In March 2009, Peru passed a new water resources law under president Alan García. The law was created in response to the country’s growing water problem related to the threat of climate change and melting glaciers, urban population growth, pressures on limited resources, and the increasing presence of the mining industry. In the words of former president García, “The law should bring modernity to the use of water in our fatherland, modernity in the daily use of water in the households. We should all prepare ourselves to face a difficult future of the water.”

The idea of modernity is deeply embedded in the neoliberal project of creating a free market and in the ideal of progress, and from the government’s point of view, the rural indigenous peoples in the Andes should be included in this modernity as a way out of “backwardness” and as a solution to poverty. One way of doing this is to change the campesinos’ water practices and introduce new technologies for efficient irrigation. This is not a straightforward process, however, due to the steep highland landscape and campesinos’ lack of financial means. Although this is part of a World Bank-funded development program, the implementation implies a lot of investment of money and time from the campesinos.

The questions that people all over Peru are asking today concern how this situation should be dealt with, and most importantly: Who is responsible for dealing with the effects of climate change? What are the consequences of these discourses of “modernity” emphasized by the central government? Who will suffer from the future water scarcity? How can it be alleviated, and who will pay the price? Indigenous campesinos in the Peruvian Andes are the ones who are most acutely experiencing the effects of global warming and who fear the threat of a waterless future. In a survey I conducted in the southern Peruvian Andes in 2011, respondents often said: “the water will decrease with global warming, and we will lose our harvests and animals,” or “with time there will be no water. We will have to buy water in bottles.”

Like the rest of the Global South, Peru contributes very little of the world’s carbon-dioxide emissions. In a 2008 world ranking, the country came in at 143 out of 215, with 0.38 metric tons of carbon per capita. Nevertheless, global warming is producing strong observable effects on temperature, precipitation, seasonality, glacier retreat, and water supply in the Andes. After the new law, the conflicts over water have still been escalating in numbers and intensity: In 2010, the National Water Authority identified 244 social conflicts related to water resources, 22 of which were in a “critical state.”

Most of the conflicts are related to mining activities, like the infamous Conga gold-mining project in Cajamarca in the northern Peruvian Andes, where the population opposes the project because they fear the mine will contaminate their water resources. President Ollanta Humala was elected in 2011 based on his promises to work for social inclusion and to counter the power of multinational mining companies. However, the challenge of balancing environmental concerns with hopes of economic progress has proved difficult. In Cajamarca, he explicitly stated that he favored water over gold, yet the Conga conflict continues. During the first 18 months of Humala’s presidency, 15 civilians died during protests.

Two years after the new water law was passed, on March 22, 2011, the global World Water Day was celebrated in Chivay, a small town and the capital of the province of Caylloma in the southern Peruvian Andes. Delegations from the local communities in the province marched around the plaza with painted banners
and shouted, “Water is life/Long live the water!” (¡El agua es vida/Que viva el agua!) and “The water should not be sold/The water should be defended!” (El agua no se venda/El agua se defienda!). Farmers and herders had traveled from all over the province to participate in the march and in the following public assembly to express their concern about the climate changes in their communities, such as melting glaciers, heavy rain, floods, irregular frosts, longer drought periods, and scarcer water supplies. A few days earlier, after a month of torrential rainfall and heavy snow in the highlands, as well as unexpected frost in the valley, the political authorities in the province of Caylloma declared a state of emergency in the province. Seventy percent of the population had been affected by the extreme weather; 25,000 young alpacas were killed, 400 hectares of cultivated land were lost, and several irrigation canals were destroyed. The mayors of Caylloma’s 20 subdistricts estimated the losses to exceed $1.5 million. Despite these damages caused by excessive amounts of water, the general experience in the province was that of decreasing water supplies and a fear of a waterless future.

The people gathering in Chivay on the World Water Day in 2011 agreed that global warming was to blame for their increasing environmental problems. However, the question they had come to discuss was, Which actions could be taken locally to mitigate the effects of climate change? Furthermore, who is responsible and who should pay the price? While most of the responsibility for producing carbon emissions and global warming lies with the Global North, it is the Global South that suffers the consequences. Moreover, the groups of people who are most severely affected are already vulnerable due to poverty and unequal access to resources. A peasant family that depends on small-scale subsistence farming will have more difficulty surviving if they lose 80% of their harvests due to drought, flood, or frost than a large-scale agriculture company. Poor farmers can seldom afford to improve their means of production, they cannot afford insurance, and they are more dependent on government relief in case of a disaster. This raises important questions concerning responsibilities and social inequalities. Shifting responsibility from the collective to individuals has always been part of the free-market ideology. Today there is also a tendency for governments, international organizations, and NGOs to shift much of the responsibility of climate-change mitigation to individuals while often allowing corporations to continue with “business as
This means that rain-fed agriculture is becoming unusual. However, the danger of this individualization of responsibility is that corporations can get away with polluting water supplies and destroying the livelihoods of peasant farmers, who then have to shoulder the burden. Most of those who live in the areas most vulnerable to climate change do not have the resources and financial means to implement the necessary projects. In this way, social inequalities will increase, both within countries and on a global scale.

Therefore, people in poor and vulnerable regions of the Peruvian Andes are now struggling to be heard and asking the government, international organizations, and multinational mining companies operating in the area to contribute financially to maintaining the headwater environment. They are specifically asking that tree-planting and micro-dam projects be supported in order to improve the soils and retain the rainwater that falls heavily in the short rainy season. The Andean farmers and herders' experience of living in a vulnerable environment, and at the same time seeing that mines or hydroelectric companies farther down the watershed use water to make money, lead to feelings of injustice and claims for collective responsibilities.

The Intergovernmental Panel on Climate Change (IPCC) states that freshwater-related issues play a pivotal role among the key regional vulnerabilities in Latin America. Reports from climatological and hydrological measurements indicate that the near-surface air temperature in the tropical Andes has significantly increased over the last 70 years, and most station records in southern Peru indicate a precipitation decrease after 1950. This means that rain-fed agriculture is becoming more difficult and that the glaciers are shrinking. Peru contains 70% of the world's tropical mountain glaciers, which are natural containers of freshwater that comes as precipitation during the rainy season.

Today, these glaciers are the most visible indicators of climate change, due to their sensitivity to increased temperatures. Glacier scientists have been monitoring the retreat and melting of these glaciers since the 1970s. According to the IPCC, the total glacier area in Peru has decreased 22% during the last 35 years, and glacier surface from very small glaciers has fallen 80% in the last 30 years. It has been calculated that by 2025, all the glaciers situated 5,500 meters above sea level and under will disappear. The indigenous people who reside between 3,000 and 5,000 meters above sea level live primarily from small-scale agriculture and pastoralism, and during the dry season almost all the water that people and animals use throughout the Andes is derived from the glaciers in the mountain's high peaks.

Peru is vulnerable to these climate changes primarily because of the unequal distribution of resources, money, people, and water. Fifty-three percent of the population lives in poverty, and massive migration to cities in the coastal desert has been going on since the 1970s. When peasant farmers lack the economic means to improve their production under declining environmental conditions, they tend to migrate to the urbanized and industrial coast, where they live in poor neighborhoods in the desert. In Peru, 70% of the country's 28 million people live along the Pacific coast yet have access to only 1.8% of the total water resources in the country. This makes water management a crucial and highly political issue.

Peru's national economy is one of the fastest growing in Latin America, in great part due to the mining industry, yet large parts of the population, especially indigenous people in the Andean highlands and in the Amazon, are still excluded from this growth and find themselves increasingly vulnerable in terms of global warming and scarcity of clean water. Poor Peruvians fear not only the effects of global warming but also the residue of more than 30 years of neoliberal globalization, such as the privatization of natural-resource extraction, the intrusion of multinational mining companies, and the tendency toward the commodification of water, particularly in moments of scarcity.

Peru's new Law on Water Resources of 2009 affirms that water is the public property of the state, but nevertheless adapts to neoliberal policies of deregulation and privatization. In 1969, the reformist Velasco government nationalized water in Peru, enacting a water law that acknowledged all water as patrimony of the state. From 1993 to 2000, the neoliberal Fujimori government attempted to privatize and create markets for water, but failed due to strong opposition from the popular social movements. The García government continued the neoliberal agenda, and in 2007, the water law was adapted to the free trade agreement with the United States. In March 2008, a legislative decree was published, promoting private investment in irrigation, and one year later, García succeeded in passing the new water resources law.

Although all forms of water are still acknowledged as the property of the state, the new law is quite ambiguous, having been modified to encompass diverging interests concerning public and private investments and responsibilities. Although water cannot be privately owned, bought, or sold, all water users have to pay different tariffs and license fees for the right to use it. Farmers pay tariffs for irrigation water and infrastructure to the
regional water users’ organizations, and they pay license fees to the state for the right to use a certain amount of water. If they live in a town with drinking-water facilities, they pay another tariff for this. The water users’ organizations that charge the irrigation water tariffs and operate the irrigation infrastructure are encouraged to develop a “modern optic and business bias” in order to continue operating. By opening up space for private investments, the law also allows private companies to operate hydraulic infrastructure and hence also makes it possible to replace the water users’ own organizations.

In 2011, the Subsectoral Irrigation Program (PSI), financed by the World Bank, started to operate in Caylloma province. The aim of PSI is to achieve more efficient water use by encouraging farmers to transition from traditional irrigation methods based on gravity and furrows to drip- and sprinkler-irrigation systems. These new technologies are embedded in discourses about modernity, rationality, and efficiency. However, the drip and sprinkler systems have been criticized for not being easily adaptable to the highlands, where the terrain is steep with tiny fields and terraces. Moreover, to obtain these high-tech systems, the local communities need to finance 10% of the installations, which in fact amounts to very high costs for poor farmers.

This means that, once again, the peasant farmers in the Andes will lose in the modernization schemes of international-development programs. These farmers make their living in an environment that has always been arid and dependent on irrigation, and they are therefore extremely vulnerable to changes in weather and climate. Among the small-scale farmers and herders in Caylloma, the effects of global climate change are being perceived as the loss of stability; the known seasonal cycle of rain, frost, heat, and drought has changed, and heavy precipitation in short periods has caused erosion,
landslides, and the death of animals. Most farmers in Chivay worried for future harvests since they had experienced economic loss when the premature frosts in February 2011 destroyed the crops of potatoes, peas, beans, and maize. A deep concern is the ever-decreasing water supply due to melting glaciers and drying springs.

The farmer Pablo Tejada in Chivay told me, “There is not enough water. The springs are not like before. They have dried up. In my father’s land, there used to be two springs that gave water, and there was a little garden there. Now they are dry.” These changes are experienced locally, and at the same time the new sense of unpredictability and water insecurity are being explained by global climate conditions. Since the melting glaciers, irregular rain, and drying springs are seen as effects of global warming, water is now articulated as a finite resource, and the threat of a water crisis is increasingly being perceived as irreversible.

After the march on the World Water Day in Chivay, the Water Users’ Organization of Colca Valley organized a public assembly to discuss the consequences of climate change in the province and to propose solutions for the future. Representatives from communities in the highlands, mid-valley, and low valley presented their testimonies about how the mountains have lost their snow, the springs have dried, the water level in the rivers has decreased, and the soil has eroded due to heavy rain and lost its capacity to store rainwater.

The solutions promoted by the authorities focused on how local communities and individual farmers could take care of the headwaters and use the available water more efficiently and protect their right by complying with the required payments. The president of the water users’ organization emphasized the obligation to pay the water tariff to have the right of reclaiming the use of water, “almost like proprietors.” The representative from the Ministry of Agriculture said that “the solution is the adequate use of the water” by using new techniques to avoid wasting the water. These ideas come from the World Bank’s Water and Sanitation Program, which aims to teach citizens and households that they should be more efficient in their water use and avoid wasting it in daily practices. While individual families certainly can gain by saving water, this is not a long-term solution. The problem is that “efficient use” requires technology that is hardly available for most farmers. It also does not address the fundamental problems of industrial pollution and poverty. Hence it will not reduce the continuing problem of melting glaciers and water scarcity. Short-term Band-Aid approaches and quick-fix solutions like these are inspired by neoliberal thought, which reduces collective solidarity to private moral responsibility and glosses over the underlying structural causes.

The representatives from the communities, on the other hand, focused on the importance of projects of planting trees and constructing micro-dams, which together are called “sowing and harvesting water.” Although these projects will not stop global warming, they are ways of taking care of the environment in the headwaters. Planting trees prevents erosion and enables the soil to store water. The micro-dams collect water when the heavy rains come in January and February and can distribute the water in irrigation canals throughout the year. These projects were initially started by NGOs in the 1990s to improve pastures and the productivity of livestock in the headwaters, but have in later years been adopted by highland municipalities and are today seen as solutions to save water in times of climate change. The micro-dams are built in the headwaters, above 4,000 meters, which is home to the poorest people in the Andes, namely the herders of alpacas and llamas. The water, which is “born” in their territories, flows down to the coast, where others use it as an economic resource.

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farmers, the local or regional authorities, the government, the lowland farmers, the hydroelectric plant, or the mining companies? Therefore, on World Water Day in Chivay, the community representatives addressed the crucial question of who would finance the projects of sowing and harvesting water.

People in the headwaters see it as unjust that they should pay for projects to mitigate the effects of global warming and maintain the headwater environment, when private companies make profit on the same water further down the watershed. Therefore, the political leaders in Caylloma province are starting to formulate new demands; they claim that a multinationally owned copper mine and a state electric company should pay a canon hidrico—a social water payment—as compensation to the province, since they use water that is “born” in their poor highlands. The mayor of Caylloma province often says in his popular speeches that water is the wealth of Caylloma and that they cannot sit and watch others getting rich using this water and not compensating them. This demand is based on the valuation of water, as formulated in the water law. This strategy thus builds on the logic of commodifying water, and instead of opposing it, they make the principle of valuation their own by turning it to their advantage. They acknowledge that water has value and reclaim their part of it. Moreover, the demand for a canon hidrico is based on a notion of justice, fairness, and reciprocity: Those who benefit from the water as a resource to make a profit should contribute accordingly to the sowing and harvesting of water in order to sustainably manage the headwaters, a goal that would in turn benefit all the water users along the watershed. Hence, supporters of the canon hidrico claim that since the consequences of climate change are unevenly distributed, the responsibility of mitigating these consequences have to be equally distributed, not unlike the discussions about “climate debt” at a global level.

When I interviewed the mayor of Caylloma province, Elmer Cáceres Llica, he said: “Those on the coast take the water for free. We send water and send water, and the coast does not even worry if the water is drying in these parts, if there are no trees, or if there are filtrations, or if a mining company enters. . . . The poorest areas of the Peruvian Andes are those that provide water to the coast. . . . [This should be] a part of the reciprocity that we as Andeans manage: Well, I give you water, so you should give me something back. . . . We can restore [agricultural] terraces and build dams. But the idea is that we sow water with that money. We will sow for example native plants around the water sources. In other words, this is all work to preserve and harvest the water.”

In a vertical landscape, where the lower parts depend on the actions in the higher parts, water management necessitates cooperation. Local environments and social groups are unevenly affected by global warming, and when responsibilities of climate-change mitigation are given to poor communities and depend on private initiatives, the environmental and social inequalities will increase. Climate change in the Andes is a kind of chronic disaster that creates winners and losers and thus power struggles within a water regime influenced by neoliberal thought and individualized responsibilities. The danger of individualized responsibility is that it allows for some to profit from investments and to shed responsibility, while the majority of those already suffering the consequences of climate change will be dependent on the goodwill of private NGOs to survive. This means that, once again, the poor and indigenous people in the Andes will lose when water is valued as a resource. Their struggle for collective responsibilities in water management is thus an attempt to take control of an uncertain future.

1. Autoridad Nacional del Agua (ANA), Ley de Recursos Hidricos y su Reglamento, Ley no. 29338 (Lima: Ministerio de Agricultura, 2010).