

# Unveiling the Hidden Aspects of Resource Extraction: Possible Pathways for Sustainable Resource Utilisation

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## Executive Summary:

- The **commodity culture** embraced by the Global North is underpinned by unsustainable resource extraction, primarily from distant locations in the Global South.
- The convenient availability of goods conceals underlying environmental degradation, loss of biodiversity, and inherent inequities. **These impacts are far removed from producers and consumers, removing them from immediate view** and, in effect, making them invisible.
- The OECD's economic growth projection between 2011 and 2060 would lead to a **doubling of global material consumption**. The most significant growth is anticipated in emerging and developing economies that are poised to accelerate their economic growth.
- Excessive extraction and consumption of natural resources contribute to habitat destruction and biodiversity loss as ecosystems are degraded or completely destroyed to meet growing demand. Additionally, material extraction, processing, and transportation often lead to **high energy consumption and greenhouse gas emissions**, exacerbating climate change.
- The unprecedented and rapidly accelerating **extraction of metals and minerals** over the past two decades will lead to a surge in global metal mining production, furthering its adverse environmental impacts and its tendency to drive social conflicts, especially in developing countries.
- In response to these challenges, underpinned by **Sustainable Development Goal-12** ("Ensure sustainable consumption and production patterns"), we participants of the Humboldt Residency Programme 2023 are now presenting our exploration of sustainable behaviour and resource utilisation. This is based on our transdisciplinary work of questioning the complexities of resource extraction, presenting ways to reduce energy consumption, illustrating personal consumption impact, suggesting sustainable resource utilisation policies and finally, through art, exploring the role of narratives and visualisation in perceptions of sustainability.

Global demand for natural resources will continue to increase in the coming decades due to urbanisation, population growth, rising incomes, industrial developments, shifts in technology, and unsustainable consumption patterns. This reliance on natural resources rose by over 65% from 2000 to 2019, and according to [OECD projections](#), economic growth is forecast to quadruple economic levels from 2011 to 2060, leading to more than a doubling of global materials consumption. The most significant growth in materials consumption is anticipated in emerging and developing economies that are poised to accelerate their economic growth. For instance, most of the expansion in resource extraction has taken place in upper-middle-income nations, such as Brazil and China, which boosted their global portion of domestic material usage from 33% in 1970 to 56% in 2017. However, when looking at per-capita figures, the high-income countries maintain material footprint consumption levels that are 60% greater than those of the upper-middle-income group, and they are thirteen times higher than those of the low-income group.

The environmental impacts of material consumption are profound and multifaceted. Excessive extraction and consumption of natural resources contribute to habitat destruction and biodiversity loss as ecosystems are degraded or completely destroyed to meet growing demand. Additionally, the extraction, processing, and transportation of materials often lead to high energy consumption and greenhouse gas emissions, intensifying climate change. For instance, the increasing demand for biomass has contributed to deforestation worldwide. Deforestation frequently occurs as a consequence of altering or clearing land to obtain the necessary resources for the production of consumer goods. This has led to loss of ecosystem services, disruption of water cycles, and detrimental impacts on indigenous and local communities that depend on forests for their livelihoods and cultural practices. As the demand for biomass is projected to increase from 24 billion tonnes in 2017 to 44 billion tonnes by 2060, if historic trends continue, deforestation and its associated environmental impacts will continue to be problematic.

Another sector considered highly detrimental to the environment and socially problematic is mining. Extensive documentation exists on its adverse environmental impacts and its tendency to exacerbate social conflicts, especially in developing countries. The unprecedented and rapidly accelerating extraction of metals and minerals over the past two decades coupled with the rise in their demand, from 2.6 billion tonnes in 1970 to 9.1 billion tonnes in 2017, with a projected further increase to 18 billion tonnes by 2060, will lead to a surge in global metal mining production. This excessive demand for metal commodities will most likely be achieved by launching new mining projects, the physical expansion of existing mining sites, and intensified and optimised extraction processes, which, if done unsustainably, will lead to ever more irreversible social and environmental impacts. In this context, the increase in material use, coupled with resource extraction, is likely to intensify the strain on resource reserves and pose a threat to future well-being and global sustainability, particularly in low-income economies.

In response to these challenges, Sustainable Development Goal-12 (SDG-12) places a significant emphasis on achieving resource conservation and the efficient utilisation of natural resources. This focus on resource efficiency is of paramount importance, particularly for economies that rely heavily on natural resources. Achieving Sustainable Development Goal 12 (SDG-12) entails a multifaceted approach involving coordinated efforts across various sectors and levels of society. It will mean individuals, communities, businesses, and governments working together, which will require a holistic approach, with a focus on sustainability, resource efficiency, and responsible consumption and production practices. This can be accomplished by encouraging people to adopt sustainable lifestyles, promoting awareness about the environmental impact of consumption choices and advocating the 5Rs (refuse, reduce, re-use, rethink, recycle). Governments have a crucial role to play in promoting sustainability by setting policies and regulations that encourage the use of green technologies and facilitate the transition to a more resource-efficient economy as well as instituting frameworks to provide incentives to consumers and producers to reduce resource consumption. Businesses can contribute by adopting eco-friendly practices, embracing circular economy principles, and ensuring transparency in their supply chains.

In this **collection of projects**, we aim to unveil the hidden aspects of resource extraction and discuss possible pathways for sustainable resource utilisation.

- **Santos Chicas** proposes a [collection of questions](#) that can serve as a tool to navigate the multidimensional landscape of resource extraction, revealing its complexities, contradictions, and potential for transformation.

- Looking at individuals as consumers, **Lou Ziyang** presents a list of behaviour choices to reduce their energy consumption and GHG emissions.
- In order to illustrate one example of the long shadow that seemingly invisible resource consumption can cast, intricate causalities and emissions caused by excessive personal consumption, **Christopher Schrader** guides you through an interactive presentation exploring the metal contents of smartphones.
- More sustainable behaviour on the part of individuals as well as industry can be voluntary, but states and international organisations should play a role in incentivising and enforcing the reduction of emissions through regulation and rewards. **Lucy Ombaka** makes recommendations for possible policies that present pathways to sustainable resource utilisation.
- Finally, **Magdalena Hart** uses her art to explore the role of narratives in sustainable behaviour and the role visualisation as well as terminology can play in individuals' perceptions of sustainability.