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Shifting to hydrological/hydrographic boundaries: a comparative assessment of national policy implementation in the Zerafshan and Ferghana Valleys

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In the literature on the implementation of national policies there is an assumption that these get implemented uniformly within one country. Here, with a focus on the implementation of national policy on shifting from administrative to hydrological/hydrographic principles of water management in the Zerafshan Valley and the Ferghana Valley in Uzbekistan, this assumption is questioned. The case study demonstrates that national policies are resisted by lower-level bureaucrats, leading to diverse, even contradictory, outcomes of the same policy. The vested interests of a multiplicity of bureaucracies, the power of individual bureaucrats, and the discretionary power given to bureaucracies in interpreting national policy are responsible for the different outcomes. The article calls for more comparative assessments across different regions for a better understanding of policy implementation.

Keywords: irrigation bureaucracy; bureaucratic politics; administrative reform; hydrological boundaries; Uzbekistan

Introduction

The formulation and implementation of national policies are often analyzed on a principal–agent basis, focusing on policy makers and bureaucrats at the national level (Krause, 1996; Weingast, 1984). There are numerous critiques of the guiding assumptions of principal–agent relationships in policy formulation and implementation, highlighting the influence of the bureaucracy (Caughy, Chatfield, & Cohon, 2009, Olsen, 2008). In addition, the literature highlights the competition between different bureaucracies, as well as the diverse interests of bureaucrats on different levels (Bowornwathana & Poocharoen, 2010; Brower & Abolafia, 1997). Hence, these factors might influence policy formulation as well as the implementation process within one country and might lead to different outcomes.

In the Uzbek SSR during the period of the Soviet Union, water resources were managed according to administrative boundaries. After the collapse of the Soviet Union in 1991 and the influence of international donors, water management according to hydrological/hydrographic¹ boundaries was promoted from 2001 onwards (Wegerich, 2009; Yalcin & Mollinga, 2007). In 2003 a water policy was implemented, affecting three existing administrative levels – the province, the district and the *shirkat* (formerly collective farm, now agricultural cooperative) – which had been responsible for water management. According to the policy, basin units, irrigation system units and water user associations (WUAs) were to be formed. The implication was that the existing water

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management units, which were structured according to administrative units (provinces, districts or *shirkats*) might have to be combined or split.

Some studies have focused on the background to the shift on the national level (Yalcin & Mollinga, 2007) and on the implementation of the shift on the province and district levels (Conrad, 2006, Wegerich, 2009) and the WUA level (Veldwisch, 2007) in Khorezm Province in the lower Amu Darya Basin. While this literature might suggest that there has been a streamlined process of defining hydrological/hydrographic boundaries across Uzbekistan, recent observations in other provinces have highlighted that this is not the case (see also Yakubov, 2012, regarding different approaches to WUAs in Uzbekistan). Hence, these observations raise the question as to whether the difference in boundary setting is due to bureaucratic discretion, autonomy or resistance to the implementation of national-level policies.

Here the focus is on the basin and irrigation-system levels only, with a focus on the Zerafshan and Ferghana Valleys. The research was conducted through a literature review as well as interviews of key informants based in three different provinces and involved (either leading or participating) in the setting of the new boundaries, as well as interviews with the national-level promoter and designer of the policy.

The article continues with a brief framework section discussing principal–agent relationships in policy making and implementation as well as autonomy and discretion of bureaucracies. The next section provides the background to two bureaucracies within Uzbekistan, the role of *hokims* (governors) and the water bureaucracy, as well as introducing the change of water management approach from administrative to hydrographic/hydrological boundary management. This is followed by two case studies on the Zerafshan and Ferghana Valleys and the implementation of the policy change. The section is followed by a discussion linking the results back to the framework. The last section draws overall conclusions, highlighting the importance of comparative studies on policy implementation within one country as well as the limitations of simplified principal–agent relationships in the analysis of policy implementation.

From policy making to implementation: the relationship between politician and bureaucrat

In the international literature, with particular focus on the United States, a clear distinction is made between politicians and administrators (Svara, 2001). Olsen (2008), looking at bureaucracies more globally, argues that this distinction “may be hard to uphold”. Work on the British relationship between politician and bureaucrat has highlighted the power of the bureaucrat to influence policy making (Bowornwathana & Poocharoen, 2010), and others have even emphasized the preference of bureaucrats to influence decision making over administrative tasks (Dowding & James, 2004; Gains & John, 2010). With the focus on the United States, relationships between politicians and administrators are seen as principal–agent situations (Krause, 1996; Weingast, 1984): the principal (the politician) gives the direction and has the control function; the agent (the bureaucrat in his or her professional capacity) formulates the policy and its implementation. The assumption regarding the politician is that the policy formulation is clear and she can keep oversight; for the bureaucrat, that she has expert authority and is independent (Olsen, 2008). These assumptions as well as the interpretation of a principal–agent relationship are critically questioned.

Olsen (2008, p. 18) highlights that “elected leaders may provide complex and ambiguous compromises rather than clear rules and purposes”. Hence, the direction might

be unclear, and therefore there could be ambiguity in terms of interpretation and concretization of the direction. On the other hand, the politician might not have the ability to control the agent: “the political ‘master’ finds himself in the position of a dilettante facing the expert” (p. 18), who would be more aware of the context as well as the nitty-gritty. On the other hand, there might be limitations to bureaucratic competence (Caughey et al., 2009; Olsen, 2008). Even if the bureaucracy wants to implement the policy, there might be exogenous events or shortages of funding which could limit its ability to do so (Caughey et al., 2009; Huber & McCarty, 2004; Olsen, 2008). Or, there could appear a case of resistance. This could take place with respect to a policy which is supposed to reform the bureaucracy itself. Olsen (2008, p. 18) highlights that “the bureaucracy protects its identity and structures against the outside”, which puts into question whether a bureaucracy would support a reform or resist it. This discussion distinguishes between autonomy and discretion of the bureaucracy in formulation and implementation. Commonly, “*bureaucratic autonomy* is defined as the extent to which agencies are able to implement outcomes that diverge from the preferred policies of their principals, without being prevented *ex ante* or punished *ex post*” (Caughey et al., 2009, p. 5). However, this definition does not distinguish between autonomy and discretion. Caughey et al. (2009, pp. 5–6) argue that “autonomy ... entails both independent goal formation and the capacity to translate goals into outcomes. By contrast, discretion refers to how much leeway an actor has within a given sphere of decision making.” Hence, discretion is part of a contractual arrangement between politicians and the bureaucracy (Olsen, 2008). The principal–agent relationship assumes that the principal hires the agent and provides incentives for the agent to perform according to the principal’s demands. However, especially when it comes to reforms of the bureaucracy, the politician would have to go through the same bureaucracy which has to be reformed, because creating “new agencies and delegation mechanisms from scratch is costly and fraught with uncertainty” (Caughey et al., 2009, p. 6). Carpenter (2001, pp. 115–6) argues that “the fact that bureaucratic agencies already exist when new policies are crafted means that they themselves are ‘player[s] in the “game” of policy creation’ and can influence the very terms of delegation”. Here also the time-frame of positions matters. While politicians have often short-term positions, within the bureaucracy positions may be for life. Discussion of the influence of the bureaucracy on policy formation as well as implementation puts into question the uniformity of implementation on the lower administrative levels in different administrative units (Caughey et al., 2009). In addition, while this view looks only to the relationship between politician and bureaucrat, the literature highlights that different bureaucracies are in competition (Bowornwathana & Poocharoen, 2010; Wegerich, 2005) and that lower-level bureaucracies pursue political activities that are primarily about the pursuit of identity rather than organizational outcomes (Brower & Abolafia, 1997; Wegerich, 2009), and hence, might influence policy formulation as well as the implementation process.

Background to the water bureaucracy in Uzbekistan

During the time of the Soviet Union, the Uzbek SSR was the cotton and irrigation development centre for Central Asia. Up to the mid 1980s the Uzbek SSR was engaged in a hydraulic mission, increasing irrigated area to 4.2 million ha. In 1991 Uzbekistan gained independence from the Soviet Union. In the early years of independence, the country’s GDP fell back to the level of the early 1980s (Dukhovny & Sokolov, 2003).² Uzbekistan maintained strong control of its agricultural sector and continued with the ‘state order’

system, inherited from the Soviet Union, for the strategic crop cotton, and added wheat for better food security (Abdullaev, Fraiture, Giordano, Yakubov, & Rasulov, 2009; Platonov, Wegerich, Kazbekov, & Kabilov, 2014; Pomfret, 2000, Veldwisch & Spoor, 2008).

The irrigation bureaucracy and water management reform: from administrative to basin boundaries

The Ministry of Melioration and Water Resources (MMWR) has existed since 1927 (Yalcin & Mollinga, 2007).³ At the time of independence, water management was organized within the Central Asian SSRs according to administrative boundaries (provinces, districts), although the river basin itself was managed according to hydrological boundaries. Thurman (2002, p. 5) argues that “by law, the functions of customer, planner, and contractor were concentrated within this single ministry”. With independence and the shrinking of the GDP, the government scaled down the MMWR and cut its budget by 50% (Thurman, 2002). Thurman (2002, p. 8) links the reduced budget to “very low salaries, small operational budgets, and very little equipment”. To make up for the reduced budget, the Uzbek MMWR proposed in 1993 to introduce water supply charges. But the proposal, which was particularly opposed by the Ministry of Agriculture, was rejected (Yalcin & Mollinga, 2007). In 1996/7 the MMWR and the Ministry of Agriculture were merged into the Ministry of Agriculture and Water Resources (MAWR). Within the MAWR, the MMWR became the Water Resource Department (WRD); the former deputy minister of the MMWR was promoted to first deputy minister of the new MAWR (1997–2004). Uzbek water professionals interpret the merger as a decrease of status, which also led to a cut in staff (Dukhovny et al., 2012). The submerged water department lost its resources, processes and decision-making power, and its old organizational objective of distributing water equitably. The dominant objective of the merged organization became the old objective of the Ministry of Agriculture, namely fulfilling the targets of state orders (Wegerich, 2005). Since fulfilling the state order on cotton was directly linked to the performance of the *hokims*, the merger is said to have politicized water distribution between provinces and districts.

According to Yalcin and Mollinga (2007), the first deputy minister tried to depoliticize water distribution by “designing and driving the reform” of introducing hydrological/hydrographic boundary management for water resources. The drought years of 2000 and 2001 were aggravated by upstream provinces’ taking more than the reduced equitable share to fulfill the state-ordered plan on cotton for their respective provinces (Dukhovny, 2002; Wegerich, 2007). This might have created a window of opportunity for the first deputy minister to push for the reform. Yalcin and Mollinga (2007, p. 21) argue that the objective of the reform was “to ‘depoliticise’ certain sectors to achieve more effective and efficient planning and management while maintaining centralised control”. A key informant from the MAWR (personal communication, 2012) reasoned that the first deputy minister lobbied and initiated the reforms mainly because of “the ‘liquidation’ [lowered status] of the district water administrations [caused by the merger] and to protect their staff”. Hence, at that time the first deputy minister’s interest was mainly in restoring the power of the water bureaucracy.

In June 2001 a special commission formed by the Cabinet of Ministers of the Republic of Uzbekistan released its Programme of Measures on Improvement of Irrigated Lands for 2001–2010 (Government of Uzbekistan, 2001). The programme provides for a transition to a two-level scheme of water management. The first (national-level) scheme proposes the transition of water management from the administrative to the basin-and-system principle with the formation of seven water basin management units (Figure 1):

1. The irrigation systems of the Ferghana Valley (906,800 ha, including Andijan, Namangan and Ferghana Provinces)
2. The Chirchik-Ahangaran basin, including the Dalverzin irrigation system (396,300 ha, Tashkent Province)
3. The irrigation system of the midstream of the Syr Darya River, irrigated from the Farkhad water engineering system (594,200 ha, Syrdarya and Jizzakh Provinces)
4. The Zerafshan River basin and Amu-Buhara machine canal system (771,300 ha, Samarkand, Navoi and Bukhara Provinces)
5. The Kashkadarya river basin and Karshi machine canal system (504,600 ha, Kashkadarya river)
6. The Surkhandarya and Sherabaddarya river basins (328,200 ha, Surkhandarya Province)
7. The irrigation system of the lower Amu Darya River, receiving water from the water engineering system of Tuyamuyun (776,200 ha, the Republic of Karakalpakstan and Khorezm Province) (NBT Report, 2012)

Per the proposals of provincial *hokims*, the above-outlined basin-unit proposal was changed later on, by Decree No. 320 (21 July 2003) of the Cabinet of Ministers of Uzbekistan, resulting in the creation of 10 basin irrigation system administrations (BISAs) (NBT Report, 2012). Yalcin and Mollinga (2007) provide a list of the 10 BISAs. Djalalov et al. (2011, p. 18) confirm that of these 10, “five BISAs . . . are set up mainly within provincial boundaries [Andijan, Ferghana, Namangan, Tashkent and Surkhandarya provinces]”. According to Yalcin and Mollinga (2007, p. 21), the reform from

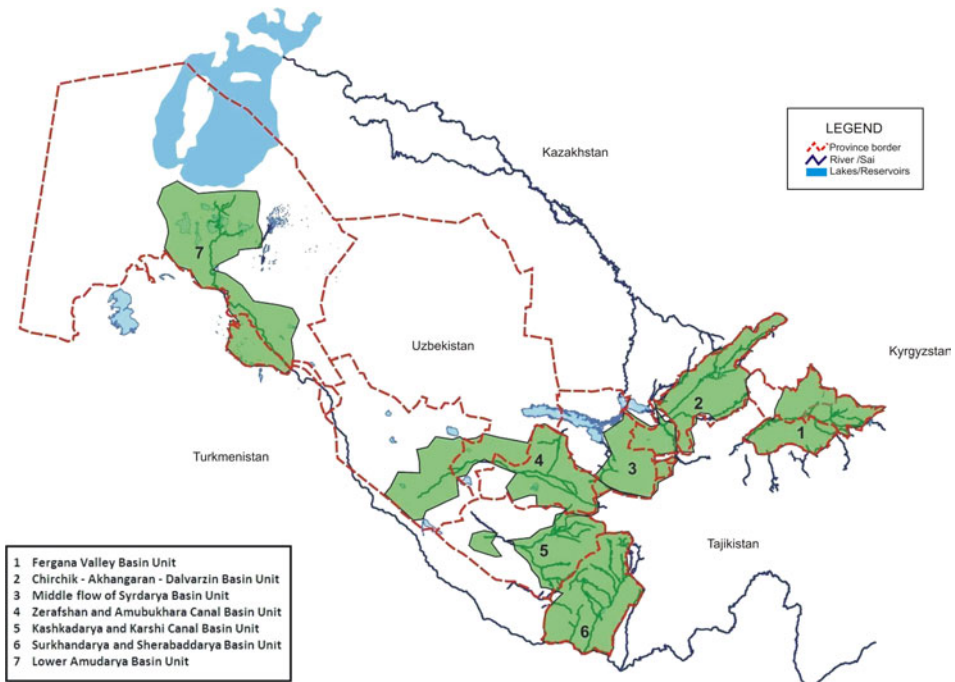


Figure 1. Proposed basin units of Uzbekistan.

administrative to hydrological boundaries has “been a move of the MAWR as a whole to reduce its dependency on *hokims*’ influence”. However, according to a key informant from the MAWR (personal communication, 2012), some of the *hokims* were strong enough to resist this change and to keep the BISA organization within provincial boundaries. The cases where boundaries were changed reflect the imbalance of power among *hokims*. Similar to BISAs, irrigation system administrations (ISAs) were to be set up according to the basin-and-system principle. However, Djalalov et al. (2011, p. 18) report that “the past eight-year period has shown that most ISAs have been set up without allowing for hydrographization”.

The power of provinces and provincial *hokims*

At the time of independence, Uzbekistan consisted of 12 provinces and 1 autonomous republic. These meso-level administrative units were further subdivided into districts. Jones Luong (2002) highlights the strength of provinces, particularly Ferghana, Tashkent and Samarkand, in the Soviet period. She points out that already before and continuing after independence, the president of Uzbekistan, (first party secretary 1989–91; president 1991 to today)⁴ started to reduce the power of the provinces and manifested the power of the centre, in this case his power position. She highlights that as first secretary he dismissed the province *hokims* of Ferghana, Namangan and Tashkent, and after his election to the presidency urged the Supreme Soviet to give him the exclusive authority to appoint province *hokims*. “By mid-1993 he had appointed in all twelve *oblasts* [*viloyats*, provinces] new regional *hokims* whom he considered ‘loyal’” (p. 125). Although the president already manifested his power over the province administrations, he further strengthened control over these local authorities. Jones Luong (2002, p. 123) specifically mentions the creation of the State Control Committee in 1992 “to effectively place direct supervision over the implementation of laws and decrees issued by the central government under the central rather than regional control”, as well as in mid-1993 the implementation of a reform which reduced the number of departments within the *hokimiats* (governor’s offices). However, she highlights that “those regional leaders in *oblasts* that grow the majority of the country’s cotton – Ferghana and Samarkand – ... maintained their primary source of patronage within the *oblast* and influence vis-a-vis the central government” (p. 132). Jones Luong emphasizes the special role of *hokims* in provinces which mainly specialize in cotton, and therefore gives the impression that these *hokims* have special status beyond their official granted powers. Nevertheless, looking at how the Uzbek constitution (Chapter 21, Articles 99–103) outlines the powers given to *hokims* shows that these are very significant:

The *Kengashes* [the council of the Senate, which is the upper chamber of Parliament] of people’s deputies, led by *hokims*, are the representative bodies of authority in regions, districts, cities and towns. They shall act upon matters within their competence in accordance with the interests of the state and citizens.

The local bodies of authority shall enforce laws of the Republic of Uzbekistan, decrees of the President, decisions of the higher bodies of state authority, participate in the discussion of matters of national and local significance.

The *hokim* of region, district, city and town shall serve as the head of the representative and executive authorities of his relevant territory.

The *hokim* of region, district, city and town shall exercise his powers in accordance with the principle of one-man management and shall bear personal responsibility for decisions and actions of bodies directed by him.

Hence, according to the constitution, the local *hokims* not only participate in decision making at the national level in terms of policy formulation but also have a direct influence in terms of implementation of the policy. Wegerich (2004) highlights the frequent rotation of *hokims* of Khorezm Province as well as their influence on the appointment of district *hokims* and *shirkat* managers. He also highlights the influence of the *hokims* regarding water distribution (Wegerich, 2006, 2009; see also Dukhovny et al., 2012). The rotation of *hokims* is a clear sign of uncertainty in their positions, and therefore lack of power. While they are in their position, they still have a significant influence on positions and the implementation of policies.

Case study of the Zerafshan and the Ferghana Valleys

The Zerafshan Valley: geographical background

The Zerafshan River (average runoff 5.3 km³; total length 741 km) originates in the northern Hissar Mountains in Tajikistan and flows towards the Bukhara Province (Olsson, Gassmann, Wegerich, & Bauer, 2010). The Zerafshan Basin can be divided into two parts: the upstream part, which is in Tajikistan; and the downstream part, in Uzbekistan. The Zerafshan Valley reaches from the May First Dam in the east (on the border with Tajikistan) to the western boundaries of Navoi District in the west. Hence, it mostly covers the area of Samarkand Province. However, water is also diverted towards Jizzakh Province to the north and Kashkadarya Province to the south. Within Samarkand Province, the Zerafshan River separates into the Ak and Kara Darya. Both rivers unite again at the boundary of Navoi. The main irrigated area within Samarkand and Navoi stretches approximately 50–60 km north–south and 200 km east–west, and is surrounded to the east and north by the Zerafshan and Turkestan Ranges (Chakilayan-Karatyube) and to the west and south by the steppes that separate the Zerafshan Valley from the Kashkadarya's irrigated area (Olsson, Wegerich, & Kabilov, 2012).

The new organizational boundaries of the BISA

Already in 1926, upon the decision of the Russian Soviet Socialist Council of National Economy (Sovnarkhoz), the Zerafshan Valley Water Management Authority (Zerdolvodkhoz) was established. In 1934, the Zerdolvodkhoz was reorganized into three distinct management units: upper, middle and downstream directorates (according to administrative-territorial principles). Later, with the organization of provincial administrations in Uzbekistan, the three directorates were transferred to the Samarkand and Bukhara provincial water department (*Oblvodkhoz*) (Benjaminovich & Tersitskiy, 1975).⁵ In 1946, the single Zerdolvodkhoz was reorganized into a water basin management organization, with the head office in Tashkent.

Instead of incorporating Samarkand, Navoi and Bukhara Provinces as proposed, and therefore the Zerafshan Basin, as well as the Amu-Bukhara machine canal system, within one unit (totalling 771,300 ha), separate Amu-Bukhara and Zerafshan BISAs were created. The Amu-Bukhara BISA includes the whole of Bukhara Province, as well as the Kiziltepa and Navoi Districts of Navoi Province. The Zerafshan BISA includes the whole of Samarkand Province, three districts of Jizzakh (Bakhmal, Gallaorol and Jizzakh), four districts of Navoi (Hatirchi, Navoi, Konimekh and Navbakhor), and one district of Kashkadarya (Chirokchi), for a total of 590,000 ha.

A key informant of the Zerafshan BISA denied that there was a proposal to merge all three provinces into one unit. He explained that in 1972, after a conflict between Bukhara

and Samarkand, it was decided to exclude Bukhara from the Zerafshan Basin. At that time, through a resolution, it was decided to split the Zerafshan River, 9.1% to the Kashkadarya Province, 11% to Navoi, 72% to Samarkand and 7.2% to Jizzakh (personal communication, Samarkand City, 2013). When checking this information, no resolution from that date could be found, only a Resolution of the Cabinet Ministers of UzSSR No. 280, dated 30 April 1983, which confirmed the water allocations.⁶ Regarding the water conflict there was also no information, but in 1972 the Amu Darya–Zerafshan water conduit was built. This canal supplies the city of Zerafshan and its irrigation fields (in Navoi) with water from the Amu Darya.

Hence, according to key informant of the Zerafshan BISA, the boundaries reflected the boundaries of the resolution. He explained that under the leadership of the head of the Samarkand Province water department (*Oblvodkhoz*), the boundaries of the Zerafshan BISA were drawn up in Samarkand, without participation of Jizzakh, Navoi or Kashkadarya Province. This draft was submitted to the special commission in Tashkent and simply accepted. To put this into the political context, at the time when the head of the Samarkand Province water department submitted the BISA plans, his brother was state advisor on agricultural issues to the president.⁷ This could explain why the head of the Samarkand Province water department could simply submit the proposal, and even though it might not have reflected the boundaries of the Zerafshan Basin, the high-level influence of his brother allowed it to be accepted.

The new organizational boundaries of the Zerafshan ISAs

Under the Zerafshan BISA there are eight ISAs. The Dargom, Mirzapai, Narpai and Ak-Kara Darya ISAa are all within Samarkand Province. The Eski-Anghor ISA covers parts of the Dargom Canal in Kashkadarya Province (notably, the canal within Kashkadarya is called Eski-Anghor). The Tuyatartar-Kli ISA covers only some irrigated area within Jizzakh Province. However, this ISA diverts water to the Mirzapai ISA, which is within Samarkand Province. In addition, the Tuyatartar-Kli ISA receives water from the Zerafshan and, within Jizzakh, from the Sanzar River. Notably, only the middle and tail end of the Sanzar River are included in the Tuyatartar-Kli ISA. The Karmona-Kanimeh ISA covers different parallel main canals in Navoi Province. Finally, the Miankal-Toss ISA is the only ISA representing an irrigation system crossing the administrative boundaries of Samarkand and Navoi Provinces.

The key informant of the Zerafshan BISA explained that the first guiding principle of ISA boundaries was the administrative boundaries of the province. The main canals crossing into other provinces were separated on the province border, like the Eski-Anghor ISA in Kashkadarya and the Tuyatartar-Kli ISA in Jizzakh; the exception to this guiding principle is the Miankal-Toss ISA. While for the Eski-Anghor and Tuyatartar-Kli ISAs the main manager is from the other province and the deputy manager is from Samarkand, the first manager of the Miankal-Toss ISA is from Samarkand, and the deputy from Navoi. The second guiding principle was the command area of the main canal. However, within Samarkand Province there is a main canal system authority that is responsible for controlling nine main canals (Dargom, Yangiarik, Bulungur, Pai, Anghor, Eski-Anghor, KPC, Progress and Narpai), and within Samarkand there are only four ISAs. Hence, within Samarkand Province this second principle was only used for the Dargom and Narpai ISAs; the other ISAs cover more than one main canal. The third guiding principle was the size of the irrigated area. Within this principle different main canals were lumped together even if they had different water sources. The Miankal-Toss ISA is responsible for two main

canals; one takes water from the Ak Darya and the other from the Kara Darya. Although the name Ak-Kara Darya suggests that it combines water from the two rivers, it only covers the land between the two rivers.

Within Samarkand the districts did not oppose the setting of the new boundaries. Arguably, these appear to be small changes, since creating ISA boundaries lumped mainly main canals together. The real change was already avoided much earlier. Also, under the leadership of the head of the Samarkand Province water department, the existing district water management organizations had been renamed water user associations. Samarkand is the only province within Uzbekistan which established WUAs at the district level.⁸

The Ferghana Valley: geographical background

The Ferghana Valley is situated in the eastern part of Uzbekistan. This large plain is surrounded to the north by the south-western Tien Shan mountain range and to the south by the Alay Range. The Ferghana Valley is shared by three countries: Kyrgyzstan, in the northern, eastern, and southern fringes of the valley; Tajikistan, in the western fringes; and Uzbekistan in the centre. The valley is approximately 300 km long and up to 90 km wide, forming an area of 22,000 km². Its position makes it a separate geographical zone. Glacier and snow melt from many tributaries, the two main ones being the Naryn (13.8 km³) and the Karadarya (3.9 km³), as well as about 16 small transboundary tributaries (total flow 7.8 km³), form the Syr Darya River (Wegerich, Kazbekov, Mukhamedova, & Musayev, 2012). The total irrigated area of the Uzbek part of the valley is 1.2 million ha. Irrigated fields receive water resources either directly from tributaries of the Syr Darya or through the vast irrigation system, which crosses the boundaries of the three countries (Wegerich et al., 2012; Figure 2). The Big Ferghana, North Ferghana and South Ferghana canals cross



Figure 2. Boundaries of basin irrigation system administrations (BISAs) in Zerafshan.

country boundaries. Three Uzbek provinces are located within the Ferghana Valley: Andijan, Ferghana and Namangan. Canals crossing two or even three provincial boundaries are the Big Andijan, Big Ferghana and South Ferghana. Although on average these three provinces take 36% of water withdrawals for irrigation from small rivers, the amount received from small rivers varies tremendously between the provinces. A recent study highlights that on average (2001–2010), Andijan Province received 70%, Ferghana Province 24% and Namangan Province 14% of their water resources from small tributaries (Dukhovny et al., 2012). Although Andijan Province supposedly receives water mainly from small rivers (locally called *sais*), the main *sais* in Andijan Province are actually canals (Andijansai, Sharihansai and Savay). Hence, the share mentioned by Dukhovny et al. (2012) is questionable.

The new organizational boundaries of the Ferghana BISA

The original proposal of the special commission anticipated one BISA within the Ferghana Valley, covering the territory of Andijan, Ferghana and Namangan Provinces. It was anticipated that this BISA would have its main location in Baghdad City, Ferghana Province. Because of resistance from provincial *hokims* (mainly in Andijan and Namangan Provinces), this proposal was rejected (informal interview with key informant from the Syr Darya-Sokh BISA, as well as a former employee of the Andijan Province water department). Because of this resistance from the provincial authorities, the commission in Tashkent came up with a second proposal for BISA boundaries. According to this proposal, two basin authorities would be established in Ferghana valley:

1. Right bank of Syr Darya (Uch Kurgan) BISA, covering the territories of the right bank of the Karadarya in Andijan Province, areas in Namangan Province adjacent to a part of the Syr Darya and Naryn Rivers – total of about 650,000–750,000 ha, with the centre in Uch Kurgan City, Namangan Province
2. Ferghana BISA, covering the left bank of the Karadarya and Syr Darya rivers in Andijan Province, with an area of about 200,000–250,000 ha, and all areas in Ferghana Province, with the centre in Baghdad City, Ferghana Province

The second proposal was equally resisted by the Andijan Province *hokim* (personal communication, key informant of MAWR, 2012) as well as its water management department (personal communication, key informant in Andijan Province water department and Naryn-Karadarya BISA, 2013). While in the first proposal Andijan and Namangan Provinces would have lost authority over their water resources to Ferghana Province, in the second proposal Andijan would have lost authority to Ferghana and Namangan. The main reason for the resistance was the assumption that any BISA will be biased towards the province it is located in and therefore water resources would not be fairly allocated. In addition, under the second proposal Andijan Province would have been divided in two: the right bank of the Karadarya to the Namangan BISA, and the left bank to the Ferghana BISA (personal communication, key informant in Andijan Province water department and Naryn-Karadarya BISA, 2013). As a result, in the Ferghana Valley the three provincial irrigation departments were converted into three BISAs in the administrative territories of the provinces. However, the names of the BISAs were changed to reflect some relation with water boundaries; they are Naryn-Karadarya (Andijan City, Andijan Province), Naryn-Syr Darya (Namangan City, Namangan Province) and Syr Darya-Sokh (Ferghana City, Ferghana Province). As a compromise, a main canal dispatch centre was created, which is located in Ferghana City, Ferghana Province. The main canal



Figure 4. First proposals of irrigation system administration (ISA) boundaries within the Syr Darya-Sokh.

The second proposal simply merged the two units of the Big Ferghana Canal and therefore would have created five ISAs. However, this proposal was also rejected. By the time the third proposal was developed, it was already certain that a main canal dispatch centre would be created, which would be responsible for the main canals. The implication was that the water resources from the main canals would not be under the ownership of Ferghana Province, and hence, the main canals were no longer seen as primary units or controllable water sources for the province. Nevertheless, the main stable water flow for Ferghana Province was and continued to be the main canals; sairs were considered too unstable. To reflect the change of ownership of the water resources of the main canals, the new proposal mainly focused on small tributaries and rivers, which are also highlighted in the names of the ISAs: Isfayram-Shahirmadam, Naryn-Ferghana, Sokh-Aktepa and Isfara-Syr Darya. Since the Big Ferghana Canal crosses through the whole province and is part of all four ISAs, it is clear that the ISAs are not hydrographic. Similarly it could be reasoned that the separation between the right and left banks of the Sokh river would be an artificial boundary, because the Sokh river also contributes to the Big Ferghana Canal and therefore to the Isfara-Syr Darya ISA. Overall, all ISAs have multiple water sources and therefore neither hydrographic nor hydraulic boundaries (Figure 5).

Discussion

While in the literature a clear distinction is made between politicians and bureaucrats, in the case of Uzbekistan, one of the main drivers of reform was the first deputy minister of the MAWR, a bureaucrat himself. By pushing its own agenda, the water department showed that it can be perceived as an autonomous unit, despite the fact that it has a subordinate position within the MAWR. Since the water agenda was driven by the water department at the national level and the implementation into action was also set by the

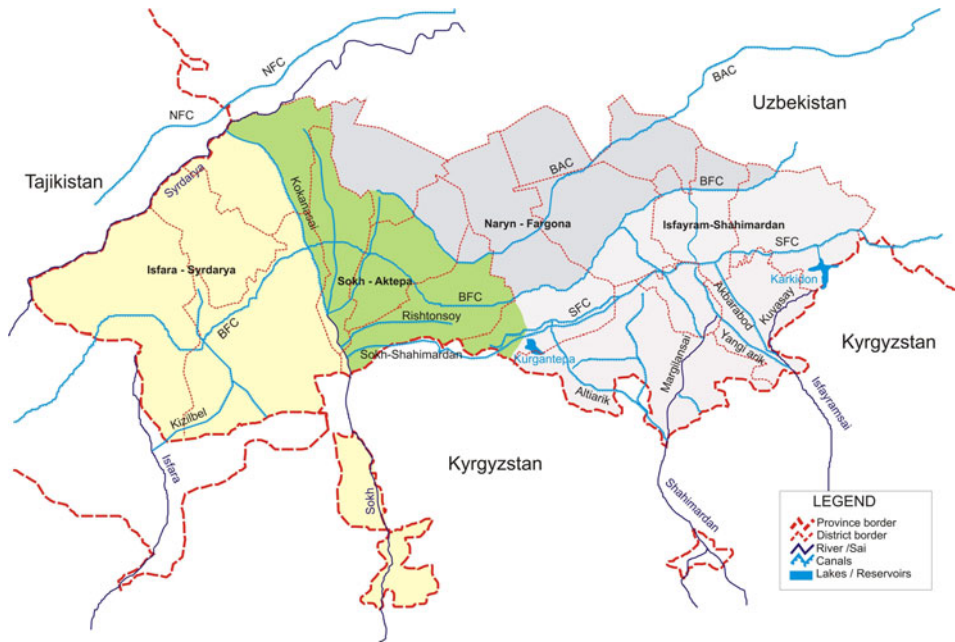


Figure 5. Current irrigation system administration boundaries within the Syr Darya-Sokh basin irrigation system administration.

same department but at a lower level, it seems that the principal-agent relationship would be more a question of inter-bureaucratic hierarchy than of politicians versus bureaucracy. However, looking at the interference of the provincial *hokims* in setting water management boundaries within the Ferghana Valley, different bureaucracies in provincial levels were involved in setting the boundaries. This confirms the competition between bureaucracies, as well as the protection of local identities. In addition, the case of Samarkand possibly highlights that lower-level bureaucrats have their own connections to higher-level bureaucrats of different bureaucracies and are therefore able to push their own agenda. In both cases, the power position of individual bureaucrats dominated. These bureaucrats could bargain for a better position of their respective unit of authority, compared to other units. Hence, not necessarily only the bargaining power of individual bureaucracies should be considered but also the bargaining power of key bureaucrats within bureaucracies. In the same line, one could argue, the question of bureaucratic autonomy and discretion is related to the power position of individual bureaucrats.

Furthermore, the case study shows that there was also competition within the same bureaucracy in different administrative units. In the case of Samarkand, the water bureaucracy resisted the merger between different water departments, which could have led to a loss of power and possibly to a reallocation of water resources. While the Samarkand water department resisted the merger with Bukhara, it was able to create a new unit, which might resemble the past power position, when the provinces of Navoi and Jizzakh did not even exist. Similarly, the Andijan water department resisted the integration into one or two BISAs and was able to establish its own BISA. Nevertheless, it seems to have lost its authority over key water control infrastructure. Both cases can be interpreted as bureaucrats pursuing their own identity as well as loyalties to their region.

The case study highlights compromises, which could be interpreted as following the principle of water management boundaries in spite of hydraulic boundaries. Some examples would include the creation of the Zerafshan BISA that incorporates main canals crossing into Jizzakh, Kashkadarya and Navoi. Another example would be the main canal dispatch centre in Ferghana Valley, incorporating main canals which cross the boundaries of the different Uzbek provinces (Andijan, Ferghana and Namangan). Neither compromise is holistic regarding the basin approach to water management.

While on paper the Zerafshan BISA, dominated by Samarkand Province, incorporates the main canal systems of other provinces, all of these main canal systems (except one) have their own ISAs and are managed by staff originating from those other administrative units. Hence, within the compromise, the power position of the (on paper) losing provinces has not been affected but the status quo maintained. In the case of the Ferghana Valley, the main canal dispatch centre, located in Ferghana Province, looks on paper like a real compromise between the provinces. However, as mentioned above, the main canal dispatch centre is only responsible for the main canals on the left bank of the Syr Darya. Hence, the unit of the main canal dispatch centre reflects a compromise between the first and second proposals on Ferghana Valley BISA boundaries. The canals for which the dispatch centre is responsible are the only canals which cross provincial boundaries within the valley. However, since the small transboundary tributaries are important sources of irrigation in the Ferghana Valley, the role of the main canal dispatch centre is limited. Therefore, it appears that the compromises increased the power position of the key provinces, Samarkand and Ferghana (as identified by Jones Luong). However, even the losing provinces, Navoi, Jizzakh and Kashkadarya within the Zerafshan Valley and Namangan (dependent on the overall dependence on small tributaries) and Andijan in Ferghana Valley, have been little affected by the changes. The compromises which were achieved between the different provinces resulted in more or less maintaining the status quo of all affected provinces within the case study, even though on paper the result might look like a great achievement.

The hydrological/hydrographic principle was introduced to the provincial departments without clear definition. One could interpret this as an underlying assumption that the lower-level water bureaucracies were seen as the experts, who could easily have interpreted this concept into a framework for setting boundaries. Going back to the issue of discretion, it appears that the lower-level bureaucracy could use different guiding principles for defining boundaries. In Samarkand Province the guiding principle was the main canal unit (although more in name than in reality). In the beginning, the guiding principle in Ferghana Province saw main canals more as boundaries themselves, and therefore divided between the left and right bank of main canals. In the third proposal, since the BISA was left without the authority over the main canals, the water source became the guiding principle, on paper. However, different water sources are merged within the same unit, and some water sources (Big Ferghana Canal and Sokh) are artificially divided. Hence, looking at the boundaries, it seems that there is no clear guiding principle. Comparing Samarkand and Ferghana Provinces, it seems that the discretion of the bureaucracy led to very different outcomes related to boundary setting. Overall, it appears that the concept of hydrographic or hydrological boundaries was not known, leading to very different, possibly localized, even contradictory interpretations of the same concept. Interestingly, at least officially the same national committee must have approved both interpretations of the guiding principle, hence also putting into question whether the national committee was familiar with the concept. Having stated this, from the beginning, there was a clear priority given to the water resources delivery

system instead of a holistic approach reflecting hydrological/hydrographic boundaries. This is reflected in the fact that the irrigation department was given the task of setting the boundary, and not the drainage department or a group of departments dealing with water resources.¹⁰ Hence, the focus of the bureaucracy which was tasked with setting the boundary dominated. The initiator of the reforms, the first deputy minister of the MAWR, who is responsible for the water supply as well as the drainage system, could have demanded a holistic approach to water; however, it seems that his hidden agenda to separate the water department from the agricultural department at lower administrative levels to increase the autonomy of water was dominant. If the water supply and drainage departments were combined, it could have led to further staff cuts. Hence, one could argue that calling the guiding principle hydrological/hydrographic boundary management was a 'cover-up' from the beginning, to push the agenda of separation of the water resource department from the agricultural department within the same ministry.

Conclusion

This article has shown that the national policy on implementing hydrological/hydrographic water management was half-hearted from the beginning, since it did not incorporate drainage boundaries or combine surface and groundwater resources. Hence, it seems that although the official policy emphasized the need for hydrological/hydrographic boundary management of water resources there might have been a hidden agenda which took priority. This seems to be further confirmed by the outcome of the implementation across Uzbekistan, since resistance and nonconformity (varying degrees of discretion) within the implementation was tolerated.

The article has highlighted for Uzbekistan that although one national policy might be issued, the implementation of the national policy is localized and might vary significantly in its implementation across regions. The evidence presented demonstrates that neither a focus on national policy nor on one case study in one region might be sufficient to understand the process as well as the varying outcomes of the policy. Hence, the article calls for more comparative assessments across different regions for a better understanding of policy implementation.

In the literature there is a focus on the principal–agent relationship between politician and bureaucracy. While this might be applicable to Western democracies, at least in the case of Uzbekistan and possibly other transitional economies this distinction is not correct. Internal drivers of change as well as implementation agencies can be part and parcel of the same bureaucracy. The principal–agent relationship appears to be applicable for analyzing the relationships between different levels of the same bureaucracy. Having stated this, the case study demonstrates that the principal–agent relationship does not account for influences beyond the agency, such as other bureaucracies; such as the *hokim* in Andijan or vested interests beyond; or such as the historic connection between Samarkand and Jizzakh and Navoi or the historic competition between Bukhara and Samarkand.

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Notes

1. When making reference to integrated water resources management strategies, the Global Water Partnership (2012) states that these strategies are based on the four Dublin Principles presented at the World Summit in Rio de Janeiro in 1992. Making direct reference to the first principle, it explains: “This principle assigns a river basin or a catchment area to be a water management unit, which is the so-called hydrographical approach to water management.”
2. Compared with other Central Asian countries, Uzbekistan was still better off; the contraction was not as dramatic as in the other Central Asian Countries.
3. The MMWR has at least two sections, one focusing on the delivery of ‘water resources’ and the other on melioration. The focus of this article is on the restructuring of the water distribution section. It is acknowledged that hydrological/hydrographic boundaries would entail both sections – however, as will become clear in the case-study section, combining water distribution and drainage boundaries was not considered from the start.
4. First party secretaries of the Uzbek SSR, 1959–1991: Sharif Rashidov, 1959–83 (origin: Samarkand Oblast); Inamdshan Usmankhodzhaev, 1983–88 (Ferghana Oblast); Rafik Nishanov, 1988–89 (Tashkent Oblast); Islam Karimov, 1989–91 (Samarkand Oblast) (Jones Luong 2002).
5. Jizzakh Oblast was created in December 1973 (the first secretary of the time originated from Jizzakh District), abolished in 1988 (it joined Syrdarya Oblast), and re-established in 1990 (Jizzakh Province, n.d.). Navoi Oblast was created in April 1982 from parts of the Bukhara and Samarkand Oblasts. In July 1988, the entire oblast was merged with Samarkand Oblast, and then it was re-established in January 1992 (Navoi Province, n.d.).
6. Abdullaev and Rakhmatullaev (2013) highlight the history of the Tuyatartar and Eski-Anghor canals and that they were already constructed during the middle ages. Although they do not mention their importance during the Soviet Union, through their linking to the historical setting, they justify their allocation to Jizzakh and Kashkadarya Provinces in the 1983 resolution.
7. Head of the Samarkand Province water department (Zerdolvodkhoz), then BISA director 1992–2004. His brother was deputy prime minister 1994–1996, minister of agriculture and water 1996–1998, and state advisor on agricultural issues to the president 2000–2004.
8. Only recently, because of donor involvement (Swiss Development Cooperation and World Bank), some WUAs have been set up at lower levels, also claiming to follow hydrographic principles (based on experiences in the Ferghana Valley) (SDC, 2012).
9. Ownership and responsibility of Kampyravat was to be transferred from the Andijan Oblvodkhoz to the dispatch centre in July 2003 (Annex 46 to Decree No. 320 of the Cabinet of Ministers, 21 July 2003). According to the key informant of the Syr Darya-Sokh BISA, “the Andijan authorities objected. Only in 2006 did the dispatch centre take over responsibility of Kampyravat” (personal communication, January 2014). However, some reports suggest that neither the whole Big Ferghana Canal nor important infrastructure like Kampyravat are under the authority of the dispatch centre (Facreau & Puigt, 2009; UNECE, 2011).
10. The Drainage Department (Hydro-geologic Meliorative Expedition) is also based on the province level. Within Ferghana Province, the department has six independent units responsible for six independent collector systems. Hence, the irrigation-water delivery and drainage systems are completely separated.

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