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# Water Grabbing Through Infrastructures and Institutions in Turkey

**Adnan Mirhanoğlu**
Institute of Geography, University of Hamburg, Hamburg, Germany; adnanmirhanoglu@gmail.com

ABSTRACT: The contestation and appropriation of water are global issues. Capturing control of water sources determines how and by whom water will be used. This paper examines how water grabbing occurs through both water infrastructures and institutions. Building on the concepts of 'infrastructural violence' and 'accumulation by dispossession', I investigate the mechanisms employed by bottled-water companies to grab water and hide the scale of grabbing, resulting in the dispossession of local farmers from the water sources they have used for centuries. Drawing on ethnographic research in Ağlasun, a rural town in southwest Turkey, my findings reveal two main insights. First, water grabbing occurs through clientelism, bending of the rules, and ambiguities in water governance legislation. Second, water grabbing is facilitated by infrastructural changes, such as the fencing off of water sources and the forced imposition of water-saving agricultural technologies. Understanding the various institutional and infrastructural processes through which water grabbing occurs helps clarify the conditions necessary for more just and equitable water governance. The paper concludes by highlighting the crucial role of locally embedded institutions and collective action in securing access to water.

KEYWORDS: Water grabbing, accumulation by dispossession, infrastructural violence, irrigation governance, Turkey

## INTRODUCTION

Ağlasun is a rural town in southwest Turkey. On a hot summer day in 2021, I walked to one of its water springs to observe what changes had occurred over the previous two years. The COVID-19 pandemic had prevented me from conducting fieldwork in 2020, so I was curious and excited to see what had changed. It was a difficult and solitary walk to the spring, which was located at the foothills of the Taurus Mountains. My round hat and backpack made it obvious that I was not a local. After walking for two kilometres, a tractor passed; the driver stared at me and then stopped and sounded the horn to offer me a lift. I climbed on, introduced myself, and we continued on together. Our slow progress on the rutted dirt road gave us time for conversation. The tank trailer pulled by the tractor was full of water, which surprised me as the tractor had passed by the water spring without stopping for a fill. I also could not understand why he would carry so much water from the town up to the mountains. When I asked, the driver explained that,

> I am a shepherd, and we are grazing our animals near the water spring. I am carrying drinking water for the family members and our animals. The new bottled-water company built a concrete hut around the spring, so we no longer have access to clean water from the spring. They fenced the spring and locked the concrete hut. Therefore, we have to carry drinking water from the town.

There are many reasons why two bottled-water companies, one national and one international, managed to grab water in Ağlasun. One of the main reasons is the outdated Water Law No. 831, which came into force in 1926 (Bulut and Birben, 2019). In the almost 100 years since it passed into law, various regulations have been layered onto it. This plethora of regulations is sometimes contradictory and contain gaps and ambiguities, which causes many conflicts and inequalities. This situation, at the same time, leads to overlapping mandates and responsibilities among the various institutions (Tatar, 2019). Turkey's water

management and policy have also been significantly altered as a result of the neoliberal transformation of Turkish agriculture (Kibaroğlu et al., 2009).

Between 1950 and 1980, the Turkish state followed a path of national developmentalism (Keyder and Yenal, 2011). During that period, the State Hydraulics Works (Devlet Su İşleri, or DSI) was established to advance water resources and there were numerous large-scale investments in the irrigation sector (Özerol, 2013). The global oil crisis in 1973 and the military coup in 1980 laid the groundwork for the neoliberalisation of the Turkish state (Işlar, 2012a). The neoliberal turn deeply affected Turkish agriculture, reducing the welfare of smallholder farmers who constitute the majority of agricultural producers in Turkey (Özerol, 2013). As Aydın (2010) claims, liberalisation and globalisation in Turkish agriculture have resulted in capitalist agribusinesses becoming the winners at the cost of smallholder farmers.

Turkey's neoliberalisation has also caused Ağlasun, a mountainous rural town, to undergo major transformations. The economic reforms in the 1980s accelerated rural depopulation (Aydın, 2010; Kavak, 2016) and left Ağlasun with a declining and ageing population (Kocabıyık and Loopmans, 2021), and the neoliberal restructuring of the agricultural sector further impoverished the rural population (Aydın, 2001). This created pressure to privatise the natural resources in rural areas.

In the case of Ağlasun, one of the most significant changes since the 2000s has been the increase in water grabbing. During this period, one multinational and one national bottled-water company set up bottling plants in Ağlasun. Many infrastructural and institutional changes also took place in the town's irrigation system, which caused an asymmetry in access to water among farmers (Mirhanoğlu et al., 2022). In combination, these changes in water governance affected access to water, determining for whom, when, how much and under what conditions it was on offer.

In its investigation of the major changes in water allocation in Ağlasun, particularly the introduction of bottled-water companies, this paper seeks out the role of water infrastructures and institutions in hiding the water grabbing by bottled-water companies and in the dispossession of local farmers from the water sources they have used for centuries to irrigate their crops. Combining the concept of 'infrastructural violence' (Rodgers and O'Neill, 2012) with that of 'accumulation by dispossession' (D. Harvey, 2003), I aim to unveil how bottled-water companies control and commodify water through institutional arrangements and infrastructures, which deflect from the power they exert in doing so. I unravel how water grabbing in Ağlasun occurs through ambiguities in legislation, institutional relationships of clientelism, and bending of the rules. I also point out how water grabbing is facilitated by infrastructural changes such as the fencing off of water sources and the forced imposition of water-saving agricultural technologies. Untangling those processes of exclusion allows us to better understand the challenges of more just and equitable water governance in Turkey.

## WATER GRABBING THROUGH INSTITUTIONAL ARRANGEMENTS AND INFRASTRUCTURES

Dell'Angelo et al. (2018) offer a detailed analysis of the different definitions used for water grabbing. They depart from what has been offered in this journal's Special Issue on water grabbing edited by Mehta et al. (2012). Dell'Angelo et al. (2018) argue that the Special Issue attempts to conceptualise water grabbing systematically. Wagle et al. (2012), for example, define water grabbing as an illicit transfer of water from agricultural to industrial use, in which farmers are deeply affected. Bues and Theesfeld (2012) define water grabbing as a change in local water governance that is caused by the arrival of powerful foreign actors. Vélez Torres (2012) uses the concept to emphasise how historically marginalised local communities were dispossessed after the implementation of water development projects. Broadly defined, water grabbing is a process in which powerful actors are able to reallocate or control water resources to their benefit, even though these resources were in use by local communities or were necessary to feed aquatic ecosystems on which these communities depended for their livelihoods (Mehta et al., 2012; Franco et al., 2013; Veldwisch et al., 2018; Bieler and Moore, 2023).

The above definitions of water grabbing give both flexibility and ambiguity to the concept. Water grabbing can be conceptualised as an 'umbrella concept' that helps us explore the problem of water access. In this paper, I define water grabbing as a process of illicit appropriation and the dispossession of local communities from water sources they have used for centuries. I focus on how institutional arrangements and water infrastructures are used not only to enable water grabbing but also to hide its scale and effects. To yield new insights on this, I bring together the literature around infrastructural violence and accumulation by dispossession. The next two subsections outline these insights and clarify how the mechanisms and processes of water grabbing occur.

### State institutions and water grabbing

The privatisation and commodification of commons are at the root of many injustices around the world. Swyngedouw (2005: 82) argues that, "privatization is nothing else than a legally and institutionally condoned, if not encouraged, form of theft". He explains that 'privatization' is equal to the process of 'accumulation by dispossession', since the process of privatisation involves the transferring of publicly owned activities and resources to the private sector (ibid). David Harvey argues that privatisation is the "cutting edge" of accumulation by dispossession and explains that international financial institutions impose privatisation of public goods, services and property on debtor nations in the Global South. He explains "… to say nothing of the wave of privatization (of water and public utilities of all kinds) that has swept the world, indicates a new wave of 'enclosing the commons'" (D. Harvey, 2003: 148). The implementation of modern enclosures often leads to commodification and to either physical or economic exclusion (Jaffee and Newman, 2013). To understand the complex dynamics of the commodification of commons, David Harvey's (2003) prominent concept of 'accumulation by dispossession' provides significant insights. It refers to a process of capital accumulation where previously uncommodified or inaccessible assets are used to generate profits and these assets are incorporated into the market exchange at little or no cost (Jaffee and Newman, 2013). Levien (2013) also argues that dispossession is a deeply political process and that state power is required to justify and naturalise apparent inequalities and to overcome limitations on dispossession. Swyngedouw (2005: 89) explains how, "without the various state levels paving the way and imposing conditions that guarantee privatization (…) this accumulation by dispossession could not possibly take place".

D. Harvey (2003, 2005) describes water grabbing as a specific form of accumulation by dispossession under neoliberalisation, explaining that it involves the privatisation of resources, the exclusion of certain groups, and the transformation of different forms of property rights into "exclusive private property rights" (Mehta et al., 2012). Many scholars examine water grabbing through the lens of accumulation by dispossession. Tetreault and McCulligh (2018) describe how powerful actors in the Zacatecas region of Mexico monopolise access to and control over, water resources as a consequence of institutionalised corruption, which results in water scarcity for local communities. Birkenholtz (2016) argues that water rights in the Rajasthan state of India have been shifted from farmers to corporations as a result of the Indian government's prioritisation of use of water for industry and urban usage. Vélez Torres (2012) analyses water grabbing in the Alto Cauca in Colombia, describing it as a form of accumulation through the racialisation and ethnicisation of environmental dispossession within the capitalist system. The paper by Işlar (2012b) examines the privatisation of hydropower in Turkey and points out that transformations in land and water property regimes can exclude or marginalise communities.

This paper focuses on the case of Ağlasun to specifically unveil the role of state institutions in water grabbing. In the process, I will explain how ambiguities in water governance legislation, the bending of rules, and clientelism enable water grabbing and, in turn, accumulation by dispossession.

### Infrastructural violence

The concept of infrastructural power (Mann, 1984) emphasises how infrastructure can serve as a powerful institutional instrument for regulating society, while the concept of infrastructural warfare (Graham, 2004, 2006, 2010) refers to the deliberate targeting of infrastructure networks such that tremendous suffering is caused. Building on these two concepts, Rodgers and O'Neill (2012: 402) propose the notion of infrastructural violence as a way to, "understand when it is that infrastructure becomes violent, for whom, under what conditions, and why". The notion of infrastructural violence also attempts to connect the suffering of marginalised groups to the violent outcomes of institutional arrangements, social structures and political-economic processes (Benson, 2008; Rodgers and O'Neill, 2012).

The concept of infrastructural violence questions the presumed neutrality of infrastructure, focusing instead on its capacity for constituting and shaping inequalities. Kumar et al. (2021), in this same vein, argue that the concept of infrastructural violence shifts the conventional understanding of infrastructure as material and technical to a socio-technical understanding. Rodgers and O'Neill (2012) divide infrastructural violence into what they refer to as active and passive forms. Active infrastructural violence occurs when infrastructure is intentionally designed to be violent, whether during its development or its operation (ibid). As an example of active infrastructural violence from the 19th century, Rodgers (2012) describes the decisions of Baron Haussmann who rebuilt Paris with wide and straight boulevards to securitise it. Rodgers also mentions how the car bridge over the Grand Central Parkway in New York City was built with a low height clearance, so that public transport buses, which were mainly used by poor people, could not pass underneath. Both of these are examples of elites engaging in the appropriation and deployment of infrastructure in order to police vulnerable populations (Star, 1999; Rodgers and O'Neill, 2012).

The second form, 'passive' infrastructural violence, refers to situations where, "socially harmful effects derive from infrastructure's limitations and omissions rather than [being] its direct consequences" (Rodgers and O'Neill, 2012: 407). Gandy (2006) shows how, during the urban development of Lagos, Nigeria, in the early 21st century, poorer parts of the city were excluded from infrastructural networks. Chaplin and Kalita (2017: 45) point to passive infrastructural violence in India where, "the failure of the state to provide adequate sanitation facilities, or effectively maintain those that do exist, exposes women and girls to gendered, caste- and class-based forms of both physical and emotional violence which often inflict lifelong harms and sufferings". In yet another study on passive infrastructural violence, McIlwaine and Evans (2022) argue that it most often takes the form of the state's failure to provide sufficient facilities, which can have a disproportionate impact on particular groups within a society, such as women.

The concept of infrastructural violence is also applied to urban studies on water governance. Kumar et al. (2021) explore how, in Delhi, India, aspects of legal exclusion, commodification and privatisation, poor coordination, planning exclusion, and over-estimation of water supply cause infrastructural violence in the city's water distribution. Desai (2018), studying the causes of infrastructural violence in Ahmedabad, India, zooms in on the everyday workings of the water infrastructure at the public housing resettlement sites, showing how it creates unequal water flows.

It has become common knowledge in irrigation studies that the institutional rearrangements that accompany the modernisation of irrigation infrastructures imply not only changes in water flows but also concurrent and entangled changes in actors' access to resources, as well as shifts in social position and power relations (Mirhanoğlu et al., 2023). The presence of irrigation systems influences social relationships and connects humans with their surroundings in particular ways. The 'physical' infrastructure, its surroundings, and the actors who are playing a key role in building and managing it are easily visible and recognisable at first glance; however, the power relations and the various forms of control embedded in the infrastructure may not be as immediately and clearly perceivable. We thus need to draw attention to, "the silent, unnoticed work done by infrastructures" (P. Harvey et al., 2016).

Various studies illustrate the highly significant role played by water infrastructure in water-grabbing practices (Andersen, 2016; Swyngedouw, 2005; Tatlhego et al., 2022; D'Odorico et al., 2024). Critical infrastructure studies draw upon insights from science and technology studies, geography, and urban studies to conceptualise infrastructure not only as, "the physical roads, dams, railways, and irrigation systems that facilitate the circulation of goods and services, but also as the entangled impacts and relationships with ecological, spatial, socio-political, and cultural processes and practices" (Turner, 2022: 186). The material and the social are deeply interconnected.

In this paper, I depart from the concept of infrastructural violence and from the insights of critical infrastructure studies; I focus, instead, on how dispossession follows from the embeddedness of material infrastructure in social and political relations. I will analyse two specific examples of active infrastructural violence found in the studied case, first explaining how the enclosure of water resources by bottled-water companies established the conditions for water grabbing. I will then discuss how the forced imposition of drip irrigation technology by the municipal government in Ağlasun caused the dispossession of certain farmers. Finally, I explain how both institutional arrangements and water infrastructures are used in water grabbing and in the dispossession of local farmers from the water sources they have used for centuries.

## CASE STUDY

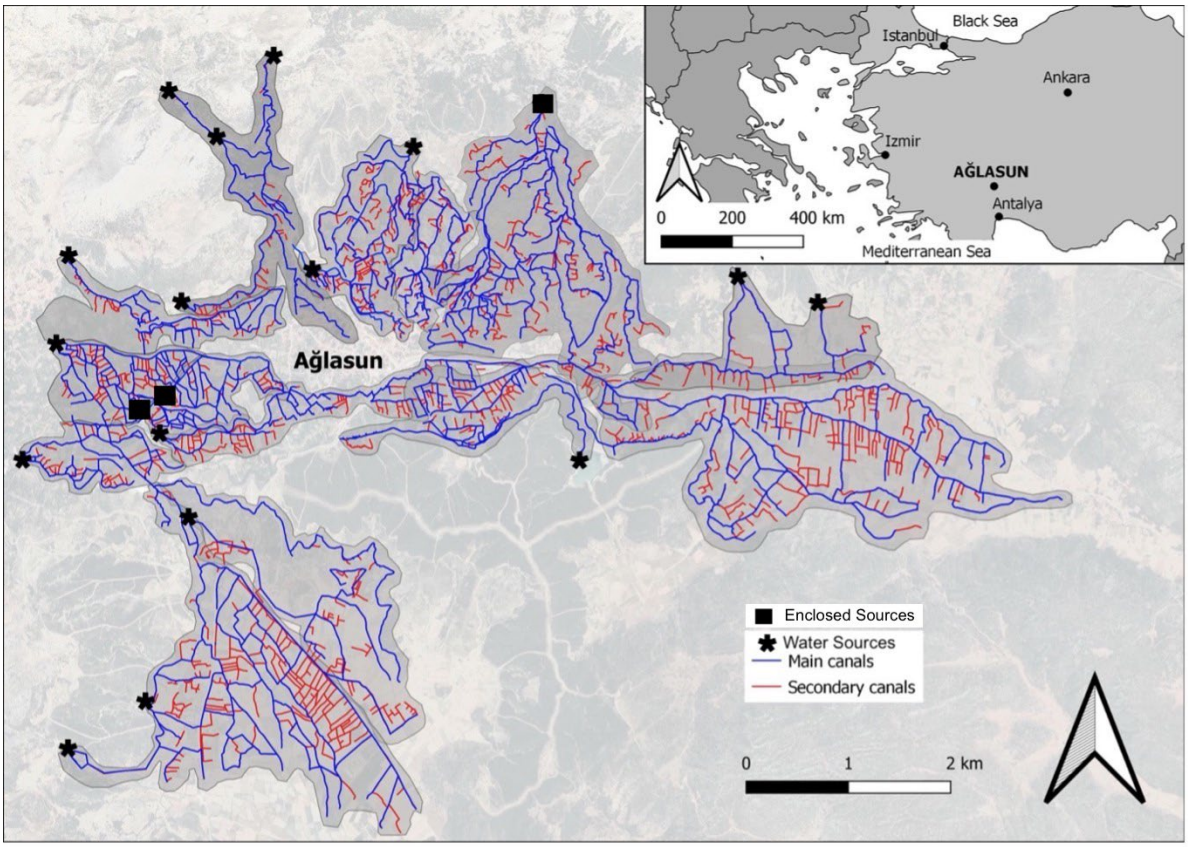
### Case study background

Ağlasun is a rural town located in the foothills of the Taurus Mountains in southwest Turkey (Figure 1). It is one of the 15 districts of Burdur province and has a population of 7408 (Turkish Statistical Institute, 2022). The main economic activities are agriculture and livestock. Between the 1960s and the 1990s, farmers planted cash crops such as sugar beets and roses with the support of national agricultural policies, and the primary use of water sources in Ağlasun was agriculture. In the 1990s, however, Ağlasun was strongly affected by Turkey's agricultural liberalisation (Kocabıyık and Loopmans, 2021). The town's farmers have been constrained from upscaling by the location of their farmland in a relatively narrow valley and on small terraced plots on the valley's slopes, so they lost access to cash crop value chains. As a result, they switched to either feed crops for their animals or labour-extensive tree crops such as walnut and cherry (Mirhanoğlu et al., 2022). Fish farming also became popular in the 1990s and some of the town's water resources were allocated to individually run private fish farms.

In Ağlasun, as generally in Turkey, the implementation of neoliberal agricultural policies has resulted in a devaluing of peasant farmers. The younger generation now prefers to relocate to nearby cities such as Antalya and Isparta, leaving farming in the hands of their ageing parents (Kocabıyık and Loopmans, 2021).

In Turkey, various actors play key roles in water allocation. The main institution responsible for water allocation is the State Hydraulic Works (DSI) (Kibaroğlu et al., 2009). Requests for water allocation are made to the DSI through the Ministry of Agriculture and Forestry or via special provincial administrations (although municipalities also have the right to apply directly to the DSI where there is a need for domestic water supply allocation). DSI engineers investigate, including measuring the flow rate of the requested water source. A report which expresses their opinion is then returned to the provincial administrative bodies or to the Ministry, which is responsible for collecting regular payments for water use (DSI Officials Interview, 18 August 2021). According to Turkey's civil code, the Turkish state is the overall owner of water sources and can lease out water rights for particular periods. Bottled-water companies are subject to Article 4, Paragraph 3 of Turkey's Act No. 167 on groundwater. The law is dated 1960 but it has undergone significant changes that have enabled the neoliberal transition in water allocation. On 3 July 2003, for example, Law No. 4916 was changed such that special provincial administrations were given legal authority to lease to water companies the right to use certain amounts of water (Taşkın, 2009).

Figure 1. Map of the Ağlasun irrigation network.




Source: Mirhanoğlu, 2023.

The decrease in the number of farmers since the 1990s has meant that agriculture is no longer the primary user of water. The Ağlasun municipal government has thus been searching for ways to use its water resources more 'efficiently', including the reallocation of water rights from agriculture to private bottled-water companies, which would bring new job opportunities to Ağlasun. The first bottled-water company arrived in the town in 2014 and a second one followed in 2020. The leasing procedure was not transparent, however, and many farmers were left with much less water, causing many conflicts between farmers and the Ağlasun municipal government. The bottled-water companies also bought the land used by fish farms, which included their water resources. Normally, the water sources used by fish farms cannot be used by bottled-water companies. The water was circulated through the fish farm and then used by farmers for irrigation. The amount of water would remain the same after being used by fish farms. Some farmers argued, however, that there was a decrease in the amount of water after the bottled-water companies bought the land of the fish farms.

## Data collection and analysis

I conducted in-depth fieldwork and gathered primary data through semi-structured interviews and participatory observation. As secondary data, I also reviewed the archives of the Ağlasun municipal government, which included minutes of the monthly meetings of the mayor and council members. My first aim in collecting this data was to understand how conflicts arose as a result of lack of transparency in leasing out water rights to private bottled-water companies. I also wished to examine the mechanisms

and processes underpinning the unequal water access that followed from the arrival of bottled-water companies in Ağlasun.

I conducted the fieldwork during the summers of 2018, 2019 and 2021. Before starting the first fieldwork, I obtained permission from the ethical committee of KU Leuven in Belgium. Interviews were recorded with the permission of the interviewees and when recording was not possible I took notes, after first obtaining the verbal consent of each participant. I interviewed 42 farmers, the mayor, the former mayor, the manager of one of the bottled-water companies, and officials from the three state institutions that are in charge of water management (State Hydraulic Works, the Ministry of Agriculture and Forestry, and the special provincial administrations). For the paper, I used the specific insights shared by five farmer interviewees, since most farmers gave general opinions in response to questions related to bottled-water companies. I used a range of approaches to get in touch with the diverse interviewees. To help the various types of interviewee become more comfortable and to communicate with them more effectively, I emphasised different dimensions of my own experience to different groups. When introducing myself to farmers, for example, I talked about my own farming experiences and the farmers were happy to listen to 'another farmer' instead of listening to a researcher. To state officials, on the other hand, I introduced myself as an academic researcher, and when interviewing mayors, I emphasised the importance of their collaboration and how the results of my research might be helpful for them in making better water governance policies in Ağlasun.

To analyse the interview transcripts and field notes, I used the CAQDAS NVivo. During the first coding cycle I prepared a general code tree. I then prepared a map of relational concepts which helped me to reorganise the codes. In a second cycle of coding, I used focused coding and axial coding.

## THE MECHANISMS AND PROCESSES OF WATER GRABBING IN AĞLASUN

Water grabbing in Ağlasun occurs through various institutional arrangements and water infrastructures. I discuss the role of both in the following section. The role of institutions is examined through an investigation of ambiguities in water legislation, clientelism, and the bending of rules. The role of water infrastructures is subdivided into the enclosing of water sources and the forced imposition of water-saving agricultural technologies.

### Water grabbing through institutional arrangements

#### *Ambiguities in the legislation*

Water allocation is one of the most challenging and ambiguous issues in Turkey because of a water law that dates back to 1926 and because of legislative ambiguities. The current legislation has gaps and overlapping mandates that cause conflicts among the different institutions (Çivgin, 2013; Tatar, 2019). Various powerful actors exploit these ambiguities, such as auditing water resources and enclosing water sources, which deprives smallholder farmers of sufficient and good quality water. As Swyngedouw (2005) explains, various state institutions bear responsibility for the dispossession of certain actors through establishing conditions that secure privatisation, which leads to accumulation by dispossession.

In Ağlasun, the main problem stemming from ambiguities in legislation concerns issues around auditing. According to the current legislation, DSI is the only responsible agent in auditing water sources. The new legislation on water allocation published in 2019, however, does not make clear how the audit should be done (Legislation on water allocations, 2019). In a 2021 interview, a DSI employee explains the issues around the audit:

> We have not received any official statement about the standards of the audit and how we are going to check the water allocations. According to the current legislation, the special provincial administration is responsible for signing the contract with the stakeholders, leasing out the right to use water for a certain period.

> Therefore, the special provincial administration should also be responsible for the audit. We are reporting these issues to DSI in Ankara, and they say they are working on the new water law, but nobody knows when it will be ready and become official (DSI Official Interview, 18 August 2021).

The ambiguities related to the audit system profoundly affect both the quantity and quality of the water that Ağlasun farmers can use. First, the bottled-water companies do not have water storage facilities and grab more water than permitted when there is a high demand, especially during the summer months. As the mayor of Ağlasun explains,

> There is a gap in the water allocation legislation. The current legislation says the amount of water being taken per second is calculated from 1 January to 31 December each year. If the bottled-water company gets permission for 5 l/s, they calculate the amount of water per year and they claim that they can use that amount of water during any period of the year, depending on when they need it most. Mainly, the bottled-water company uses water during the summer period. They have permission for 5 l/s, but they use 10 l/s and sometimes 20 l/s during the summer periods and there is no control over it (Mayor Interview, 17 August 2021).

The ambiguity around how much water can be taken by bottled-water companies is explained in various ways by different state institutions. According to state officials of the DSI Regional Directorate in Isparta, the legislation on water allocation published on 10 December 2019 states that bottled-water companies should take only the volume of water per second that has been assigned to them and should store the water during the winter period for use in the summer (State Officials Interview, 18 August 2021). When I enquired, however, I learned that neither of the bottled-water companies in Ağlasun had built any water storage tanks and both of them were bottling water directly from the source.

The second effect of legislative ambiguity is manifested in the purchase by both bottled-water companies of fish-farm land and their ability to lease the corresponding water rights. The permission was not to bottle water but rather to use the water for fish farming. Before the arrival of the bottled-water companies, the water had circulated through the fish farm and then, with no loss of volume, it had continued on to be used by farmers. After the arrival of the bottled-water companies, however, some farmers argued that the amount of water had decreased. Officials do not check whether the water is being used for its permitted purpose, and farmers claimed that the bottled-water companies were transferring water from the fish farms to the bottling factories. As one of the farmers claimed, "The second bottled-water company first bought the land and the fish farm located at the edge of the water source. The reason for buying this fish farm was not to continue fish farming business. The main reason was to divert water from fish farm to the bottled-water company illicitly" (Farmer Interview, 8 August 2021).

The mayor, also complaining about the possible water transfer from aquaculture facilities to the bottled-water company, stated that,

> Both bottled-water companies bought the lands of the fish farms which have their water source. After buying the land with the water source, the bottled-water companies set up factories to bottle water. The strategy is to enclose the maximum water sources so that they can transfer some water from the water sources of the fish farm to their bottled-water companies. The current legislation forbids this transfer. However, the bottled-water companies enclosed the water sources of the fish farm and built concrete huts around them. There is also no check either from DSI or from the special provincial administration. These institutions should be responsible for the audit (Mayor Interview, 17 August 2021).

The third effect of ambiguities in the audit system is problems with water quality. Farmers belonging to the irrigation network complain that the bottled-water company not only reduces the quantity but also the quality of the water in the network. One of the two bottled-water companies takes fresh water from the water source and returns some of the water back to the irrigation canal, as seen below. According to the farmers, however, the colour and smell of the returned water are different from that of the water

flowing directly from the water source (Farmer Interview, 20 August 2021). The bottled-water company uses 19-litre carboys made of polycarbonate. According to the regulations in Turkey, these polycarbonate carboys can be used for five years starting from their production dates, so bottled-water companies wash and reuse them (Taşkın, 2009; Louie and Reuschlein, 2011). According to the farmers, it is this cleaning process which mainly accounts for the change in smell and colour of the water. The bottled-water company washes the polycarbonate carboys with fresh water and gives 'dirty water' to the farmers. The farmers therefore do not trust the quality of the water in this irrigation canal and do not drink it, instead carrying water from home when working on their agricultural plots. Some farmers in Ağlasun even worry that this 'dirty' water can harm their crops (Farmer Interview, 20 August 2021).

Figure 2. The leftover water coming from the bottled-water company to irrigation canals.

Source: All photos in the paper are the author's.

DSI officials explain that the DSI does not allow illicit access or polluting of the water; however, as explained by a DSI employee, actual practices may differ from written legislation:

> The governor, the local officials in the Ministry of Agriculture and Forestry, and the special provincial administration prefer to turn a blind eye to any illicit enclosing of a water source. The state does not care about how the local water sources are being used. The state only cares about the number of investments, which is also used to evaluate the success of the local officials. Therefore, the local officials turn a blind eye to any misuse of water sources, and they try to increase the number of investments in their region. The local officials in Ağlasun think that the investments are more important than the water itself and they don't care about whether smallholder farmers access enough water (DSI Official Interview, 18 August 2021).

To overcome the above ambiguities and overlapping mandates, the state institutions propose changes in the water law. Since 2010, there has been discussion regarding how to adapt to the European Union Water Framework Directive as part of the harmonisation process with the European Union; however,

there are many reasons why this comprehensive update in the water law has not yet come into force (Bulut and Birben, 2019). According to DSI state officials, the main reason is the potential heavy requirements that will be placed upon certain governing institutions following such an update. As one DSI employee explained,

> The update in the water law could not come into force because of issues in water allocations. If the update in the water law comes into force, the requirements for water allocations will be significantly affected. It will also impose very serious sanctions and obligations on the governors, the state officials in the Ministry of Agriculture and Forestry, and the special provincial administration. The new water law will also affect the current water allocations which will make everything more complicated, and some officials may be found guilty because of the previous water allocation permissions (DSI Official Interview, 18 August 2021).

The explanations provided by the DSI employees, and the mayor clearly justify the arguments of Levien (2013) and Swyngedouw (2005) about the role of state power in dispossession and privatisation (see above).

*Bending the rules*

The first bottled-water company arrived in Ağlasun in 2014. Its owner 'convinced' the Ağlasun municipal government to make a rental agreement for the water source for a longer period than was allowed in the legislation. According to water regulations in Turkey, the use rights of a water source can be rented for up to 10 years for commercial use (DSI Official Interview, 18 August 2021). The Ağlasun municipal government did not, however, follow that legislation during the first rental agreement; instead, on 17 November 2015, they signed a 29-year lease on one of the water sources. Some farmers made an official complaint to the state about this violation. Complaints were also made to DSI, which thus decided to make a detailed investigation. As one DSI employee recounted,

> After we received the official complaints about the violation of the legislation, we started a detailed investigation. However, we could not continue the investigation because we were warned by the officials of the Ministry of Interior. The Ağlasun municipal government informed the governorship of Burdur, stating that the contract was made to get the investment. The governorship of Burdur convinced the officials of the Ministry of Interior to stop the investigation. So, we also had to stop the investigation. Politics messed up the legislation. Otherwise, the official and technical parts are very clear. However, we cannot do anything when politics interferes with the issue (DSI Official Interview, 18 August 2021).

After convincing the governorship of Burdur and the officials of the Ministry of the Interior, the Ağlasun municipal government decided to cancel the first agreement with the bottled-water company in order to persuade the farmers to withdraw their official complaints, which they then did. On 13 December 2016, the municipal government made a new 10-year agreement with the bottled-water company.

Observing the bending of water access rules in Ağlasun demonstrates how powerful actors receive state support in controlling water resources (Tetreault and McCulligh, 2018) and engaging in water grabbing (Levien, 2013).

*Clientelism*

The most recent legislation around water allocation was published on 10 December 2019 (Legislation on water allocations, 2019). According to this legislation, the same water source can be allocated for different purposes if there is enough water, however, water allocation must follow a certain prioritisation protocol. Domestic water supply must be prioritised, and if there is not enough water for the domestic water supply the source cannot be used for any other purpose. Only if there is a surplus can water be allocated for irrigation and fish farming. Energy production and industrial water use are the third priority, and the lowest priority is placed on mining activities and commercial use of water that involves permissions for bottled-water companies (Legislation on water allocations, 2019).

Collusion has occurred, however, between the Ağlasun municipal government and the bottled-water companies. According to the legislation on water allocation and priority use of water, the municipal government has the power to request water sources for domestic purposes (Legislation on water allocations, 2019); however no official request from the municipal government is made for the water sources that are enclosed by bottled-water companies. As explained by a DSI official,

> The second bottled-water company asked the previous mayor to send the petition to DSI, stating that the Ağlasun municipal government does not need that water source for the domestic water supply. Therefore, the second bottled-water company could get permission for the use of water very easily since the priority of the water sources is first given to the domestic water supply. After the local municipal elections of 2019, some farmers made a complaint about that petition and claimed water allocation from that water source for irrigation purposes. The court decided to judge the previous mayor and the previous council members and all previous officials in the municipal government since the Ağlasun municipal government didn't follow the official procedures before sending the petition. They faced both fines and imprisonment. However, the farmers who made the complaint were 'convinced' to withdraw the lawsuit at the last minute. We don't know how the farmers were convinced (DSI Official Interview, 18 August 2021).

When the bottled-water company needs help, they first ask the to appeal to the municipal government for services or to suggest whom they should approach for assistance. The bottled-water company also hires workers who are referred by the mayor, who thus plays a key role in determining who is employed there. During my fieldwork in 2018, 2019 and 2021, I visited the office of the mayor many times and was able to observe changes over time. In 2018, the mayor was keeping locals waiting in the entrance hall and was inviting them to his office one by one, listening to their questions, and trying to find solutions for them. I asked the people waiting at the entrance why they wanted to see the mayor, and some said clearly that they or their children needed a job and that they had come to request the mayor for a job in the bottled-water company. The new mayor followed a different strategy, inviting in more than one person at a time and asking them for their requests. The reluctance of some locals to ask for a job in the bottled-water company in front of other villagers helped the new mayor to minimise such job requests. When a supporter of the mayor visited him, the mayor could opt for a private closed-door meeting. One farmer, describing the role of the mayor in employing locals, recounted that,

> I went to the new bottled-water company to apply for the work. They said I must visit the mayor and give my CV to the mayor. I went to the office of the mayor and explained my situation. The mayor asked his secretary to note down my contact details, and the secretary said they will contact me in case of further hiring. However, I haven't heard from them for 6 months (Farmer Interview, 20 August 2021).

The examples of clientelism mentioned above illustrate how shifting water rights from farmers to the private bottled-water company resulted in water grabbing, as also described by Birkenholtz (2016) with regard to India.

## Water grabbing through infrastructures

### *Enclosing water sources*

The first bottled-water company enclosed the water source with a concrete hut, as seen below. Neither farmers nor the Ağlasun municipal government can check the amount of water flowing to the bottled-water company or the proportion of total water that is flowing to the irrigation canal.

Figure 3. The concrete hut enclosing the water source.


The farmers have no other choice than to accept the volume of water coming from the hut built by the bottled-water company. The farmers need the water for irrigation during the summer period, which is generally between June and September. These are also the months of the year when the bottled-water company receives the most orders from its customers and the company is in operation 24 hours a day, running three shifts. This leaves less water for farmers to irrigate their fields during what are for them also high-demand months. The concrete hut built over the source prevents farmers from proving that the declining discharge of the source is due to the water company's higher intake.

Bottled-water companies are employing various strategies to enclose more water sources in Ağlasun. According to some farmers I interviewed, these companies want to ensure that they have alternative water sources in case of any decline in the ones they are currently using. One of the managers of the bottled-water company admitted that they are constantly seeking alternative water sources, collecting and testing water samples from different sources around Ağlasun to determine their quality and suitability for drinking (Interview with a bottled-water company manager, 19 August 2021). In an interview, the previous mayor confirmed that bottled-water companies were renting water sources other than those they were using. Referring to the strategies of the first bottled-water company, he stated that,

> The first bottled-water company rented two different groundwater sources other than what they have been using (…). They rented the first water source to bottle water with a different brand name. Up to today, they have not taken any water from that source. The same bottled-water company rented another water source, and they claimed that they will use water to wash the used polycarbonate carboys before refilling. However, they needed electric energy to transfer water from the water source to the bottled-water company, which would not make it profitable because of high energy tariffs. We learnt that the bottled-water company rented the second water source to make a better bargain with the special provincial administration since they pay a high tariff for the first water source. The farmers are not allowed to use water from these sources, and they have been enclosed by the bottled-water company (Interview with Previous Mayor, 19 August 2021; see Figure 1).

Similar things occurred after the second bottled-water company set up a factory and started to bottle water in Ağlasun in 2021. The second bottled-water company also made an official request to the special provincial administration to rent a secondary water source in Ağlasun. According to the director of DSI, the agreement has been approved and the second bottled-water company has the right to use another water source in Ağlasun (Interview with DSI Official, 18 August 2021). The farmers using that water source, however, have not been informed about the future plans of the second bottled-water company, even though the company has the power to enclose the secondary water source if it experiences increased demand for its product or if there is a decline in the volume of water available from the primary water source shown in Figure 4.

Furthermore, one of the first actions of the second bottled-water company was to enclose the water source after rental agreement. During the 2018 fieldwork, I had visited the water source that was to be rented by the second bottled-water company. The water source was covered with an iron lid, and it was easy to open and check the amount of water coming from each of the three different taps that fed the spring. They had been aggregated by farmers around 30 years ago after a severe drought year in Ağlasun, and there had been no significant water issues for that spring since that time (see Figure 4).

Figure 4. The amount of available water was transparent to everyone before being enclosed by the bottled-water company.

Note: The photos were taken in July 2018.

The second bottled-water company's construction of a new infrastructure and enclosure of the spring, however, made it impossible for farmers to check the amount of water flowing to the bottled-water company and the amount of water flowing to their irrigation canals (Figure 5). The bottled-water company erected barbed wire fences and a sign stating that 'Entry is dangerous and forbidden'. There is thus no transparency regarding volumes of water flow and the farmers can no longer check the amount of water being used by the bottled-water company.

Figure 5. The water source was enclosed by the bottled-water company.


Note: The sign reads, 'Entry is dangerous and forbidden'. The photo was taken in August 2021.

When farmers complain of decreasing volumes of water in the irrigation canals, the blame is put on 'climate change' by the water guards, the mayor, and the bottled-water company, who all claim that the discharge has declined because of reduced precipitation (Mayor Interview, 17 August 2021; Water Guard Interview, 20 August 2021; Interview with Manager of the Bottled-Water Company, 19 August 2021). Farmers argue, however, that the decrease is not only due to climate change but is also because of the amounts of water being used by the bottled-water companies. As one farmer stated, "Last year, the stream of water, which once flowed as wide as a leg, has now shrunk to the size of an arm since the arrival of the second bottled-water company. Next year, it might cease altogether" (Farmer Interview, 21 August 2021).

Enclosure of water sources by the bottled-water companies in Ağlasun is a clear example of 'active' infrastructural violence (Rodgers and O'Neill, 2012), as it has resulted in farmers being dispossessed of equitable water access.

### *The forced imposition of water-saving agricultural technologies*

The irrigation network in Ağlasun underwent significant changes after the 2009 mayoral elections. The new mayor invested in a plastic pipe network and replaced some parts of the main canals for the pressurisation of the irrigation system. To promote drip irrigation, the Ağlasun municipal government made changes in the rules for water distribution and gave priority to drip irrigation users. The number of farmers opting for drip irrigation systems, however, was much less than expected by the municipal government. The mayor who was elected in 2019 thus made some changes. First, the Öteyüz irrigation network was converted to a closed-pipe system, with half of the pipes (around 3000 metres) donated by the first bottled-water company (Mayor Interview, 17 August 2021). The municipal government then asked farmers to switch to drip irrigation and buy drip irrigation infrastructure for their plots. Due to prohibitive costs, however, farmers did not comply and the municipal government thus made it

mandatory that they switch to drip irrigation infrastructure to access water. Farmers who still did not make the change were excluded from that irrigation network.

The Ağlasun municipal government is planning to extend this new rule to other irrigation networks, which will further increase the number of farmers deprived of irrigation water. The second irrigation network where the open canal infrastructure is being replaced by a closed-pipe system and farmers are being required to switch to drip irrigation is the Kirazlı irrigation network. The municipal government chose this irrigation network because the water source is shared with the second bottled-water company, who responded to the municipal government's request for financial help to replace the main pipes by donating about 5000 metres of pipes, sufficient for the whole irrigation network of Kirazlı. It is the municipal government's hope that the switch to drip irrigation by farmers would result in a reduced need for water and thus fewer complaints about the amount of water being used by the bottled-water company. The new pipes were installed in Kirazlı in 2021 (Figure 6). As in the Öteyüz irrigation network, the municipal government is planning to withhold water access from farmers who are not able to install drip irrigation.

Although most farmers I interviewed complained about the forced imposition of drip irrigation technology by the municipal government, there was almost no resistance to this new rule. There was also a lack of resistance to the bottled-water companies. Only one farmer had filed a legal complaint petition against the bottled-water company. When interviewed, he stated that he did not wish to share the details of the lawsuit or the name of the lawyer from whom he was receiving legal support, afraid that the bottled-water companies would pressure the lawyer to withdraw the lawsuit.

Figure 6. The drip irrigation infrastructure being built by the Ağlasun municipal government.

The forced imposition of drip irrigation technology by the municipal government in Ağlasun is also a clear example of 'active' infrastructural violence (Rodgers and O'Neill, 2012) as farmers without drip irrigation technology are unable to access water, leading to their dispossession from the Öteyüz irrigation network.

## DISCUSSION

In this paper, building on the concepts of accumulation by dispossession (D. Harvey, 2003) and infrastructural violence (Rodgers and O'Neill, 2012), I focus on water-grabbing conflicts specific to the rural context, where water grabbing results in the dispossession of local farmers from irrigation water.

I examine the mechanisms and processes that cause inequities in access to water, with a particular focus on the role of water infrastructures and institutional arrangements in implementing and hiding the scale of water grabbing. According to Birkenholtz (2016), accumulation by dispossession involves both institutions and infrastructures in the process of dispossessing farmers from their water. He suggests that the water-grabbing literature will be advanced by focusing on the materiality of water infrastructures (Birkenholtz, 2016; see, for example, Boelens, 2021, for the role of large-scale water infrastructures in dispossession). I respond to this call by bringing the concept of infrastructural violence into conversation with the literature on accumulation by dispossession, the aim being to examine the combined role played by water infrastructures and institutional arrangements in dispossessing local farmers from their water resources. To that end, I draw on empirical data from a case study conducted in a mountainous rural town in southwest Turkey where bottled-water companies engage in the grabbing of irrigation water.

In critical water governance literature, particularly in irrigation water literature, combining different theoretical frameworks can be very challenging. Each school of thought and theoretical framework may offer a different approach to explaining water access issues. One strength of this paper is its ability to bring multiple theoretical frameworks into conversation with each other, enhancing our understanding of the complexity and the realities on the ground. Combining multiple theoretical frameworks in critical water governance literature strengthens their overall potential to explain how water is managed, distributed and utilised, as well as by whom, when and under what conditions. In this paper, I combined the concept of infrastructural violence (Rodgers and O'Neill, 2012) with the idea of accumulation by dispossession (D. Harvey, 2003) to demonstrate how the material and the social are interconnected. I also show how the "silent, unnoticed work done by infrastructures" (P. Harvey et al., 2016) was utilised in the process of water grabbing. The concept of infrastructural violence helped me explain how the enclosure of water sources by bottled-water companies resulted in the dispossession of farmers from water access. By engaging with this concept, I unveiled how the forced imposition of drip irrigation technology by the municipal government in Ağlasun similarly dispossesses certain farmers of water access. The concept of accumulation by dispossession has helped me understand and explain the role of various institutions in water grabbing. In this paper, I focused specifically on how bottled-water companies established relations with both central state institutions and local authorities to exploit ambiguities in legislation and bend the rules; this allowed them to successfully enclose water sources, which led, in turn, to the dispossession of farmers. In irrigation systems, it is essential to examine the 'social' and the 'material' perspectives of water access together, since actors, infrastructures and institutions co-shape each other (Mirhanoğlu, 2023). In this paper, combining the concept of infrastructural violence with the idea of accumulation by dispossession was crucial for focusing on both the social and the material dimensions of water access and uncovering water-grabbing conflicts.

In Turkey, the neoliberal transition in water allocation is evident not only through the activities of bottled-water companies but also through (small-scale) hydropower plants. Scholars have extensively explored the role of neoliberalism in shaping Turkey's water governance and legal framework, with a specific focus on the hydropower sector (Harris and Işlar, 2013; Sayan and Kibaroğlu, 2016). Hydropower experienced unprecedented growth in the mid-2000s in Turkey. In 2014, Turkey was ranked the fourth-fastest growing country in the world, following China, Brazil and Canada (Erensü, 2017). Several scholars argue that the hydropower plants in rural Turkey are causing the displacement of local populations and the destruction of the rural fabric. Işlar (2012b), for example, investigates the impact of hydropower privatisation in Turkey and highlights the potential exclusion of communities due to changes in property regimes. Extensive research has also been conducted on how local communities in Turkey resist the

hydropower plants (Eren, 2017; Erensü, 2013; Hamsici, 2010; Işlar, 2012a, 2012b; Yaka, 2020). The neoliberalisation of water governance thus has detrimental effects on many of the country's local communities.

As someone who comes from a smallholder farming family and spent my entire childhood in the midst of water conflicts in a rural village, I was deeply impressed by how local communities in Turkey have built strong resistance against hydropower plants and how they defend their water and land against hydropower companies. I was also very intrigued by how the local community in Ağlasun was coping with the injustices in water access and how it was resisting the bottled-water companies. I asked this question of almost all the farmers I interviewed. Surprisingly, although most farmers I interviewed complained about the bottled-water companies, there seemed to be almost no resistance to them and farmers appeared unable to establish a strong basis for resistance.

One possible reason for this the lack of resistance may be related to locally embedded institutions, which also shape local practices (Cleaver, 2002; de Koning, 2011). Farmers in Ağlasun found it difficult to defend their locally embedded institutions, such as the distribution of the irrigation water and collective canal cleaning (for a detailed explanation of the locally embedded institutions in Ağlasun, see Mirhanoğlu, 2023), resulting in a lack of collective action. It is also significant to note that the community in Ağlasun was not homogenous and that there was an asymmetry in access to water among farmers (for a detailed analysis of the social and political relations in Ağlasun, see Mirhanoğlu et al., 2022).

## CONCLUSION

The paper has shown how water grabbing occurs through both water infrastructures and institutions. Based on the data from ethnographic fieldwork about water governance in the rural town of Ağlasun, in southwest Turkey, I analysed how bottled-water companies use water infrastructures and various institutional arrangements to grab water and to hide the scale of grabbing, a phenomenon which has caused local farmers to be dispossessed from agricultural water sources they have used for centuries. My findings in Ağlasun reveal how the bottled-water companies grab water through practices such as bending the rules, clientelism, ambiguities in legislation, fencing off of water sources, and imposing water-saving agricultural technologies.

My analysis presents three key contributions to the literature on water grabbing.

First, I advanced the water-grabbing literature by focusing on the water infrastructures' materiality as suggested by Birkenholtz (2016). I analysed various water infrastructures and how they were used not only to grab water but also to hide the scale of the grabbing. My findings reveal that infrastructural changes such as the fencing off of water sources and the forced imposition of water-saving agricultural technologies dispossess farmers of sufficient and good quality water. Additionally, the farmers who were not able to buy drip irrigation infrastructure were excluded from the irrigation system.

Second, I combined the concept of infrastructural violence (Rodgers and O'Neill, 2012) with the idea of accumulation by dispossession (D. Harvey, 2003) to elucidate the complexity of water access and realities on the ground. My aim was to demonstrate how these theories, which prioritise different perspectives in critical water studies, can interact. I found the combination of different theoretical concepts to be very helpful and I hope it will inspire other scholars to explore alternative ways of integrating different theoretical concepts, especially in critical water research.

Third, I explained why the bottled-water companies managed to grab water in this mountainous rural town. Turkish agricultural and water policies have been profoundly changed after the neoliberal transformations in Turkey that began in the 1980s. These neoliberal policies mostly ignored rural areas and peasant lives, which resulted in the grabbing of natural resources in rural areas. In addition, local officials were rewarded for attracting investments, even though these investments caused enclosure of the water sources which left farmers with insufficient and poor-quality water.

I would like to conclude my paper with some solidarity recommendations for smallholder farmers. My findings underscore the crucial role of locally embedded institutions and collective action in securing access to water. My solidarity recommendations for smallholder farmers are thus to find various ways to actively defend and strengthen local collective action and solidarity-based institutions without privileging elite actors or excluding certain groups. Doing so will contribute to more just and equitable water governance.

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