

# **The nature and determining factors of inter-household water transfers in Kabul, Afghanistan: a qualitative study**

## **Abstract**

Inter-household water transfer is a common practice in water-scarce regions where households may rely on their neighbors or broader community to access water. However, the literature on inter-household water transfers is dominated by the notion of “borrowing,” while the factors influencing this socially conditioned form of water access are not well understood. This is problematic as it can skew inferences and bias policies and interventions. Our qualitative study, based on 68 semi-structured interviews with water users in two peri-urban areas in Kabul, aimed to examine the nature and underlying factors of inter-household water transfer practices. We found that these practices are dominated by sharing and gifting – rather than “borrowing.” Water availability (and especially the impact of droughts), transfer costs, frequency of requests, the period over which they operate, and religious beliefs played key roles in determining the dynamic pattern of inter-household water transfers. Considered from the behavioral science perspective of the COM-B framework, social and physical opportunity were the strongest drivers of water transfers. The findings of this study have important conceptual and practical implications. Conceptually, pervasive and pragmatic water sharing/gifting in the absence of explicit “borrowing” suggests that common framings of water transfers through notions of the moral economy or generalized reciprocity may be misdirected. In practical terms, the nature and dynamics of such transfers calls for a rethinking of large-scale international water access surveys, and for establishing the local nature of such context-sensitive and socially conditioned behaviors before designing interventions aimed at combating water scarcity.

## **Keywords**

Water access, Water scarcity, Behavior, Qualitative study, Afghanistan, Household, Water transfer

## **1 Introduction**

Currently, 2.3 billion people live in water-scarce regions, and of these 733 million people live in highly and critically water-stressed countries (UN-Water 2021). The number of people living in water-scarce areas is projected to increase to half of the world’s population by 2050 (Boretti and Rosa 2019; UN-Water 2018). The increasing demand for clean drinking water is an escalating global development challenge as climate change alters and complicates precipitation regimes (Grafton 2017). Households especially in low- and middle-income countries already routinely engage in informal water transfers to bridge immediate shortages and crises (Bond and Dugard 2008; Ford et al. 2022; Maes et al. 2018; Pearson et al. 2015; Velzeboer et al. 2018; Wutich et al. 2018, 2022; Wutich and Beresford 2019). Recognizing and understanding of social practices

such as this can help in characterizing the nature of water insecurity and may contribute to overcoming this challenge.

International development organizations such as the World Bank recognize the crucial role of informal practices in alleviating poverty (Narayan and Pritchett 1997). One such practice is where community members lend money or other resources and reciprocally offer each other various kinds of support (Grootaert et al. 2004). Social scientists have long considered how food, for example, is shared through social networks (Wiessner and Schiefenhövel 1996). Only recently, however, have they turned their attention to informal transfers of water, perhaps as a result of the problematic nature of water as a “fugitive resource” that is difficult to own and control (Ostrom 1990).

The literature on water sharing uses a range of terms which have different behavioral implications – for example: “water gift,” “non-paid water transfer” (Allen et al. 2006; Bond and Dugard 2008; Zug and Graefe 2014), or “water exchange” (Wutich 2009). Water transfers among households are often represented as a “coping strategy” in water-scarce regions (Clarke-Sather 2017; Stoler et al. 2019; Wutich 2011; Wutich and Beresford 2019). Allen et al. (2006) characterized inter-household water transfers as “needs-driven” and a way for less-advantaged individuals to acquire water, often without considerable assistance from government policies or resources. Transfers may be more common when water infrastructure is poor or disrupted. Zug and Graefe (2014), for example, found that in Khartoum, Sudan, many households relied on water gifts that enabled them to access water in the context of a poorly functioning municipal water system. However, the social logistics, forms of accounting, and entailments of these practices remain little researched. To understand the nature of informal water transfers, researchers have drawn on the concept of moral economy, which prioritizes ethical and moral values such as fairness, reciprocity, and sustainability in economic activities, and is grounded in a sense of social responsibility and obligation in terms of access to vital resources (Scott 1976; Thompson 1971). In dialogue with this tradition, Wutich (2011) examined how water exchanges among water-scarce households in Bolivia complied with the social insurance paradigm of reciprocity. ElDidi & Corbera (2017) explored the role of charitable water wells (Sobol) in enhancing access to water for vulnerable groups and individuals in a village in Egypt, examining their different modes of governance and the motivations behind their emergence.

Major empirical contributions to water transfer research have come from the Household Water InSecurity Experiences (HWISE) study. HWISE draws on a set of standardized questionnaires that have been deployed to samples of approximately 250 people each in a variety of settings across 28 countries. In two recent publications Brewis et al. (2019) and Rosinger et al. (2020) analyzed the HWISE dataset with a focus on responses to the question: “In the last 4 weeks/30 days, how frequently have you or anyone in your household asked to borrow water from other people?” and “What was expected in return?” The answers provide an unparalleled opportunity to compare water transfers across a range of world areas. In an analysis of data from 8 sites, 77 % of inter-household water transfers were described as generalized reciprocity or water

sharing as per the authors' interpretation, where nothing was expected in return (Brewis et al. 2019). While the question posed in the HWISE questionnaire concerns water borrowing frequency, it is notable that the term water sharing was used in the analyses and presentation of results (Brewis et al. 2019). Across 21 sites, water borrowing was reported among 45% of the sampled households (Rosinger et al. 2020).

Despite progress, several conceptual and empirical problems in water transfer research continue to limit our ability to derive practical policy solutions. For instance, the HWISE approach seems to presume that “borrowing” is the key concept underlying informal water transfers. However, borrowing is a concept that presumes direct reciprocity (tit-for-tat return) as opposed to generalized reciprocity (sharing with no expectation of return). This narrow conceptualization can be problematic unless it is first established whether “borrowing” patterns actually govern inter-household water transfers. While many of the survey respondents would depend on the translation of the English term “borrow” into local languages, the difference in meaning between the words “borrowing” and “sharing” is evident and is likely to persist in translations. Consequently, the analysis based on HWISE data by Brewis et al. (2019) and Rosinger et al. (2020) may systematically underestimate or indeed misrepresent the prevalence of water sharing and its factors.

On the other hand, there is literature that explores the drivers and barriers of inter-household water transfers, but remains relatively unstructured and inconclusive. A comprehensive literature review by Wutich et al. (2018) would for instance categorize the determinants of inter-household water sharing (e.g., water gifts, exchanges, and transfers) into *material, need-based, and self-interested motivations* (costs and benefits of sharing, and water availability, storage, infrastructure, and technologies), *socioeconomic processes* (social and political power, water entitlements, ethnicity and gender, and sovereignty over territories, reserves, and reservations), and *cultural norms* (moral economies of water, water ontologies, and religion and religious beliefs). However, this typology of the factors influencing water sharing represents an assembly of disconnected pieces of underlying research rather than a framework or theory surrounding human behavior – which limits the ability of such work to inform concrete policy and interventions in response.

One such framework is the COM-B behavior change model, which was developed by Michie, Van Stralen, and West (2011) to harmonize diverse theories in the behavior change literature. The simplest and most inclusive explanation of behavior suggested by Michie et al. (2011) requires three conditions for behavior to take place, namely Capability (physical and psychological), Opportunity (physical and social), and Motivation (reflective and automatic). Although the typology of factors by Wutich et al. (2018) on the determinants of water transfers corresponds broadly to the “social” and “physical” opportunities of COM-B behavior definition, how concretely these factors interact to shape water-transfer practices remains elusive.

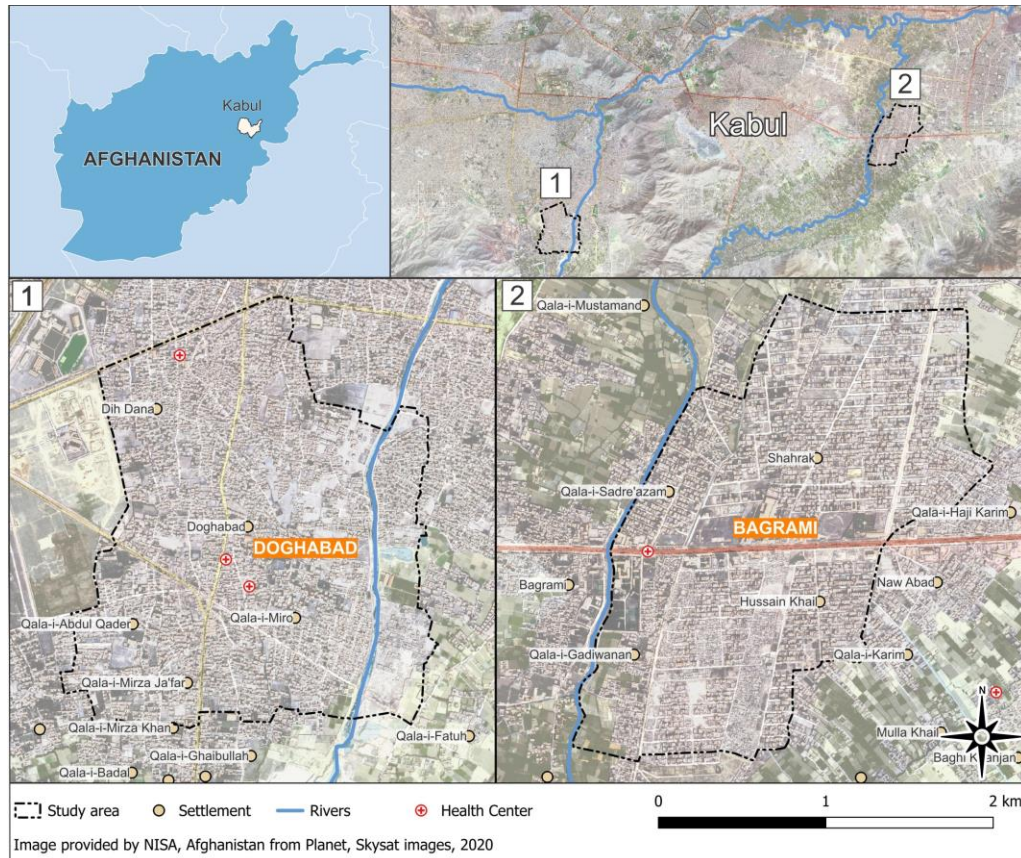
In order to address the gap in understanding a critical global development issue, this paper draws on 68 semi-structured interviews conducted in two peri-urban areas in Kabul. The city

serves as a key exemplar of urban water insecurity, where rapid urbanization and resource scarcity converge, reflecting challenges faced by cities under similar pressures worldwide. By taking an open-ended exploratory approach, our qualitative research aimed to (a) enrich our understanding of inter-household water-transferring practices and (b) explore the factors influencing informal inter-household water transfers.

## **2 Materials and Methods**

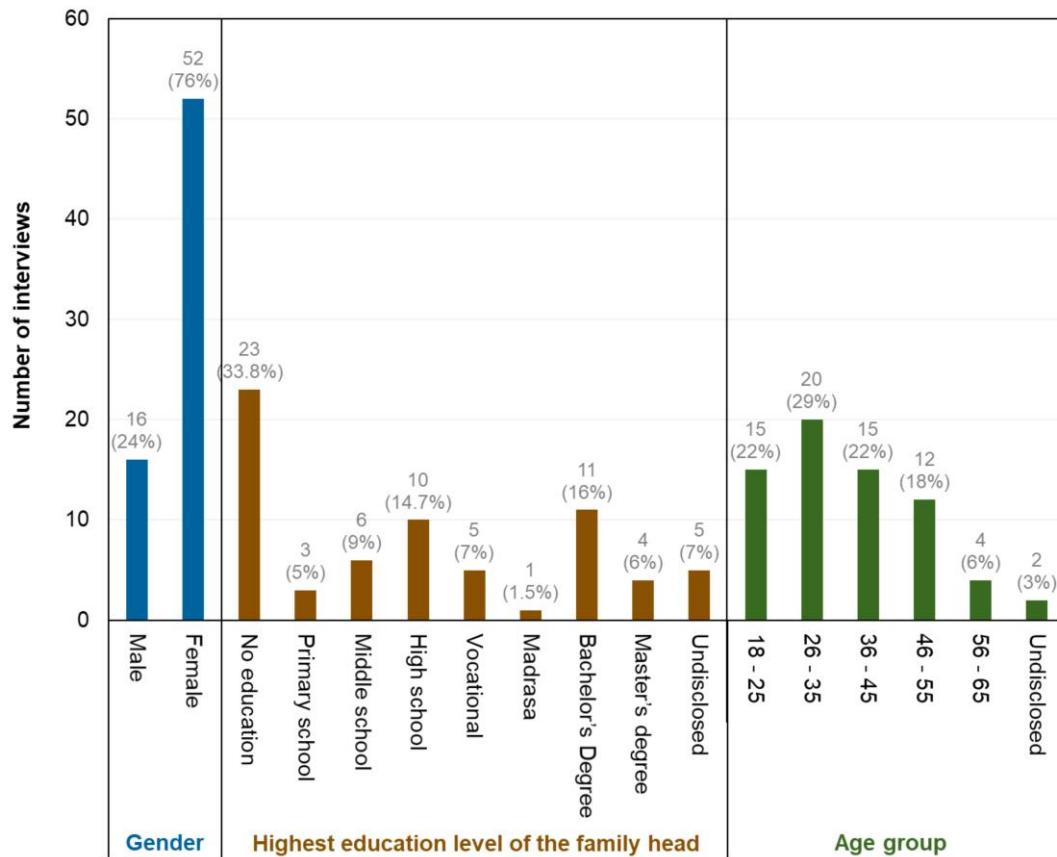
Our study employed semi-structured interviews with water users in urban Kabul, a city that may be characterized as a water insecurity hotspot (Hamidi, Kissane, et al. 2023; KMARP 2018). The data collection instrument was a semi-structured interview guide informed by existing literature on access to water, including Mubarak et al. (2016), Sigel (2009), UNICEF/WHO (2006), and Wutich (2006). The guide comprised two main parts: Part 1 included open-ended questions on 1) main water sources, water storage, and water quality, 2) health risks associated with water, and 3) water treatment techniques in the household. Part 2 captured the demographic and household characteristics of the participants, with the demographic questions largely adopted from UNICEF/WHO (2006) – refer to Supplementary Material 1 for the interview guide. Our approach to eliciting information on inter-household water transfers primarily relied on questions around the primary source of drinking water (e.g., “Tell me about the main source of drinking water for your household?”). This led people to describe in their own terms a variety of ways they obtained water, which included transfers of various kinds. When people volunteered such information, it was further probed to characterize the frequency and duration of transfers, and the relationships between donors and recipients. This portrait of inter-household water-transfer arrangements, therefore, emerged through inductive inquiry rather than following a hypothetico-deductive approach (Ferguson et al. 2011; Rodwell 1998).

The research was implemented in two study sites, namely the districts of Doghabad and Bagrami in the Kabul metropolitan area (Figure 1). The sites were chosen for their relevance of water scarcity and water access in a conflict-prone urban environment (see Section 3.1 for detailed context), and the resulting data consisted of 68 interviews with an average duration of 30 to 40 minutes each, collected from 1 May to 22 June 2021. Interviews were carried out either in Dari Persian or Pashto, depending on the native language and the preference of the interviewee. Participants were recruited based on a purposive maximum variation sampling strategy, with 36 from Doghabad and 32 from the Bagrami study area. Overall, the participants included 76 % women, with an average age of 36 years (from 18 to 65 years). The highest education level of the head of the household included 34 % with no education, 5 % primary school, 15 % high school, and 16 % bachelor’s degree (Figure 2).



**Figure 1** Locations of the Doghabad and Bagrami study areas within Kabul, Afghanistan, along with surrounding settlements, rivers, and health centers. Satellite imagery was provided by NISA, Afghanistan, using Planet’s Skysat images (2020).

Refusals to participate were limited and primarily due to concerns about audio recording (in 4 cases, persons with equivalent characteristics were recruited to substitute for candidates who refused). Male participants were mainly interviewed by a male researcher (MDH), and female participants were interviewed by two female research assistants. All participants were provided with an Information Sheet before obtaining oral consent (Supplementary Material 2). Interviews were recorded using digital voice recorders.



**Figure 2** Demographic distribution of participants by gender, educational level, and age group. *Note:* The total number of interviews amounted to 68.

The audio recordings of the interviews were transcribed verbatim and translated into English (yielding a total record of approximately 60,000 words). Data analyses were carried out concurrently during the transcription and translation, which informed the sampling process. The coding and thematic analysis were implemented using NVivo 12 (QSR International 2018). However, NVivo’s limited language capabilities in Dari Persian meant that we prioritized the English translations of the transcripts (and reviewed the original text where translations were ambiguous or unclear). The Department of Anthropology at Durham University approved the ethics application (Reference: ANTH-2020-11-28T00 10 33-1gww95).

### 3 Results

We present in this section the key themes on inter-household water-transferring practices.

### 3.1 Context, notions, and practices of water transfers in the study sites

The climate of Kabul is semi-arid, with an average annual rainfall of over 300 mm and evapotranspiration reaching 1600 mm per year (Hamidi, Gröcke, et al. 2023), and occasional dry years (Baig et al. 2020). The study sites within Kabul have a combined total population of approximately 150000 (approximately 3.7 % of the Kabul metropolitan area, which had a total population of 4.1 million in 2020), and are located in two different watersheds: one (Doghabad) having more constraints than the other (Bagrami) in freshwater availability due to the impact of droughts, increased abstraction, and low river recharge rates.

Two features of the study sites stood out as having a potentially significant impact on the availability of water and its suitability for drinking. The groundwater depth in Bagrami was relatively shallow (3-7 meters) compared to Doghabad (25-35 meters). However, in Bagrami, the groundwater was too salty to consume, and in Doghabad the groundwater was contaminated with *E.coli* (Hamidi, Kissane, et al. 2023). The depth of the water table and water contamination problems constitute chronic challenges to accessing safe drinking water for these communities. Residents in both study sites utilized groundwater wells, bottled water, and hand pumps as primary sources of drinking water. However, the residents of Bagrami primarily relied on water trucks, while a specific area in Doghabad had access to a private water supply network.

During normal water years (as opposed to drought years), water-transferring practices were widespread and revolved mainly around household-owned wells and handpumps (recipients would approach them with plastic gallon containers) or donors temporarily transfer water by providing plastic pipes from their houses to neighboring houses. The terms that community members used to describe this informal water transfer behavior in Dari Persian and [Pashto] were “get” (گرفتن [ترلاسه کول]), “give” (ورکول [دادن]), “take from” (اخيستل [بردن]) and “fetch” (راورل [آوردن]). Examples of phrases referring to inter-household water transfers include a housewife from Bagrami who said “*we fetch it [water] from other houses*” (210621\_003\_R2). In another instance, a woman from Doghabad said, “*it has been several days that our well dried up.*” In the interim, her household relied on “*a neighbor’s house located opposite to us*” to “*get water, or we fetch water from the mosque*” (210616\_016). These terms imply, *prima facie*, an arrangement of donation of water, as opposed to lending or borrowing, which would imply an expectation of compensation or return.

### 3.2 Physical Opportunity factors influencing inter-household water transfers

Water availability in households influenced the practice of water-transferring and it was most likely to take place where water was relatively plentiful. A woman from Bagrami, for example, fetched water for domestic use from a neighbor’s well, where water was accessible in lower depths. As she was pointing to the buckets that they “*fill [...] from the neighbor’s house,*” she added that, “*We don’t use the well water [fetched from the neighbor’s house] for drinking at all, we use it for washing clothes and dishes. We use mineral water for drinking. If we drink this water [from the well], it causes stomach ache*” (210619\_005\_R1, Female, 30, Bagrami). It was

common in Bagrami to gift water (albeit not suitable for drinking purposes) since the groundwater was abundant and the groundwater level was close to the surface, making it easier for the recipient to fetch it from the wells or get water from handpumps.

In households where water was abundant, community members practiced water transferring even over the longer term as long as water abstraction from wells and handpumps would not impose an economic burden on them. Otherwise (*i.e.*, if the water-affluent household incurred costs), they tended to ask the water recipient for compensation or request them to provide the means for transporting water. This case was illustrated by a 41-year-old female informant from Doghabad. In response to the question whether neighbors would fight over water, she responded that, “*No, it didn’t [happen]. God bless the owner [of a water source that we are accessing,] he did not say anything and asked us to get water, but we provided the electricity*” (210617\_009\_R2, Female, 41, Doghabad). This situation was common among neighboring households. Donors who owned electrical water pumps would often provide a long cable that the recipients could use to plug in a socket in their own household to supply electricity to pump water, which happened mostly between surrounding households.

In contrast to the situations of plentiful water access described above, in households where access to water was limited, the relationship between the donor and recipient was an important factor. For example, kin-neighbors would be more likely to get water compared to neighbors who were non-kin. Other important factors included the period (and frequency) over which water was transferred. For instance, a neighbor who had a temporary problem with water sources at their household was more likely to get water a couple of times every day for a week compared to a person who would need water for a long period.

One particularly important theme under the heading of “scarcity” was droughts, which underlined the dynamic nature of inter-household water transferring practices. Families often faced difficulties when trying to access water during the dry years when the private water supply network was disrupted and neighbors were more reluctant to share drinking water than during normal water years. A woman in Doghabad pointed out that they “*just had access to the tap water [water supply network] if it was supplied,*” and highlighted the regular disruptions to which they were exposed. During the dry years, they therefore “*used to consume the water that [they] had, in small quantities*” and their household experienced many days:

*When we went to the neighbor’s house for water; the neighbor said ‘We also buy water’ and [claimed] that they do not have any*” (210616\_005, Female, 36, Homemaker, Doghabad).

### **3.3 Social Opportunity factors influencing inter-household water transfers**

The informal inter-household transfers also had broader social features that arose as key themes in our work. Among them was the gendered nature of the behavior. The brokers of inter-household water transfers were most commonly women who negotiated with women in



neighboring households to secure access to water, and who also made decisions related to the use of water for cooking and other purposes during the day. This was primarily due to the division of labor in the household where women were mainly responsible for household chores. Secondly, it relied on the social network that women have the opportunity to establish while men are at work.

Another important social dimension enabling or disabling water transfers was whether the request for water was deemed legitimate (or “deserving”) from the position of the donor. A non-kin neighbor, and even a stranger, might receive water even if there was an economic cost to the donor, but only in case the request to access water was sporadic (e.g., once a week or month) or it fell under a specific circumstance. For example, a 25-year-old female respondent explained that, “*The first day we moved into this house, our water pump was broken and the neighbors provided us with some water.*” On another occasion when the same water pump broke, during the religious festival of Eid, the circumstances of the holiday legitimized the household’s request for their neighbor’s aid: “*During Eid, the water pump broke again and we fetched water from the neighbors, filled all the gallon containers,*” (210621\_001\_R1, Female, 25, Bagrami).

Deservingness primarily entered water transfers between non-kin households. Where kinship relationships existed, households could rely on their relatives for water for extended periods, even when this involved significant economic costs to their kin. For example, one family in Doghabad received water for over two years from a neighbor who was a relative, despite the fact that the donor was bearing the electricity costs for pumping groundwater throughout this period. As the recipient put it, their water “*is from my uncle’s house. They have a water pump, [and we use it] if there is electricity,*” withdrawing water daily or even more than once a day (210617\_006\_R1, Female, 45) – while their uncle’s family (donor) paid the cost of the electricity required to pump the water from the well.

In the Kabul context and our study sites in particular, religious belief played an important role in inter-household water transfers. Particularly salient was the use of the term *thawab* [ثواب] as a rubric for thinking about water transfers as gifting and sharing a scarce resource. For example, a woman from Doghabad who fetched water from their neighbor’s house explained her neighbors’ actions in sharing water as follows: “*They call us to get water from their house. Giving water is a reward [“thawab”]. They give us water. My son goes and brings water home*” (210616\_016, Female, 45, Doghabad). Islam emerged and thrived in a desert region where water resources were in short supply, and Muslim sources (the *Quran* and *Hadith*) and Muslim scholars regularly discuss the ownership and transfer of water. One *Hadith* describes water as the best form of donation:

Sa’d asked: Messenger of Allah, Umm Sa’d [Sa’d’s mother] has died; what form of donation “Sadaqah” is best? He replied: Water (is best). He dug a well and said: It is for Umm Sa’d. (Sunan Abi Dawud, Hadith 1681)

Other examples of encouraging water donation or gifting in Islam include dedicating water wells for public use, a practice that is highly rewarded (Sahih al-Bukhari, Distribution of Water (42), Chapter 1). Supplying water from wells as a form of donation (“*Sadaqah*, صدقه”) is encouraged in another *Hadith* (Sunan Abi Dawud, Hadith 1669). Providing water to any thirsty living creature is recognized as the highest reward, or in Arabic *thawab* (ثواب) (Sahih al-Bukhari, Hadith 2363). On another occasion, the *Hadith* (Sahih al-Bukhari, Hadith 2358), expresses the idea that withholding water from travelers is sinful. These religious traditions informed the inter-household water transfer practices we witnessed in Kabul.

## 4 Discussion

### 4.1 Summary of findings

The findings of this study from two peri-urban areas in Kabul suggest not only the varied facets of informal inter-household water transfers but also that multiple factors enabling or disabling these practices are overlooked or at least underplayed in existing research. Dynamically shaped by local contexts, water transfers would at times apply to drinking water directly, and at times to water used for other purposes that would indirectly relieve the pressure onto a household’s drinking water storage. Participants spoke of “giving”, “taking” and “getting,” but hardly ever “borrowing.” While gender and religious norms profoundly shaped the face of these water transfers in Kabul, key factors behind this behavior were cost and frequency of access, the relationships between recipient and donor, and the broader (and variable) availability of water during normal and drought years – all of which also demonstrate the entanglement of water access with broader social, environmental, and infrastructural aspects of the local context. This section will reflect further on the implications of the ways people speak about water transfers in this setting, and explore the determinants of inter-household water transfers from a COM-B perspective.

### 4.2 Revisiting the nature of informal inter-household water transfers

None of the participants in our study used the terms “borrow” or “lend” in relation to inter-household water transfer; instead, they used terms such as “give”, “take”, and “get” which are consistent with “sharing”, “donating” and “receiving,” and do not necessarily imply any expectation of material reciprocity. This point is potentially important and holds practical implications in light of the widespread use of the term “borrow” in large-scale international survey research which has dominated the literature on inter-household water transfer in the past several years (e.g., Brewis et al. (2019) and Rosinger et al. (2020)). The question “How frequently have you or anyone in your household asked to borrow (قرض گرفتن) water from other people” in this context would likely have confused participants and might have led to systematic underreporting

of water transfers. Additionally, it may also lead to inaccurate conclusions being drawn about the nature of those transfers.

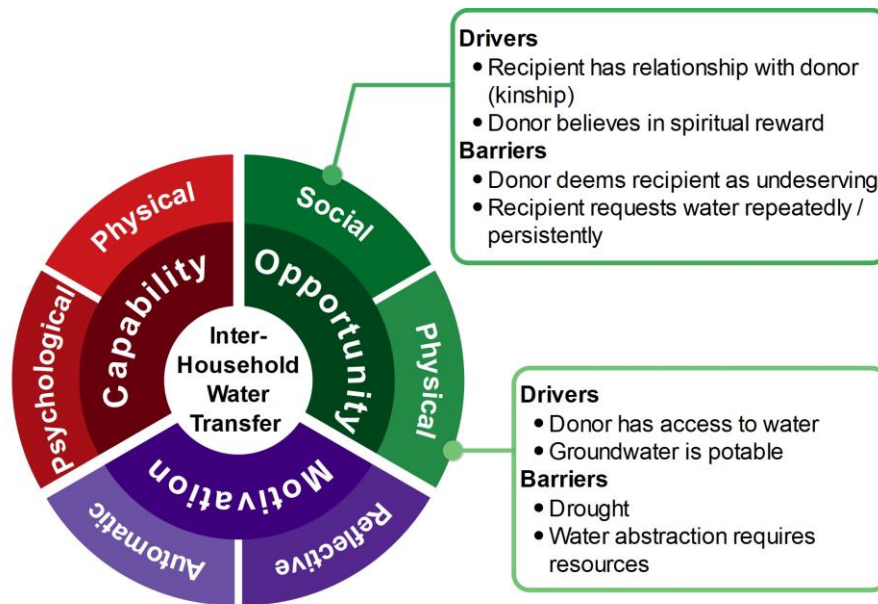
Lack of consistency in using terms to describe the inter-household water transfer and interchangeable use of “sharing” and “borrowing” could lead to biased conclusions when utilized to establish a relationship with other concepts. For instance, Wutich et al. (2022) used the HWISE data to describe the relationship between water sharing and shame, upset, and anger in twenty study sites. Further, the study by Brewis et al. (2021) established the relationship between water sharing and psychological distress in Ethiopia. Lastly, the HWISE scale was used by Ford et al. (2022) to investigate the relationship between water borrowing and psychosocial stress in Kenya. Those questionnaires that only used the term “borrowing” may therefore potentially leave important (and possibly dominant) aspects of informal water transfers unexplored.

Apart from the methodological problem that our study points to, this research also has theoretical implications for the conceptualization of informal inter-household water transfers. The dynamics of inter-household water transfers and the interdependencies between factors influencing these practices suggest that categorizing them as *either* part of a moral economy *or* a form of generalized reciprocity, as defined by Sahlins (1972), is unnecessary. To distinguish these categories as opposites is to ignore the close connections between religious convictions and everyday practices, which in this setting (and likely many others) cannot be isolated from one another. For example, if asked what they expect in return for sharing water, many people might simply say, “Nothing.” Yet many respondents in our study believed in receiving a reward [“thawab”] for such behavior –a reward from God– indicating that this behavior is promoted through religious belief (among our participants); see Parrott (2017) and Kochuyt (2009) for further details on charity in Islam.

#### **4.3 Reconsidering the drivers of water transfers**

From the perspective of the COM-B behavior model, two dimensions were especially pronounced in shaping this behavior that effectively connected the water access of several households: physical and social opportunity (other dimensions remained dormant in our qualitative data, albeit that does not automatically imply that they are non-existent though perhaps less salient). Physical opportunity factors relate to inanimate parts of the environmental system and time (e.g., financial and material sources), whereas social opportunity factors include involving other individuals and organizations (e.g., social norms and culture) – see West et al. (2019) for details. The physical and social opportunity factors influencing inter-household water-transfer practices comprise behavioral enablers and disablers for the target behavior (i.e., approaching a household for a water transfer or granting such a request, depending on whose behavior is considered), and are strongly interacting with each other – as we explain further in the following paragraphs.

Physical opportunity factors influencing inter-household water-transfer practices documented in other geographies (e.g., Wutich et al. (2018)) included water availability, storage, and infrastructure, and technologies. In our study of Kabul, it was noted that among the most salient factors was the relative accessibility of water. Also relevant was the quality of water: it was more common for people in Bagrami (the site with plentiful but low-quality water) for people to share water than for people in Doghabad (the site with relatively good quality but less easily accessible water). In Bagrami people shared water with all their neighbors, albeit the water was only suitable for purposes such as bathing, washing clothes, carpets, etc. Water transferring was generally less common if the donor was bearing an economic cost for accessing the water. The community members in Bagrami, on the other hand, relied on water trucks as their primary source of drinking water. Drinking water transfers in the circumstance that a donor paid for it depended on how frequently the petitioner asked for it as well as their relationship with the donor. In Doghabad, where the groundwater was suitable for drinking purposes but needed to be pumped from deep wells, donors typically asked their neighbors to provide electricity in order to pump water from their wells. Overall, social relationships determined whether people were apt to share water and over what period.



**Figure 3** COM-B factors, at the source level. Source: Authors, adapted from Michie et al. (2011). *Note:* Call-out lists indicate behavioral factors that arose as themes in qualitative analysis in this present study.

The role of religious belief on inter-household water transfers was equally pronounced as it contributed to explicit social norms and reward systems for water sharing and charitable donations. The central role of religion underlines that research needs to be mindful of local social

drivers of water access. In the context of Muslim countries, for example, there is a clear distinction between the *Quran* and *Hadith* as described by Maureen (2011) that some scholars occasionally confuse (e.g., Wutich et al., 2018). In the worst case, insensitivity to such religious concepts could undermine the policy recommendations of the research.

The findings of this study imply that interconnecting factors such as water availability, costs to the donor, frequency of requests for water, and the period over which they operate significantly and dynamically impact water-transferring practices. For example, droughts played a crucial role in modifying water availability and costs to the donor, which would in turn affect inter-household water-transferring practices. Inter-household water transfer practices also appeared to vary over time, and, during the droughts in Doghabad, people did not tend to share drinking water except in very few instances – irrespective of the relationship between donor and recipient.

#### **4.4 Study limitations**

Our research relied on one-off interviews rather than long-term relationships or repeat interviews. However, the issue was mitigated by the researcher's familiarity with the local water environment as an Afghan national, limited use of observations, and the use of broad interview questions that did not require participants to directly state their reasons for certain decisions. The cross-sectional nature of our study limits our ability to study parameters of inter-household water transferring that change gradually or seasonally, such as weather conditions and household economic status. The sample was limited to two specific peri-urban areas in Kabul, meaning the results may not be easily applied to rural areas or other peri-urban areas with different contextual and environmental characteristics. However, the findings highlight potential issues in existing research on inter-household water transfers while also suggesting policy implications that could have broader applications in other contexts, which future research can help to establish yet more firmly.

#### **4.5 Implications for policy and practice**

This study highlights the importance of inter-household water-transfer practices for practitioners and policymakers. Firstly, grounded appraisals of water access and scarcity need to be mindful of the varied character of informal water transfers, which potentially create a more nuanced picture of exclusion and deprivation. Secondly, interventions aimed at improving access to water (e.g., infrastructure development, water purification solutions, emergency water provision) should consider design options that maximize outreach or otherwise optimize household-level impact in light of the pervasive water transfer practices, and evaluations of their impact again be prepared to assess spill-over effects that broaden access to water beyond a narrowly defined group of beneficiaries. Water filter systems decorated with Islamic art and

religious texts could for example subtly encourage water sharing beyond household boundaries, and community - rather than household-level water distribution interventions might take precedence during droughts when inter-household transfers dry up. The social dynamics involved in these processes also call for intervention design that is sensitive to the gendered nature of water transfers as well as to the multiple and mutually reinforcing dimensions of exclusion that can create a particularly hard core of water-deprived, low-income, and socially marginalized households.

Thirdly (and taking a more structural perspective), the social reality of water access raises more fundamental questions about conventional water access and pricing models in contemporary development practice and public administration. Should policymakers and donors attempt to boost informal water access practices, for example by offering electricity grants or public safety campaigns that enable more communal exchange? Concerns exist that formal proceedings may substitute the informal safety net (Mozumder et al. 2009). However, a recent study in Tanzania provided evidence that the introduction of a conditional cash transfer (CCT) program increased trust in other community members and the perceived ability to access support from other households (Evans and Kosec 2023). Should pricing models therefore even be based on user fees if the concept of the “user” becomes blurred and unstable in dynamic social environments such as those covered in our study? Respecting and foregrounding social realities from a community perspective can help inform reflections on such fundamental questions toward a potentially more inclusive and equitable water access landscape.

Lastly, our study highlighted that water scarcity, the frequency of requests, and the cost to the donor limit water transfers between households. These findings might also be relevant to transboundary water sharing. For instance, limited water availability might shape community perceptions about implementing transboundary water agreements, such as releasing water from reservoirs. Although these agreements are endorsed at a high level between governments, communities are directly impacted by them, and communities’ perceptions play an important role in successful implementation (Green et al. 2013; Varady et al. 2020, 2023). Thus far, very few studies have explored the factors influencing people’s perceptions of transboundary water sharing, which is an important omission given the global nature of water scarcity as a development challenge.

## **5 Conclusions**

This qualitative study highlighted the complex and context-specific nature of inter-household water transfers in two peri-urban areas of Kabul. Our findings suggested that the pervasive concept of water “borrowing” and “lending” to represent water transfers do not hold in reality and its continued use could lead to biased conclusions in water access research. Our study also emphasizes the importance of interconnected behavioral drivers (e.g., cost, frequency of access, religious norms, and broader social and environmental conditions), with implications not only for research but also for the appraisal, design, and evaluation of water access policy and

interventions. A better understanding of these features shaping access to water could ultimately help reduce inequitable access, alleviate multi-dimensional exclusion, and even provide stimuli for new water provision models to overcome the ever-intensifying global development challenge of water scarcity.

### **Disclosure of Conflicts of Interest**

The authors declare that they have no known competing financial or non-financial interests that could have appeared to influence the work reported in this article.

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### **Data availability**

The datasets generated during this qualitative study, including the recorded interviews, are not publicly available due to privacy and confidentiality concerns.

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## Figures list

**Figure 1** Locations of the Doghabad and Bagrami study areas within Kabul, Afghanistan, along with surrounding settlements, rivers, and health centers. Satellite imagery was provided by NISA, Afghanistan, using Planet’s Skysat images (2020).

**Figure 2** Demographic distribution of participants by gender, educational level, and age group. Note: The total number of interviews amounted to 68.

**Figure 3** COM-B factors, at the source level. Source: Authors, adapted from Michie et al. (2011). Note: Call-out lists indicate behavioral factors that arose as themes in qualitative analysis in this present study.



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