Emancipatory Alternatives Among Contested Green Hydrogen Production Pathways in Chile

Context

Since the late 2010, (green) hydrogen has experienced a continuous hype. Hydrogen is not only framed as key to combat the climate crisis but also as promises energy supply security and green growth (Dorn, 2024; Rischer, 2023). This is due to its ability to store energy over long periods and thereby stabilize electric grids, and to cut emissions in sectors that would otherwise be difficult to decarbonize (Pepe et al., 2023). Concretely, green hydrogen produced from renewable energy represents a feasible technological solution for greening specific high-emission and energy intensive sectors such as heavy industry, long-distance, heavy-duty transport, or some chemical processes (IRENA & WTO OMC, 2023). Thus, labor unions highlight the potential to green these hard-to-abate sectors and thereby protect existing industrial jobs while also creating new employment opportunities for workers in fossil industries like oil and gas (ITUC, 2022). However, academics alongside environmental and social organizations increasingly criticize the current market-driven hydrogen transition underpinned by narratives of green growth due to its injustices and potentially devastating socio-ecological implications (see for example Aldana Rivera & León Peñuela, 2022; Amouzai & Haddioui, 2023; Dillman & Heinonen, 2023; Müller et al., 2022; Thiele et al., 2022). In this context, it is necessary that labor unions, environmental and social organizations not only acknowledge this criticism but also integrate their perspectives and make a combined push towards a just hydrogen transition.

So far however, the emerging hydrogen economy seems to be captured by the international capitalist elites' aggressive lobbying, while most states are primarily concerned with energy supply security and questions of global competitiveness and economic growth. The international hydrogen lobby is dominated by multinational companies which include fossil companies (e.g. Shell, SINOPEC), energy distributors (e.g. ENGIE, ENEL), chemical and fertilizer companies (e.g. BASF, Dow) and technology providers (e.g. Bosch, Siemens), all interested in creating a huge hydrogen market to profit from (Corporate Europe Observatory, 2023). Depending on its penetration of the global economy, green hydrogen could supply up to 14% of the global energy mix by 2050, with up to 25% of the 500 Mt projected demand being traded internationally (IRENA & WTO OMC, 2023). To benefit from this potentially massive market, industrial producers such as China, Japan, the US and Germany have created ambitious hydrogen strategies that include financial incentives and billions of loans (Noussan et al., 2021; Pepe et al., 2023). Thus, there is tight competition between major economies to advance technological leadership and capture emerging global hydrogen production networks (Pepe et al., 2023). Furthermore, as hydrogen production is energy intensive, actors with limited energy resources such as the EU or Japan also compete for hydrogen imports from the Global South (ibid.). In this context, several states with high potential for

producing comparatively cheap green hydrogen such as Morrocco, Namibia or Chile hope to profit from future demand and are positioning themselves as prospective hydrogen exporters (Noussan et al., 2021). These states are attracted by expectations of considerable investments, technology transfers and the opportunity to leapfrog to a modern, decarbonized economy (Dorn, 2024).

Problem and research question

Thus, a global hydrogen market characterized by international trade flows and a division of labor between producer and consumer countries is emerging. States with high potential for producing green hydrogen are faced with competing hydrogen production pathways associated with distinct economic challenges and socio-economic implications (Kalt et al., 2023). However, the policy choices available to these countries are limited by prevailing economic dependencies and power asymmetries. The currently emerging global hydrogen economy is so far characterized by green extractivism, enclave economies and (neo-)colonial trade patterns (ibid.). At the same time, the disruptive potential of green hydrogen within the global energy transition might also open windows of opportunities for alternative hydrogen transitions (Villagrasa, 2022). To accomplish a just hydrogen transition, it is thus fundamental that labor unions and civil society organizations both in the Global North and South understand existing challenges and work to strengthen emancipatory alternatives of green hydrogen production. The proposed research paper contributes to this understanding by examining the emerging hydrogen economy in Chile. Chile is an interesting case study due to its advanced hydrogen strategy dominated by an export-oriented, extractivist production model which is contested by labor unions, domestic industries and opposition from social movements. To investigate the contested green hydrogen policy process in Chile, the following research question is asked:

What are the key objectives, challenges, and opportunities of alternative hydrogen transition pathways within the contested Chilean green hydrogen policy process?

To answer this question, the paper will operationalize historical-materialist policy analysis (HMPA). This critical approach to policy analysis builds on historical-materialist state theory and focuses on "material structures and interests" among the competing social forces driving the policy process (Brand et al., 2022, p. 297).

Note by the author:

The paper builds on insights obtained during research for my master thesis which also investigates contested hydrogen pathways in Chile but seeks to answer the following overall research question: To what extent does the emerging Chilean green hydrogen economy overcome or (re-)produce situations of dependency? In my research for this thesis, I will do a research trip to Chile where I will conduct interviews with key actors, make field trip to the southern region Magallanes, take part in a Chilean hydrogen conference and combine all these insights with a qualitative content analysis of key official documents. I will then integrate these findings in the proposed research paper.

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