their own community members. At the same time, mining is profoundly transforming social relations of coexistence and power dynamics in these territories.

The following testimony – beyond its emancipatory tone – highlights the profound transformation in communities that previously relied on agricultural practices and ways of life close to buen vivir. It shows how the transition to mining introduces a mentality that is alien to these community logics, where the individual prevails over the collective, and conventional models of development based on accumulation and unlimited economic growth are reinforced.

"Gone are the days of Robin Hood, of taking from the rich to give to the poor... what we want is to give the poor the same opportunities so that the poor can also become rich" – Testimony reported in Bloomberg, 2025.

CHAPTER 2. PERU'S ROLE IN THE SUPPLY OF CRITICAL MINERALS

2.1. Extraction and export of critical minerals (copper, manganese, magnesium, arsenic and bismuth)

Copper clearly accounts for the most significant volume. In 2024, Peru exceeded 3.7 million fine metric tonnes (FMT), consolidating its role as a major global exporter. Other critical minerals also form part of the extractive portfolio, albeit in smaller amounts: arsenic (31,000 TMF), manganese (24,000 TMF), bismuth (262 TMF) and magnesium (41 TMF). It should be noted that these values are taken from the official 2024 records of the Ministry of Energy and Mines (MINEM), although their traceability presents serious limitations, as will be discussed below.

The extraction of these minerals is mainly concentrated in two major areas of the country: the central and southern Andes (Figure 4). Departments such as Moquegua, Apurímac, Arequipa, Cusco, Tacna and Puno are among the territories suffering the greatest extractive pressure. Large-scale operations

[11] Escalante and Weil (2023). Mineria artesanal y de pequeña escala, un mapeo inicial. Published by Derechos Humanos Sin Fronteras. Cusco.
[12] Rochabrun and Attwood (2025). La fiebre del cobre desata una crisis existencial para la gran minería en Perú. Published by Bloomberg. https://www.bloomberg.com/features/2025-cobre-conflicto-peru-mineria-indigena-las-bambas/

such as the Southern Peru Copper Corporation, Cerro Verde, Antamina, Las Bambas, and Anglo-American Quellaveco, are leading the way in national production, especially of copper.

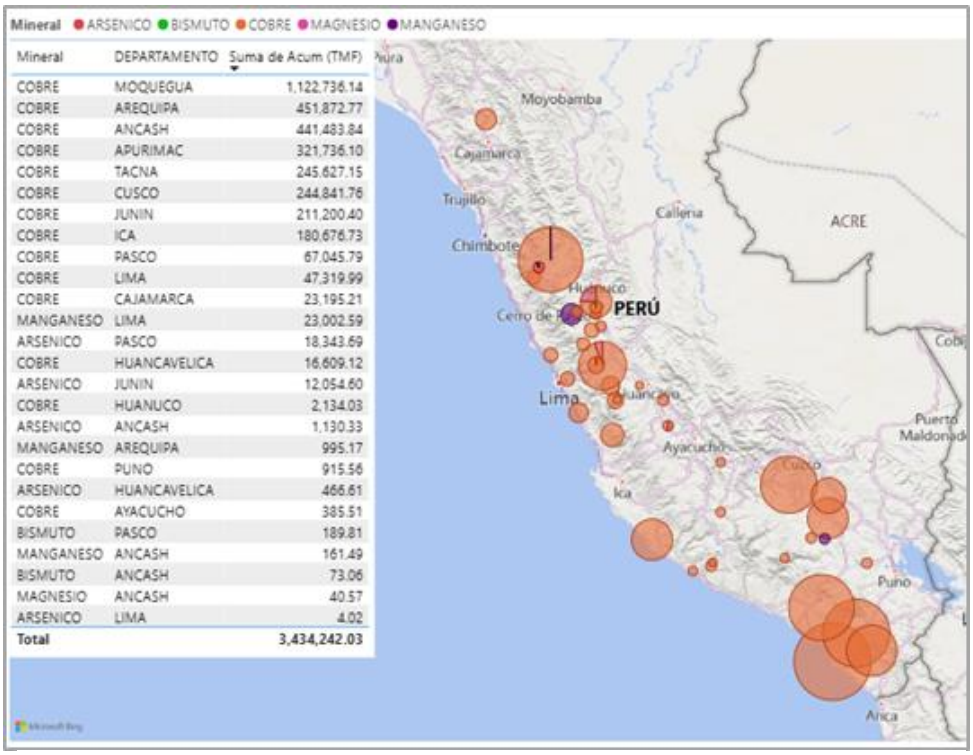
While Peru's significance as a global supplier of these minerals is undeniable, this position comes with high social and environmental costs. The communities that inhabit these territories face processes of dispossession, criminalization, contamination, prolonged conflicts and a lack of access to real participation or consultation mechanisms.

2.2. Main export destinations: the link with the European Union

According to information from Peru's National Superintendency of Tax Administration (SUNAT) on mining company exports in the 2024 period, the following European countries stand out as the main destinations for Peruvian copper: Spain, with more than 321,000 tonnes of copper concentrate and refined copper; Germany, with 142,000 tonnes; and Bulgaria, with 139,000 tonnes. Italy, Sweden, Finland, the Netherlands, France and Belgium also feature in smaller albeit still relevant volumes from the perspective of critical materials and minerals needed for the energy transition.

In 2024 alone, the main mineral export companies in Peru had direct trading relations with the following European countries:

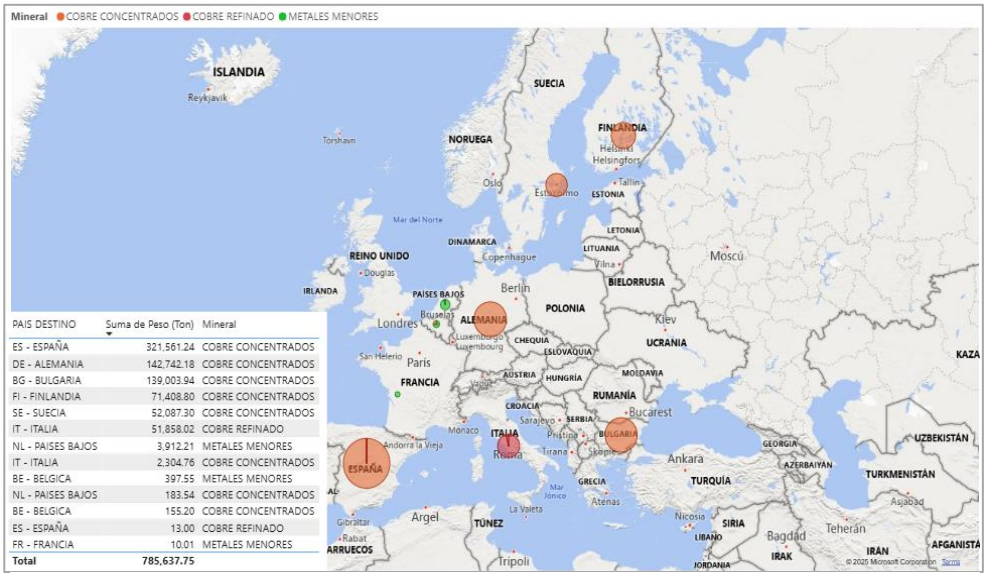
- Quellaveco (operated by Anglo-American) with Spain, Germany and Bulgaria.
- Antamina (operated by Glencore, BHP Billiton, Teck y Mitsubishi), one of the country's largest copper and zinc producers, with Germany, Bulgaria, Spain and Finland.
- Antapaccay, operated by Glencore, also exports to Spain.



Mineral	DEPARTAMENTO	Suma de Acum (TMF)
COBRE	MOQUEGUA	1,122,736.14
COBRE	AREQUIPA	451,872.77
COBRE	ANCASH	441,483.84
COBRE	APURIMAC	321,736.10
COBRE	TACNA	245,627.15
COBRE	CUSCO	244,841.76
COBRE	JUNIN	211,200.40
COBRE	ICA	180,676.73
COBRE	PASCO	67,045.79
COBRE	LIMA	47,319.99
COBRE	CAJAMARCA	23,195.21
MANGANESO	LIMA	23,002.59
ARSENICO	PASCO	18,343.69
COBRE	HUANCAVELICA	16,609.12
ARSENICO	JUNIN	12,054.60
COBRE	HUANUCO	2,134.03
ARSENICO	ANCASH	1,130.33
MANGANESO	AREQUIPA	995.17
COBRE	PUNO	915.56
ARSENICO	HUANCAVELICA	466.61
COBRE	AYACUCHO	385.51
BISMUTO	PASCO	189.81
MANGANESO	ANCASH	161.49
BISMUTO	ANCASH	73.06
MAGNESIO	ANCASH	40.57
ARSENICO	LIMA	4.02
Total		3,434,242.03

Figure 4. Main companies and amounts of the five critical minerals extracted: copper, arsenic, bismuth, manganese and magnesium. Expressed in mio. of Fine Metric Tonnes. Source: Prepared by the author based on 2024 mining production data from MINEM

Minerals exported with no trace left in Peru



PAIS DESTINO	Suma de Peso (Ton)	Mineral
ES - ESPAÑA	321,561.24	COBRE CONCENTRADOS
DE - ALEMANIA	142,742.18	COBRE CONCENTRADOS
BG - BULGARIA	139,003.94	COBRE CONCENTRADOS
FI - FINLANDIA	71,408.80	COBRE CONCENTRADOS
SE - SUECIA	52,087.30	COBRE CONCENTRADOS
IT - ITALIA	51,858.02	COBRE REFINADO
NL - PAISES BAJOS	3,912.21	METALES MENORES
IT - ITALIA	2,304.76	COBRE CONCENTRADOS
BE - BELGICA	397.55	METALES MENORES
NL - PAISES BAJOS	183.54	COBRE CONCENTRADOS
BE - BELGICA	155.20	COBRE CONCENTRADOS
ES - ESPAÑA	13.00	COBRE REFINADO
FR - FRANCIA	10.01	METALES MENORES
Total	785,637.75	

Figure 5. Destination countries for critical minerals. Quantities of ore in tonnes.
Source: Prepared by the author based on SAIP Sunat data, 2024

In addition to the trading connections, there is another structural problem that prevents an accurate understanding of the actual volume of strategic minerals exported. In 2024, 92.8 percent of exported copper was classified as "copper concentrate", a category that also includes other critical minerals such as arsenic, bismuth and antimony, all of which are high on the EU's list of critical raw materials. These elements are not reported in a disaggregated manner, which generates, on the one hand, a loss of taxes on undeclared minerals[13] and, on the other, a lack of transparency in the supply chain.

Faced with this situation, two key challenges arise: on the one hand, the Peruvian State must implement effective control and traceability mechanisms for the extraction and commercialisation of minerals in those territories where mining is already present. On the other hand, in areas where there is no mining activity, it is essential to fully respect the collective decision of communities that reject these activities, as demonstrated by the cases of Tía María in Arequipa and Río Blanco in Piura.

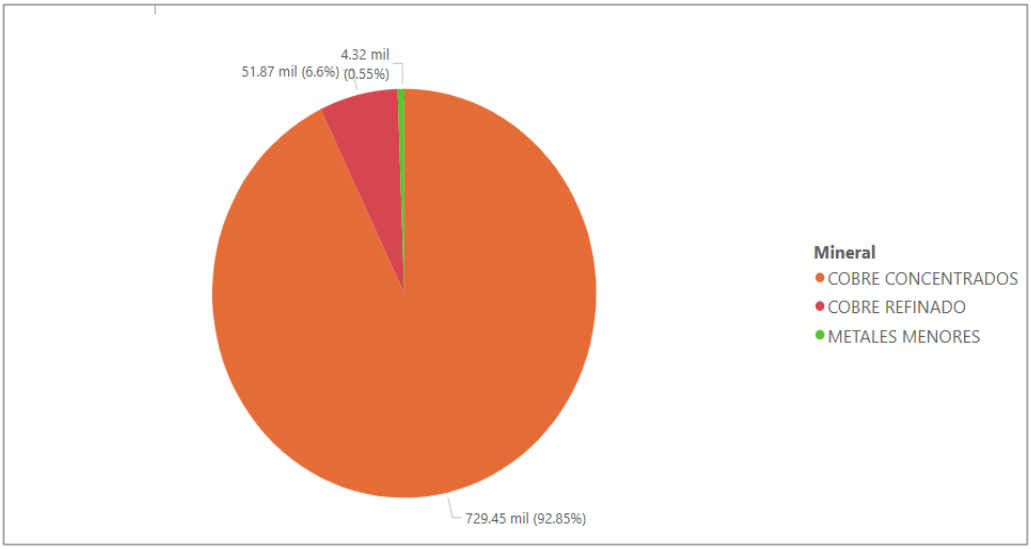


Figure 5. Percentage composition of critical minerals exported by Peru to EU member countries
Source: Prepared by the author based on 2024 mining production data from MINEM

[13] CooperAcción (2025). Boletin de la actovidad minera del Perú Nro 311. https://cooperaccion.org.pe/boletines/boletin-actualidad-minera-del-peru-mayo-2025-no-311/

2.3 Evolution of Peruvian mining revenues: have revenues increased in relation to overall demand?

The current context marks a new boom for minerals. The international copper price - driven largely by the energy transition, technological development and national security (including the field of armaments), among others - is at an historically high level, with the 2025 price ranging from four to five dollars per pound of copper. To this must be added gold, which is now valued at over US Dollar 3,500 per ounce in 2025, and other metals such as nickel with similar trends. All indications are that demand for these resources will increase significantly by 2050 (figure 7)[14].

This outlook suggests that Peru, as one of the main mineral exporters in the region, should be experiencing a new boom. However, official figures show a contradictory reality (figure 8).

According to the analysis of the economist José de Echave, while the 2024 international price for copper remained at levels similar to the 2007 "supercycle", the mining sector's contribution as a proportion of tax revenues has declined significantly: from 50.9 percent in 2007 to 17.9 percent in 2024[15]. This is also taking place in a context whereby the mining companies are continuing to record extraordinary revenues[16] – 41 percent in extraordinary revenues in 2024[17] –, driven both by global demand and financial speculation around transition minerals, as well as by a fiscal and contractual framework which, through benefits, deductions and clawback mechanisms, significantly reduces the sector's effective contribution in taxes, even in periods of high prices. As a result, the mining sector bonanza is not resulting in increased revenues for the Peruvian state nor in tangible improvements for the territories that bear the socio-environmental impacts of extraction.

It is essential to recognise that dependence on mining not only weakens the national economy, but also limits and displaces other initiatives due to its predatory nature. In other words, the challenge is to commit to diversifying the economy, reducing dependence on extractive industries and

Figure 6. Evolution of the international price for copper

Source: CooperAcción (2025)

[14] Boletín de la actividad minera del Perú. BOLETIN-AMP-MAYO-2025.pdf

[15] CooperAcción (2025). Tributación minera, cosas del Orinoco. https://cooperaccion.org.pe/opinion/tributacion-minera-cosas-del-orinoco/#_ftn1

[16] Extraordinary revenues refers to additional profits earned by mining companies as a result of a cycle of high mineral prices. These profits exceed normal projections and arise from favourable conditions in the international market.

[17] CooperAcción (2025). Ingresos extraordinarios de la minería en el 2024. https://cooperaccion.org.pe/opinion/2025-estimacion-de-ingresos-extraordinarios-de-la-mineria/

supporting alternatives to extractivism that already exist in the territories[18]. To this end, extraordinary revenues from the sector should be used to strengthen these alternatives rather than to consolidate further mining, preventing fiscal resources from being used to promote its expansion. In addition, consumer countries—both in the Global North and emerging powers such as China—should be required to progressively reduce their demand for minerals under a new tax scheme that allows for adequate compensation for extraction territories.

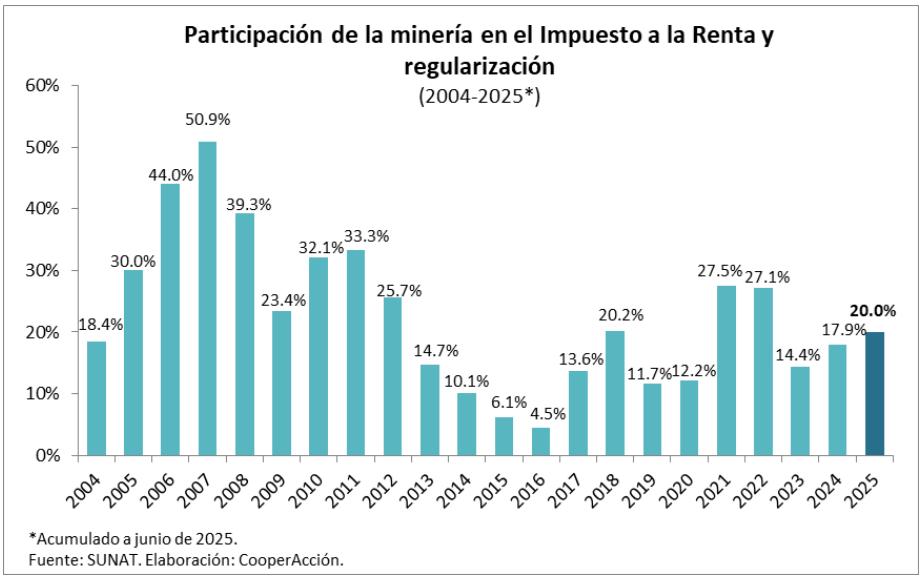


Figure 7. Mining Sector's Contribution to Tax Revenues

Source: CooperAcción 2025

CHAPTER 3. SOCIAL AND ENVIRONMENTAL IMPACTS OF EXTRACTIVISM IN PERU

The impacts of extractivism on Peru are many: more than 2.4 million hectares of Amazon forest felled between 2001 and 2019; at least 180 tonnes of mercury dumped annually in Madre de Dios by illegal mining; nearly 10 million people exposed to heavy metals; 42 contaminated watersheds; and 6,128 mining environmental liabilities still without remediation[19]. Added to this is the systematic criminalization of social protest (960 people recorded as of 2022), and the loss of at least 220 people's lives for participating in protests and defending their rights[20]. In recent years, the advances made by illegal economies associated with gold mining has intensified the violence in regions such as La Libertad, Arequipa and Madre de Dios. The responsibility of legally-constituted mining companies for environmental pollution has also now been demonstrated, such as in the cases of Aruntani in Puno[21], Antapaccay in Cusco[22], and many more.

[18] Red Muqui (2024). Agenda Muqui 2024. https://muqui.org/wp-content/uploads/2024/05/Cartilla-Agenda-de-la-Red-Muqui-2023-2024-1.pdf

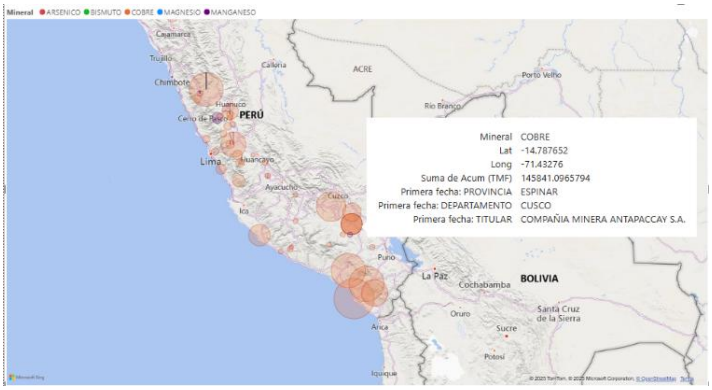
[19] Muqui Network (2024). Muqui Agenda 2024. Propuesta y acción. https://muqui.org/wp-content/uploads/2024/05/Cartilla-Agenda-de-la-Red-Muqui-2023-2024-1.pdf

[20] Servindi (2021). 220 asesinados en 10 años por protestar y defender derechos. https://www.servindi.org/actualidad-noticias/25/02/2021/peru-220-asesinados-en-10-anos-por-protestar-y-defender-derechos

[21] Martínez (2025). Bajo los lentes de la ecología política y los sensores remotos: análisis del caso Llallimayo. https://tesis.pucp.edu.pe/items/12b06dd8-27d1-41f9-b2d0-bbb4bb932bbb

[22] CooperAcción (2024). Contaminación en Espinar: causalidad comprobada. https://cooperaccion.org.pe/wp-content/uploads/2024/10/ContaminacionEspinar_CooperAccion_IDL_DHSF_2024-final.pdf

The case studies below seek to demonstrate, on the basis of official Peruvian state data and the Muqui Network's internal technical documents, how large-scale mining projects – those of the ten largest copper producers in the country who have relevant commercial links to the European market – are resulting in profound negative impacts.



3.1. Antapaccay: "Proven causality"

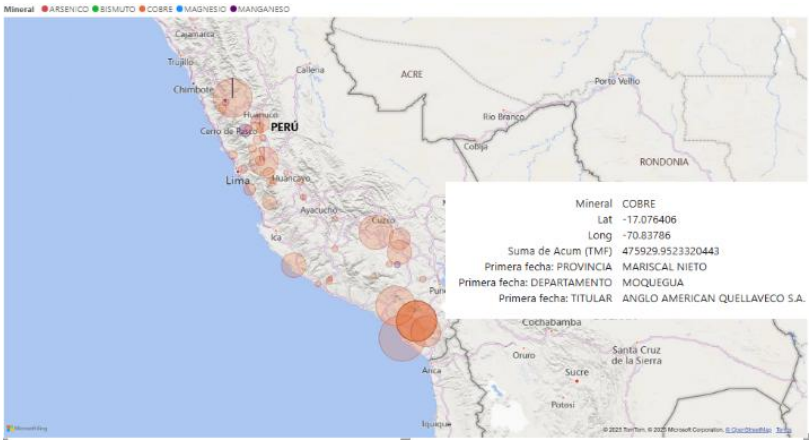
Project	Antapaccay, Espinar
Main source	*Contaminación en Espinar: Causalidad comprobada por CooperAcción, Derechos Humanos Sin Fronteras e Instituto de Defensa Legal*[23].
Company	Antapaccay - Glencore (Switzerland)
Mineral	Copper (7th largest national producer, 2024)
EU Destination	Spain[24]
Buyer	Not publicly identified
Impact	OEFA study confirms impact on rivers, water and ecosystems in Espinar

The Antapaccay mine, operated by Glencore in the province of Espinar (Cusco), is at the epicentre of one of the most solid and conclusive studies on environmental impacts in Peru. Between 2022 and 2023, the Environmental Evaluation and Oversight Body (OEFA) issued technical causality reports confirming the direct link between mining operations (Antapaccay Unit and Tintaya expansion) and the contamination of the natural environment – including air, surface and groundwater, soil, flora, wildlife and domestic animals – in at least 38 assessment areas. Some of the most relevant findings were as follows:

- Contamination of water bodies and soils with heavy metals such as arsenic, lead, mercury and cadmium, detected in the Tintaya and Salado rivers, as well as in pastures, wetlands and aquifers.
- Deterioration of air quality, with high levels of particulate matter (PM10) attributable to blasting, transport and spills. Several samples exceeded the maximum permissible limits established by national environmental quality standards.
- Contamination of the food chain: analyses of Andean pastures and wildlife revealed toxic concentrations in plant tissues (copper, arsenic, iron, lead and aluminium), compromising sheep health and thus livelihoods, food security.

[23] Id 23.
[24] Based on SUNAT export data for copper, magnesium, manganese, bismuth and arsenic only for the year 2024 from SUNAT processed by the Muqui Network.

"We used to live from agriculture and livestock. Today our animals are aborting, they are born deformed, our production has declined and we no longer have anything to support our families. We are sacrificed so that others can enjoy. The copper they are taking is bathed and stained in blood..." Espinar community member, 09 July 2025



3.2. Quellaveco: "Dispersal of pollutants"

Project	Quellaveco (Moquegua)
Main source	Muqui Network, DHUMA and TerraJusta
Company	Anglo-American (UK)
Mineral	Copper (5th largest national producer, 2024)
EU Destination	Spain, Germany, Bulgaria[25]
Buyer	Germany
Impact	An OEFA study confirms contamination by particulate matter dispersal (PM10), contamination of crops (oregano), and bioaccumulation in aquatic species

The Quellaveco mining unit represents an important case because of the rapid and intense environmental impact that has occurred in only a couple of years since operations started. In October and November 2023, OEFA carried out an Environmental Causality Assessment (ECA) to determine the level of impact caused by the mining operations that make up the project.

The study identified critical concentrations of particulate matter (PM10) – especially at night – and confirmed Quellaveco's mining operations as the main source of emissions. Atmospheric modelling revealed that the mining dust contained metals such as copper, molybdenum and lead, which were being dispersed by the wind into adjacent agricultural areas, in addition to other key findings below:

- → Metals in soil and crops: copper concentrations above 20 mg/kg were detected in oregano crops in the Piedra Mesa sector, levels that exceed plant toxicity thresholds and compromise the physiological development of the plants.
- → Presence of contaminants in agricultural soils: there was a significant increase in copper and molybdenum compared to the baseline, directly attributable to the sedimentation of particulate matter.

[25] Id 25.

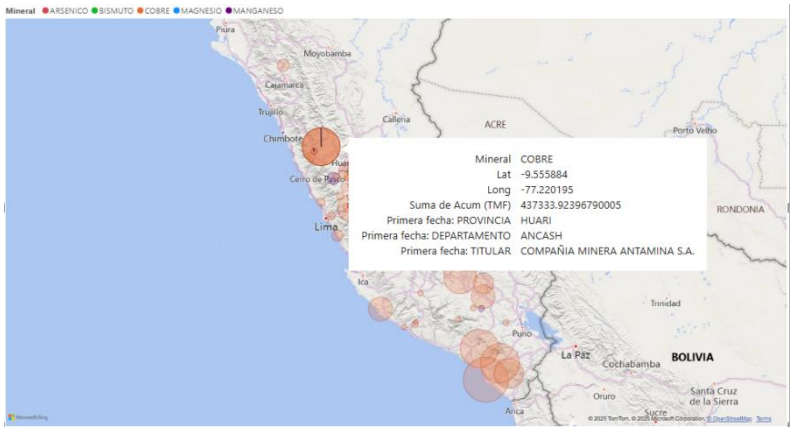
- Biological contamination of water bodies: bioaccumulation of heavy metals was documented in the tissues of indicator species such as Rhinella spinulosa and Telmatobius peruvianus, in which accumulated levels of arsenic, chromium, nickel, zinc and mercury were recorded.

- Underestimation of the real impact: the atmospheric dispersal study that Anglo-American submitted was contradicted by OEFA's data. The company's model underestimated the area affected by PM10, demonstrating a critical omission in the estimation of impacts.

One crucial aspect of this case is that Quellaveco is not a compact unit but a system covering at least five operational areas – from the water catchment areas at the headwaters to the extraction pit, the processing plant and the final storage at the port of Matarani. These areas are located in four different micro-watersheds, which significantly extends their area of influence and the complexity of the impacts generated.

"The Quellaveco project was deceitfully imposed on us. They said it would not cause pollution, that it would be modern friendly mining, but today we have a diverted river, the plants and animals are affected, and there are multiple sanctions for environmental damage. They export copper concentrate but we know that valuable rare earths are also being extracted. There is no transparency." Moquegua Community Member, 09 July 2025

It is important to note that the water catchment area of the Quellaveco mining project is located in the headwaters of the Tambo river basin – a key source of water for agriculture in regions such as Arequipa in the Tambo valley.



3.3. Antamina: "Heavy metals in blood"

Project	Antamina, Ancash
Main source	Muqui Network
Company	Antamina Mining Company (BHP Billiton - Anglo-Australian, Glencore - Switzerland, Teck - Canada and Mitsubishi - Japan)
Mineral	Copper (3rd largest national producer, 2024)
EU Destination	Germany, Bulgaria, Spain, Finland[26]
Buyer	Germany
Impact	Air pollution in the port of Huarmey; communities with arsenic in their blood. It is estimated that approximately 3,000 people from the surrounding areas are affected

[26] Id 23.

The port of Huarmey lies on the coast where Antamina operates a plant for filtering, unloading and shipping copper concentrate from the Yanacancha deposit (300 km away). For several years now, the community has been denouncing the severe impacts on health and the environment, without an effective response. The heavy metal dust generated by the transport of copper has affected approximately 3,000 local people, primarily in Huarmey.

Below are some relevant facts about the case that give rise to the impacts on communities surrounding the port of Huarmey:

- Toxic metals in humans: MINSA studies (2022-2024) revealed that up to 88 percent of people tested (mostly children and pregnant women) had dangerous levels of lead and arsenic in their blood and urine.

- Marine pollution: reports from OEFA and IMARPE confirm the presence of arsenic in sediments and marine species (such as octopus and snails) above the permitted limits.

- Impact on small-scale fisheries: the shipment of minerals has resulted in dust dispersal and spills, damaging coastal ecosystems and the main production activities of fishing communities.

"There are up to three deaths a month in our community, many from cancer caused by arsenic. We have official analyses... the same metals found in the Antamina plant are in the roofs of our houses and in the urine of our children. Nobody is listening to us in Peru. We want the outside world to know what is going on here." Huarmey woman leader, 09 July 2025

CHAPTER 4. PROPOSALS AND RESPONSES FROM PERU: BUEN VIVIR, POST-EXTRACTIVISM AND TERRITORIAL ECONOMIES

This chapter summarizes the process of collective reflection being promoted by the Muqui Network and its member organizations, in coordination with academics and experts, aimed at building alternatives to the dominant extractive model. On the basis of this analysis, and considering the historical responsibility of the European Union and, in particular, Germany – reflected in its high per capita emissions, intensive use of resources and persistent asymmetries in the distribution of the benefits from raw materials – proposals are being made that are called "alternatives to extractivism", understood as post-extractivist transition processes that dismantle conventional notions of development based on the accumulation of capital and the depredation of nature.

From this perspective, the starting point is not formed of abstract utopias but concrete experiences already underway. Various authors agree that these alternatives, beyond homogeneous processes, share at least five common points, which have been identified in research, debates and territorial struggles, namely: i) Territoriality and self-determination, ii) Economies for life, iii) Eco-dependence and care, iv) Political subjects, and v) Coordinated knowledge.

1. Territoriality and self-determination: Territory is, above all, the space where peoples live, develop their identity and make collective decisions. It should not be reduced to a resource or an area for investment, but rather understood as a sphere where community management of common goods is exercised from a position of deep roots and autonomy.

2. Economies for life: These are peasant, popular, supportive and caring initiatives, the aim of which is not accumulation but to support a dignified life, reciprocity and sufficiency.

3. Eco-dependence and care: These alternatives embody an ethic of care that recognizes both our interdependence with other people and our eco-dependence on nature. This view, driven by ecofeminist currents, allows us to rethink the way we produce, consume and relate to each other.

4. Political subjects: Far from being victims or mere resistors, Indigenous Peoples, peasant communities, women and youth are epistemic and political actors who imagine and construct alternatives from their own cultural frameworks.

5. Coordinated knowledge: These proposals combine ancestral, technical and scientific knowledge, promoting contextualized solutions that respond to the ecological and cultural diversity of the country.

In this context, the Muqui Network has documented at least 17 (although there are more) different experiences in the country, including agroecology, territorial planning, medicinal plant production, family farming and community water management. The three experiences presented below are examples of how communities are already building territorial economies that sustain life, protect ecosystems and generate income to strengthen their livelihoods. They all express, in concrete terms, the five common elements outlined above.

Support Institution: Muqui Network, CEAS, Diocese of Chulucanas and REDAD

Communities: Peasant communities of: Segunda y Cajas, Yanta

Province: Ayabaca and Huancabamba

Region: Piura

Ecosystem: Andean páramo (tundra)

Context of the Alternative: In Ayabaca and Huancabamba, 17,800 people are resisting the Rio Blanco mining project and sustaining their economy through family farming, which is generating 15 times more income[27] than the planned mining. They are protecting the páramo, cloud forest and water sources that supply the towns and cities of the northern coast.

Alternative: Conserving water, strengthening family farming and recognizing the ecological and economic value of the territory.

[27] Aste (2024). Agenda de defensa y protección del territorio, páramos y bosques de neblinas de Piura. https://muqui.org/wp-content/uploads/2025/01/AGENDA-2024-Defensa-y-proteccion-del-territorio-Piura.pdf

Support Institution: Grupo para la promoción del desarrollo de los ANDES

Communities: Rocco, Vilcabamba, Chacayán, Chango, Michivilca, Mito

District: Chacayán, Vilcabamba, Yanahuanca

Province: Daniel Alcides Carreón

Region: Pasco

Ecosystem: Andean

Context of the Alternative: In Daniel Alcides Carrión, with 74 percent of the territory parcelled out in mining concessions and high levels of lead contamination, peasant families have created 150 agro-ecological gardens and are raising guinea pigs[28], reusing the manure as fertiliser. They are reducing their external dependency and guaranteeing fresh food for the community.

Alternative: Buen Vivir[29] in the Andes without mining, with a commitment to agroecology and food sovereignty.

Support Institution: CEDAP, Ayacucho

Communities: 25 rural communities, 18 villages and 80 locations.

District: Paras, Totos, Chuschi and Maria Parado de Bellido.

Province: Cangallo

Region: Ayacucho

Ecosystem: High Andean

Context of the Alternative: In Cangallo, communities are managing pastures, restoring soils and building qochas (traditional reservoirs) that can store up to 20,000 m^3 of water. This is making it possible to irrigate 14 hectares and grow potatoes, quinoa, maize and pulses all year round[30].

Alternative: High Andean communities as guardians of the water: "sowing water to harvest life".

[28] Muqui Network (2019). Agricultura familiar y minería en el Perú. https://muqui.org/wp-content/uploads/2024/02/Agricultura-Familiar-y-Minera-en-el-Per_.pdf

[29] **Buen Vivir** is an Andean concept that refers to a way of life centred on collective well-being, reciprocity and harmony with nature, as opposed to the Western notion of development based on economic growth.

[30] Id 29.

If these alternatives are to expand, however, economic incentives or one-off projects are not enough. A structural change is required in national policies that will support economic diversification, reduce extractive dependency and recognize the strategic value of community practices in regulating nature. This is precisely the intention of post-extractivism: moving towards a model in which mining ceases to be the central pillar of development while demand for minerals from the consumer countries of the Global North and emerging powers such as China is reduced.

Failing this, an increase in global demand – such as can currently be seen in the context of the energy transition – not only threatens to displace these alternatives but will also perpetuate a system in which, as José de Echave's analysis has shown, high international prices do not result in greater benefits for the country. The challenge is therefore not to expand mining but to strengthen existing alternatives, promote new forms of territorial economy and pave the way for a transition that goes beyond extractivism and energy, as proposed by the current energy transition.

CONCLUSIONS

The pressure for copper and other critical minerals for the energy transition is causing a transformation of the territories, with environmental impacts and impacts on the health of the population, as has been shown in the case studies. This demand for minerals has also triggered an increase in artisanal and small-scale mining, not only in gold but in artisanal copper mining in the south of the country. There is furthermore an undeniable increase in illegal and criminal mining, which is accompanied by significant violence in some regions such as La Libertad, Arequipa, Madre de Dios, among others.

The boom is not resulting in more revenue for the Peruvian state, nor in significant improvements for the territories that are bearing the socio-environmental brunt of the extraction. In this context, it is questionable to continue expanding the extractive frontier if, even in times of record prices, the producing country receives only a fraction of the income generated. The case studies have shown that mining companies such as Antapaccay, Antamina and Quellaveco – linked to human and environmental rights violations and the degradation of ecosystems due to non-compliance with the Peruvian government's environmental quality standards – have important trading partners in countries such as Germany, Spain, Bulgaria and Italy, some of which are the main importers of copper. This dynamic replicates the same neo-colonial and discriminatory pattern that reinforces Peru's role as a mere supplier of raw materials, while the Global North concentrates the profits from extraction and externalises the socio-environmental costs to the Global South.

Strategic minerals such as arsenic, bismuth, antimony, among others — included in the European Union's list of critical raw materials — are exported from the country in the form of concentrates without adequate economic remuneration, which again favours companies and their shareholders to the detriment of local society. In addition, several of these minerals are considered punishable due to their polluting nature, generating financial penalties when their presence in commercialised concentrates exceeds the limits established by Peruvian legislation.

Finally, there are alternatives to extractivism in Peru. These are tangible proposals that are responding to the different livelihoods that exist in the country, and they are based on

initiatives such as family farming – key to national and international food security and sovereignty –, agro-ecological production, circular economies, and practices linked to water protection, such as planting and harvesting water for life, among others. These should be protected and supported, yet they are under constant threat due to the advance of extractivism driven by demand for critical minerals in the global north.

RECOMMENDATIONS

The recommendations that follow seek to answer the central question of this paper: is a "just" energy transition possible for countries of the South such as Peru without a structural reduction in the consumption of raw materials in the North? From our analysis, it can be seen that a "just" energy transition will only be possible if the global demand for critical materials is reduced. "Just" implies, first and foremost, that the transition cannot be sustained by expanding the extractive frontier, as this will only exacerbate socio-environmental conflicts, violate human, environmental and collective rights and degrade ecosystems.

Given the territorial, environmental and social impacts of the pressure for copper and other critical minerals:

To the Peruvian Government:

- Resume the discussion of a binding land-use planning policy that can protect fragile ecosystems and headwaters, and that will guarantee prior consultation and free, prior and informed consent for Indigenous Peoples and peasant communities before any decision and action is taken which will affects the communities.
- Implement transparent and accessible information systems on the traceability of strategic minerals, ensuring that the composition and origin of exported minerals are publicly known to avoid opacity and possible corruption.
- Strengthen the environmental institutions, empowering and giving autonomy to the institutions that manage and supervise environmental policy in Peru, such as ANA, OEFA, and SENACE, among others.
- Review and update the Environmental Quality Standards for water, air and soil, ensuring that they are aligned with international standards for the protection of health and ecosystems.

To the European Union:

- Make trade agreements and bilateral treaties with Peru conditional on clear guarantees of protection of human rights, environmental and collective rights, as well as respect for the right to prior consultation of indigenous peoples. Likewise, we propose the revision of the current Free Trade Agreement with Peru and the initiation of a new democratic process, based on solidarity, equity and participation, which includes all parties interested and affected by such agreements.
- Demand compliance with the Supply Chain Act promoted by the European Union and Germany, as well as other regulations, such as the 'Regulation against Deforestation' and unilateral measures within the framework of the 'Green New Deal', guaranteeing respect for the human, environmental and collective rights of the populations affected by investments by European and German companies. Likewise, avoid any setback in the application of these regulations and ensure that it contemplates civil liability, as well as accessible complaint mechanisms that allow affected persons to effectively assert their rights.

- Ensure an effective reduction in trade volume to decrease the demand for metal raw materials and, therefore, the pressure of extractivism on local regions and territories.

Given the human rights violations by companies trading with European countries:

To the Peruvian Government:

- Implement a policy to protect environmental human rights defenders, safeguarding the lives of environmental defenders in situations of risk, and stop persecuting and criminalizing those who defend their territories from the presence of extractive activities.
- Approve the Escazú Agreement, which seeks to protect environmental defenders, especially those at high risk.

To the European Union and Germany:

- Include verification and penalty clauses in regulatory frameworks – such as the German Supply Chain Act and the proposed EU Due Diligence Directive – for companies that maintain business links with companies involved in human rights violations or proven ecological damage in Peru.

Given the economic losses due to the penalties imposed on strategic minerals:

To the Peruvian Government:

- Implement robust and transparent control mechanisms over the actual composition of exported concentrates to prevent the illegal or undervalued extraction and removal of strategic minerals such as arsenic, bismuth and antimony. This includes improving the technical and legal capacity of OEFA, SENACE and SUNAT to monitor and penalise non-compliance and tax fraud, considering the high international demand for these critical raw materials.
- Develop public policies that promote the transformation of minerals within the country through the development of its own processing infrastructure, access to clean technologies, and the implementation of environmentally and socially responsible processes, in order to increase the added value of production and strengthen tax collection.

Given the alternatives to extractivism that already exist in the territories:

To the Peruvian and European governments:

- Allocate public funds or funds from cooperation, using taxes paid by companies, to strengthen alternative economies that require recognition and structural support, prioritising family farming, agroecology, circular economies and community water management, which contribute to diversifying the economy beyond extractive mining and reducing dependence on the sector.
- The economy needs to be reoriented to prioritise the needs of the Peruvian population, guaranteeing food security, social welfare and ecological sustainability.

To Germany and the European Union:

- Incorporate specific support for alternative economies into cooperation policies, which should be geared towards improving the living conditions and livelihoods of the population, rather than favouring the economic interests of transnational companies, avoiding the reproduction of extractive practices and strengthening Peru's food security and sovereignty.
- Ensure that regions can diversify and strengthen their local economies and move away from their neo-colonial role

as suppliers of raw materials to foreign countries.

In relation to the consumption of critical materials in the European Union:

- The extractive pressure on Peru and other countries in the South is linked to unsustainable overproduction and excessive consumption patterns in the Global North. A global just energy transition cannot be sustained by reproducing neo-colonial structures that extract wealth and externalize impacts.
- Countries with high mineral consumption, such as Germany and other EU members, need to adopt binding commitments to reduce the use of materials by setting sectoral limits and ceilings on the consumption of strategic metals.
- Establish clear and accessible institutional mechanisms for complaints and reports to the EU and Germany that can be used by people affected by extractive business activities in Peru or countries in the Global South, either directly or through the supply chain.

In conclusion, this document has shown that the increased extractivism and specifically the demand for minerals is not being reflected in tangible economic benefits or social improvements in Peru but rather in conflicts, pollution and the violation of rights. At the same time, Peru is a megadiverse country, with proposals that are challenging extractivism and offering a future different from conventional development models. We are talking about Buen Vivir: alternatives that protect ecosystems and headwaters while generating economies capable of sustaining the local ways of life. The proposal is therefore to diversify the national economy, strengthen these alternatives and, above all, promote a structural reduction in the demand for critical minerals. Only through less mining will it be possible to protect nature, guarantee human rights and move towards a true just transition for countries such as Peru.

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