

## Big Dam Biographies in Central Asia

### Tracing Goals, Actors, and Impacts from World War II to the Present Day

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During the Soviet period, social engineering was such a crucial an aspect of environmental engineering projects that perceived success in reaching social reform goals could compensate for inadequate economic outcomes and (concrete) engineering failures. The tragedy of the Belomor canal is an eloquent illustration of this phenomenon: a hugely wasteful and cruel digging project, which mobilized thousands of imprisoned laborers and cost many lives, but turned out to have almost no practical value. Maxim Gorky, however, edited a notorious anthology that celebrated the social engineering successes of Belomor in reforming “criminals” into “productive labourers” (Gorkii, Averbach, and Finn 1934; Ruder 1998). Apart from the early twentieth-century focus on “reforming” workers, both Soviet and post-Soviet governments have pushed big dams as the linchpin of development, *the* strategic solution to improve human lives across the country through the placement of one great big machine.<sup>1</sup> In the Central Asian republics, whose populations were widely perceived by Russian bureaucrats and specialists as backward and insufficiently “enlightened” in Marxist terms, the social transformations predicted to ensue from water infrastructure projects were discussed alongside the economic gains expected from the planned environmental transformations. As in the case of the southern Macedonian irrigation projects (Vlachos, chapter 2 in this volume), an ethnicized and gendered understanding of “backwardness” shaped the way these social engineering projects were put together in the Soviet period.

Though several Soviet big dam projects have been revitalized in post-Soviet Tajikistan and Kyrgyzstan, we find a change in the meanings of “social engineering,” and the political functions of these mega projects also change.

In this chapter, we use the device of dam “biographies” to conceptualize the political, social, and environmental relations through which these dams were conceived—and which they generated in turn. We track contexts of environmental and social engineering in Central Asia since the mid-twentieth century by comparing dam projects built on the Syr Darya River in the Tajik Soviet Socialist Republic with contemporary dam building on the Naryn in Kyrgyzstan, and on the Vakhsh in Tajikistan. The comparison highlights how discussions of the social and environmental transformations attendant on dam construction have gone through several metamorphoses. We find that while the social effects of dam building today differ significantly, the environmental effects have remained similar over the past seven decades. While this chapter does not discuss detailed life histories of technical experts, we track the transformation of different categories and groups of actors who experienced and participated in dam building: Soviet engineers, ditchdiggers, valley residents, and World Bank employees. The great environmental transformations generated by building dams also brought together new constellations of groups involved with dams across the momentous political transformations of the mid- and late twentieth century in Central Asia.

### **DIVERSE ENGINEERING GOALS, SIMILAR IMPACTS?**

Historians and social scientists have long been interested in the twentieth-century dam-building binge: their intended and actual effects and the rise and fall of their appeal according to political context and era. We recognize several elements as “family traits” of the roughly 45,000 “plugs” in rivers and their power plants across the globe. Large hydraulic projects have long served economic and political ends—to control the flow of water and harness its energy, to turn “deserts into gardens,” and to recruit large numbers of people as part of state projects (Worster 1985: 191–93). Big dams and other water infrastructure have also long operated as set pieces of nation building, similar in this respect to other highly visible infrastructure projects—“spectacles” such as new capital cities that consolidate government prestige and attempt to draw citizens into a common project (Klingensmith 2007: 280; Menga and Swyngedouw 2018). Dams redistribute resources across time and space, between communities and ecosystems, and thus are a means to demonstrate the techno-economic power of the state (Mitchell 2002: 21). Franklin D. Roosevelt’s Tennessee Valley Authority project is an early example, and more recent examples include the Grand Ethiopian Renaissance Dam (Mains 2012) and China’s Three Gorges project (Pietz 2015: 198). In contemporary Ta-

jikistan, politicians and publicists have likened rivers to veins in the national body politic, and their water to the nation's life blood (Suyarkulova 2014: 368).

The Soviet Union drew heavily on US expertise on irrigation and dam building before World War II, but during the Cold War period began instead to "export" water engineering knowledge to projects from Southeast Asia to Egypt (Kalinovsky 2018; Zeisler-Vralsted 2014). By the early 1960s, the Soviet Union was building gigantic dams at home whose reservoirs and electricity generation capacity far outstripped the largest American dams, and replaced the United States as an international sponsor at sites such as the Egyptian Aswan High Dam (Gestwa 2010). Such gargantuan projects were (and are) always presented as fulfilling a range of needs for different sectors of the economy. In the planning phase, the potential to use dams either to store irrigation water or to generate electricity is usually prioritized, although flood control is also often promised. The political prestige of such projects frequently determines the forecasting of potential benefits for citizens, generally underplaying financial, social, and environmental costs.

These common family traits in the "social life" of big dams, however, underplay their individual biographies and "personalities," which are shaped by time, place, and different kinds of actors. The Soviet "parent" generation of dams may look similar, as material end products, to their "children" in post-Soviet Tajikistan and Kyrgyzstan. But should these dam generations meet at a family gathering, they would have serious difficulty relating to each other's ideas, outlook, and life histories. In this chapter, we therefore look in detail at the *how* of dam building in Central Asia.

## **TAPPING RIVERS FOR IRRIGATION AND HYDROPOWER IN CENTRAL ASIA**

Kyrgyzstan and Tajikistan, the poorest of the post-Soviet republics, are sometimes called the "water towers" of Central Asia, as the glaciers and precipitation in their mountains provide 90 percent of the region's drinking and irrigation water.<sup>2</sup> In the 1920s and 1930s, the Kyrgyz and Tajik Soviet Socialist Republics (SSRs) were formed following several revisions in status and territory. Although named for a titular nationality, each republic was inhabited by a wide variety of ethnic and language groups: speakers of Iranian languages were concentrated in the Tajik SSR, albeit with a substantial Turkic minority, and in Kyrgyzstan speakers of Turkic languages like Kyrgyz and Uzbek predominated. The Soviet Union integrated Central Asia into the centralized planned economy, largely as a source of raw goods such as meat, wool, and cotton. Efforts in the postwar period to break away from this "colonial" pattern and diversify Central Asian economies met with limited success (Kalinovsky 2013). Today, citizens in both Kyrgyzstan and Tajikistan depend largely on a combination of subsistence agriculture and remittances from migrant

workers, particularly in Russia and the Gulf states (Abashin 2014; Bahovadinova and Scarborough 2018; Reeves 2011). The two countries' political histories diverged, however: Tajikistan suffered a devastating civil war in the 1990s, while Kyrgyzstan has coped with several periods of popular unrest that have overthrown successive governments. The Kyrgyzstani government is making increasing attempts to curtail freedom of speech and opinion, but political repression and state violence are still much more severe in Tajikistan. In each case, dam histories and futures remain politically sensitive, restricting the degree to which we can include "local" voices in this overview.

Flowing several thousand kilometers from the peaks of Tajikistan and Kyrgyzstan, the Amu Darya and Syr Darya feed the intensive agriculture in the lowlands of Uzbekistan and Kazakhstan. In the pre-Soviet period, both the distribution of water and the construction of extensive irrigation systems were often organized through a combination of community-appointed water-distribution specialists (*mirob*) and khanate officials. Once Turkestan was conquered by the tsar's troops in a series of campaigns up to 1868, Russian governors had great ambitions to expand and modernize irrigation, but little appreciation for local expertise on maintaining water channels and reducing evaporation in the hot climate. Early Soviet water infrastructure such as the Great Ferghana Canal drew on mass labor coordinated by a centralized—if often haphazard—management style (Obertreis 2017; Peterson 2019), while household water use on small plots also survived. In the postwar period, the government attempted to strengthen the water sector and vastly increase agricultural land use, particularly for thirsty cotton crops, by extending irrigation networks, creating a new bureaucratic structure, and dispatching irrigation specialists from Russia.

Political ideas of decolonization and liberation were supposed to be realized through water infrastructure projects, which were expected not only to boost the economy but also to mold a new Soviet citizenry in the process (Teichmann 2007: 499). A 1960 cover of the satirical journal *Khorpushtak* (The Hedgehog) shows a Tajik man in a suit and tie, his nationality discreetly indicated by his skullcap, standing triumphantly before an industrial landscape featuring a dam. He exclaims, "Look on in envy, capitalist sirs!" to the salivating foreigners in top hats (see figure 7.1 below). Although official literature celebrated the transformation of steppe and rivers, and the fraternal collaboration between republics that this required, there was fierce competition over resources between state agencies, ministries, and republics (Cucciolla 2017; Roberts 2018).

Cascades of big dams built from the 1950s onward vastly expanded the capacity to control the rivers' seasonal flow: these "water towers" continue to supply the vast majority of electricity in Kyrgyzstan and Tajikistan. Such strong



FIGURE 7.1. “Look on in envy, Gentleman Capitalists!” Commentary: “The grandiose successes of communist construction in our country are so striking that at the sight, capitalists are filled with envy, their mouths watering.” Despite the sacks of gold that identify them as capitalists—who for some reason are riding donkeys, and thus portrayed as backward—they salivate, green with envy. A smartly suited Tajik man (his ethnicity discreetly indicated by his embroidered skullcap) shows off a vista centered on an enormous dam, complete with hydroelectric station, factories, building sites, and prosperous fields of wheat and cotton. Source: Cover of *Khorpushtak* (Hedgehog) monthly magazine, issue no. 8, August 1960. Tajik language publication, with some text in Russian.

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reliance on hydropower means that in low rainfall years, citizens suffer through extensive blackouts in the severe winters, and rely to a greater extent on generators, firewood, and torches for heat and light. Over the past half century, excess withdrawals from these rivers has severely dried up the Aral Sea, an outcome forecast and accepted by Soviet planners. Alongside the Chernobyl disaster, the desiccation of the Aral Sea was one of the signal catastrophes sparking public debate and environmentalist critique in the glasnost era. The centralized approach to resource management faltered after the collapse of the Soviet Union, as the differential interests in water and energy between Central Asian states became harder to reconcile. A greater focus on national interests, and mounting disengagement and distrust between neighboring states, have remodeled relationships and decision-making processes along these rivers (Dukhovny and de Schutter 2011).

It might seem surprising at first, that such small, poor countries as Tajikistan and Kyrgyzstan are again pursuing big dam projects originally designed by a much more powerful state, in the framework of a vast planned economy. Below, we will examine some of the reasons for such continuities and shifts in what these dams actually achieve socially, environmentally, and politically.

## **ELECTRIFICATION AND RESHAPING SPACES FOR THE COMING OF COMMUNISM**

In 1920, Lenin declared communism equivalent to “Soviet Power plus the electrification of the whole country.” As increasing the production of electricity became a major policy goal, a state organization for the electrification of Russia was founded, GOELRO. But, Lenin cautioned, electrification could not succeed without a concerted and ambitious campaign to increase literacy: “We must see to it that every factory and every electric power station becomes a center of enlightenment.” Lenin considered this coupling of environmental and social engineering goals as necessary to achieving his ultimate goal, when communist economic development would “become a model for a future socialist Europe and Asia” (Lenin 1964: 513–18).

Social engineering goals were also closely linked to new forms of spatial and environmental planning. Many of the people tasked with designing new Soviet cities in the 1920s held that by building new physical communities they were also contributing toward fashioning new (literate) Soviet men and women. During the First Five-Year Plan alone, across the Soviet Union over sixty new towns were laid out by Soviet architects. Many were firm believers in voluntarism, holding that with careful urban planning, the new settlements’ inhabitants could be guided toward socialism entirely without force (Starr 1984). Broadly defined, social engineering can encompass any set of policies designed to promote certain types

of social interactions and individual behaviors, while discouraging others. In this sense, drawing new cityscapes and housing blueprints was only the beginning. Once Soviet citizens lived in socialist housing units and congregated in socialist public spaces, there was still the wider environment with which Soviet citizenry interacted, a new relationship with nature and with work to be redesigned (Brain 2010).

## **ENGINEERING NATURE AND SOCIETY FOR VICTORY AT FARHAD**

The dams built on the Syr Darya from the 1940s onward exemplify an important trend in the way that social and environmental engineering were coupled within the Soviet Union. On both the social and environmental levels, the stated intent was to replace farm workers and farmland with industrial workers, hydropower stations, and factories. As was so often the case, the needs of agriculture were subordinated to those of industry. The farmland submerged by the dam reservoirs was written off as a loss, the population evacuated from the floodplain, and collective farms near and far were obliged to free up a significant portion of their labor force to work on dam construction.<sup>3</sup> Collective farm workers were drafted to distant regions to dig ditches and were rhetorically (if not always in actual fact) transformed into industrial workers by their labor. Though symbolically important, the touted transformations were at best partial and incomplete: the bulk of the labor carried out by collective farmers on construction sites was unskilled manual labor—primarily digging—carried out with basic agricultural tools (Zhinskii 1956). It may have been labor in the service of electrification and industry, but digging is digging. The planned factories did not always materialize, and when they did, their workforce was not made up mainly of local former farmworkers, who confounded Soviet social scientists by apparently preferring to remain members of *kolkhozes*. This did not prevent official Soviet publications from celebrating the advancing industrialization of Central Asia, albeit with less emphasis on the proportion of locals in the industrial workforce, and more on the successful outliers. In both domains, social and environmental, success could most easily be declared by moving the goalposts.

The outbreak of World War II marks a crucial turning point, as before the war, the principal concern of state-led interactions with the waters of the Syr Darya had been irrigation, not energy production. Studies of the river basin focusing on its potential to expand irrigated agriculture into the steppe had been produced regularly in the 1920s and 1930s.<sup>4</sup> Beginning in December 1940, the state planning commission (Gosplan) published a comprehensive plan for the waters of the Syr Darya basin, which envisioned a cascade of dams along the whole course of the river from the Kyrgyz highlands to the plains not far from the Aral Sea.<sup>5</sup> The first

dams approved in the 1940s and 1950s prioritized industrial goals at the expense of agriculture, as both the social and environmental “footprints” of these dams—at Farhad and Kairakkum—make clear.

Even environmental engineering projects undertaken with great urgency in support of the war effort were not shorn of their concomitant social engineering objectives, which on the contrary were conceptualized as key to the projects’ success. The dam and hydroplant built at Farhad in the Uzbek SSR is a good example of this. In June 1941, when Hitler’s armies abruptly invaded the Soviet Union, the vast country was forced to mobilize at great speed and expended enormous efforts in dismantling and evacuating thousands of industrial enterprises, sending them eastward by train along with their workforces. Many of the evacuated factories were reassembled in the Uzbek SSR, providing a huge boost to the industrialization of that republic, while exponentially increasing local demand for electricity. It was thus because of, rather than in spite of, the outbreak of hostilities that certain dam construction projects that had been tabled before 1941 were given the green light during the war. The State Defense Committee (GOKO) ordered the construction of a dam and hydroelectric station at Farhad, a site close to the border between the Uzbek and Tajik republics at the far eastern end of the Fergana Valley, in November 1942.<sup>6</sup> The Farhad hydropower plant was deemed crucial to the war effort, as it was needed to supply electricity to the Bekabad steel plant, which in turn supplied the Chkalov aircraft factory (Dukhovny and de Schutter 2011). One would imagine that social engineering goals would recede from view altogether in such extremities, but they did not.

The war did, however, temporarily reorient social engineering priorities toward fanning the flames of self-sacrificing devotion to the motherland. A peacetime dam project in Uzbekistan would not necessarily have secured the attentions of an architect, but the talented Iosif Karakis, who had designed major public buildings in Kiev before the war, was evacuated from Kiev with his family and put to work (Yunakov 2016). Karakis was charged not just with designing a dam, but with fostering and increasing the “fighting and creative spirit” of the workforce and local population by appealing to the romantic and “patriotic” (in the sense of national) local myth of Farhad and Shirin, one of the most famous love stories of Turko-Persian culture.<sup>7</sup> This Karakis accomplished—to the great satisfaction of the commission of Soviet architects who evaluated his work in 1943—by means of a monumental sculpture of the water-carrying hero Farhad, sculpted into the live rock face as if emerging from the rocks (Yunakov 2016: 195).

Although the Farhad project was given the green light in 1942, circumstances linked to the war would initially slow down construction. Mobilizing a workforce of sufficient size to complete the dam and power station at the accelerated tempo



the war seemed to demand was a serious problem. Working conditions were harsh for the thousands of collective farm workers sent to Farhad from across the region (published figures put the total at six thousand in February 1943).<sup>8</sup>

The labor of Uzbek collective farmers was supplemented by deportees from farther afield, including a number of Crimean Tatars punitively resettled to the Uzbek SSR in 1944 and drafted to work on Farhadstroi.<sup>9</sup> Although working conditions on the site were very harsh and almost entirely reliant on human muscle, significant efforts were also expended to edify and elevate the workers. There were small but telling touches, such as the installation of a New Year's tree for local children.<sup>10</sup> This was the socialist version of the Christmas tree, which had been popular in urban Russian households before the Revolution, but was previously unknown in predominantly Muslim Central Asia. Theater troupes, evacuated from prestigious centers of culture to the West such as Kiev, performed for the workers; for example, members of the Gorky Drama Theater performed the "patriotic play *Russian People*."<sup>11</sup> Delegations of official writers, members of the local Writers' Union, visited the site in March 1943, charged with composing poems and stories celebrating the workers' achievements.<sup>12</sup> A radio program was broadcast from Bekabad, which began with the words "Listen Uzbekistan! Farhadstroi is talking!" The program included regular concerts and updates from engineers about the hard work being put in by collective farmers from across the republic.<sup>13</sup> Cumulatively, these endeavors signaled a commitment to enlighten and educate the workforce, particularly the "backward" Central Asians, among whom adoption of certain western European cultural norms and habits was taken as a sign of successful social engineering.

Another important role for construction-site newspapers, at Farhad as elsewhere, was to spur workers to greater efforts by heaping praise on those who exceeded their targets and publicizing the valuable rewards they had received. To spur socialist competition, teams of workers identified by their region of origin and occupation (collective farmers, by and large) were listed alongside their target goals and achievements.<sup>14</sup> A commission of Soviet architects pronounced the Farhad project a success by 1943—long before the hydropower station began producing electricity—thanks to its professed morale-boosting effects on the local community. The echoes of the lonely Farhad's mythical struggle for water, and the *collective* fulfillment of the Uzbek's people's "century-old dream" of bringing water to the Hungry Steppe had an important role to play, it was confirmed, in forging the collectivist spirit that would deliver victory to the Soviet Union. In sum, at Farhadstroi both declarations of social transformations and significant policy efforts in that direction went hand in hand with ambitions to radically alter the landscape. As we will see, social ambitions paled in subsequent dam generations, and in the

case of Kairakkum town were even reversed. The power to alter environments has, however, remained a key motivation.

### ENGINEERING AN INLAND SEA AT KAIRAKKUM

Before the dam at Farhad was even finished, negotiations were underway for the next in the series of dams planned for the Syr Darya. Experienced workers who had received special training and acquired new skills on the Farhad site were invited to move to the next construction site a few dozen miles upstream at Kairakkum. The project to build a dam and large reservoir at Kairakkum, in the Tajik Ferghana Valley, was approved in 1951, following an intense period of wrangling over its location (Roberts 2018). The opportunity to build another dam nearby solidified and compounded the gains of those relatively few Central Asians who had gained a new industrial (and thus enlightened) identity as technicians, cement workers, or electricians. The work of forging a native proletariat by siphoning off agricultural laborers for dam construction begun at Farhad continued at Kairakkum, and for years thereafter in the heyday of Soviet hydropower that lasted into the 1970s (Nazarov and Shozimov 2011).

The memories of outsiders and locals differ sharply with regard to the environmental impact of the dam and the reservoir of 530 square kilometers at Kairakkum. In 2017 an elderly farmer displaced in childhood by the reservoir described the area in which he had grown up as a “janggal” (a Persian word, whence the English “jungle” derives), a densely wooded area alive with foxes, wolves, and plentiful game for hunters. Part of the area flooded by the reservoir was covered by *tugai* riparian forests, described by Soviet officials objecting to the planned dam as the only source of timber in the region. A Russophone engineer, on the other hand, who surveyed the future dam site emphasized a very different topography: “In July 1951 when the first builders arrived to build a hydropower station, a desert stretched out before their eyes: not a single tree, not a single shrub. Often, smothering winds lifted the sands from place to place, and obliterated all life forms, even the prickles eaten by camels did not grow there.”<sup>15</sup>

Of course, the reservoir flooded a wide area, encompassing diverse ecosystems, but this version of the parable of the blind encountering an elephant carries a twist: in the case of Kairakkum, only one partial version of the truth gained currency, through repeated discussion in the press and propaganda. It was surely no accident that the former toponym for the sandy area, Kairakkum (ascribed the etymology “grinding sands”), was preserved for the model Soviet town, so as to canonize the most extreme version of the transformation of nature enacted there: from desert (rather than from riparian marshland or orderly cottonfields) to inland sea.

The construction workers' town founded in proximity to the dam site would be developed into a model Soviet town—with a grid of straight, tree-lined avenues and symmetrical apartment blocks. This town was considered as important an avenue for modernization as the dam and power station itself. In a 1960 speech, the lead engineer of the Kairakkum construction project, Ya'akov Fligelman, contrasted “the beautiful, green city” of workers with the barren, windy valley dried out by the sun that had preceded it (Kalinovsky 2013).

In the course of oral history fieldwork conducted in 2017, Flora Roberts heard several versions of a (possibly apocryphal) story about Kairakkum's flagship factory. The initial plan had been for the main industrial enterprise in Kairakkum to be a bicycle factory until the chairman of the State Planning Agency intervened to prevent it, “arguing that Central Asians do not like bicycles, and that instead we should play to their strengths, and find something that would get Central Asian women out of [the] house.” That is how, Roberts was told, Kairakkum got a carpet factory, still a highly cherished part of the townscape, although much diminished since Soviet times. This anecdote points to the strengths and limits of Soviet social engineering: the carpet factory provided the preconditions for multiethnic, multilingual teams to work together. But by the late 1950s, there were clearly limits to the types of work that the authorities envisioned Central Asians, and Central Asian women in particular, participating in.

Long-term residents and former residents interviewed in 2017 all made a point of emphasizing the cosmopolitan, ethnically and linguistically diverse character of Soviet-era Kairakkum, in spite of its small size. Strikingly, although the environmental transformations—intentional and less so—are ongoing and profound, the social transformations promoted in tandem have largely been reversed in subsequent decades. The settlement is still dominated by the dam and reservoir, although the progressive silting of the eastern side of the reservoir has greatly reduced the hydropower generated annually. But the town's population is very different. A strong earthquake in 1988 whose epicenter was close to Kairakkum town was soon followed by the collapse of the Soviet Union and the Tajik Civil War: in combination, these events spurred the departure of most of the nonlocal ethnic groups. In contrast to its Soviet-era identity, Kairakkum today is a predominantly Tajik town by ethnicity and language. Both the one-family wooden “Finnish homes” supplied in the 1950s to the town's elite workers, and the distinctive Khrushchev-era five-story apartment blocks, on whose stairwells a Babel of languages once echoed, are showing severe signs of age, and very little post-1990 housing stock is visible. Women have retreated from the formal labor market and occupy far fewer positions of responsibility than they did in the last Soviet decades. Thus, the major priorities in engineering the social fabric of the town of

Kairakkum—encouraging local women to enter the industrial workforce, promoting the peaceful coexistence of multiethnic communities in a modern workers' town with state of the art facilities—have largely been reversed. Soviet environmental engineering has outlived the social engineering, although the river too, continues its slow work to reverse the dam builders' efforts.

In the case of Kairakkum, the intentional environmental transformations have not only survived but also have catalyzed a chain of unintentional and profound landscape alterations. In the following sections, we follow the continuities and fractures in dam biographies, their social and environmental impacts into the post-Soviet period. Having traced the story of dams into twenty-first-century Kyrgyzstan and Tajikistan, we see changes in the available sources, the involved actors, points of friction, and social effects, despite similar physical dam designs on the very same rivers. We conclude by comparing the social and environmental impacts of these two dam “generations.”

### **CONTEMPORARY DAM-BUILDING STRUGGLES IN TAJIKISTAN AND KYRGYZSTAN**

Once the Central Asian republics, somewhat unwillingly, became independent in the early 1990s, long-suppressed tensions over the ownership and management of the dams on shared river basins emerged once more. Kyrgyzstan, Tajikistan, and Uzbekistan all suffer from chronic energy shortages and an aging distribution network. Soviet-era management of Central Asian dam cascades sought to balance the needs of upstream countries to store water for electricity production in winter, while allowing sufficient water releases for irrigation needs downstream in summer. Since 1991, water allocations and energy transfer agreements between riparian neighbors have been increasingly disputed (International Crisis Group 2014: 5–7). Built at the behest of the Uzbek SSR, but with a floodplain mainly on Tajik territory, the Farhad dam was one of several sites that became a source of tension. Having been denied a requested border change in the 1940s, the independent nation-state of Tajikistan reasserted a claim to control the area, until eventually in 2002 a squad of Tajik police seized the initiative and wrested control of the dam from the Uzbek border guards. Throughout the tenure of the Uzbek president Islam Karimov (1991–2016), control of Farhad remained one of the most serious points of contention between the two countries, and it was only under the new leadership of Shavkat Mirziyoyev that talks were held in 2018 to resolve the impasse (Mannonov 2011; Tursunov 2013; Safar 2018). The 2018 agreement, as reported by Russian news agency Interfax, resolved the border dispute by acknowledging that the territory on which the power station stands belongs to Tajikistan, but agreed that the infrastructure would continue to be managed and maintained by the Uzbek side (Interfax 2018).

Another bone of contention between Uzbekistan and Tajikistan since the 1990s has been Tajikistan's commitment to reviving a large dam-building project begun in the Soviet period. The Roghun dam on the Vakhsh River will supplement the aging Nurek dam (begun in 1961) downstream, and is intended to stake a claim as one of the world's tallest dams. Construction on Roghun began in 1982, but during the glasnost period the project became a focus of public criticism. Voices in the Tajikistani press critiqued Roghun's "gigantomania" and protested the envisioned resettlement of 42,000 people in order to flood 170 square kilometers. Construction was halted in the late 1980s, but it is no longer discernible whether this was due to public criticism or the dwindling budget (Menga 2015; Sodiqov 2013). While the new workers' town of Roghun was occupied by military forces during the Tajik Civil War (1992–1997), floods destroyed much of the work carried out on the site. Since the peace agreement in 1997, Tajikistan has been ruled by increasingly authoritarian means under President Emomali Rahmon. Relaunching the dam project in 2008, the president has made promoting Roghun his signature policy: "Roghun is not only a source of light, but a national honour and dignity" (Rahmon 2010, in UPI Energy 2010). Roghun promises to double the country's energy output (forecasted to be 3,000 megawatts; World Bank Group 2014: 11). From posters on the avenues of the capital to Tajik popular songs, Rahmon is personally associated with Roghun across the full spectrum of public media.<sup>16</sup>

However, the symbolism of Roghun has shifted since the late Soviet era: although still cast as a collective project, it is now associated with the "Tajik" rather than "Soviet" people, and has become the trademark of a single political figure.<sup>17</sup> Insistence on the most ambitious version of Roghun, rather than more modest propositions, fits with the Tajik government's drive to build the world's tallest flagpole, the largest *chaikhana* (teahouse), and the biggest national library in Central Asia. Roghun's completion will also likely benefit the state-owned TALCO aluminum plant, which consumes a large portion of the country's current hydropower output at subsidized rates, and which is effectively controlled by the president's family (Lemon and Roberts 2021). Even if the country were to double its energy output as projected, it is unclear how much the greater electricity output would benefit citizens, instead flow to industries like TALCO, or be sold to energy-hungry neighbors such as China and Pakistan. Nevertheless, in 2009–2010 the government launched a campaign encouraging citizens to buy shares in Roghun. The dam was vaunted as a "magic bullet" for Tajikistan's struggling economy, and state employees such as teachers were pressured to buy significant numbers of shares, increasing citizen debts (Eurasianet 2010). Since the modes of investment and return for Roghun are very murky, the scheme is widely considered just

another way for high-ranking officials to erode citizens' salaries (Ibañez-Tirado 2015). But unlike critiques voiced in the 1980s, current skepticism about *how* the building is funded, does not necessarily translate into rejecting the idea of the project itself. The Roghun dam seems to embody, with some success, the hoped-for escape route from growing poverty.<sup>18</sup> And if dependence on international agencies such as the World Bank is one side of the coin, the Tajikistani government has shown itself quite adept at using World Bank approval of the Roghun project as a form of regional "soft power" (Menga and Mirumachi 2016). As the first turbine started turning on President's Day in 2018, some of the Roghun promises are being put to the test.

### **STOP-AND-GO DAM BUILDING IN KYRGYZSTAN**

Though neighboring Kyrgyzstan has also rejuvenated late Soviet dam projects, the tone of interaction between the state, international actors, and citizens is very different: less laden with symbolism, but no less with sentiments of "hope against hope." As in Tajikistan, projects launched in the late 1980s were being dusted off by 2007. The large Kambar-Ata 1 and 2 plants (capacity foreseen at 2,200 megawatts) are intended to meet domestic demand, and to export electricity to Afghanistan and Pakistan (International Crisis Group 2014). These dams are the single prestige project to have survived the toppling of their promoter President Kurmanbek Bakiyev, in 2010. Among many other grievances, a sudden rise in energy prices was one of the bitter pills that drove people to demonstrate in that restless period (Wooden 2014). Though questions of funding and implementation are periodically debated in parliament, the basic necessity of expanding hydropower on the Naryn River is not questioned. Political turbulence has sometimes also favored these dams across successive governments. In the volatile summer of 2010, when political crises bled into ethnic violence, the opening of the smaller Kambar-Ata 2 plant on Independence Day provided a singularly positive news story and national "glue." In this sense, Kambar-Ata 1 and 2 have at times been made to play just as "national" a role as Roghun in Tajikistan, but they are not consistently made central to a national narrative, as in the case of Farhad in the 1950s, nor associated with a single figure, as with the contemporary marriage between Roghun and President Rahmon.<sup>19</sup>

Despite the occasional propaganda victory, all the new Naryn dam projects have caused the local population intense disappointments on several fronts. Construction has repeatedly been delayed, largely due to difficulties in securing the necessary external investment. In 2016 ongoing construction at Kambar Ata stalled and a deal with the Russian company RusHydro for the upper Naryn cascade projects was canceled amid accusations of financial mismanagement (Harris

2016). In terms of social impacts, the contrast with dam building on the same river in the 1940s and 1950s is striking. Fieldwork in the area between 2014 and 2019 revealed that no special advantages, such as preferential pricing or social and vocational training programs, were foreseen for the region affected.<sup>20</sup> Apart from a banner with slogans and a map of the projected dam sites in the region's capital, virtually no public information was available. The main expectation of citizens and regional administrators has been that the dam sites will provide work locally. Some local residents went so far as to invest in qualifications that would be useful in dam work (Allyn Kapalova, personal communication). Unsurprisingly, despite initial promises, it turned out that the construction company needed workers with formal qualifications, prior experience, and fluent Russian. The industry also tends to prefer retaining workers employed at previous sites to offering work to local farmers, as was done in the first generation of Soviet dams. The withdrawal of the initial promises, and the failure of the project to progress caused intense disappointment and ill-feeling (which went as far as sabotage) toward both the company and the national government. As in the Tajik town of Roghun, a sense of having received no benefits from the dam is pervasive (Féaux de la Croix and Suyarkulova 2015).

### **COMPARING GENERATIONS OF CENTRAL ASIAN DAMS**

Who owns a river? How and with what priorities should it be administered? The post-Soviet (and as elsewhere, neoliberal) process of privatization has signaled a fundamental reworking of the role of the state, and the role of “the people” and individuals in relation to it (Alexander 2004: 256). The Soviet-era dams discussed here were envisioned as key elements in comprehensive plans to reform both people and their environs. Planners dreamed of, advocated, and at least partially realized an intricate interaction between dam labor, electricity production, urban development, agricultural production, water control, and profound transformations of environments that they considered “difficult.” Soviet dams generated their own publishing industry, with biographies of dam workers, celebratory poetry, and pamphlets explaining the technology for a lay audience (Roberts 2018). National and pan-Soviet pride was yoked together under the banner of “Friendship of the Peoples.” The main actors visible in the building process were Soviet state agencies, the dam workers as portrayed by the official press, and the citizens these projects were to benefit: whether through the gift of electricity, a modern flat in a new town, or a new job in a carpet factory.

The dam reservoirs drowned forests and agricultural land, with the promise of expanding irrigated fields elsewhere in the former steppe and semideserts of the lowlands. In this sense, damming the main rivers of Central Asia was a precondition for much more far-reaching environmental transformations, including the

desiccation of the Aral Sea. This parent generation of dams also generated large population movements: emptying the flooded land, settling people in new towns and new agricultural settlements. The post-Soviet second generation of these dams—closely related, due to shared origins in the offices of Soviet planners—have a different range of social and political effects, some of which would have been anathema to a “Soviet” dam persona.

Since independence, dam building has become a more “insular” enterprise. Despite recent signs of a dam “détente” between upriver and downriver states, big dam sites have become nationalized in different ways in Tajikistan and Kyrgyzstan. In the Tajik case, Roghun has been intimately connected to President Rahmon, while in Kyrgyzstan a commitment to hydropower has survived successive governments and upheavals. This narrower focus is matched by a narrower range of governmental aspirations connected to dam building and an attendant paucity of public information. Despite official photographs of President Rahmon in a hard hat, dam workers are no longer celebrated as heroes: the relevant actors, often international construction companies, closely control access to their sites and documents. In Tajikistan, where Roghun is a national project, the government has actively solicited the financial support of the population, a kind of pressure unimaginable in restive Kyrgyzstan. But even considering the recordbreaking ambitions of contemporary Tajikistan, the vaunted aim is the more modest circumscribed vision of creating economic wealth, rather than the sweeping, multidimensional social transformations envisioned during the postwar Soviet period in the same areas, and for the same projects. The main “audience” for dam propaganda has shifted to potential evaluators and donors for these megaprojects.

The actual financing of these projects has a much more international dimension than in the Soviet context. Though big dams no longer enjoy the unremittingly positive reputation of the mid-twentieth century, and potential funders such as the European Bank for Reconstruction and Development have become somewhat more cautious in their backing, such reticence does not play out publicly in Central Asia. While the environmental impacts of international mining ventures in Kyrgyzstan are often publicly contested, dam projects do not provoke intense local resistance. This is surely in part because of dams’ glowing official reputation as manifestations of state largesse in the later Soviet decades: another instance of the productive entanglement of “past and present for the purposes of transforming nature,” as in the case of Polish forestry (Blavascunas, chapter 9 in this volume). Whether or not a single megawatt of electricity is ever produced, big dams yield significant political and financial gains for some actors. Megaprojects are known as sites not only for prestige making but also for moneymaking through contracts or controlling (and sometimes diverting) financial flows (Molle, Foran, and Ka-



konen 2009: 328). A further new form of internationalism is evident in that integration into the Asian or Eurasian economies: however, the type of integration is still one of exporting relatively unrefined “natural resources” rather than finished products. It is possible to view these aspects as neocolonial: being financially dependent on and judged as viable projects by countries like Russia and China but also big international institutions like the World Bank. The know-how on dam building is now an amalgam of a generation of Soviet-trained cadres, and (vastly more expensive) “international” expertise.

Tracing the biographies of Soviet and post-Soviet dams in Kyrgyzstan and Tajikistan suggests that dams are elements of Soviet environmental engineering that can be readily adapted by other kinds of governments and that invoke quite different forms of social engineering—or none at all. It is notable that other forms of ambitious environmental and social engineering, such as large-scale irrigation projects and the establishment of new industries or townscapes have not been transitioned at the scale, or with the ease, of dams. As a “family” of objects, the senior generation of Soviet dams lived on and affected a set of actors very different from today’s investors: they might hardly recognize each other as relatives at a family gathering. Nevertheless, it is striking that although the place of dam building in narratives of building a (supra-)national state and sense of collectivity has fluctuated in post-Soviet iterations in Kyrgyzstan and Tajikistan, the reference point of a common “national” project remains surprisingly stable (Dorondel and Şerban, introduction to this volume). Similarly, the environmental impacts of such megaprojects, from changes in the water distribution to silting, have proved surprisingly constant.

## NOTES

1. This has also been true elsewhere, particularly in the postcolonial world, as in the case of Ghana’s Akosombo dam or Paraguay’s Itaipú Dam.

2. Kyrgyzstan has 6.5 and Tajikistan 9.5 million inhabitants. Both are approximately the size of the United Kingdom, but the population is concentrated in the lowlands, while over 90 percent of the territory of each republic consists of sparsely populated mountains (Sultanov et al. 2018; World Bank 2021).

3. On resettlement connected to Farhad, see GARF F. P7523, op.65, d.172 (1946), and “Narod stroit Farkhadskuiu GES” [The people are building the Farhad hydropower plant], *Pravda Vostoka*, March 12, 1943, 2.

4. Rossiiskii gosudarstvennyi arkhiv ekonomiki [Russian State Archive of Economics] (RGAE), f. 8378, op. 1, d. 22 (1929–1932), meetings and resolutions on improving the management of the “land and water resources of the Syr Darya river basin.”

5. RGAE, f. 4372. Gosplan, op. 38, d. 1797–1834, and Roberts 2018.

6. GARF (State Archive of the Russian Federation), f. R5446, op. 48a, d. 1578, l. 86

7. The tragic tale of Farhad, who perishes in the attempt to win the hand of Shirin by digging

an impossibly long water channel single-handedly, appears in varying versions in works by Nezami and Ferdowsi, among others.

8. “Novye otriady stroitelei” [New cohorts of builders], *Narodnaia stroika*, March 23, 1943, 2.

9. Abil’ Seitbekirov, “Truba Badina zvala v Krym,” *Golos Kryma*, no.7(945), February 17, 2012.

10. “Novogodniaia elka” [Christmas tree], *Narodnaia stroika*, December 29, 1943, 2.

11. “Teatr im. Gorkogo v Farhadstroie” [Gorky Theater in Farhadstroi], *Narodnaia stroika*, March 13, 1943, 2.

12. “Pisateli na stroike,” [Writers at a construction site], *Narodnaia stroika*, March 23, 1943, 2.

13. “Stroiteli u mikroфона” [Builders take the microphone], *Narodnaia stroika*, March 14, 1943, 2.

14. “Reshaiushchie dni” [Decisive days], *Narodnaia stroika*, December 29, 1943, 1. “Premii—otlichivshimsia,” *Narodnaia stroika*, December 29, 1943, 2.

15. From an unpublished typescript of personal recollections and data on Kairakkum, authored in 1984 by G. Bernadskii, who described himself as a “veteran of the construction of Kairakkum GES.”

16. The Avesta.tj news website has an entire section dedicated to Roghun-related news and opinion pieces. Popular songs include, for example, Afzalsho Shodiev’s song “Roghun” (2010) or Qurbonali Rahmon’s song “Roghun” (Rahmon 2010).

17. There are many other examples of dams closely associated with a single figurehead, including Roosevelt’s Tennessee Valley Authority and Nasser’s Aswan dam.

18. Since freedom of speech is severely restricted in contemporary Tajikistan, it is not possible to accurately gauge the balance of skepticism and hopefulness: comparison with neighboring Kyrgyzstan, which enjoys greater freedom of speech, suggests that hydropower may indeed be widely assumed to be a “Good Thing.”

19. The interim president Roza Otunbayeva had been asking highly critical questions of the project under Bakiyev, but once in power, she supported the project, as did the successive government (Menga 2013: 137–38).

20. The best known is *The Report by the World Commission on Dams* (2000), and other international standards recommend that such measures be included.

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