REPORT

Water, Peace and Security

Conflicts over water and water infrastructure at the Tajik-Kyrgyz border

A looming threat for Central Asia?

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ABSTRACT

A conflict is looming on the Tajik-Kyrgyz border. Based on long-term disagreements between the two countries over border demarcation and other historically grown discontent, the conflict has been repeatedly triggered and intensified by competition over water and access to water infrastructure. In April 2021, the installation of surveillance cameras over a water intake station located on territory disputed by Tajikistan and Kyrgyzstan by Tajik citizens triggered a spark of violence that left 55 people dead, over 200 injured and more than 10,000 displaced. By exploring the linkages between water-related risks and conflicts – in the broader context of regional, political, and socio-economic factors, this paper provides an overview of the historical and current situation in the region. It further explains how a complex mix of different factors – many of them relating to the use of water resources and, in particular, water infrastructure – has led to the latest conflicts and can potentially trigger more of those in the future. This can provide guidance to policy makers in the region and in the international community to identify entry points for conflict mitigation and successfully implement targeted and timely responses.

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1. Introduction

On April 28th, 2021, a group of Tajik citizens were spotted installing surveillance cameras at the "Golovnoy" water intake station from which water of the Isfara River is distributed between Kyrgyzstan, Tajikistan, and Uzbekistan *(Figure 1)*. Because this water infrastructure is located on territory that both Kyrgyzstan and Tajikistan claim (Deutsche Welle, 2021), it raised discontent among residents from nearby Kyrgyz villages. The dispute that started like many previous local incidents with angry words, fist fights and stone-throwing, quickly turned into the most serious conflict that happened so far in this area, with heavy weapons, rockets and mortars being deployed (Toktomushev, 2017). Within a few days in April 2021, at least 36 Kyrgyz (including two children) and 19 Tajik citizens were killed, mostly civilians, over 200 injured and tens of thousands displaced. Moreover, dozens of homes, schools, and other buildings burnt and were destroyed (Deutsche Welle, 2021; Radio Azattyk, 2021c; Radio Free Europe, 2021b), leaving a lasting impact in the area. This incident is another signal of a growing threat in the region, with every new conflict turning out to be more serious than the previous. This bears increasing risks of a spiral of conflict that is increasingly hard to control.

Figure 1. Map of Tajik-Kyrgyz border clash.
Source: https://www.rferl.org/a/kyrgyzstan-tajikistan-border-fighting-perceptions/31237942.html

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Kyrgyzstan and Tajikistan are two mountainous countries in Central Asia that were formerly part of the Soviet Union. They are both characterized by a low GDP per capita in comparison to the rest of the region as illustrated by a map in *Figure 2.* A high share of their rural population is engaged in agro-pastoralism and they heavily depend on water resources both for irrigated agriculture and for generating electricity due to insufficient fossil fuel reserves (Zakhirova, 2013). This strong dependence on water and related infrastructure has been one of the central elements of the conflicts in the Isfara Basin.

It is important to note that this specific conflict is playing out in a broader regional setting characterized by water-related conflicts as well.

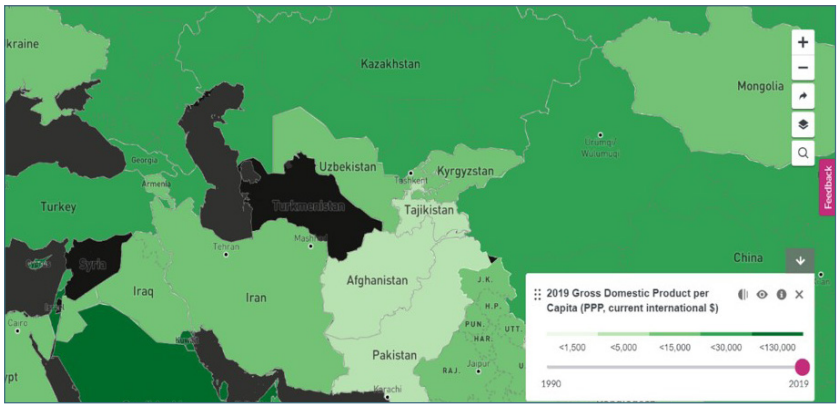

Figure 2. GDP per capita of Kyrgyzstan and Tajikistan compared to other countries (2019) (data for Turkmenistan is not available).

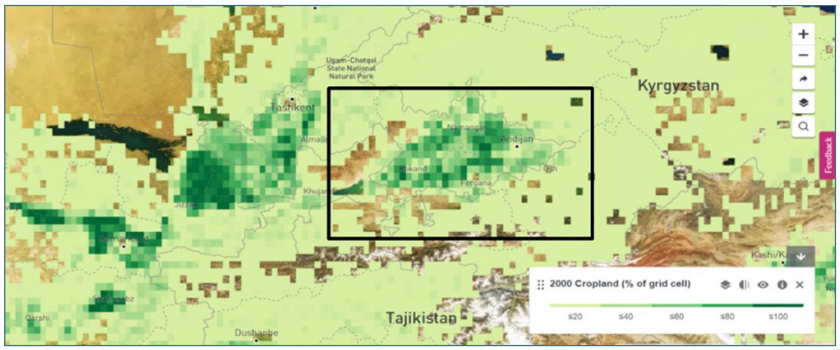

Figure 3. Percentage of land used for farming (cripland) in the Ferghana Valley.

After the dissolution of the Soviet Union, Central Asian states signed the 1992 Almaty Agreement and agreed to maintain the Soviet status quo in water-energy exchange (Ziganshina, 2009). According to this agreement, upstream Tajikistan and Kyrgyzstan collect water in winter, to be used for irrigation during the growing season in downstream Uzbekistan, Kazakhstan and Turkmenistan, who in exchange would provide free fossil fuels. Despite this agreement, Kyrgyzstan and Tajikistan experienced severe power shortages during winter. This led them to change dam operation from irrigation to hydro-power generation, which in turn disrupted the water intake expectations of downstream neighbors. Moreover, to increase their hydro-power capacity, both Kyrgyzstan and Tajikistan attempted to complete hydropower plant projects started by the Soviet Union and paused after its dissolution (Kambarata in Kyrgyzstan and Rogun in Tajikistan). The objective of these projects is to increase domestic power supply and to export the surplus electricity abroad. This led to disputes over water sharing between upstream and downstream neighbors of Central Asia, which played out particularly strongly in the early 2010s, with the dispute around Rogun Dam.

Within this region, the Fergana Valley, through which the Isfara River flows before joining the Syr Darya River, is of particular importance. The Ferghana Valley has a long history of irrigated agriculture and animal husbandry that dates back to the Bronze Age. The maps (*Figures 3 and 4*) show that the Ferghana valley is abundantly covered by croplands (in the range between 60-100%) (*Figure 3*) and the territories that surround the valley are rich in pasturelands (*Figure 4*).

Agricultural fertility contributed to the significant population growth of the region (Toktomushev, 2017), with three ethnic groups (Kyrgyz, Tajiks, Uzbeks) living as interconnected communities with shared land, water, pastures, markets and burial sites (Reeves, 2005; Toktomushev, 2017). As can be seen from *Figure 5* in 2020 the population density in most parts of the Ferghana Valley was between 1000-5000 people/km².

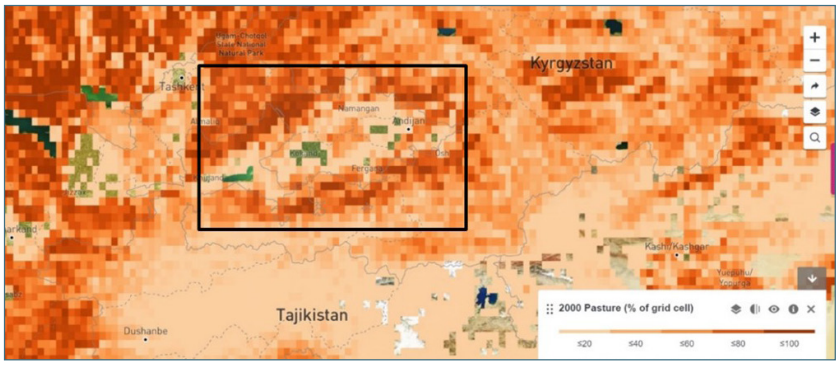

Figure 4. Percentage of land used for livestock (pastures) in the Ferghana Valley.

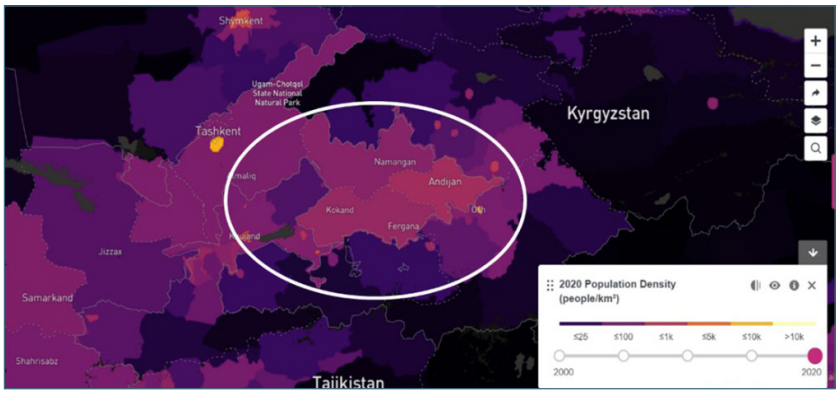

Figure 5. Population Density of the Ferghana Valley in 2020.

2. The role of water resources and their management in the conflict

In the region of the Ferghana Valley, water has been a trigger, a threat multiplier of and a target in conflicts. There is a high demand for water resources by different population groups and different water use sectors, spanning across national borders, leading to conflict over water as well as to conflict well beyond the water sector and interrelating with unresolved border issues (Current Time, 2021b). At the same time, during confrontations at the local transboundary level, villagers often block water channels to stop water from flowing downstream (Avazbekov, 2021), effectively making use of water as a means of conflict. Additionally, located in one of the most conflict-prone parts of Central Asia, where "new violence is likely, indeed, almost certain" (Nunn et al., 1999), the persistent conflictive situation in the region has also negatively affected water infrastructure, decreasing its effectiveness and further exacerbating conflicts. The region can thus be regarded as exemplary for the many forms in which water-related conflicts can play out. *Figure 6* demonstrates that baseline water stress in most parts of the Ferghana valley ranges from medium to extremely high.

The Isfara River is a tributary of the Syr Darya River located within Ferghana Valley and shared between Kyrgyzstan, Tajikistan, and Uzbekistan (Pak et al., 2014) (*Figure 7*). The length of the river is 107 km, its annual average runoff volume equals 457,3 million m³. The river forms a basin with an area of 3240 km² (CAREC, 2015). The Isfara River originates from snow and ice melt of Kyrgyz Ak-Suu glaciers, then flows to the Tajik

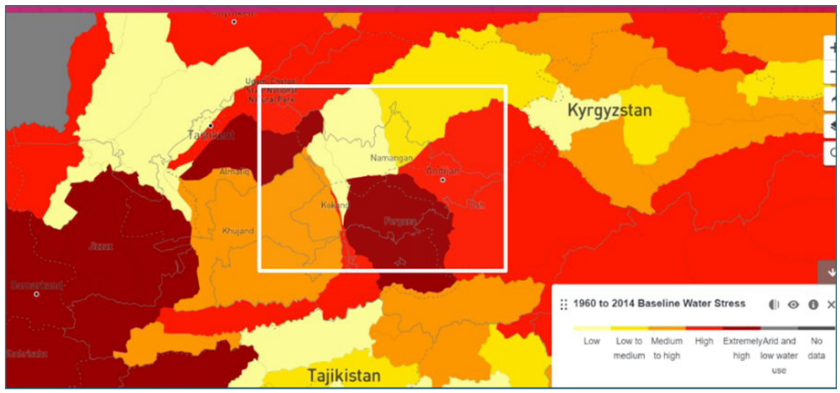

Figure 6. Water Stress level in the Ferghana Valley.

Vorukh enclave, returns back to Kyrgyzstan, after which, at Tangi-Vorukh gauging station, it divides between Tajikistan's Isfara region and Kyrgyzstan's Tortgul reservoir (SIC-ICWC, 2014). There are almost half a million people living in the Isfara Basin, most of whom live on the Tajik side (84,2%) (CAREC, 2015). The population density on the Tajik side is also higher (251,6 people/km^2) than on the Kyrgyz side (16,6 people/km^2) (CAREC, 2015), adding another important dynamic to the competition over water and related infrastructure.

The water of the Isfara River is mainly used for irrigation purposes, supporting the irrigation of 43,000 hectares of land (77,5%) (CAREC, 2015; Erkebayeva, 2021). It is also an important source of income for the 74,3% of Isfara basin's population that live in rural areas and work in the agricultural sector (CAREC, 2015).

Figure 7. Map of the Isfara River Basin. basin outline digitized by the authors based on Abdullaev & Rakhmatullaev (2014)

Despite increased dependence on water resources for provision as well as high rate of population growth, conflict over water in the Isfara river basin partly contradicts the neo-Malthusian views. According to these views water scarcity caused by increased water demand due to population growth and climate change may lead to serious water conflicts and even wars (Cooley, 1984; Gleick, 1993; Hensel et al., 2006; Homer-Dixon, 1999). However, conflict in the Isfara basin demonstrates that decreased water scarcity is not always caused by population growth or climate change, instead it may be the result of inefficient and wasteful infrastructure as well as poor governance choices. In fact, both Kyrgyzstan and Tajikistan have the highest per capita water availability in Central Asia. And although in the long-term water deficit is expected due to climate-change induced retreat of Central Asian glaciers, it has not been experienced for the time being. Moreover, recent studies showed that there is no overall decline and no variation over time in the runoff of the Isfara River.

According to a study carried out by the Scientific Information Center of the Interstate Commission for Water Coordination in Central Asia (SIC ICWC) with the data retrieved from the Tashkurgan measuring station for the period between 1911–2012, there are no signs of significant decline in

the mean monthly *(Figure 8)* and yearly river flow of Isfara river *(Figure 9)* (SIC-ICWC, 2014). Instead, *Figure 10* shows an increasing trend in the river runoff in July and August after 2000. SIC-ICWC concludes that there is minimal likelihood of an increased water deficit as the result of climate change in dry years in the Isfara Basin in the near future. According to their estimates, decline in the flow of the river will take place after complete retreat of glaciers, which is predicted to happen after 2050 (SIC-ICWC, 2014).

Moreover, satellite observations of the water level of the Tortgul Reservoir further show no decline in the runoff of Isfara river. Tortgul Reservoir was built in 1970s with a volume of 90 million m^3 and 9,000 hectares irrigation capacity in order to expand cropland and improve water supply to both Kyrgyz and Tajik residents (Avazbekov, 2021). The reservoir was built on a territory that both Kyrgyz and Tajiks now claim as theirs (Pak et al., 2014). According to the Protocol on Inter-state Division of Small Tributary Rivers Flow of the Ferghana Valley, signed by the Deputy Minister of Water Resources of the USSR dated April 11, 1980, Tajikistan, Kyrgyzstan, and Uzbekistan receive 55%, 37%, and 8% of Isfara's annual water flow respectively (Kurmanalieva, 2018).

Water level and filling percentage of the Tortgul reservoir were calculated by regressing historically observed water occurrence using the ICESat-2 (satellite with a laser) elevation data. The results illustrated in *Figure 11* show a periodic behavior in the maximum fill of the reservoir, while according to *Figure 12* the lowest point in the surface water area went down over the last three years. Since based on the previous studies *(Figures 8-10)* there is no observed decline in the river's runoff, the decrease in the lowest point of the reservoir could be the result of water loss through evaporation due to temperature increase during hot months or greater water withdrawal by local water users.

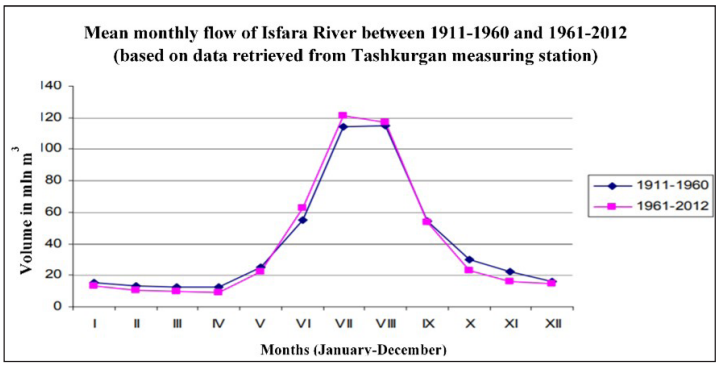

Figure 8. Graphs of mean monthly flow of Isfara River between 1911-1960 and 1961-2012.

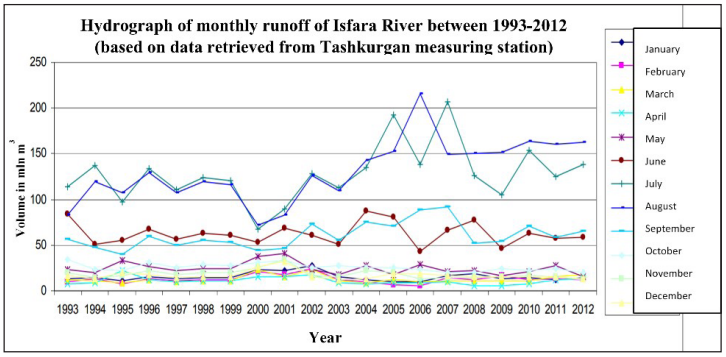

Figure 9. Graphs of monthly surface runoff of Isfara River between 1993-2012. Translated from SIC-ICWC, 2014.

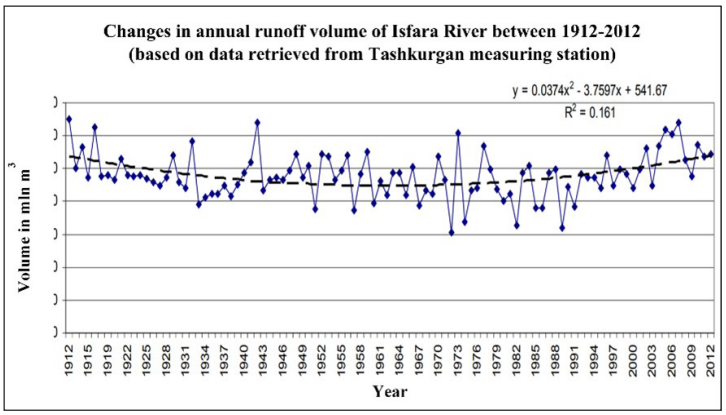

Figure 10. Graphs of changes in mean annual runoff volume of Isfara River between 1912-2012. Translated from SIC-ICWC, 2014.

Thus, hydrologically induced water scarcity is not at the origin of water-related conflicts in the area. Instead, water scarcity is the result of poor governance left from the Soviet era (discussed in

more detail in *Chapter 4*) as well as deteriorating infrastructure that leads to significant losses of up to 50% (Pak et al., 2014).

Inefficiency of wasteful and deteriorating water infrastructure at the Kyrgyz-Tajik border contributes to the growing water scarcity and tensions both at the local and transboundary level. Worn out water pumps and pipes negatively affect access to drinking water, which is available only to 29,1% of the basin's population (CAREC, 2015). The rest of the population either fetches water directly from the river or has to buy from water tanks, which is why diseases such as typhus

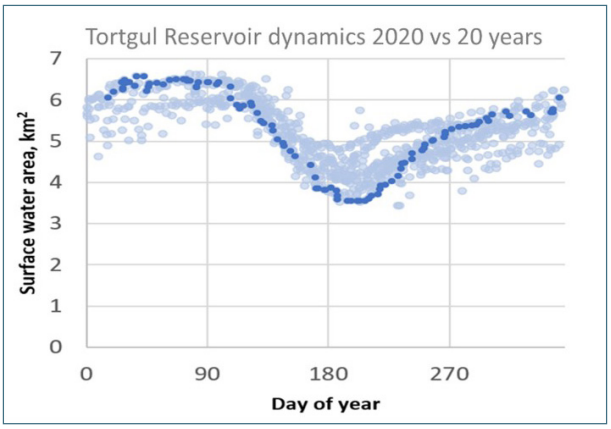

Figure 12. Tortgul reservoir annual surface water area - lowest point for the period of 20 years.

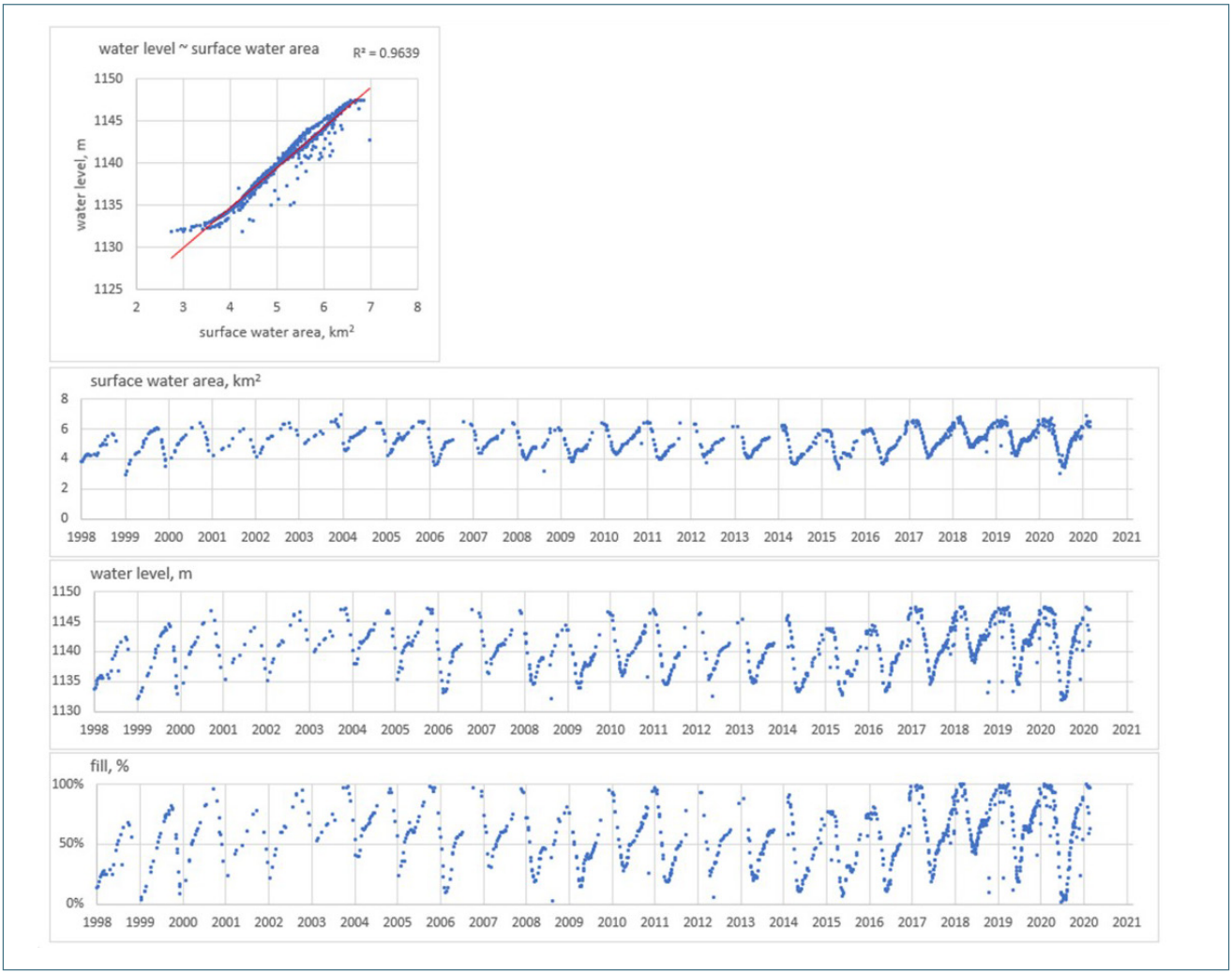

Figure 11. Tortgul reservoir surface water area, level, and percentage between 1998-2021 based on ICESat-2 data.

and hepatitis are widespread (CAREC, 2015). Transboundary hydraulic infrastructure located on disputed lands is in especially poor condition because the two sides do not feel responsible for maintenance and lack willingness to invest because of the disputed status of infrastructure (Toktomushev, 2017). Moreover, both sides are cautious about recognizing another country's right to manage infrastructure on disputed land as this could be interpreted as recognition of new borders (Murzakulova & Mestre, 2016). For example, on April 17, 2021 Kyrgyz side started repair works at "Golovnoy" water intake station located on a disputed land plot. About thirty Tajik residents from Khoja A'lo village gathered to stop these works referring to the 2008 bilateral agreement, according to which sides promised not to carry out any kind of construction activities on disputed non-demarcated territories (Radio Ozodi, 2021b).

Climate change

The Isfara River is sensitive to climate change due to its dependence on glaciers as an important source of its summer flows used for irrigation. Although at present it is not expected that Isfara basin will experience water deficit due to climate change, in the long term melting of glaciers may result in the river flow decline and cause geohazard threats. Thus, while climate change is not a source of conflict for now, in the future it may become an additional challenge to already tense Kyrgyz-Tajik relations over water in the bordering region.

Central Asian mountains in general are vulnerable to climate change induced temperature increase that adversely impacts glaciers, which are important source of major rivers in the region (Syr Darya and Amu Darya). Annual average temperature increase of less than 1.0 °C per century reduced Central Asian glaciers by more than 30% (UNDP, 2011). Glaciologists also predict that if global air temperature will increase with the same pace, glacial retreat and snow cover reductions will accelerate (Punkari et al., 2014) and by the end of the 21st century glaciers of Central Asia will completely disappear (Borisova, 2012; IFAS, 2009). Other studies claim that underground ice in the form of permafrost and rock glaciers will stop full retreat of glaciers (UNDP, 2011), but even then the remaining glaciers will be at higher altitude, so melt will be lower, hence the river flow will still decline (Punkari et al., 2014).

The Aral Sea Basin already lost 115,5 km^3 of glaciers between 1957-1980, which equals to 104 km^3 of water and represents 20% of the ice as compared to 1957 (Borisova, 2012; IFAS, 2009). Tajikistan's glaciers decreased by 20-30% in the 20th century and Kyrgyzstan's glaciers in 2000 were 14,9% less compared to 1960s (Borisova, 2012). Previous studies on Central Asia report a general warming trend of 1-2 °C since the beginning of 20th century (Lioubimtseva et al., 2005), others predict temperature increase by 3-5 °C until 2080 (Lioubimtseva & Henebry, 2009).

Similar to the other Central Asian rivers, Isfara River heavily depends on glacier-melt water especially during irrigation season (Punkari et al., 2014). While snowmelt provides water from snow accumulated in winter and released in spring and early summer (Hoelzle et al., 2020), glaciers become an important source of irrigation water during the hot seasons when seasonal snow reserves become depleted and aridity reaches peak levels (IFAS, 2009; Xenarios et al., 2019). For example, although glaciers contribute on average 10-20% to the runoff of large rivers in Tajikistan, the contribution of glaciers to these rivers in summer of particularly dry and hot years may go up to 70% (IFAS, 2009; UNDP, 2011). Similarly, glaciers contribute to 15% of the rivers in Kyrgyzstan, which may increase three-fold in the hot seasons (Kulikov et al., 2020).

While immediate decline in water flow from glaciers in the basin is not expected in the near future, it is foreseen that after 2050 up to 70% of Central Asian glaciers will retreat (Blue Peace Central Asia, 2018; SIC-ICWC, 2014). Accelerated melting of glaciers will eventually diminish the runoff volume in summer season (Borisova,

2012) and for the regions like Isfara River Basin that are already experiencing water shortages the conditions will become even worse. Growing water shortage and related natural hazards may aggravate the existing border security issues between Kyrgyzstan and Tajikistan.

While the retreat of glaciers may lead to water shortages during summer, it may also increase geohazard threats such as glacier outburst floods, mudflows, and landslides. Proglacial lakes may form as the result of rapidly melting glaciers creating a threat of collapsing and causing a catastrophic flooding (Punkari et al., 2014). In Kyrgyzstan only there are 2000 glacial lakes identified through satellite remote sensing, of which 20% are considered at potential risk of outburst (Hoelzle et al., 2020). Thawing of permafrost may also cause sudden release of mudflow, which will make irrigation water unsuitable for use and feel irrigation storage infrastructure with silt (Malone, 2010). Landslides and mudflows are already a common problem in Central Asia that result in damage of settlements, infrastructure, irrigated lands and human casualties (Punkari et al., 2014).

With the dissolution of the Soviet Union many of the observation stations have discontinued their work that resulted in huge data gap that complicates the accuracy of climate change predictions. This knowledge vacuum creates obstacles towards effective prediction of extreme weather events related hazards (Xenarios et al., 2019) and precludes taking of timely and appropriate preventive measures.

3. Border demarcation issues

In addition to – and in close interdependence with – water issues, long-lasting disagreements over the border between Kyrgyzstan and Tajikistan have driven conflicts in the past and today. In fact, it is the complex interdependence between water resources use and related competition, water infrastructure and border demarcation disputes that has driven this complex. This is also the case for the most recent conflict from 29 April to 1 May 2021. Regulating and understanding these incidents is, however, becoming more and more challenging with the emergence of other complicating factors such as smuggling, illegal border crossing, and drug trafficking (Holiki & Rahimov, 2015), highlighting the importance of addressing them effectively. Today, Kyrgyzstan and Tajikistan share 971 km of borders, out of which only 60% is fully demarcated (Gaysina, 2016). Most of the disputed borders are located in the valley along the Isfara River.

At the heart of the border disagreement is the fact that the two governments refer to different geo-political maps and documents (Kurmanalieva, 2018). Tajikistan's claims are based on the Soviet maps of late 1920s, according to which Vorukh and the nearby territories belong to Tajikistan *(Figure 13)* (Interfax, 2021). Tajikistan claims that Vorukh has never been an enclave (Tajikistan Asia-Plus, 2014) and part of this land was rented out to the Kyrgyz SSR (Holiki & Rahimov, 2015).

Kyrgyz-Tajik borders have frequently changed after 1920s, causing confusion among local populations as well as national governments (Kislov, 2021). For example, maps after 1950s

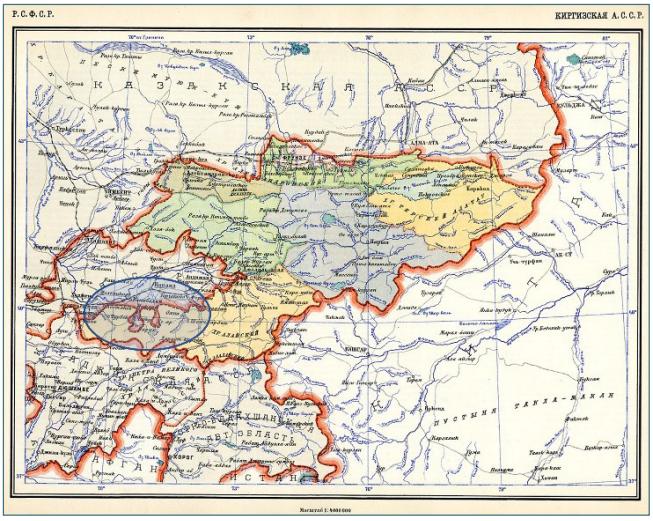

Figure 13. Map of Kyrgyz SSR (1928).

mark Vorukh as an enclave within the Kyrgyz SSR *(Figure 14)* (Radio Free Europe, 2014). Kyrgyzstan proposes to delimit disputed borders based on the actual use (Kurmanalieva, 2018) and with reference to the documents dated 1958-1959 and 1989, according to which Vorukh is marked as an enclave (Radio Ozodi, 2014). Tajikistan refuses to consider these documents claiming that they did not go through necessary enforcement procedure hence cannot be used as legal documents (Tajikistan Asia-Plus, 2014).

Before the Soviet Union, Kyrgyz nomads and sedentary Tajik peasants had a long history of living without 'properly' demarcated borders. They lived interdependently and exchanged goods, common resources and even services, which created incentives for avoiding conflicts and sustaining friendly relationship (Reeves, 2005; Бушков, 1990). This interdependence remains in some geographically isolated regions, in which remote Kyrgyz and Tajik bordering villages depend on each other for supply of food and other products, which are more expensive if delivered from cities. Kyrgyz, for example, depend on Tajik markets for vegetables and fruits, while Tajiks buy meat and coal from Kyrgyz villages. (Radio Azattyk, 2014b)

Kyrgyz-Tajik border conflicts date back to the 1930s. Following the victory of the 1860-1920 colonial wars and annexation of Central Asia, the Soviet Union divided the region into administrative units and artificially formed nations led by 'divide and rule' policy of Joseph Stalin (Rothacher, 2006). The idea behind this process was to break up the linguistic (Turkic) and religious (Islamic) identification of the region that the Soviet Union perceived as a threat (Бочкарева, 2019). It was a collaborative nation-building project led by Russian anthropologists, historians, and linguists who directed Central Asia to a new level of national identification highlighted by differences in ethnicity, language, history, and culture (Rothacher, 2006).

Previous Khorezm, Bukhara, and Turkestan khanates were divided into new administrative

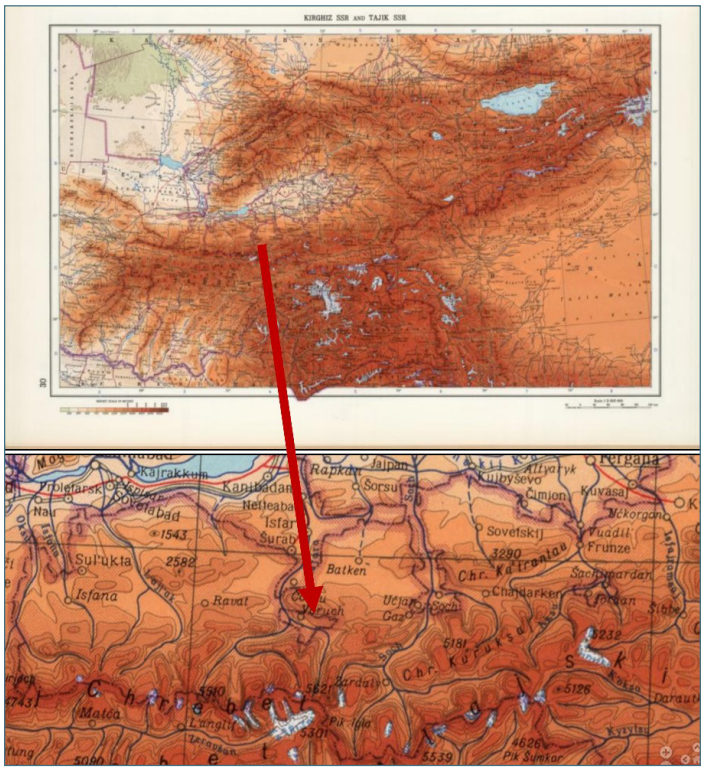

Figure 14. Map of Kyrgyz SSR and Tajik SSR (1969).

units based on Kazakh, Kyrgyz, Tajik, Turkmen, and Uzbek ethnicities (Holiki & Rahimov, 2015). This border drawing process highly misrepresented the actual location of ethnic settlements, leaving some parts of one ethnicity within the territory of another administrative unit and resulting in numerous enclaves *(Figure 15)* (Current Time, 2021b).

Figure 15. Isolated enclaves in the borderlands of Tajikistan, Kyrgyzstan and Uzbekistan (Kreutzmann, 2013)

Vorukh enclave is one of eight enclaves that formed in Central Asia as the result of the Soviet territorial division process. It has an area of 130 km² and about 35 000 Tajiks live there. During the initial stages of administrative division, parts of Isfara River where Vorukh enclave is located were part of the Uzbek SSR just like the rest of modern Tajikistan and only towards the end of 1920's it was divided as Khodjent region under the Tajik SSR (Orunbay, 2021).

In 1920's the long-established lifestyle of nomadic and semi-nomadic populations changed to a great degree (Toktomushev, 2017). Soviet central government prioritized agriculture, so it initiated a sedentarization process for nomadic tribes of this region. Sedentarization is the process of settling or restricting movement of nomadic groups, which led to forced settlement of Kyrgyz nomads and confiscation of their livestock for further transfer to the collective farms of the Soviet Union (Kurmanalieva, 2018). Part of nomads settled on the land along Isfara River, which Tajiks traditionally considered as 'theirs'. As a result, 58 Kyrgyz villages such as Kapchagai, Aksai, Samarkandek were formed here and Tortgul reservoir was built for irrigation purposes mainly to grow livestock feed (Бушков, 1990). Kyrgyz had to readjust their skills from animal husbandry to agriculture to survive in a new environment.

As a result of territorial division and settlement of Kyrgyz nomads, Kyrgyz-Tajik tensions over land and water started as early as 1939 and repeated in 1969, 1974, and 1989 (Avazbekov, 2021; Holiki & Rahimov, 2015). Conflicts started when overpopulated Tajik villages within Isfara region blamed Kyrgyz for their troubles, for occupying 'Tajik' land and using 'Tajik' water (Бушков, 1990). Up until now there is a sharp population difference between the two bordering regions: Batken population- 548,247 (National Statistical Committee of the Kyrgyz Republic); Sughd population- 2,349,000 (Toktomushev, 2017). There are various reasons behind the fast-growing Tajik population, including a conservative Islamic tradition that promotes large families and the tradition of having many children to support the agricultural activities of rural families (IWPR, 2002). Moreover, large families were supported during Soviet times, with the government issuing monetary rewards to women who gave birth to ten or more children and nominating them for the Hero Mother Order (IWPR, 2002).

Sometimes Soviet administration would interfere to mitigate Kyrgyz-Tajik disputes. For example, in the late 1960s, Tajik farmers started extending their agricultural activities to Kyrgyz pastures, which turned into a heated conflict between the two. A commission was formed to mitigate the conflict, which decided to divide the territory under question into two. Moreover, Kyrgyz were allowed to settle in the Aksai village near the Vorukh enclave (Orunbay, 2021). With the dissolution of the Soviet Union, the status of administrative borders changed to national. As a result previously drawn borders became blurred resulting in disputed border lands claimed by both sides (Holiki & Rahimov, 2015).

Both Kyrgyzstan and Tajikistan justify the introduction of stricter border control and militarization with the need to provide better protection of the porous borders. However, building of dividing infrastructure and 'securitization' of borders only aggravated existing disputes and negatively affected the interdependence of Kyrgyz-Tajik communities that has existed for centuries, especially through excluding them from shared resources and spaces (Toktomushev, 2017). Even where both countries have legal right to use the transboundary infrastructure, their access became more constrained with militarization of borders (Murzakulova & Mestre, 2016). Moreover, involvement of armed security guards and law enforcement agencies in the local skirmishes play a contributing role to the escalation of conflicts (Avazbekov, 2021).

Militarization of borders also had a negative impact on economic and social life of some border villages such as in the Kyrgyz village of Dostuk, which depended on Tajikistan for trade

as well as shared use of schools, hospitals, and mosques. Dostuk villagers now have to walk 15 km to reach arable lands compared to 300 meters road that they used to take before it became in accessible for them behind Tajik borders. (Avazbekov, 2021).

These broader demarcation disagreements also link to and are impacted by a range of other factors, namely illicit activities such as drug trafficking, violent extremist organizations and the construction of roads, perceived as a sign of informally establishing claims to territories.

Firstly, drug trafficking has a destabilizing effect in the border conflicts. The Tajikistan - Southern Kyrgyzstan route was recognized as one of the main routes for drug smuggling from Afghanistan (Deutsche Welle, 2019). In an interview with the Deutsche Welle, a Russian military expert Lev Korolkov claimed that smuggling and especially drug trafficking could be considered as key factors in local border conflict: "Vague borders convenient for smuggling are valuable, so desire to control them may lead to increased tension. If interests of local people were the main cause of conflicts, then border disputes would have been resolved long time ago" (Deutsche Welle, 2019). Similarly, Kyrgyz State Drug Service Chair Vitaly Orozaliev claims that Batken is a 'leaky place', from where a large amount of drugs and goods pass to Russia (K-News, 2011). Kyrgyzstan is an important transit country for smuggling as Tajikistan has no alternative routes since Uzbekistan blocked its borders with Tajikistan with the beginning of the 1992-1997 Tajik civil war by mining border territories even in the parts that were not demarcated yet (Имомов, 2013). Even after the end of the Tajik civil war, some mines along Uzbek-Tajik borders still remain resulting in annual casualties among locals (Имомов, 2013).

Second, porous borders benefit activities of violent extremist organizations and criminal groups. On the one hand, recent history of Tajik civil war, close neighborhood with Afghanistan, difficult social and economic situation as well as poor reputation of state religious agencies, created favorable environment in both Kyrgyzstan and Tajikistan for the intrusion of violent religious extremist organizations (ICG, 2016a, 2016b; Kazantsev & Gusev, 2017; Zenn & Kuehnast, 2014). Although it is hard to measure how degrading access to water resources impacts the likelihood of people joining the extremist organizations, poor social and economic status, often due to degraded livelihoods and a lack of economic opportunities as a consequence of insufficient access to water, increases the vulnerability of people to be radicalized and manipulated. For example, 85% of 1094 Tajik citizens who are members of ISIS were recruited into this group while they were labor migrants in Russia (Kazantsev & Gusev, 2017). With the active post-Soviet revival of Islamic religiosity, multiple violent extremist groups have set up their activities not only through religious ideology but also by providing financial support in the form of stipends for unemployed women, women with multiple children whose husbands are absent as well as to the families whose children were 'martyred' in Syria (Zenn & Kuehnast, 2014). On the other hand, organized criminal groups could ignite the border conflicts to create distraction while transporting drugs across the borders (Avazbekov, 2021). According to the German expert from the Center for European and International Research Studies, Beate Eschment, there are groups from both sides that instigate these conflicts: "I cannot define them in detail despite my research. They are hard to identify. I am sure these are local groups that are interested in destabilized borders" (Deutsche Welle, 2019).

Third, roads have also become subject of disputes. Tajiks living in Vorukh are connected to Tajik mainland via a road that passes through Kyrgyz territory. At the same time, Kyrgyz village Ak-Sai has to pass through Vorukh enclave to reach Batken (a Kyrgyz regional center) (Radio Azattyk, 2014b). Inability of Kyrgyzstan and Tajikistan to resolve border issues also leads to additional expenses at the state level such as construction of alternative roads to bypass enclaves and their border checkpoints (Radio Azattyk, 2014a).

In 2014 Kyrgyzstan started building a road that would allow Kyrgyz Aksai and Samarkandek villagers to bypass border checkpoints in the Tajik Vorukh enclave (Murzakulova & Mestre, 2016). Kyrgyz claim their goal was to ensure safe and free movement for their citizens (Toktomushev, 2017). Tajikistan complained that the bypass road was being built on disputed plot of land in breach of the previous 2008 agreement, under which both sides promised not to carry out any construction works or economic activity on disputed lands until parties finalize the border demarcation process (Radio Azattyk, 2014a; Toktomushev, 2017). According to other sources, Tajikistan prevents an alternative route around enclave because it can lead to the Vorukh being totally cut off from its mainland (Radio Free Europe, 2021a).

4. Governance issues

The conflicts driven by the factors highlighted above are further exacerbated by governance challenges. A combination of nationalistic discourses on both sides, a neglect of local people's interests and a lack of involvement of local communities into decision-making processes, weak water and pastureland management and the deterioration of water infrastructure, as well as a lack of coordinated transboundary water management all further deteriorate the situation and render the mitigation of the conflict increasingly difficult.

Firstly, the nationalistic discourses from both countries are leading to a nationalization and securitization of water-related issues as well as the conflict overall. Existing studies on Kyrgyz-Tajik border conflicts rarely analyze the impact of government officials' speeches and behavior as an important contributing factor. Political discourses carrying nationalistic ideology that overemphasize the role of borders could contribute to the division among communities and "nourish discourses against the 'others'" (The Third Pole, 2021). In the environment that is as sensitive as in the region along the Isfara River, it is useful to study how indiscreet nationalistic speeches of Kyrgyz politicians could have been misinterpreted by the Tajik leadership, and how this could have spilled into a conflict. Kyrgyz politicians could have been misinterpreted by the Tajik leadership, and how this could have spilled into a conflict. Equally, the research could investigate the impact of reserved behavior from the Tajik side – lack of a timely response to the official solution proposals made by Kyrgyzstan could lead to negative misconceptions by the Kyrgyz leadership as well.

On April 25, 2021 the Chief of the State Committee for National Security of Kyrgyzstan, Kamchybek Tashiev, announced Kyrgyzstan's plans to build a reservoir on another river that originates in Kyrgyzstan and flows downstream towards Tajikistan (Sputnik Kyrgyzstan, 2021). Tashiev said: "It looks like our water flows off to Tajik cities Khujand and Gafurov while our villages suffer from lack of irrigation water. The border issue will be solved if we build a reservoir" (Sputnik Kyrgyzstan, 2021). Tajikistan expressed its discontent with such plans calling them unilateral and uncoordinated, it further promised to give an "appropriate answer" if Kyrgyzstan decides to tie border issues to water resources (Tajikistan Asia-Plus, 2021b).

The next day on April 26, 2021 Tashiev proposed to exchange 12 000 hectares of land within the Vorukh enclave for another equivalent Kyrgyz land. Moreover, he claimed that until border issues with Tajikistan are resolved, Kyrgyzstan would block smuggling (Tajikistan Asia-Plus, 2021a). This raised discontent in Tajikistan. After Tashiev's statement, Tajik President Emomali Rahmon made a rare visit to the Vorukh enclave and said the following there: "during 19 years of border negotiations, we have never considered exchanging Vorukh to any other territory and never will" (Radio Ozodi, 2021a).

While at the national level nationalistic discourses have been shaping the conflict, local interests and needs are insufficiently taken into

account and interests often diverge between the capital and the local communities (Sputnik Kyrgyzstan, 2020).

After Shavkat Mirzoyoyev became Uzbek president in place of Islam Karimov, Kyrgyzstan and Uzbekistan made a decision to complete border demarcation process by the end of March, 2021 (TASS, 2021). However, despite the problem being solved at the government level between Bishkek and Tashkent, Kyrgyz citizens living near Kyrgyz-Uzbek borders protested against the decision to exchange territories (Известия, 2021). As the result, the Chief of the State Committee for National Security of Kyrgyzstan, Kamchybek Tashiev, who initially was part of the border demarcation committee and previously claimed that "interstate borders between Kyrgyzstan and Uzbekistan are resolved for 100%" (Radio Azattyk, 2021a) had to promise the Kyrgyz protesters to insist on the revision of recently made border decisions (Current Time, 2021b).

Similarly, following the April 28, 2021 clash at the border, Kyrgyz and Tajik delegations met on May 1st in Kyrgyz Batken city to discuss demarcation and delimitation of the border. The parties agreed to consider maps and documents from 1924-1927 and 1989 (Elgezit, 2021). It was also agreed that a bypass road connecting Tajik Kodja A'lo village with Vorukh enclave will be built on Kyrgyz territory for further use and maintenance by the Tajik side (Elgezit, 2021). Similar to the Kyrgyz-Uzbek border agreements, Kyrgyz officials did not discuss their decision with the local communities, which is why soon after the conflict a group of residents of the Kyrgyz Ak-sai village gathered to protest against this decision (Radio Azattyk, 2021d). Moreover, Kyrgyz-Tajik border commission once again concentrated on the border demarcation only neglecting other important issues such as sharing of disputed water infrastructure where the conflict originated.

Specifically in the field of water and land management, weak governance also affects and further deteriorates the current conflict. With the dissolution of the Soviet Union, large farms and herds that belonged to the Soviet state were broken up and distributed among inhabitants of the area depending on the size of the family. This process started right after independence in Kyrgyzstan and involved privatization of land, whereas in Tajikistan it happened after 1999 and its land remained under state ownership (Ludi, 2003). Even after the reforms Tajiks continued using Kyrgyz pastures and hiring Kyrgyz herders to graze their livestock.

However, lack of informed decision-making and fragmentation in management had a negative impact on effective coordination of pasturelands and contributed to the Kyrgyz-Tajik conflict. In 2009 Kyrgyzstan adopted a new Pasture Law, according to which foreigners cannot use or lease Kyrgyz pastures (Kurmanalieva, 2018). This affected both Kyrgyz side that lost pasture rental income and Tajik herders who relied on mountain pastures as an important source of cheap forage (Kurmanalieva, 2018). Lack of adequate regulation allows for over-population of livestock, which leads to increased pressure and degradation of pastureland and water resources (Toktomushev, 2017). It is reported that while 85% of Kyrgyzstan's agricultural land is covered by pasturelands, 72% of these pastures are degraded (Pak et al., 2014). *Figure 16* shows territories with low and negative NDVI that point out areas with degrading plant biomass in the low mountain plains along Tajik-Kyrgyz border both due to over-grazing and climate change.

Secondly, there is lack of transboundary water management and evidence based joint decision-making on the Isfara river. The basin does not have shared basin organization or agreements for joint management and planning activities, instead riparians interact at the level of their water ministries. And the more ad-hoc inter-governmental commissions formed after every incident have so far not been able to solve the problem and sporadic violence occurs with greater intensity. Informed decision-making is another challenge at the transboundary level as well: Only after 2015, basin countries installed

computerized measuring equipment with the help of international organizations that replaced manual recording of water data on paper, which before often led to disputes and distrust among the neighbors (Dusik & Nurmamedova, 2015).

There are also challenges related to the lack of adequate investments into professional development of civil servants and researchers in both Kyrgyzstan and Tajikistan. These investments are important for ensuring informed decision-making based on quality research and analysis.

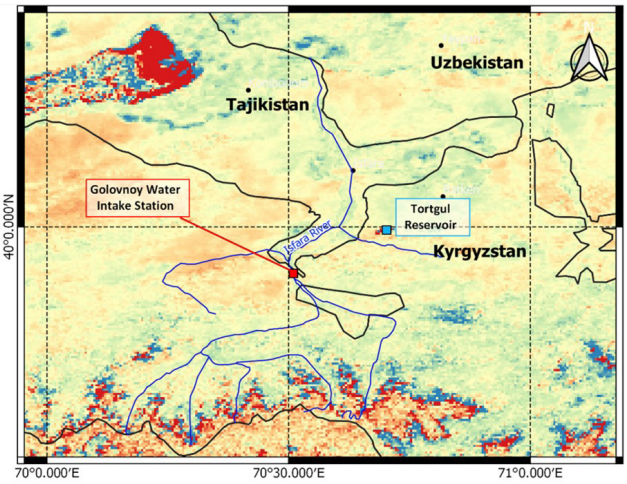

Figure 16. Normalized Difference Vegetation Index near Kyrgyz-Tajik border.

The uncoordinated management of natural resources is also related to an imbalance in the development of national legal reforms in the countries, which resulted in different decision-making mechanisms (Murzakulova & Mestre, 2016). For example, soon after independence Kyrgyzstan adopted land and pasture legislation that allowed for privatization of 78% of agricultural land and introduced community-based pasture management (Kurmanalieva, 2018). On the other hand, all lands in Tajikistan continue to remain under exclusive state ownership and the pasture legislation is still under development (Kurmanalieva, 2018). The resulting imbalance in land and pasture management disturbs the local residents as they interact across borders, in the face of absence of proper laws and agreements in relation to the disputed lands and pastures in the bordering regions.

5. Conclusion

Following the April 28-May 1, 2021 border conflict, Kyrgyzstan and Tajikistan were able to avoid further escalation of tensions and agreed on a ceasefire. However, the conflict remains a 'frozen' conflict as root causes and underlying dynamics are not sufficiently addressed, bearing a risk of (re-)escalation any time.

This paper showed that the Tajik-Kyrgyz border conflict emerged due to a combination of factors such as the competition over land, water and other natural resources, disagreements over (often inefficient) water infrastructure, disputed borders, socioeconomic development pressures, as well as governance shortcomings. Water lies at the heart of the problems as the conflict arose in the region whose majority of population historically relies on irrigated agriculture and pasture-based animal husbandry for sustenance. As a consequence, shared water and water infrastructure became a trigger, threat multiplier and a target in the border conflicts. It is thereby important to note that water scarcity is not the result of a physical lack of water. Studies demonstrated that there are no signs of significant decline in the mean river flow of the Isfara river and there is minimal likelihood of an increased water deficit in the near future (SIC-ICWC, 2014). However, this may change in the long-term as the result of climate change-induced retreat of glaciers, which are an important source of summer flows used for irrigation, moreover their melting may lead to destructive geohazard threats. Instead, water

scarcity is the result of poor governance, a lack of coordinated and joint decision-making mechanisms as well as inefficient and crumbling water infrastructure that leads to enormous water losses up to 50% (Pak et al., 2014). This is exacerbated by a lack of investments into data collection equipment that could fill the knowledge vacuum needed for accurate river flow estimates and transparent data sharing.

Settling water and water infrastructure sharing problems between Kyrgyzstan and Tajikistan is a key element of resolving or mitigating thelong-lasting disagreements. Finalizing the demarcation process of porous borders is complicated by other factors such as smuggling, drug trafficking, as well as intrusion of criminal groups and violent extremist organizations. The governments from both sides reacted by building dividing infrastructure and by securitizing of borders, which also negatively affected the long history of interdependence between Kyrgyz-Tajik communities. It is further suggested that future studies look into how behavior of government officials that promote nationalistic ideology and overemphasize the role of borders could thereby contribute to the division and "nourish discourses against the 'others'" (The Third Pole, 2021).

This report found that inefficient infrastructure and poor governance are the main sources of water scarcity in the Isfara basin and thus also the main reason for water-related conflict. This could be used by local and international policy makers as a guidance for future measures to prevent the (re)-escalation of such conflicts and contributing to peacebuilding in the region – within and beyond the water sector.

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