

Ecocide in Chile: A review of the devastation of Nature in Chile

1. Introduction

Chile is a unique country, geographically delimited by natural borders (desert, mountain range, ocean and Antarctic territory), which is why it possesses a great diversity of landscapes, ecosystems and species that are considered irreplaceable components of the natural heritage on a planetary scale, both by naturalists and scientists and by the pre-existing and native peoples of Chile.

To understand the transformations of the continental, maritime and Antarctic territories, which are part of Chile, it is necessary to go back to the beginning of the Quaternary geological period (2.59 million years ago), where the landscapes and ecosystems that we know today were defined, after intense periods of volcanism, mass flows resulting from alluvium and periods of sedimentation, which led to the formation of the ecosystems and landscapes - groups of ecosystems - that we know today.

Landscapes and ecosystems vary (develop, modify, expand, contract or even disappear) throughout the history of the planet, both due to natural factors (such as volcanic eruptions, floods, droughts or even glaciations) and human factors since our appearance (agriculture, war, industrialisation, construction of cities, etc.).

In particular, in Chile, the landscapes have varied greatly and the vital cycles of the elements of nature have been interrupted throughout its history, due to human action, developing, since the conquest of America and the colonial era, the dispossession of multidimensional realities, where the history of the pre-existing native peoples has been made invisible, and the story of the social and environmental movements of the present day.

Finally, substantial elements are made available that aim to make the discussion on the devastation of nature and its consequences more complex, opening doors to understanding the effects perpetrated by humanity and the development of societies in Chile, integrating the conceptualisation of Ecocide and exemplifying cases of Ecocide that have occurred throughout history. These elements are proposed as a starting point, which will be further developed during the constituent process in the Constitutional Convention.

2. What is Ecocide?

Ecocide is a form of violation of the rights of nature, defined as the "total or partial destruction of an ecosystem, or of a specific condition of it, or the threat or extinction of an endangered species". Ecocide is considered to be similar, at the level of the rights of nature, to genocide, which is a serious form of human rights violation understood as the "total or partial destruction of a social group". The ecocide is caused by humans against nature (voluntarily or not, by action or omission, directly or indirectly) and/or by other species that through human responsibility generate an ecocide in a certain territory (for example, invasive

alien species introduced by humans or by conditions created by humans).

The Climate and Ecosystem Crisis is an act of planetary ecocide, against the entire biosphere and its species. Ecocide also has a historical character, it is not only a current phenomenon, but countless acts of ecocide have been carried out throughout the history of humanity, and as an act that violates rights, it also requires the guarantee of historical truth, justice, integral reparation and regeneration of Nature. The extinction of a native people is understood as an act of ecocide, considering the human population that cohabits it in harmony and as part of it to be part of the biodiversity of an ecosystem.

3. Ecocide in Chile

3.1 Recurrent ecocide in Chile

- A. Total or partial destruction of indigenous peoples or their ways of life.
- B. Replacement of native ecosystems by cities and/or industrial agriculture.
- C. Destruction, filling and/or felling of wetlands.
- D. Human-induced wildfires.
- E. Change of native forest coverage to forest plantations.
- F. Dumping of industrial waste or mine tailings.
- G. Total or partial destruction of an ecosystem due to the change of riverbeds and/or river flows by canalisation of water.
- H. Environmental "sacrifice zones".
- I. Destruction of glaciers.
- J. Extermination of a species or population of a species in an ecosystem.
- K. Extraction from peatlands.
- L. Destruction of ecosystems by construction of large infrastructure works.

3.2 Particular cases of ecocide in Chile

A. Caso Chañaral:

The origin of this ecological disaster dates back to 1938, when the earth reservoirs that stored the tailings from Potrerillos were filled, and this flow was emptied into the sea, using the Salado River, a small stream of natural water (it should be noted that this area of our country has a shortage of water for both human consumption and agriculture). Thus, over the course of 52 years, more than 320 million tons of solid mining waste and 850 million tons of wastewater from the industrial process of the Gran Minería del Cobre were dumped into the sea in the coastal area of Chañaral. The situation in Chañaral Bay has been cited in international forums as "the most brutal example of what should never be done"; millions of tonnes of copper tailings dumped on the area's coastline for almost 52 years engulfed the bay, the sea retreated about two kilometres inland from its natural shore, causing

the old port infrastructure of Chañaral to disappear. What exists today is a desolate, lifeless, artificial beach stretching in a straight line for six kilometres. The white sands, with strange greenish veins, are nothing more than mineral and chemical residue with corrosive, reactive and toxic connotations.

The big mining, yesterday transnational as was Andes Copper Mining Company, today state-owned as is CODELCO CHILE, used the bay and, with impunity in the face of the demands of its inhabitants, turned it into a real "natural" tailings (Mendivinsky-Roa, G., et al. 2015).

B. Filling of Los Molles Wetland:

In the coastal area of Los Molles, located in the Valparaíso Region, part of the Los Molles and Los Coiles wetlands were filled in order to construct buildings. It is worth noting that wetlands provide a number of ecosystem benefits such as freshwater supply, food and habitats for numerous species, as well as controlling the impacts of the Climate and Ecosystem Crisis we live in.

Considering the above, when wetlands are built on, the people who live in the buildings are put at risk because they are not able to mitigate the effects of climate change, storm surges and floods. In this sense, ecosystems that provided protection are destroyed and dwellings are built that expose people to danger. According to the note made by Ladera Sur, in the sector there is a relevant biodiversity given the terrestrial and marine ecosystems present, ecosystems that have unique Chilean flora and fauna species in the country (Díaz, 2020), however, with the growing number of real estate projects, these ecosystems are in danger.

C. Forest fire in Peñuelas Lake:

Between March and May 2021, a series of forest fires were recorded in the Peñuelas Lake National Reserve in the Valparaíso Region. One of these fires, which occurred on 22 March, had at least six simultaneous outbreaks, which is presumed to be intentional. During that week of March, at least 380 hectares were consumed in the Reserve as a result of these fires. On 16 April, another 70 hectares were burnt, and again it is believed that this new fire had an intentional origin.

D. Massive planting of pine trees to replace native vegetation:

In Chile, more than 273,000 hectares have been affected by fires, and in their replacement the forestry industry has been boosted by pine

and eucalyptus plantations, mainly in the regions of O'Higgins and Los Ríos.

According to biologist and ecologist Andrés Fuentes, this type of plantation has a major impact on forest fires. According to Fuentes, native forests act as a natural barrier to fire, as they are more humid and do not burn at the same rate or intensity as replacement plantations (Urquieta, 2017).

E. Dumping of sewage and chemical waste into the Mantagua wetland:

In the sacrifice zone of Quintero, Puchuncaví and Concón is located the Mantagua wetland, which has 269 hectares of flora and fauna that are considered a "green lung" within the seriously polluted sector.

However, in February of this year, the dumping of sewage from chemical toilets and chemical waste was reported, actions that have the potential to cause irreparable damage to the ecosystem, causing the possible disappearance of all the flora in the area and the death of fish and birds. As Muñoz (2021) explains, dumping is causing water bodies to be negatively affected, with changes in their pH and chemical composition that are compromising the life of the ecosystem's flora and fauna.

F. Mejillones "sacrifice zone":

Mejillones, a city located in the Antofagasta Region, is a territory where mining-related industries have been installed. Some of the companies located in the sector include four coal-fired thermal power plants with six units in operation (Oceana, n.d.).

According to a study conducted by the University of Antofagasta in 2012, levels of heavy metals (nickel, copper, zinc, cadmium, vanadium and lead) in marine sediments in the sector exceed international standards on a large scale. It was also found that various species of crustaceans and molluscs were contaminated with heavy metals.

In February 2020, the situation in Mejillones became more worrying after the dumping of six tonnes of coal (El Mostrador, 2020). The seriousness of what happened adds to the effect of contamination and accumulation of harmful substances on the seabed, as the seabed is in a condition of complicated anoxia. All of the above seriously affects the biodiversity of the existing ecosystems in the sector.

G. Damage to Toro 1, Toro 2 and Esperanza glaciers at Pascua Lama:

Pascua Lama was a mining project carried out by Barrick Gold in the

Andes Mountains, on the border between Chile and Argentina. According to Leblanc (2020), the project aimed at open-pit mining to extract gold, silver and copper, minerals that are located under important glaciers in the area, which are fundamental as water reserves for the supply of water to communities and ecosystems.

According to a study financed by the same company, in the exploration stage alone, the mining company destroyed more than 62% of the Toro I glacier, 71% of the Toro II glacier, and 70% of the Esperanza glacier, with an estimated damage to glaciers exceeding 90% (Leblanc, 2020). In the same vein, the greatest environmental impact occurred because the deposit is located below the glaciers that supply the Chollay river, which is the main tributary of the Tránsito river and feeds the Huasco river. Thus, the main victims were the Diaguita Huascoalina community.

Today Pascua Lama is closed with a fine of \$7,000,000,000,000 for serious and repeated violations of the Environmental Qualification Resolution (Leblanc, 2020). However, the project is bi-national, so the operations on the Argentinean side are still in force.

H. Death by contamination of the black-necked swans of the Cruces River:

At the end of 2004, the company Celulosa Arauco caused environmental damage in the Río Cruces Nature Sanctuary. Following an investigation, the damage resulted in "the death and disappearance without regeneration to date of the black-necked swan, death and emigration of black-necked swans from the wetland, damage to the ecosystem as a whole, loss of biological diversity of the ecosystem and loss of the landscape value of the wetland" (Cox, 2013).

Following on from the above, Cox (2013) indicates that the cause of the environmental damage caused was due to the illegal dumping of Riles into the Cruces River by Celulosa Arauco. The company dumped liquid industrial waste into the river's wetland, the quantity, composition and treatment of which did not correspond to that authorised, which caused an increase in water temperature, an increase in acidity and an increase in conductivity. All of the above resulted in an obvious environmental disaster.

I. "Sacrifice Zone" Choapa Province:

The Choapa province is located in the so-called "Norte Chico" of Chile, in the IV Region of Coquimbo, some 300 kilometres north of Santiago. Since the 1990s, private mining mega-extractivism has been imposed, owned by national and transnational capital through

the Minera Los Pelambres project. This company has attacked nature with impunity by destroying and intervening in rock glaciers that provide water to the basin and its ecosystems in times of water scarcity. Whether by removing rock glaciers, depositing waste rock on them or building roads, between 2000 and 2006 the private company has affected permanent fossilised water reservoirs equivalent to a maximum of 2.84 million cubic metres of the vital element, a loss that according to a study by the University of Waterloo, Canada (Azocar and Brenning 2008) was caused by interventions that were not announced in any of the environmental studies presented to the authorities between 1997 and 2004.

Along with the destruction of the cryosphere, this company has an environmental record that includes the spillage of thousands of litres of copper concentrate into the Choapa River, and the installation of mega mining tailings such as the El Mauro tailings dam, the largest in Latin America in agricultural areas, which was located on the Priority Site for the conservation of biodiversity "Fundo El Mauro", whose main component was a native forest of preservation of 200 hectares of threatened flora such as Canelo (*Drimys winteri*), Lilén (*Azara celastrina*), Peumo (*Cryptocarya alba*) and Boldo (*Peumus boldus*) (Libro Rojo de la Flora Nativa y de los Sitios Prioritarios para su Conservación: Coquimbo Region. Squeo, Arancio and Gutiérrez, 2001). The destruction of this forest, today under the tailings deposits is the disappearance of the largest population of Canelo in the Norte Chico.

J. Genocide of the Selk'nam people:

The original peoples of the southern channels are associated with histories of massacres, dispossession, colonialism, assimilation, banishment, pandemics of Western diseases, realities fostered under permissive policies that facilitated the mass murder of native inhabitants in exchange for land, goods and privileges for European settlers.

The Selk'nam way of life is the oldest of humankind: that of the Stone Age hunting, gathering and fishing people. The Selk'nam population probably numbered 3,500-4,000 when, in the 1880s, whites began the occupation of their territory, Isla Grande de Tierra del Fuego (Chapman, 2002).

During the last decades of the 19th century and into the first decade of the 20th century, the Selk'nam were decimated by whites. Many died from diseases transmitted by the whites; others were shipped to the mainland. Some Indian ground hunters committed unnamed atrocities on their own before killing their victims. Other Selk'nam died in wars among themselves; such infighting was more frequent at this time, as

the herders' fences advanced and the hunting ground diminished, causing disputes among the Selk'nam (Chapman, 2002).

The countless atrocities committed by the white man on Fuegian soil reached a point of no return at the beginning of the 19th century; demographic data dating from 1919 showed that the Selk'nam population had been reduced to less than 500 people (Gallardo, 1986).

"Whole families fled from mounted men, armed, paid to kill them, from dogs trained to tear them to pieces.

The Indians resisted as best they could, in anguish, in confusion, in an effort to survive.

But they fell, riddled with bullets, their ears, sometimes their heads, torn off". **Lola Kiepja, 1966, (last Selk'nam native speaker)**

4. Discussion and conclusion

During the ongoing process within the Constitutional Convention, space is opening up to question substantial elements that stem from the normative framework that has governed Chile since 1980. The participatory construction of the new constitution must integrate the story and historical memory of the peoples of Chile, a process that has begun with the reception of hearings from various social and environmental organisations, academics and indigenous peoples, which have nourished the debate to date. Among these stories, the various violations of Nature have been highlighted, partly due to the lack of recognition of Environmental Rights and the Rights of Nature. In addition to the stories heard, this document provides evidence that in Chile there have been and continue to be multiple serious violations of the rights of Nature, where Ecocide has been perpetrated, with the total or partial destruction of ecosystems, landscapes and/or their species.

Although the recognition of rights to Nature has been in the culture of various peoples since ancient times, and is recognised as part of the cosmovisions of indigenous peoples, its recognition is incipient at the level of international jurisprudence. It is important to recognise that although Nature cannot speak and defend itself, it is entirely possible and necessary to recognise its rights, not only to maintain on our planet the sphere of life on which our very existence depends, but also because of the intrinsic value of Nature.

Based on the conceptualisation of Ecocide and the examples mentioned here, the Constitutional Convention is intended to lay the foundations for a process of vindication of the historical truth and environmental memory, justice and guarantees of non-repetition of violations of the rights of Nature (and particularly ecocide), comprehensive reparation measures for damaged territories, "sacrifice zones" and degraded ecosystems, and the regeneration of Nature. Finally, in order to generate guarantees of non-repetition of the aforementioned violations, it is fundamental to enshrine the Rights of Nature and the environment in the new Constitution.

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