

Case Study Peru:

Loss and damage associated with tropical glaciers in Peru: Importance of the National Inventory of Glaciers

Peru concentrates more than 70% of the world's tropical glaciers ¹, so it is of great urgency to make visible the irreversible impacts of climate change on these ecosystems and the actions that must be carried out in the shortest possible term; considering the additional warming expected under a high emissions scenario by 2050 in mountain glacier ecosystems.

The IPCC ²highlights that climate change has caused substantial damage and increasingly irreversible losses, such as the impacts of hydrological changes resulting from the retreat of glaciers, or changes in mountains and the Arctic.

In the case of glaciers, these ecosystems are important mainly for the water security of the population and for subsistence activities such as agriculture. It means that the population depends on these ecosystems for their survival and the impacts associated with the loss of glaciers directly affect the occurrence of losses and damages.

According to the scientific information³ on the loss of glacier mass from 1962 to 2020, there has been a total reduction of 56% of the glacier surface and there is evidence of areas in which glaciers have become extinct.

Likewise, the presence of acid rock drainage as a product of glacial retreat has been evidenced. These events generate significant impacts on the quality of water available to the Peruvian population, since the acidity of the water increases and affects the presence of metals, which can cause losses in health and human lives.

On the other hand, the melting process of the glaciers is associated with an increased risk for the population settled in the lower parts of the mountains, where lagoons of glacial origin are increased and the probability of alluvium of glacial origin that they would produce losses and damages in human lives, in the economic activities of the population (agriculture, mainly) and impacts in infrastructure and services.

In this regard, monitoring the state of glaciers in Peru is necessary considering the context of current climate change and associated impacts. In this sense, the National Inventory of Glaciers is of great importance as a technical document that, having as a backdrop the situation of the glacial mountain ranges, in turn, presents updated information on the physical-geographical state of each mountain region; that is, the main climatic, glaciological, geographic, geological, geomorphological, hydrographic, demographic, cultural aspects and economic activities of each mountain range.

To date, the National Inventory of Glaciers is being updated, which will provide information on the current state of the surface of the glaciers in Peru and the loss trend to date is as follows: In 1989 (there were 2,399 remaining km ²), 2001 (1,595 km ²), 2014 (1,298 km ²), 2028 (1,118 km ²) and 2023 (1,049 km ²).

¹INAIGEM. 2023. National Inventory of Glaciers (in preparation)

²IPCC. 2022. Report of the IPCC Working Group II on Climate Change: Impacts, Adaptation and Vulnerability.

³INAIGEM. 2023. National Inventory of Glaciers (in preparation)

This information allows us to infer, according to the global warming trend, that the probability of occurrence of losses and damages in the Peruvian population increases, mainly associated with the availability of water resources and the impacts of disasters.

Likewise, the IPCC specifies that some ecosystems with extreme risks could exceed limits for adaptation, and it is considered that glaciers can reach this scenario considering the global warming trend, which will lead to consider increasing actions to address losses and damages in Glacier-dependent populations.