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A Street View of Groundwater Policymaking and Management in Azraq, Jordan

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ABSTRACT: Groundwater management is a complex task that includes a multitude of actors. It is even more complicated in water scarce countries with less well-established formal water governance structures. In these settings, local government officers have been recognised for their essential role in groundwater management. Often, their role is described as problematic, with officers being under-resourced, under-motivated and, at times, corrupt. In this paper we zoom in on these street-level bureaucrats in Azraq, one of the most depleted groundwater basins in Jordan. Based on inputs from officers, farmers, and sector experts, we collate and analyse information on how the settings in which local officers work influence their day-to-day implementation of policies. We observe that officers in Azraq are heavily influenced by the context in which they operate. This context is characterised by the physical scarcity of groundwater, the formal policy setting, and the presence of the shadow state. The context shapes local officers' relationships with farmers, their own personal beliefs and subjectivities, and their capacity and resources. As a result, their divergent actions arguably become the groundwater management policy. Based on these findings, we argue that a deeper understanding is needed of the underlying factors and drivers that shape local groundwater management if we are to arrive at better groundwater policy for a more sustainable future.

KEYWORDS: Groundwater management, street-level bureaucrats, policymaking, shadow state, Jordan

INTRODUCTION

Groundwater plays a key role in water governance as a relatively stable and reliable resource that helps improve access to water for many users and uses. At the same time, groundwater resources are increasingly under pressure, and deeper investigations are needed into their management and governance (Molle and Closas, 2020). Groundwater is difficult to manage, due to its invisibility and the costs of monitoring available volumes and recharge capacity. Additionally, groundwater is a common pool resource which requires specific infrastructure to access it, which increases its excludability (Zwarteveen et al., 2021).

In Jordan, a notoriously water-scarce country, almost 60% of the country's water supply comes from groundwater sources (MWI, 2017), and groundwater-based agriculture in the highlands is deemed intensive and unsustainable (Al Naber and Molle, 2017a). Since the introduction of groundwater management policies and regulations in the 1990s, little success has been observed in the conservation of groundwater, with some experts describing the policies as ineffective (Al Naber and Molle, 2017b.

Almost three decades after the inception and development of groundwater management policies, most of the basins in Jordan are depleted and used beyond their safe yields (MWI, 2017).

Current social science research on groundwater management for agriculture in Jordan focuses primarily on farmers and their practices in response to two types of pressures, stemming from: (1) policies and regulations and (2) the shadow state (Yorke, 2016; Hussein, 2018a). However, little is known about the local government officers who interact with farmers, make decisions, and take actions that alter policy implementation. Several authors have described corrupt behaviour, like accepting bribes and committing fraud, of government officers as one of the most important reasons behind the failure of groundwater management policies in Jordan (Al Naber and Molle, 2017b; Molle and Closas, 2020). In this paper, we dig deeper into the 'water mismanagement narrative' (Hussein 2018b) as an explanation of water scarcity in Jordan, by looking from a street-level bureaucracy perspective into what this management practice is.

A more complete understanding of groundwater management, therefore, requires a better understanding of the role that local government officers play in it. In many countries and sectors, local government officers tasked with implementing policies and regulations are de facto policymakers. They are so-called street-level bureaucrats, whose actions become the policies (Lipsky, 1980, 2010). In this paper, we examine the factors and circumstances that influence street-level behaviour in order to better understand the challenges associated with implementing groundwater management policies. To do so, we recontextualise street-level bureaucracy theory, and combine it with other policy implementation concepts, for it to fit within the social, cultural, and political norms of developing countries like Jordan (Lipsky, 2022; Lotta et al., 2022). We set out to answer the following research question: how do local government officers shape groundwater management in Azraq, Jordan?

We examine a number of factors surrounding the daily work of officers and their interactions with the service recipients (the farmers). We consider the formal policy setting (formal institutions, bureaucratic structures, and procedures for decision-making and implementation), officers' personal beliefs and subjectivities (Holstead et al., 2021), the presence of the shadow state (Yorke, 2013, 2016; Hussein, 2018a), and the available capacities and resources (Sevä and Jagers, 2013) in order to clarify the ambiguity surrounding the operation of government officers in Jordan and to better grasp the details of the 'enforcement conundrum' (Molle and Closas, 2020) or the 'implementation gap' (DeLeon, 1999; Hupe, 2014).[1] Through this paper, we present a deeper analysis of the perspectives of local officers, and their role in reshaping groundwater management policies.[2]

Brief overview of Azraq

We focus our research on the Azraq basin, located in northeastern Jordan (see Figure 1), as it is the most depleted groundwater basin in Jordan (MWI, 2019) and where groundwater-based agriculture is extensive. As shown in Figure 2, the safe yield for abstraction in Azraq is 24 million cubic metres (Mm^3). However, actual abstraction values lie closer to 61.2 Mm^3, of which 38.6 Mm^3 are allocated for agricultural purposes (Oberhauser et al., 2023).

[1] The term 'enforcement conundrum', as used by Molle and Closas (2020), refers to the gap between laws and regulations and their enforcement, which stems from a lack of capacity and resources to undertake effective implementation. In policy sciences, the term 'implementation gap' refers to a broader set of reasons why policy outcomes differ from policy intentions (DeLeon, 1999; Hupe, 2014). It often takes a normative, top-down view to explain what went wrong in implementation, rather than a bottom-up view to explain what happens in implementation to get things done.

[2] This paper is based on the research of the first author (Al-Amin, 2022). Al-Amin (2022) presents a broader review of the literature done on the Azraq basin. In this paper, we limit ourselves to references that are directly related to the argument we are developing.

Figure 1. Azraq surface water basin in eastern Jordan (left) and the spatial pattern of agricultural, environmental, and domestic groundwater abstraction around the town of Azraq (right) (Oberhauser et al., 2023).

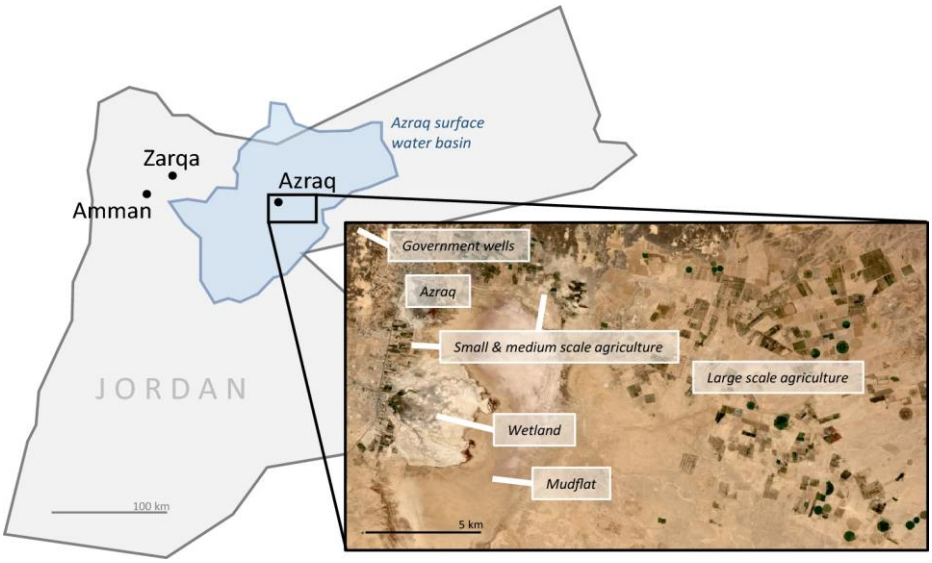
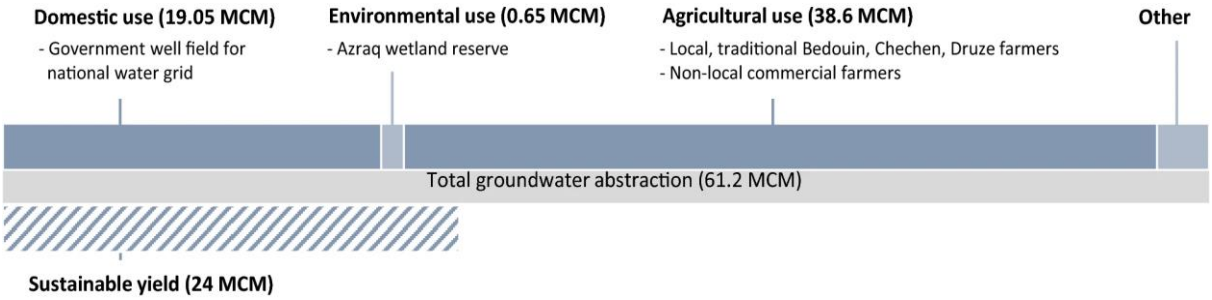


Figure 2. Groundwater user groups in Azraq, total annual groundwater abstraction, and sustainable yield (Oberhauser et al., 2023).



The study area is of particular interest also due to the presence of Jordan's endangered Azraq Ramsar Wetland, the presence of powerful tribes, and the prevalence of illegal well drilling and water abstraction (Al Naber, 2016). The Azraq basin has been studied by numerous scholars and institutions; previous research has looked at its complex geohydrology and groundwater resources (Al-Adamat et al., 2003); climate change impacts on water resources (Al Qatarneh et al., 2018); its vulnerability to droughts (Aladaileh et al., 2019); agricultural groundwater uptake and use (Al Naber, 2018; Al-Bakri et al., 2023); illegal groundwater use (Habjoka and Mesnil, 2012; Al Naber, 2016); limitations in groundwater policy enforcement and water-society-state relations (Al Naber and Molle, 2016, 2017a, 2017b); competition between various water users (Oberhauser et al., 2023); and the politics of groundwater distribution and reallocation (Liptrot and Hussein, 2020).

Azraq's unique social fabric makes it a particularly interesting study area because it is described as a 'melting pot' of different cultures (Habjoka and Mesnil, 2012). Azraq is home to some prominent Bedouin tribes who left behind their pastoralist way of life and became either land brokers or farmers (Al Naber, 2016). Minority groups are also present in the area; the Chechens and the Druze, for example, are farmers and salt-industry workers respectively (Al Naber, 2016, 2018; Al Naber and Molle, 2017a).

In this paper, we shed light on the practices of street-level bureaucrats in groundwater management in Azraq. Street-level bureaucrats, in our research, are the local government officers who are in direct contact with farmers, well drillers, and other relevant non-state actors. Within the organisation of groundwater management, they are tasked with monitoring agricultural expansion, carrying out metering inspections, issuing warnings and fines to non-compliant farmers, and estimating water consumption from unmetered wells. These officers are responsible for the day-to-day water management operations and enforcement of formally set policies. They use their available skills, resources and instruments to curb groundwater overabstractions.

BACKGROUND

Groundwater management in Jordan

Formal groundwater management policies and institutions in Jordan

The management of groundwater has proved to be complex, considering the multitude of factors surrounding its monitoring, quantification, and regulation. With increased abstractions and resource depletion, states have attempted to manage and regulate the use of groundwater through a number of policies and laws. However, these have been deemed largely ineffective in reducing abstractions (Venot and Molle, 2008; Closas and Molle, 2016; Al Naber and Molle, 2017a; Hoogesteger and Wester, 2017; Nabavi, 2018; Molle and Closas, 2020). In Jordan, for example, the National Water Strategy 2016-2025 (MWI, 2016b), and its integrated Groundwater Sustainability Policy (MWI, 2016a) as well as the Underground Water By Law No. 85 (MWI and WA, 2002) and its amendments, are all aimed at creating a more resilient water sector by sustainably managing groundwater resources. The policies and regulations use different policy tools, ranging from licensing systems, to block-tariff structures, to sanctions that are expected to reduce consumption.

The institutional landscape of groundwater management in Jordan is complex. Formally, it consists of three main actors operating within the framework of the National Water Strategy and the Groundwater By Law. The Ministry of Water and Irrigation (MWI) is the most influential policymaking body in the sector (OECD, 2014). Its role is focused on strategic planning, policy formulation, the development of resource management programmes, data management, and resource monitoring and control (Al-Karablieh and Salman, 2016). The Water Authority of Jordan (WAJ), in turn, is an autonomous body that is financially and administratively independent from the MWI (OECD, 2014). However, the Secretary General of the WAJ reports to the Minister for Water and Irrigation (Al-Karablieh and Salman, 2016). The WAJ takes on a more operational role; it is tasked with implementing water resource management policies, and providing water supply and wastewater services (Al-Karablieh and Salman, 2016; Al-Addous et al., 2023). The third national government actor is the Jordan Valley Authority (JVA). It operates in the Jordan Valley and, as such, is not a key player in this research.

Despite some overlap and entanglement in the responsibilities of the MWI, the WAJ, and the JVA (Yorke, 2013), the institutional landscape generally suggests a centrally organised and hierarchical governance system, whereby strategic decisions and plans are made by the state through the MWI (Al-Najar et al., 2013), while the more operational management decisions are made by the WAJ and the JVA. For example, the MWI draws groundwater basin delineation plans, conducts studies of existing groundwater resources, and formulates policies, whereas the WAJ and VJA are responsible for the licensing and permitting of well drilling and water supply (Al-Karablieh and Salman, 2016). A lack of communication and coordination of activities between the institutions, in particular in instances where mandates and responsibilities overlap, create implementation gaps on the ground (Yorke, 2013; Al-Karablieh and Salman, 2016).

In Jordan, the agricultural sector is the largest consumer of water; it uses about 52% of the available water supply (MWI, 2017). Groundwater-based agriculture is rampant, despite the depletion of almost all groundwater aquifers (Al Naber and Molle, 2017a). In an attempt to reduce groundwater abstractions and manage the resource, the government introduced policies aimed at banning the drilling of new wells using a licensing system, thoroughly discussed by Al Naber (2016) and Al Naber and Molle (2017a); controlling the abstracted amounts using electricity pricing and a block-tariff structure; regulating the operation of drilling companies; and introducing penalties. However, the results of these efforts have been either limited or non-existent due to issues related to enforcement (Al Naber and Molle, 2017a; Molle et al., 2017; Molle and Closas, 2020). Jordan has also resorted to measures such as using satellite imagery to monitor and estimate water consumption based on the expansion of the irrigated area; a naming and shaming campaign in the newspapers against people who have not paid their bills; and lastly, linking other administrative procedures (like passport applications and driver's license renewals) to whether or not a water user has paid their water bills (Molle and Closas, 2020).

Groundwater management policy versus practice in Jordan

Evidence from multiple regions shows that failure of groundwater management policy is often attributed to a 'lack of political will' (Nabavi, 2018; Molle and Closas, 2020) and to monitoring and enforcement challenges (Molle and Closas, 2020). Research on the enforcement conundrum (Molle and Closas, 2020) has revealed several factors that can undermine effective enforcement efforts. These include insufficient means, fraud and corruption, ineffective sanctions, metre tampering and farmers' practices, as well as personal relationships, and power. For example, sanctions and reports of violations are ineffective because "they provide a bigger stick to local officials to extract larger bribes from water users" (Molle and Closas, 2020, p.4).

In Azraq, where the water tariff is higher than elsewhere in Jordan despite more saline water, Al Naber and Molle (2017a) found that farmers adopted certain practices to challenge official groundwater regulations. For example, farmers apply to obtain a permit to clean a well, but in reality, use that permit to deepen their well or to dig a new one (Al Naber and Molle, 2017a). Additionally, farmers resort to tampering with metres, creating bypasses, and damaging equipment to reduce the metered water consumption and related bills (Al Naber and Molle, 2017a).

Another obstacle facing the implementation of groundwater management policies in Azraq is the issue of land acquisition and well legality, explored extensively by Al Naber (2016, 2018) and Al Naber and Molle (2016, 2017b, 2017a). The status of both the land and the well dictates the water tariff. Wells on unregistered lands are subject to a higher tariff than legal wells on registered lands. Some farmers have registered lands, but illegal wells that may nonetheless be permitted to operate.

Hussein (2018a) paints a more violent picture of groundwater management in Jordan by addressing the presence of the shadow state and how its power allows farmers to undermine regulations. Similarly, Mustafa and Talozi (2018) showcase the social power dynamic shaping water access and practices. The shadow state is a social structure or institution of powerful individuals that harbours sufficient power to resist changes in policy and influence reforms (Yorke, 2013, 2016; Mustafa et al., 2016; Hussein, 2018a). The impact of the shadow state becomes clear when powerful farmers deny entry to officers to carry out inspections (Al Naber and Molle, 2016) or when officers are met with violence during inspection visits (Hussein, 2018a).

Liptrot and Hussein (2020) and Hussein (2018b) explore the nuances of international involvement in policymaking at the ministerial level in Jordan (perceived as unwanted interference by some at the local level). Donors and the international community have pushed for water reallocation policies, suggesting different tools for implementation that include farmer buyouts and increased tariffs for agricultural water. Donors have also highlighted the unsustainable nature of irrigation and agricultural practices in Jordan, and pushed for policies targeting such practices. However, many local actors – such as farmers,

shadow state members, and the general public – have resisted these policies as it would create unemployment and close farms in the area (Liptrot and Hussein, 2020). This creates room to reflect on the role of international actors in national policymaking and the relation to what happens in the field.

Molle and Closas (2020) discuss how the interactions between water users and officers influence enforcement efforts. For example, they observe that officers tend to turn a blind eye to violations carried out by certain farmers because they are relatives or share a personal relationship with each other. We build on this theme through our own observations of the relations between local officers and farmers in Azraq. We explore what officers and farmers have in common in terms of their personal beliefs, and how those beliefs influence the officers' decision making in implementing, enforcing, hence, making groundwater policy.

Policy implementation, context, and street-level practice

Within the disciplines of policy, public administration, politics, and governance studies, there has been a long-standing debate about policy implementation, and how to capture its main mechanisms. Traditionally, implementation has been highlighted as the aspect of policy processes where problems occur. A number of explanations have been put forward for this, including the theory behind the policy design (Elmore, 1979; Montjoy and O'Toole, 1979); the multiple governmental layers involved (Pressman and Wildavsky, 1973); the multiplicity and continuous influence of political actors, advocacy coalitions and epistemic communities (Sabatier and Mazmanian, 1980; Haas, 1992); the influence of inter- and intragovernmental networks and structures (Hall and O'Toole, 2000); the co-management and participation of public and private actors around the policy issue (Arnstein, 1969; Ostrom, 1990); how peoples' worldviews influence local management (Cleaver et al., 2021); and the behaviour of frontline staff (Lipsky, 1980). These authors acknowledge that implementation is not straightforward. Meaning that implementation is not a causal result of converting formulated rules and procedures into prescribed practices. Implementation depends on multiple actors working at different operational levels. They recognise actors' different knowledge and belief systems, and the possibility that actors may not have similar interests in the success of a policy as formulated. The authors are also aware that actors use power and resources to influence policy implementation.

Lipsky (1980, 2010) introduced the notion of 'street-level bureaucrats', which he defines as "public service workers who interact directly with citizens in the course of their jobs, and who have substantial discretion in the execution of their work". Lipsky theorises that the actions of these public service workers on an individual level represent the services delivered by the government. On a more collective level, these actions become the implementation reality and thereby the de facto policy.

The work on street-level bureaucracy continues to offer useful concepts to understand the practices of local officers. Street-level bureaucracy can be better understood when two main factors are considered: (a) autonomy of local officers from the organisation's authority and (b) discretion of local officers to exercise their professional judgement (Lipsky, 1980, 2010; Sevä and Jagers, 2013; Holstead et al., 2021). Essentially, it is about understanding the space officers have to exercise their judgement when faced with challenges during implementation of formal policies in local realities. Nunes and Lotta (2019, p.2) argue that autonomy and discretion arise from "tension between rules and the realities on the ground", requiring bureaucrats to negotiate and take decisions as they see fit within a given situation. These decisions are not always in line with what was intended in the formal policies.

In exercising their autonomy and discretion, street-level bureaucrats are influenced by three different types of factors. These include, firstly, their own perception of reality, their beliefs and their subjectivities. Local officers can face dilemmas during implementation when formal policy intentions conflict with their own morals, their identity, and their culture. Therefore, their implementation decisions are often dependent on how they negotiate or balance their professional and personal identities (Holstead et al., 2021). Similarly, Cleaver et al. (2021) make the case that worldviews of local communities are often not

considered in higher level policymaking. Which plays a significant role in shaping local water management arrangements that is different from what was planned for.

Secondly, personal relations also play a role in influencing the operation of street-level bureaucrats. Since it was first theorised, street-level bureaucracy has been mostly explored in developed countries (Chang and Brewer, 2022).[3] Street-level bureaucracy in the Global North is in general characterised by high levels of professionalisation, administrative capacity, and bureaucratic autonomy (Peeters and Campos, 2023). However, most of the world's street-level bureaucrats work under very different circumstances. A growing number of authors have begun to shed light on the work of street-level bureaucrats in the Global South (Sevä and Jagers, 2013; Bierschenk and Olivier de Sardan, 2014; Sevä, 2015; Funder and Mweemba, 2019; Holstead et al., 2021; Lotta et al., 2022; Peeters and Campos, 2023). In a country like Jordan, where local officers are often recruited from local families (Molle and Closas, 2020), implementation becomes more complicated due to the personal connections that officers have with the service recipients. Additionally, street-level bureaucrats do not operate in a silo as they are positioned within a network of vertical and horizontal relations, which influence them and also hold them to account (Hill and Hupe, 2007). Therefore, Hill and Hupe (2007) argue that these bureaucrats are more influenced by their personal relationships than by the rules that attempt to define their work.

Thirdly, the availability of resources and capacity. Sevä and Jagers (2013) relate the resources available to the officers to their capacity for action, varying from financial resources to the availability of vehicles to do field inspections. Formal policy offers resources for implementation, by allocating financial, human and technical resources, and authority, task and responsibilities. However, in many cases implementation agencies are confronted, with insufficient (skilled) personnel and limited financial and technical resources. As a result, local officers use their discretionary power to prioritize some of their tasks and responsibilities over other work. Funder and Mweemba (2019) document how local officers responsible for implementing climate change induced resettlement policies in Zambia, delegated tasks to a community-based organisation due to limited resources and slow bureaucratic procedures around land entitlements. Creating an informal land administration system allowed people to resettle and employ new land while waiting for official title deeds to come through. Delegating tasks increased the resources of the local officers. At the same time these officers, together with the communities, stage certain adaptation activities in order to report progress to higher government levels. These staged activities are real, but to the local officers and communities it is understood that other activities are more important. It is done to assure a continuation of funding and other future benefits.

Street-level bureaucrats are thus de facto policymakers who shape and create policy (what governments choose to do or not do) in the field and in interaction with society. Street-level bureaucrat practices can be significant in both realising (national) policy intentions, as well as in deviating from policy intentions.

Implementation is not as straightforward as presented in policy cycle models and stage heuristics since it is continuously influenced by actors, networks and processes at various layers of governance (Hill and Hupe, 2002). The ability of local implementation actors to shape policy is influenced by the context within which the local policy actors interact. Bressers (2004) states that the course of a policy implementation process crucially depends on the characteristics of the policy actors involved (their interests and motivations, their knowledge and belief systems, and their power and resources) in relation to the policy context. Local implementation officers play a crucial role in translating and adapting higher level policy ambitions into effective local policy practice in interaction with the local policy network

[3] Chang and Brewer (2022) carried out a systematic review of literature on street-level bureaucracy published between 1980 and 2019. Over 80% of the papers in their study focus on Northern America, Europe, and Oceania, while only 2.5% focus on the Middle East. They also show that more than half of this body of literature focuses on the policy domains of social welfare (25.7%), education (13.3%), law enforcement (police) (11.5%), and health (5.5%). Environmental regulation accounts only for 3.7% of the papers identified in their study.

actors. Policy practice cannot be understood from the formal policy context and the street-level bureaucrat-client relation alone. Rather, these need to be seen in a wider perspective, one that accounts for the political, cultural, socio-economic, technological and biophysical or environmental settings in which such practices unfold.

A framework to understand street-level policy practice

This paper focuses on the practices of street-level bureaucrats in Azraq, and their actions and behaviours that lead to deviations from formally set policy targets. By examining the pressures that officers operate under, we can better understand the implementation gap. This paper also depicts how policies are reshaped by the daily actions of these officers. Against a backdrop characterised by the presence of the shadow state, limited resource availability and a complicated land and well situation, we explore their autonomy and their discretion in an effort to understand their role in shaping groundwater management policies through their implementation practices.

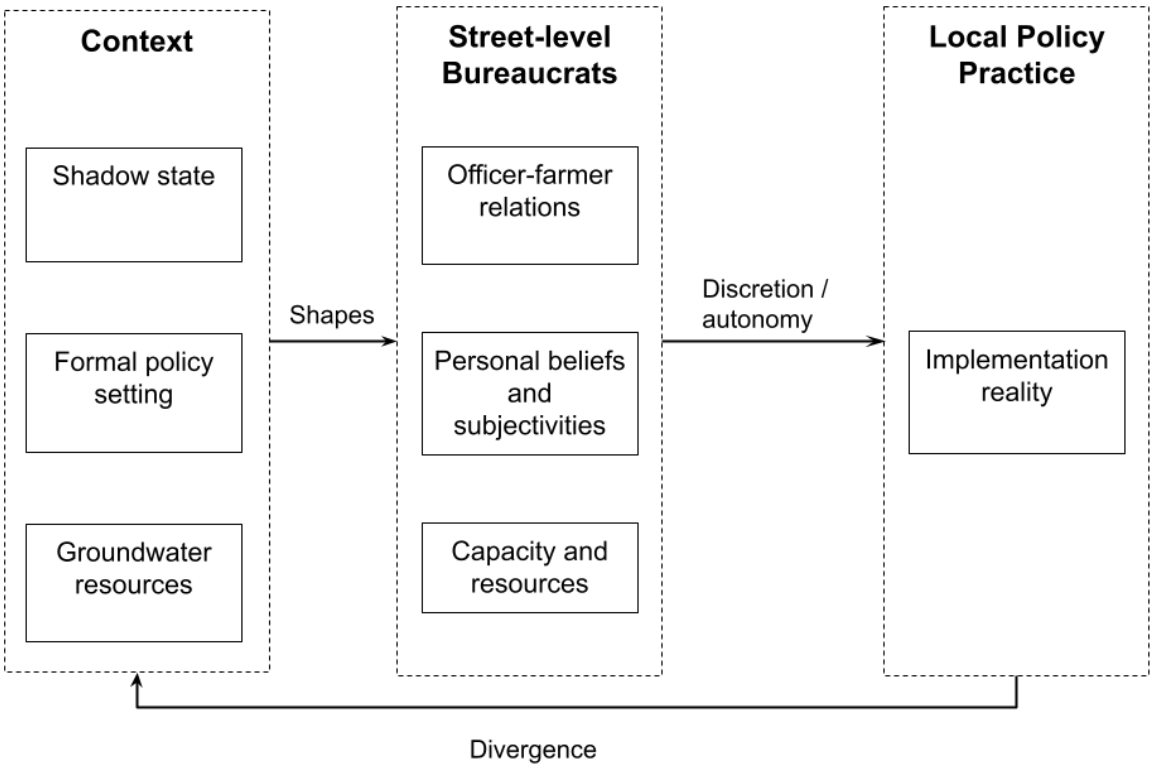
Figure 3 visually illustrates the way we theorise the operation of local government officers in the groundwater management sector in Jordan. Caught between the formally set policies and the complicated reality of implementation and interaction with service recipients, local government officers are subject to factors that influence the way they perceive policies and how they translate them.

The local officers operate within a context that is set by three main circumstances: (a) the shadow state, (b) the formal policy setting, and (c) the scarcity of groundwater sources in Jordan. The first of these relates to the existing social and community structures. In Jordan, Yorke (2016) and Hussein (2018a) refer to the tribal setting against which the government operates as a 'shadow state'. The second set of circumstances stems from the official policy setting stage where the groundwater policies and regulations are created and developed at the ministerial levels, often with international influence. The official policy setting stage is the step that sets the implementation process in motion. The third set of circumstances is the physical system of the groundwater resource. This is both the system that policies and local officers seek to manage as well as an important context in which street-level bureaucrats make their choices. In addition to the shadow state, some local cultural factors also affect officer-farmer relations.

Next in our conceptual framework, we explore the interrelation between the contextual factors mentioned above and the (a) officer-farmer relations, (b) officers' personal beliefs and subjectivities, and (c) the available capacities and resources of local officers for implementation. We chose to investigate, firstly, the influence of the shadow state on the operation of local government officers in Azraq because the shadow state is a unique social structure that has been absent from the literature around street-level bureaucracy. This allows us to recontextualise the theory to fit the societal norms in Jordan. It also gives insight into how the shadow state further complicates policy implementation by influencing officer-farmer relations and officer operation. Secondly, local officers' personal beliefs and subjectivities in Jordan have not been explored in the literature. According to Holstead et al. (2021), bureaucrats' subjectivities and their role in environmental governance is not yet fully understood. We therefore aim to fill this gap in knowledge in an attempt to identify and analyse one of the root causes of the implementation gap. Lastly, we choose to investigate the influence of the available resources and capacities on the officers' operation.

The factors described above influence the autonomy and the discretion of the officers, which affects their decisions during implementation activities. As a result, an implementation reality is created, which diverges from formal policy intentions.

Figure 3. Conceptual framework.



METHODOLOGY

As a starting point, we reviewed the available literature on water management in Jordan as a whole, and in Azraq more specifically. We also reviewed the available literature on street-level bureaucracy and policy-making. We then designed our conceptual framework and data collection methodology in a way that best captures the reality and complexity of policy implementation practice. The methodological ideal was a semi-ethnographic approach (c.f. Hasan et al., 2020).

Data collection was carried out by the first author between December 2021 and January 2022, and it consisted of semi-structured interviews with eight individuals and two groups (see Table 1), supported by field observations while visiting farmers and accompanying officers during their fieldwork. Despite the ongoing Covid-19 pandemic at the time of fieldwork, there were no limitations in visiting farmers and officers in Azraq, and meeting with sector experts in Amman.

The following three categories of interviewees are relevant to the scope of this paper: firstly, government officers as the street-level bureaucrats who are in direct contact with farmers; secondly, farmers, who are themselves divided into three more categories depending on the size and purpose of their farms (small-, medium-, and large-scale farmers); and finally, sector experts, consisting of high-level policymakers, researchers, and academics. Speaking to the different types of sector experts is important to gain a better understanding of the policy arena in Jordan and the different perspectives of relevant actors. A total of 14 respondents were interviewed; 3 government officers, 1 large-scale farmer, 2 medium-scale farmers, 3 small-scale farmers, and 5 sector experts. The interviewees were selected based on their professional position, which also shows that the field is dominated by men.

Table 1. Categorisation and description of interviewees.

Category	Description of interviewees	Gender
Group interviews		
Street-level bureaucrats	Government officer	Male
	Government officer	Male
	Government officer	Male
Farmers	Large-scale farmer	Male
	Medium-scale farmer	Male
Individual interviews		
High-level policymakers / expert	Sector expert working with an international non-governmental organisation (INGO) in Azraq	Male
	Policymaker, advisor, and private consultant	Male
	Researcher, policy advisor	Female
	Researcher, sector expert, reporter	Female
	University lecturer, consultant	Male
Farmers	Medium-scale farmer	Male
	Small-scale farmer	Male
	Small-scale farmer	Male
	Small-scale farmer	Male

The first author met with officers in their place of work, and joined them on fieldwork and visits to the farms of the large-scale farmer and one of the medium-scale farmers. To accommodate the social and cultural considerations, some of the planned semi-structured interviews morphed into focus group discussions. The interviews with each individual had a different set of probing questions tailored to the role and the position of the interviewees. Given their semi-structured nature, interviews took the form of informal discussions. The data were collected in a data repository where the different narratives were extracted (Al-Amin, 2022). The narratives were then organised into the different themes to show their depth and interrelation, and to draw conclusions.

RESULTS AND DISCUSSION

In this section, we present the information we obtained from observations and discussions with farmers, local officers, and sector experts. We use this information to demonstrate how local policy practice is impacted by the operation of the street-level bureaucrats as a result of an amalgamation/interplay of contextual factors surrounding their operation. The narratives are regrouped into four themes to allow for a holistic exploration of heavily interrelated factors. The themes are as follows: (1) formal policy setting, (2) personal beliefs and subjectivities, (3) shadow state and officer-farmer relations, and (4) capacity and resources. For the groundwater conditions, the main biophysical system, we describe subjective beliefs only. For more general information, we refer to background section. Each theme is explored from the perspectives of the three different respondent groups. There are interlinkages between the four themes and the narratives that constitute them (i.e. one story is related to more than one thematic area). We encourage the reader to keep this in mind in order to better grasp the factors that collectively influence street-level behaviour.

Formal policy setting

The formal policy setting theme addresses the perceptions of the interviewees about the national policymaking arena, including formal institutions (e.g. laws, regulations), bureaucratic structures (e.g. ministries, agencies), procedures of decision making and implementation (e.g. administration, policy instruments), management style and flow of information (e.g. networks, hierarchies). For the sake of analysis, we look at the formal policy setting as the trigger that sets the policy process shown in Figure 3 in motion, even though we are aware that the formal policy setting is also a result of the other contextual factors. The formal policy setting stage is influential in forming certain beliefs among the farmers and the officers, as well as in allocating resources. Formal policy beliefs (e.g. water scarcity) and related implementation and enforcement instruments are not always compatible with local beliefs (sufficient groundwater available), the social fabric in Jordan (closing of wells and resulting loss of income), thus influencing the relations between officers and farmers.

Officers

In Azraq, local government officers described their official duty as (a) restricting the drilling of new wells, (b) restricting agricultural expansion, (c) identifying the operational unmetered wells and estimating their water consumption, (d) metering the legal and registered illegal wells, and (e) approving licenses to deepen or clean existing wells. Monitoring and data collection were also mentioned as being part of their tasks; however, officers explained that these are not carried out regularly.

Officers described a top-down flow of information in a hierarchical structure that excludes them from the policy conception, design, and setting stage. From the perspective of the officers, this exclusion leads to the creation of policies that are unimplementable due to their incompatibility with reality. The interviewed officers unanimously agreed that high-level policymakers are oblivious to street-level challenges as they are 'disconnected' and 'out of touch'. One officer explained that policies are adopted due to external/international pressures and are neither in favour of Jordanian farmers nor compatible with the social context of the area. Officers do not believe that the policies are suitable or appropriate and, as a result, find it difficult to implement them. Consequently, their relations with the farmers are heavily influenced by the formally set policies, and their perceptions and approval of them.

Elaborating further on the disconnect between high-level policymakers and local officers, a government officer explained that "what happens behind closed doors in the ministry is something, but what actually happens here on the field is something else". Officers gave the example of the failure of a national campaign in 2013 to close down all illegal wells, also mentioned in the work of Hussein (2018a). The officers said that the local office is understaffed, lacked financial resources, and were disproportionately weaker than powerful individuals of the shadow state in Azraq. As a result, officers reported violations involving the national water infrastructure (i.e. instances where people have tapped into the main pipeline to syphon water) instead of reporting violations related to private wells that could be traced to a certain farmer, and they negotiated with violators to close down non-operational wells only. In this example, we can see that officers used their discretion to prioritize actions, due to limited resources and power, related to national infrastructure, and non-operational wells. These actions, however are not in line with the formal policy setting that prioritizes closing of illegal wells. At the same time, the local officers are able to report on progress of implementing groundwater management policy to higher levels of government.

Lastly, officers in Azraq pointed out the lack of and their need for a framework to guide their estimation of water consumed from unmetered wells. This gap in legislation creates room for officers to use their discretion and estimate water consumption based on their professional expertise. It also gives rise to tensions with farmers as the process is not transparent and there is a high chance for human errors to occur. In instances of estimating water consumption from unmetered wells, officers have to rely on their own knowledge and observation to make water estimates. Officers state that many factors should

go into the process of estimating consumption, including type of crop, spacing between crops, and different sources of water on the farm. However, due to their understaffing and limited capacities, officers tend to make guesstimates. The officers attributed this gap in the legislation to the administrative gap between the Ministry of Water and Irrigation and the Ministry of Agriculture. According to the interviewed officers, collaboration is lacking between the two ministries, thus limiting the resources they have to adequately estimate water consumption.

Farmers

Echoing the views of the officers, farmers also expressed a belief that the distance between high-level policymakers and the field is far too great to allow them to formulate fair and realistic policies. Farmers claimed that high-level policymakers are not knowledgeable enough about the day-to-day activities and implementation challenges in Azraq. On this note, one farmer explained: "there are many exceptions that apply to Azraq in the bylaw. Also, policymakers are too far away from our reality", meaning that policymakers do not pay enough visits to the area in order to comprehend the actual challenges that farmers face. This furthers the distrust between the farmers and the government, which extends to the officers since they are seen as representatives of the government. Farmers attributed the main source of conflict between them and the officers to the special rules in the Groundwater By Law No 85 that apply to Azraq only. Based on these rules, the water tariff in Azraq is higher than in the rest of Jordan despite the water being of lesser quality. Farmers are unable to accept justification for this, stating that the reason behind the aquifer's depletion is the overpumping of water to Amman in the past decades.

Regarding the lack of a framework to guide water consumption estimation, farmers who were interviewed in the presence of the officers claimed that officers try to underestimate the cultivated areas in an effort to reduce the water bill. However, not all farmers shared this point of view. Those who were interviewed in the absence of the officers claimed that officers only care for overestimating and billing higher amounts. Elaborating further, a farmer said: "It really depends on your luck. If the officer is in a bad mood because he had a fight with his wife that morning, then may God be with you".

Commenting on the 2013 campaign to close down all illegal wells, one farmer notably stated that "implementing this decision could have started a civil war". Farmers described how that sudden decision – which, according to Hussein (2018a), was pushed for by the United States Agency for International Development (USAID) – did not fit the situation in Azraq. This gives more insight into how top-level decisions are not well received at street-level by both farmers and officers due to dislike of foreign intervention in internal policies, therefore those policies are not accepted and are ultimately incompatible with the social fabric in Azraq.

Sector experts

Experts agreed that "Jordan has some of the most developed and well-crafted water policies, strategies, and plans compared to other countries in the MENA [Middle East and North Africa] region". However, they also noted a clear discrepancy in implementation that cannot be blamed on a single group of actors. Experts also noted that policies are designed with heavy international influence and do not factor in the presence of the shadow state or the social context in Jordan. Therefore, policies end up being unimplementable as their design is influenced by individuals who lack an understanding of the Jordanian social construct. As a result, policies tend to disregard the substantial role of the shadow state in undermining their implementation. For example, policies on groundwater management are blind to the power imbalance between farmers and officers. Consequently, officers only take actions that are within their limited power and are acceptable to more powerful farmers, resulting in implementation gaps.

On another front, experts noted the lack of communication between the relevant ministries as a main reason for why legislation does not support local officers in their work (a view also shared by farmers and officers). One of the experts stated:

> The MWI and the MoA have opposing mandates and approaches to water management and land productivity. Policies of the MWI aim at reducing water demand for groundwater-based agriculture, whereas the MoA aims to increase crop productivity by incentivizing farming in the highlands. The fact that these ministries operate in silos, results in inharmonious policies and an absence in legislations that support officers in making estimates of water consumption.

Such gaps in legislation reduce the officers' capacity for action and forces them to resort to other ways of estimating water consumption.

Lastly, one of the experts noted that "the MWI usually launches campaigns and policies without prior notice and without a gradual build-up to them". An example of this was the 2013 campaign to close down illegal wells in Jordan. Officers and farmers alike are required and expected to adapt to sudden changes despite not agreeing with them or not having been consulted. The expert also noted that these sudden changes impact small- and medium-scale farmers disproportionately, with the large-scale and more powerful farmers being more able to resist these changes either at street level or at higher levels.

Shadow state and farmer-officer relations

The influence of the shadow state was most visible in the farmer-officer relations, so we have combined these into one theme. This theme discusses the shadow state, the structure of patronages that comes with it, and how the relations between the officers and farmers influence the operation of local government officers in Azraq. It zooms in on the social challenges associated with policy implementation as seen from the perspectives of the three respondent groups. We describe how officers respond to the pressures exerted by the shadow state and how their consequent actions cause changes in policy.

Officers

Local officers are aware of the sensitivity and volatility of the environment in which they operate in terms of violence and armed clashes. They are also aware of the strength of the large-scale farmers or investors and their ties to the shadow state. Coupled with the officers' preference for prioritising their own safety, they are inclined to avoid confrontation with powerful farmers. In many situations, the shadow state can be seen as an institution that limits the autonomy of officers. For example, officers are coerced into ignoring violations or allowing certain actions due to the threat posed by members of the shadow state. As a result of this pressure, not all farmers in Azraq are afforded the same treatment, thereby furthering inequality. A local officer noted that "some policies are implemented on some farmers, but not others". The presence and influence of the shadow state further complicates the relationship between the officers and the remaining small-scale farmers, who do not have access to the same means, but would like to be treated similar.

The influence of the shadow state can be clearly observed in the 2013 campaign to close down illegal wells. In line with what was observed by Hussein (2018a), officers shared that they were met with hostility from the large-scale farmers when approaching them to close down the illegal wells. As a result, officers resorted to negotiations to reach an agreement that would benefit both sides. Only non-operational wells were backfilled; farmers were able to keep all of their operational wells while officers were able to report the closure of wells regardless of operational status. However, this was not the case for all the farmers in Azraq.

Officers also spoke about the ability of large-scale and well-connected farmers to waive fees or bills by appealing to individuals working at higher levels. For example, if an officer manages to issue a violation ticket or a higher water bill, certain farmers are able to pull some strings in order to waive that amount. Officers describe that they then feel discouraged from carrying out their role because all of their efforts go to waste and they are subject to violence. One of the officers stated:

> Even if we do manage to issue violation tickets for some illegal wells, or serve farmers with water bills, we know that in a few days or weeks, they will reverse it through their connections. So why should we go through the trouble?

Another factor that further complicates the relations between farmers and officers is what an officer terms 'the continuity effect'. This describes how the experiences with and the reputation of the previous officer extends to the new officer. For example, one officer explained that "if the previous officer was lenient and overlooked many violations, then the new officer is expected to do the same". Speaking from a previous personal experience, a local officer faced threats from the farmers and difficulty in assimilating into the new role in Azraq because the predecessor was unpopular among the farmers.

Speaking about their understanding of the difficult situations that farmers in Azraq face, the officers described their relationship with most farmers in Azraq to be 'normal'. Officers also spoke about how they strive to foster positive relationships with all the farmers, especially since they themselves come from agricultural backgrounds and share similar struggles as the farmers. As a result, officers explained that they try to be as consistent and friendly as possible with all the farmers, regardless of their social status.

Farmers

Contrary to the views expressed by the officers, small-scale farmers used terms like 'war' and 'enemies' to describe their relationship with the officers, whereas medium-scale and large-scale farmers used words like 'tense'. This highlights the inequality in treatment between the farmers depending on their power as a farmer. However, small-scale farmers understand the predicament that officers find themselves in because some are themselves government officers in different sectors and subject to similar pressures from the shadow state. They were able to personally relate to the officers and justify their actions and 'nepotism'. One of the farmers spoke about his own experience, saying "I am also a government officer but I work in the north. I have to face the same issues as the poor officers here in Azraq". Despite this empathy, small-scale farmers still find it difficult to accept this reality and will challenge officers whenever possible.

One small-scale farmer explained that "some farmers are powerful enough to have fees or fines waived without even filing an objection… Your status is proportional to your connections". This causes frustration among the small-scale farmers, which is then extended to the officers as representatives of the government.

The shadow state is able to influence officers' operation both directly and indirectly. Officers' decisions to ignore violations in the large-scale farms are directly caused by the threat of the shadow state. However, the inequality in treatment between the farmers created by the shadow state results in the small-scale farmers becoming more violent and their relationship with the officers becoming more fraught. On this note, a small-scale farmer shared that "every government vehicle has at some point been vandalised or assaulted". Furthermore, small-scale farmers explained that they are aware of certain pleasantries and agreements exchanged between the officers and large-scale farmers who have the means to offer in-kind or monetary tokens. As a result, preferential treatment is expected, though not fully accepted, by the small-scale farmers, causing more hostility towards the officers.

Sector experts

"Favouritism and nepotism reduce the effectiveness of policy implementation, so the government loses its credibility and image", according to one of the experts. The interviewed experts are aware that large-scale farmers and investors in Azraq are powerful enough to resist changes in the status quo, especially if the changes are not in their favour. This is represented in the ability of large-scale farmers to waive fines and fees at higher levels. Some experts noted that many of the high-level policymakers are

themselves investors in Azraq and members of the shadow state, which brings their private versus their public interest into question.

Experts also shared their knowledge of the hostilities that occur between farmers and officers in Azraq, where one expert said: "Conflicts have been observed between farmers and officers, especially regarding the water estimation process". They recognise that this environment makes the job of the officers very difficult.

Personal beliefs and subjectivities

This theme addresses the beliefs of the officers, farmers, and experts; what they are influenced by; and how they act on those beliefs. We present different narratives that provide insights into the street-level action and reasoning behind certain decisions.

Officers

Contrary to what was observed by Molle and Closas (2020) regarding the personal relationships between the officers and farmers, officers in Azraq were not from the area and they were not related to the farmers and families who live there. Therefore, we did not observe that officers are influenced by their familial ties to the farmers. However, we did observe that officers working in Azraq come from agricultural backgrounds and are, therefore, able to empathise with the farmers. The officers believed that the policies and rules are unfair to the farmers, so they try to do what is within their power to alleviate certain pressures. For example, officers stated that they try to underestimate water consumption amounts, or ignore violations occurring on the farms, saying "we try to cooperate a little bit with the farmers, because we also come from agricultural families, live in similar circumstances, and share the same struggles". From the perspective of the officers, their agricultural background and their own struggles in farming communities in other governorates contribute to the use of their discretion in favour of the farmers.

Another very important belief that officers share is that water scarcity in Jordan is a hoax. One of the officers notably said: "Do not listen to those who say there is no water in Jordan. We are standing on a sea of water". Since officers do not share the water insufficiency narrative (c.f. Hussein, 2018b), they do not agree to the solutions offered by the government through the policies. Rather, they reproduce the mismanagement narrative (c.f. Hussein, 2018b), blaming the government for pumping Azraq's water to Amman. As a result, they (co)create a narrative of wrong problem formulation resulting in wrong policies, which are not implementable and not in favour of farmers.

Officers are also firm believers in not affecting a person's livelihood or source of income, saying "[h]e who cuts your livelihood, you take his life". With that in mind, local officers do not want to be responsible for the closure of a farm and the laying off of the workers on that farm. Faced with this dilemma that stems from their cultural identity, officers tend to look the other way and be lenient with farmers to honour this moral belief that they hold.

A very important part of the officers' belief system is that they will always prioritise their safety, their family's safety, and their reputation among their peers. When on duty and a violent situation ensues, officers will defuse the situation by looking the other way and ignoring the violation. Officers are usually outnumbered and unarmed when conflicts erupt; therefore, they are likely to make a rational choice and leave the area instead of engaging in violent conflict.

Farmers

Farmers in Azraq have a great sense of private ownership towards the resources available in their property. Farmers regard the groundwater from the wells on their land as a private resource, rather than a common public resource. As a result, many of the farmers expect to be included at the policymaking

level; to have unlimited access to the resources of the land that they have been cultivating for decades; and to be consulted when new pieces of legislation are passed. Since farmers claim that they are not consulted or involved in policymaking, they are displeased with national government making decisions over groundwater as a common public resource, and will do anything within their power to hinder implementation.

Mirroring the view adopted by the officers, farmers also believe that the narrative of water scarcity in Jordan is a hoax. They, therefore, do not accept this as a reason to justify the policies that aim at increasing the water tariff to reduce demand. A small-scale farmer shared "there is no water scarcity in Jordan, there is severe water mismanagement". This also overlaps with their belief that they are paying the price for the government's mismanagement of the Azraq aquifer, which resulted in its depletion. This creates more tensions between the farmers and the government (represented by the officers).

Lastly, farmers have a strong belief in the sanctity of their farms as their homes and, stemming from this, a strong sense of privacy and secrecy. Consequently, they do not openly welcome people into their farms, including officers. As a result, officers have to make their estimates of water consumption based on what they observe from behind the fences or gates. This acts as an obstacle to officers when they are on duty. Farmers recall incidents of violence when officers have tried to enter farms in order to take metre readings, carry out inspections, or make consumption estimates.

Sector experts

Contrary to the belief held by farmers and officers, all the interviewed experts accept the narrative of water scarcity. They recognise that it is a problem that is further exacerbated by climate change. Their solution to this problem is to create more policies to build on the existing ones and to ensure their implementation. However, with officers, farmers, and experts standing on opposite ends of the spectrum, more tensions are created since experts are designing policies targeting a problem that officers and farmers deny exists.

"Implementation officers have nothing to do with setting, creating, or shaping policies. Their role is strictly to implement the instructions, and does not go beyond that", a sector expert explained during a discussion on the role of street-level officers in policymaking. This reflects how high-level policymakers perceive local officers and their role in influencing policies. There is a lack of awareness among some sector experts regarding the ability of the officers to be policymakers through their actions. As a result, the policies that are designed are often blind to the power of the officers in reshaping policies and actually impacting groundwater management. This further contributes to the previously described disconnect between the high-level policymakers and the reality of implementation in Azraq.

Capacity and resources

This theme addresses the officers' access to resources – both human and financial – and their capacity to execute their roles. It brings to light how the formally devised policies impact officers' operation by limiting the resources available to them.

Officers

Officers in Azraq recognise that their role in policy implementation is diminished due to the lack of actual power and authority that they possess. Firstly, officers explained that the financial resources available to them limit their operation. For example, officers are expected to carry out quarterly inspection visits, but they have had to reduce the frequency of such visits as they do not have sufficient transportation budget. This undermines their authoritative image and their position. It also shows how their lack of financial resources reduces their capacity for action. As a result, their discretion becomes more limited because they simply do not have the means to carry out the tasks described in the policies and regulations. Consequently, the policy objectives of regular monitoring and consequent enforcement are not met.

Secondly, officers in Azraq are an unarmed entity that require police backup, given the violent nature of operating in that area. One officer recalled receiving a complaint about a new well being dug in a nearby farm. The officer asked for police backup while the team was making its way to the farm. The officers quickly realised that they were outnumbered and unarmed, and that the police were unlikely to show up. The officers decided not to escalate the situation; they simply asked the drillers to halt their activities and left. Commenting on this incident, officers said "the police prioritise dealing with a car crash or a robbery over accompanying us on such missions". This incident highlights how the officers choose to prioritise their safety because they are limited by what they are able to do. Their capacity for action is significantly reduced because they do not match up in power to the noncompliant individuals.

Lastly, officers explained that in the absence of legislation on how to make water estimates, they are left to make such decisions based on their own knowledge and expertise. This gap in the legislative framework creates room for human errors to occur, adding to the turmoil between the officers and the farmers.

Farmers

One of the small-scale farmers used a personal experience to illustrate how officers' resources and capacity undermine their image in Azraq. This small-scale farmer was involved in a project aimed at building the capacities of officers by providing new computers and programmes that enable monitoring. However, the officers did not receive sufficient training to be to operate these programmes in the long term and, therefore, to monitor agricultural expansion. This highlights how the lack of capacities and resources limits the action of officers in Azraq and undermines their authoritative image among the farmers.

Farmers are also aware of the officers' limited budget for transportation and the fact that this curtails officers' ability to carry out regular monitoring and inspection visits, creates ample room for exploitation by the farmers. Additionally, there is the power imbalance between the farmers and officers in terms of arms and lack of police backup. Farmers are able to exploit their power dominance, and undermine ambitions of officers to enforce and implement the formal groundwater management policy.

Sector experts

One sector expert stated that "local government offices are typically understaffed, ill-equipped, and lack the financial resources to build the capacity of its employees". On a similar note, another expert explained that the officers' on-call working conditions are not ideal; officers sleep in their offices, and are poorly compensated for their services in a violent environment. As such, experts believe that officers are not incentivised enough, making it easier for them to be manipulated by farmers. Experts attributed the challenge of implementing groundwater management policies to the susceptibility of officers to accepting bribes in order to act in the private interest of farmers.

A discussion on local policy practice

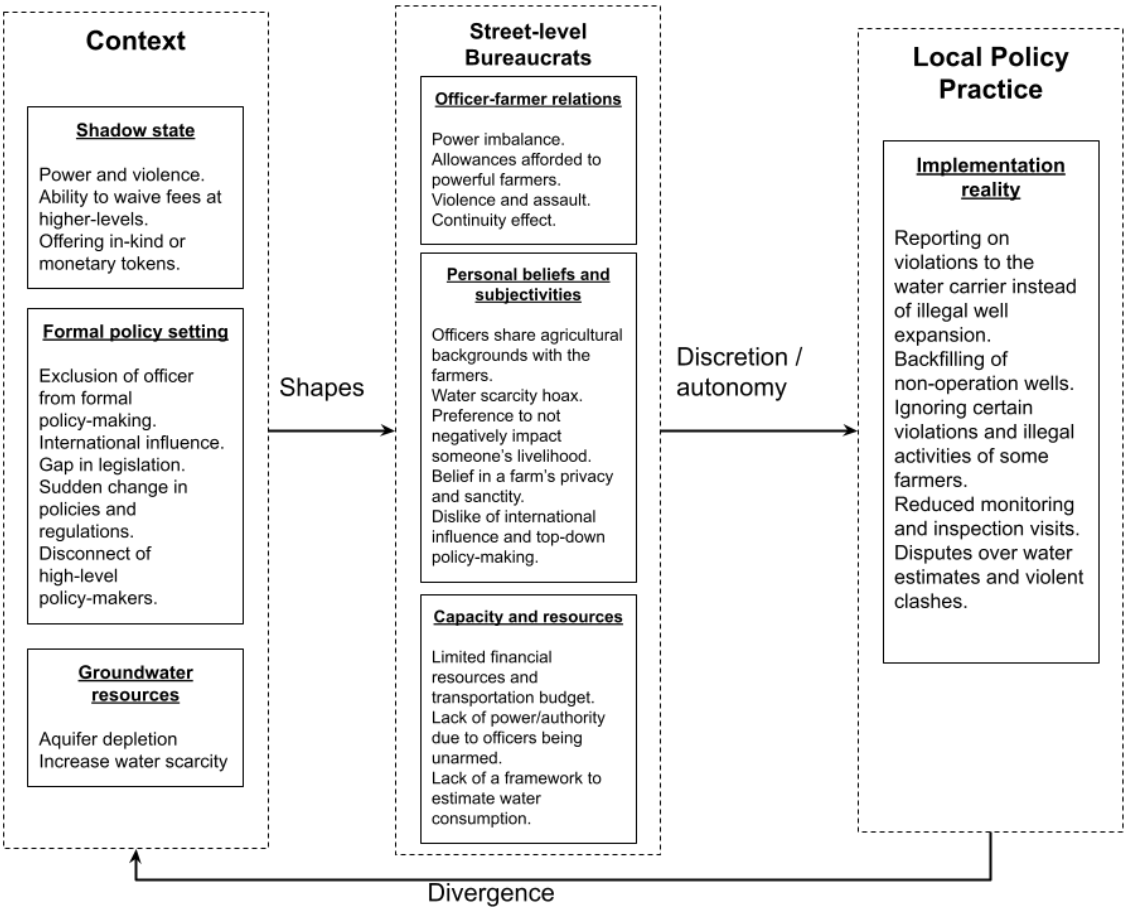
In Figure 4, we summarise and visually organise our findings in a way that fits our conceptual framework. It presents our findings which demonstrate how street-level behaviour in groundwater management in Azraq is influenced by; gaps in the formal policy setting; the shadow state and officer-farmer relations; personal beliefs and subjectivities; and capacity and resources. These influences culminate in a groundwater policy practice on the ground that is quite different from formal policy intentions.

The circumstances that officers find themselves in, that is the external and internal pressures they are subjected to, forces them to use their discretion to ignore violations; report on the backfilling of non-operational wells, instead of illegal wells that are in use; reduce the frequency of their inspection visits; and report lower volumes of groundwater consumption. Such practices – among others – are divergent from the formally set policy intentions and the national approach towards groundwater management.

The task and responsibilities of local groundwater management officers is based in the formal policy setting (formal institutions, laws and regulations, bureaucratic procedures). However, the personal beliefs of the officers we interviewed run counter to the national problem narrative. Alike many farmers, local officers think groundwater scarcity is a hoax, combined with their empathy with farmers, create local practices that are not in line with national groundwater management policy. The resulting practices undermine the state as they continue to allow illegal groundwater extraction. Not implementing national groundwater policy thus supports their beliefs that there is sufficient groundwater available for farmers. Additionally, local officers have mentioned that they dislike the fact they were not included in national policymaking on groundwater management, and see involvement of international actors as interference in a national issue. Although the local officers lack sufficient power and authority to act on all illegal practices. Nonetheless, they also enforce the state by continuing to visit farms and inspect wells. Small-scale farmers (due to their limited power) are treated differently than large farmers.

The power and influence of the large farmers is in being 'generous' to the local officers, who then from their perspective cannot be strict and unkind. In addition, these large farmers have influence at higher levels of the state, and the shadow state.

Figure 4. Summary of results.



The practices of the local officers take place in an environment where the state's problem narrative is not shared by the farmers or the local officers. The resources and authority of the local officers representing the state are limited, and their personal beliefs motivate them to deviate from

implementing national policy. The shadow state creates an additional layer of power and authority over the ability of local officers to implement groundwater management policy following formal policy intentions, which benefits the large farmers over the small farmers.

CONCLUSION

We observe, as others have done earlier, that groundwater management in Jordan is heavily influenced by the operation of local government officers. The role of the local government officers in the implementation gap is often described as resulting from a lack of (enforcement) power, a lack of willingness to enforce regulations, corruption, and efforts by water users to frustrate groundwater management. Our exploration of the context in Azraq paints a richer picture. Represented as the bottleneck between policy formulation and achieving policy objectives, the officers are required to navigate through difficult circumstances during their daily implementation practices, which causes divergence from intended policies. We now understand that officers in Azraq act divergently in response to pressures represented by the shadow state, their relations with the farmers, their agricultural identities and background, and the lack of resources available to them, among others.

Labelling implementation gaps as local mismanagement – or worse as corruption, fraud, or bribery – is a top-down perspective on what happens in the field. By looking at implementation practices from a street-level bureaucracy perspective, we want to shed further light on the complexity of policymaking in the field. Local officers' relations with farmers are not only tense or difficult, but can turn violent and are referred to as 'war' by some farmers. When carrying out their work to regulate groundwater use, local officers are routinely bypassed by powerful actors in the shadow state and expected to enforce a policy that they themselves believe to be unfair and unnecessarily strict. This shows that the enforcement problem cannot be blamed on a single actor or group of actors, and we therefore benefit from this exploration of the officers' reality. While we empathise with officers and recognise immense pressure they operate under, we do not condone their practices.

Our results indicate that social and political structures like the shadow state, which can probably be observed across numerous countries, have a significant impact on the operation of street-level bureaucrats. Whether through violence, substantial political influence, or the creation of a power imbalance among different parties, the shadow state emerges as the structure that challenges the daily operation of local government officers in Azraq. Such structures and institutions create inequalities and power imbalances, thus deepening the dilemmas faced by the implementation officers. While the implementation practices of officers do not impact the shadow state in its absolute sense, it does give us a better understanding of street-level policymaking.

The current internationally influenced, top-down approach to policymaking limits the implementation capacity of officers. Consequently, the overall objective of achieving sustainable groundwater management in Jordan is undermined. As a result, groundwater resources continue to be over-abstracted and aquifers depleted. With government officers caught in between the ambitions of the state, powerful actors in the shadow state, and farmers, the complexity of groundwater management deepens. It is important to take into account the needs and perspectives of local government officers in order to formulate policies that can be implemented and whose objectives are achievable.

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