6.1.4 Chile



Context

Huasco Province in Chile's Atacama Region combines desert, transverse valleys, coastal areas and the Huasco River basin. Its high solar radiation makes it attractive for photovoltaic solar parks, while its valleys and drylands sustain agriculture, transhumant goat herding, small-scale mining, tourism and culturally significant landscapes. The province includes Vallenar, Freirina, Huasco and rural Alto del Carmen, with a substantial Diaguita population. Landholding is highly concentrated: nine estates control more than 96 per cent of the recorded provincial area, while most holdings are smaller than five hectares. Historically, large estancias combined private ownership with collective grazing and mobility rights. The province also carries a legacy of extractive pressure and pollution, including mining, coal-fired generation and agro-industry. Against this background, 13 photovoltaic projects entered environmental assessment over the previous decade, mostly from 2022 to 2024, covering more than 4,000 hectares and representing approximately USD 2.776 billion in proposed investment.

Conflict description

The emerging conflict concerns the cumulative transformation of land by large solar parks and associated transmission infrastructure. Landowners lease extensive areas to developers for 20 to 30 years, but those privately negotiated decisions affect collective and customary uses, particularly transhumance. Fencing and intensive land occupation obstruct routes between seasonal grazing areas and *majadas*, undermining goat-rearing as both a livelihood and a Diaguita cultural practice. Projects may also displace agriculture, including vineyards and other crops, while generating relatively few permanent jobs. Construction creates temporary employment, often requiring skills unavailable locally; operation is highly automated. Communities therefore perceive an imbalance between the territorial costs and local benefits, with electricity discounts and company contributions considered limited or poorly visible. Environmental concerns centre on the *desierto florido*, a globally distinctive flowering-desert phenomenon that contains more than 300 endemic species. Proposed mitigation through relocating bulbs or creating private conservation areas is viewed with skepticism because ecological relationships may not be reproducible elsewhere. Other reported risks include habitat fragmentation, interrupted movement of guanacos and native fauna, impacts on bird corridors and pollination, deterioration of soil beneath panels, increased temperatures and heat-island effects, possible disruption of coastal fog, water use for construction and cleaning, and long-term uncertainty over toxic electrical waste. Photovoltaic installations also alter a culturally valued landscape containing petroglyphs, ceremonial sites and Indigenous graves, and may reduce tourism associated with rural life and the flowering desert. Institutionally, communities face late or fragmented information, technical asymmetries and narrow participation windows. Projects submitted

through Environmental Impact Statements do not automatically require public participation, and some developers allegedly split installations into units below three megawatts to avoid assessment. Generation and transmission are also assessed separately, obscuring cumulative impacts. Municipalities lack updated land-use plans, inspection capacity and clear authority, leaving location decisions largely to developers. These conditions produce a conflict between an energy-enclave model and local visions based on diversified livelihoods, ecological cycles and territorial identity.

Resistance and pathways forward

Resistance is organised through neighbourhood councils, local assemblies, environmental groups, researchers and sympathetic public officials. Communities challenge projects during environmental assessment, publicise information gaps and question technical claims surrounding flora relocation, water savings and benefit-sharing. Some local organisations have been strengthened by earlier socio-environmental struggles and now connect opposition to photovoltaic parks with defence of water, heritage and rural livelihoods. The study does not portray residents as rejecting renewable energy. Rather, they demand decisions about location, scale and design that recognise cumulative effects and territorial priorities. Recommended pathways include earlier and more accessible participation, longer consultation periods and technical information that communities can use. Municipal and regional authorities should urgently update land-use plans, establish exclusion zones for high-value ecosystems and cultural sites, and strengthen inspection and enforcement. The flowering desert should receive robust legal protection, while environmental assessment should examine generation, transmission and multiple nearby projects as an integrated whole. Independent research should address soil, water, temperature, fauna and semi-arid ecosystem impacts, incorporating local knowledge. Companies should prioritise degraded or lower-value land, replace transactional relations with transparent engagement, create meaningful local value and provide verifiable financial guarantees for end-of-life waste management. Conflict resolution therefore depends on reframing the transition as a socio-ecological process: renewable energy can contribute to decarbonisation, but only if the people living in Huasco can shape where and how it develops, and if its benefits do not depend on sacrificing transhumance, food production, biodiversity and the cultural landscape.