

¿Green sacrifice zones in Chile?

Threats and risks of mining and energy expansion in the territories and ecosystems of the Atacama Desert.

Executive Summary

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This research arises from the need to **understand and anticipate** the cumulative impacts and risks associated with the expansion of copper and lithium mining, as well as the installation of a hydrogen industry, in the Antofagasta region of northern Chile. Both processes stem from Chile's declared intention to maintain its leadership in these minerals while also becoming a world-class exporter of hydrogen and its derivatives, such as ammonia, within the framework of global, and particularly European, decarbonisation goals. Based on Fundación Tantí's experience in the protection of Andean ecosystems - especially wetlands - this study set out to understand the forces driving the establishment of these industries, and the emerging impacts that massive Non-Conventional Renewable Energy (NCRE)-related infrastructure developments have on territories and ecosystems already damaged by mega-mining. Following the approach of political ecology and ecological economics, we identified the environmental effects and ecologically unequal exchange resulting from green extractivism in northern Chile.

The **methodology** followed the principles of action research (Kemmis et al., 2014) and militant research (Bookchin et al., 2013; Bringel & Maldonado, 2016). The various conversations, analyses and accompaniment processes with project-affected communities detailed in the report took place between March and November 2024. The information on so-called 'green' hydrogen projects is updated as of November 2024. A qualitative analysis was carried out in five of the region's territorial clusters: Calama, Peine, Taltal, Mejillones and Tocopilla. These case studies reveal the different impacts of projects already underway in Andean and coastal territories. Additionally, we performed a quantitative analysis of both the projected capacity of the hydrogen and derivatives industry, as well as the current and future NCRE projects in the Antofagasta region.

In terms of **results**, we observe that in the five territories analyzed there are conflicts directly and indirectly related to technologies, infrastructures and extractive processes associated with mega-mining. These conflicts have clear potential to worsen if the **31 green hydrogen projects** currently in the pipeline for the region are developed. Given the relevance of this new source of threats, we present 14 factsheets on green hydrogen projects, photovoltaic and wind energy projects, and electricity transmission. These conflicts are related to (1) impacts on terrestrial ecosystems and aquifers that are already directly affected by lithium and copper mining processes, as well as coastal marine ecosystems indirectly affected by processes related to mining, such as water desalination. These impacts are exacerbated by the increasing juxtaposition of industrial activities,

raising concerns about unassessed synergistic and cumulative effects. Archaeological heritage impacts (2) are also a concern, in particular due to the advance of large-scale wind farms. We also identified (3) social and cultural impacts emerging from the relationship between companies and communities, particularly in relation to (4) the violation of rights to information and participation in environmental matters, as well as the violation of the rights of indigenous peoples, such as the right to free, prior and informed consultation and the right to self-determination.

Of the 31 green hydrogen projects considered in this report, 13 have announced the construction of associated energy infrastructure. This would add up to a total of **16 GW** of NCRE electricity, when today 4.8 GW of this type of energy is generated in the region. If the trends described in the report continue, we project an **increase in socio-environmental conflicts** in the future.

In our **analysis and conclusions** we propose a dialogue with the concepts of green extractivism and green sacrifice zones. We argue that it is useful to situate emerging hydrogen-related processes and associated infrastructure within the history of extractivism in Antofagasta, as hydrogen overlaps geographically with other extractive processes - notably lithium and copper mining - and deepens existing problems such as the growing and unregulated use of desalination plants to meet industrial water demands. This research provides a framework for further understanding threats to socio-environmental justice from a holistic framework that goes beyond corporate labels of hydrogen as a 'green' solution to the problem of decarbonisation, and provides key insights towards the construction of a just and popular energy transition.

References

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