Current Trends in Water Management in Central Asia

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Abstract

The primary objective of the following article is to examine current trends in water management in post-Soviet Central Asia. The hypothesis of the article is that ongoing discrepancies and absence of consensus among the Central Asian states on water issues will encourage the growth of economic, ecological, and political threats to the development of the states. The key research approaches are systems and strategic analysis combined with geopolitical, dialectical, traditional-historical, and empirical approaches. The methodology is characterized by an objective approach to the correlation of general and specific in the development of the Central Asian states and their influence on the inner political processes in the region. The methodology allows investigation of the region as a whole system with special interconnections and interdependence of its components in order to define priority strategic goals and tasks of each structural element of the system. Main outcomes and results of the work reveal tendencies in the current water strategy in Central Asia, some prognosis and recommendations for regional and international actors. The conclusion states that much depends now on the political will and readiness to make compromises by both regional states and external actors and the ways and means they apply to realize their common interests in the region. The research data and results can contribute to making regional strategy more purposeful, concrete, and coordinated and to serve as a basis for scientific-practical searches for new solutions to the problem.

Keywords: water security; Central Asia; economic, ecological, and political threats; regional security; regional cooperation

General background

Central Asia is located in arid or semi-arid zones and natural evaporation significantly exceeds precipitation. Therefore, the main regional rivers - Syr Darya and Amu Darya with their tributaries - are the only fresh water sources for the entire five countries of the region and are of great importance to the region’s economy, since agriculture contributes a large share to the countries’ GDP. In Kazakhstan it is an estimated 6%, in Kyrgyzstan 34%, Tajikistan 21%, Turkmenistan 25% (2003 data), and Uzbekistan, 23% (World Bank 2007). More than 90% of the Amu Darya and Syr Darya waters are used for irrigation and about 60% of rural residents using these rivers are engaged in agriculture (SPECA 2004).

Since the Syr Darya and Amu Darya originate in Kyrgyzstan and Tajikistan, these two countries are considered upstream countries, the other three countries - Kazakhstan, Turkmenistan, and Uzbekistan – located at the lower reaches of these rivers and are called downstream countries. Central Asia’s irrigated lands are located mainly in the downstream countries - 85% - while only 15% are in the upstream countries (Table 1). This kind of natural distribution pattern of water in the region gave the Soviet-era Kremlin reason to designate Kyrgyzstan and Tajikistan as water providing countries to the rest of the region. During this time, centralized water management controlled by the All-Union Ministry of Water Resources based in Moscow established water limits for each country in the region (Du khovny 2005). Starting from the 1960s, large construction projects of dams and reservoirs were launched in the upstream countries, while at the same time irrigation systems were developed in the downstream countries. According to the barter agreements concluded during Soviet times that are still partially in force, water collected in the reservoirs in autumn-winter is released in spring-summer to irrigate Uzbek, Kazakh, and Turkmen agricultural lands. In return, the downstream countries provide the upstream countries with gas, oil, coal, and the electricity which the upstream countries cannot produce. This kind of heavily interdependent infrastructure works properly only if these countries remain united. Therefore, it is not surprising that with the collapse of the Soviet Union, this system resulted in negative consequences and caused serious cross-border tensions.

In spite of the fact that Afghanistan is also included in some plans for reviving the Central Asian economy, at present it is not clear when and how unstable Afghanistan will claim its share for the Amu Darya water. That is why this paper concentrates only on the water discrepancies among the post-Soviet Central Asian states, the solution of which will naturally affect positively on all other regional problems, including Afghanistan.

Conflict potential and threats to the region

The circle of the well-established Soviet water-energy exchange process was broken after independence, as each country in the region started experiencing lack of dialogue, coordinated action, and cooperation among national authorities dealing with water management. As a result, in the post-Soviet years each state had to work out its own strategy of development based on their national interests and available resources. However, those strategies brought little if any results due to difficult economic situations in these countries. In these conditions the uneven distribution of water resources led to the clash between the providers (Kyrgyzstan and Tajikistan) and consumers (Uzbekistan, Turkmenistan, and Kazakhstan) of water. In the so called globalization era, Central Asian domestic and foreign economic, social and political developments are tightly interconnected with global events. Thus, the tense geopolitical situation around the region, accompanied by economic sanctions against a number of Central Asian states, as well as ongoing domestic transformation processes led to the reduction of foreign investment flows into large scale projects in Central Asia. Foreign financial assistance accompanied by technical and expert-consultative assistance to the countries would be timely given the world economic crisis that would radically improve their economies. Nevertheless, the countries have opted for utilising their own capital and natural resources.

Although Central Asia is abundant with valuable natural resources, their distribution in the region is uneven - Tajikistan and Kyrgyzstan are very poor in fossil fuels (oil, gas, coal) but very rich in potential hydropower, while downstream countries are rich in fossil fuels but poor in potential hydropower. For example, Kyrgyzstan almost totally depends on oil and gas imports from Kazakhstan and Uzbekistan. Oil and gas rich Kazakhstan depends on Kyrgyzstan and Uzbekistan for 60% of its electricity and buys gas from Uzbekistan. Kyrgyz and Tajik hydropower stations (HES) provide Uzbekistan with irrigation water during planting periods to satisfy its seasonal needs in electricity (Dorant 2006) (Table 2).

Therefore, while natural resource-rich Uzbekistan, Kazakhstan, and Turkmenistan can elaborate more or less independent strategies in their economies, small and economically weak Tajikistan and Kyrgyzstan have to rely on the success - and largess - of their neighbours, which can incorporate them into large-scale integrated economic projects and thus create favourable grounds for their prosperity. In this sense, the revival of the Great Silk Road with its transport branches on their territories is of special interest to Bishkek and Dushanbe in their efforts to be integrated into the regional and world economy.

Nowadays, Dushanbe and Bishkek are interested in the use of water for the production of hydro-energy to satisfy their own needs and to export it to third countries. The Tajik government, for instance, considers that the only way to become economically sustainable is to develop their hydro-energy sector “as a priority direction in modernization of the state economy” (Khairulloev 2007). As for Kyrgyzstan, it is more ambitious and wants “to occupy leading positions at the energy market of the region” (Bakiev 2009). In this regard, Dushanbe and Bishkek demand that their downstream neighbors increase financial compensation for the exploitation of their HESs in the irrational mode. For instance, Kyrgyzstan announced its intention to sell water in the National Kyrgyz Energy Strategy for 2008-2010 (2008).

According to some sources, turning water into a commodity was pre-conditioned by the events in 1999, when Uzbekistan substantially decreased natural gas delivery to Kyrgyzstan due to
the latter’s debt (Business Week 2005). In response, Kyrgyzstan demanded financial compensation for water deliveries to cotton fields in Ferghana Valley. Bishkek justifies its position of receiving financial compensation by calculating economic benefits Uzbekistan and Kazakhstan gained using water that was collected and released for downstream and economic losses Kyrgyzstan experiences as a consequence. For example, they say that both Kazakhstan and Uzbekistan were able to increase the territory of irrigated lands by 400,000 hectares thanks to the reservoirs in the Kyrgyz territory (Kurtov 2004). Uzbekistan alone was able to double the territory under cotton cultivation, the source claimed. Kyrgyz experts say that during 22 years of using the Toktogul reservoir Uzbekistan and Kyrgyzstan received 7.6-8 billion USD of net profit (Kurtov 2004). According to their calculations, annually Uzbekistan earns 360 million USD and Kyrgyzstan earns 240 million USD using water resources from constructions in Kyrgyzstan.

However, the idea of turning water into a trade unit has not been welcomed by other Central Asian states, especially Uzbekistan and Kazakhstan. These countries insist on the predominantly irrigation mode of HESes, both built in the Soviet era and planning to be built in the present days. These claims can be justified by the fact that Uzbekistan and Kazakhstan account for 53% and 10% correspondingly of the region's irrigated lands and constitute the biggest share of the region’s population (SPECa 2004, Tables 1, 3). Kazakh and Uzbek specialists note that downstream countries for water is unprecedented in international law and within the international community (Tajjunov 2009, Rengum 2009a). The mere fact that water originates in a country does not give it the full right to become the sole owner of the water. The upstream countries have to realize that it is universally acknowledged that the absolute sovereignty of upstream countries over water resources is inadmissible under international law. In this respect, the Preamble of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE 1992) states that transboundary waters shall be used through the elaboration of agreements between countries bordering the same rivers.

Lack of trust among parties in the region is another factor that impedes consensus. The upstream parties are highly suspicious of annual water allocation quotas (Bogdanov 2009) established by the Interstate Coordinating Water Commission (ICWC), which is based in Tashkent and therefore sometimes does not comply with established and recommended quotas. The upstream parties may presume that calculations on water allocation quotas are done to the detriment of them and benefit only Uzbekistan.

Nevertheless, although the Central Asian states made significant efforts to avoid “water conflicts”, none achieved multilateral agreements, nor did a series of talks between the states under the aegis of the USAID organized in summer 1997 and an Uzbek-Kyrgyz Agreement of December 2000 lead to improvements in upstream-downstream relations (Makhkamov 2009).

Meanwhile, according to some estimates, the demand for already exceeded available resources (Eurasian Development Bank 2008). Population growth, melting glaciers, and Central Asia's arid climate constitute natural and human causes for further pressures on drinking and irrigation water. Central Asia’s population grows by 1.02% per year (Table 3) which requires additional increases in water resources up to estimated 700 million m³ annually (UNECE 2008). Climate change and global warming put additional pressure on Central Asian water problems. Scientists predict that by 2025, thousands of small glaciers in the Tajik mountains will disappear, the glaciated area will shrink by 20%, and ice reserves will decrease by 25% (Eurasian Development Bank 2008). The estimated drop in the flow of the two main rivers is 25-30% over the next 20 years (World Water Forum 2008).

New tendencies
The severe winter of 2007-2008 combined with serious drought hit Central Asia hard, especially the upstream countries, and resulted in a compound water-energy-food crisis in Tajikistan and Kyrgyzstan. If on the one hand, the upstream countries were unable to provide their population with electricity because the water level in their main HESes, Nurek in Tajikistan and Toktogul in Kyrgyz, were receding due to reduced snow melt, on the other hand, the downstream countries limited the export of fossil fuels to the upstream countries in order to meet high domestic demands. In addition, as of 1 December 2009 Uzbekistan is not a part of the Central Asian Unified Electricity Grid System that was partially providing electricity to some regions of four countries except Turkmenistan. Uzbekistan explained its position that it had to take this decision due to unsanctioned electricity withdrawals by Tajikistan that were threatening the security of transmission lines and caused their damage thus posing a serious threat to energy security of the country (Gazeta.uz 2009). Although Uzbekistan could provide electricity to the parts of the region that were dependent from the grid system by building new electricity transmission lines, Tajikistan and Kyrgyzstan experienced problems in providing electricity to their parts of the country (Kholmatov 2009, Central Asian News 2009).

These negative implications pushed Tajikistan and Kyrgyzstan to accelerate their plans to complete the construction of reservoirs and hydro-electric stations started in the Soviet times and to build new ones. Dushanbe plans to finish Rogun HES with the capacity of 3600 MW and Bishkek plans to finish Kambartaba-1 and 2 with the capacity of 1900-360 MW. While by building these HESes the upstream countries hope to meet their domestic electricity requirements with a surplus for export to China, Pakistan, Afghanistan, and other countries, the downstream countries fear that the planned large-scale dams might reduce the amount of water available for irrigation and strengthen the control over water resources by the upstream countries.

The upstream Central Asian countries lean towards the notion that economic benefits are enjoyed mainly by the upstream countries that build dams and reservoirs (SPECa 2004). In these terms, Ostrom (1994) argues there are two types of issues when several countries have to use common water resources. The first problem is called appropriation and takes place when only one member enjoys the benefits of the water resources instead of making it available to others. In the situation of Central Asia, once the large-scale dams are built, the filling of empty reservoirs with water will present an appropriation issue and impact significantly on the flow regimes in downstream river sections. The second issue is called provisional and relates to the operation and maintenance of dams that will directly impact the environment and safety of people. Wegerich (2007) presented a similar explanation where he argued that the construction of large dams mainly present a zero-sum game, in which upstream countries receive the benefits and downstream countries are subservient.

Theoretically, building large scale HESes in the upstream can be either advantageous or disadvantageous for downstream countries. If the water from the dams can be used both for producing electricity and agriculture by co-riparian countries at the same time, this will result in a win-win solution. However, if water is released when it is not needed for downstream irrigation, it is only the upstream country that will have the benefits; not the downstream who experience losses in irrigation (Wegerich 2007). With the current difficult political conditions and lack of cooperation among the countries in Central Asia, the downstream countries experience to a lesser or greater extent the latter situation.

However, firstly, if on one hand the intentions of Tajikistan and Kyrgyzstan to develop large-scale dams can be understood and seen by them as a way to become economically sustainable and reduce poverty, on the other hand, such big projects need to be technically feasible, economically efficient, environmentally friendly (Biswas 2008) and most importantly, negotiated with the countries that historically have been using water from the same rivers. Secondly, there are a range of economic, ecological, and political threats to the viability and stability of the Central Asian region should these plans be carried out.

Economic threats. In regard to Tajikistan's Rogun HES, a staff member of the Institute of Water Issues at the Academy of Science in Dushanbe, has stated that the construction of Rogun is an ineffective and overly costly project (Petrov 2004), as an alternative plan for diverting the flow of the Pyanj River towards Vahsh HES would require a total cost of 340 million USD, while the Rogun project costs 2 billion USD.

According to another Tajik power engineering specialist’s view, the Rogun project is not a cure for the current energy issues the country is experiencing every year (Safarov 2008). First, according to the source, the project itself is not attractive for investors even if the reservoir is built, several decades will pass before it starts repaying. Second, the source continues that 50-60% of the produced electricity from Rogun will go to a planned new aluminium factory, the remaining 40-50% will not be enough either for selling abroad or providing to the population. Third, every year in winter large-scale reservoirs in Tajikistan have to limit electricity production due to reduced water flow as a consequence of limited snow melting during that period (Safarov 2008). These limitations in combination with usually experienced dry years would result in shortages of electricity production that again will not be enough for its own population and commercial purposes. Thus, the country cannot escape electricity and fossil fuel dependency on its neighbours, regardless of whether or not it builds the Rogun HES.

Ecological and technical threats. Majority of HESes in the region have deteriorated due to lack of funds for needed renovations and modernization (Dorrain 2006) therefore, specialists in the region do not rule out the probability of a replication of the Sayano-Shushensk type of accident that took place in Russia on 17 August 2009. Central Asian large-scale HESes were constructed during the Soviet time under the same general plan and the turbines of Toktogul HES (in Kyrgyzstan) are 35 years old and were bought from the same plant as those for Sayano-Shushensk (AKpPress 2009). The deterioration of the HES equipment in Kyrgyzstan reaches 70% (Centrasia.ru 2009; 12.uz 2009; Beliy parus 2009)
Kyrgyz and Kazakh scientists have highlighted several environmental and technical risks of building a new HES in Kyrgyzstan due to its location in a major seismic zone (Jalgasbaev 2009). The earthquake that took place in 1992 in the Suyamsay Valley, which had before been defined as a seismically weak region, clearly showed the danger of building new dams in mountainous Kyrgyzstan. Some sections of the Kambarata-2 dam dislodged as a consequence of the tremors and later in 1996 further damage to the dam took place. Indeed, Central Asia’s earthquake frequency is one of the highest in the world (GeoHazard International 1997). According to the USGS, a 9.0 magnitude seismic hazard map, most of the territory of Tajikistan and Kyrgyzstan can experience seismic intensity up to 9 (the highest is 12) on the Medvedev-Sponheuer-Karnik scale which is enough to cause the destruction of many ordinary buildings and heavy damage to well-structured systems such as water dams.

At the same time, the radioactive and toxic waste in Kyrgyzstan can pollute its own territory and the territories of Uzbekistan and Kazakhstan in case of landslides and flooding and could cause ecological disaster at the most fertile territory in Central Asia—Fergana Valley.

Representatives of the Institute of Seismology in Uzbekistan assert that the construction of any big hydro- technical objects in the valley of the Naryn River or on the territory of Rogun HES could stimulate a cascade effect in which an insignificant breakthrough in one place provokes a chain reaction of irrepressible flow of water and dirt masses (Usmanova 2009). This can stir up vast economic and ecological damage to downstream states and sharply increase the seismic activity of the Hysar-Kokshai seismogen zone. As a consequence, the Sarez Lake in Tajikistan with the volume of 17 cubic kilometres of water threats to flood a territory with more than 5 million people (Fakhdushinov 2009).

Political threats. Problems with payments due to economic difficulties and disagreement over energy and water prices among the countries in the region (Dorian 2006) provoked tensions in Kyrgyz-Uzbek and Tajik-Uzbek relations and has led to confrontations and supply cut-offs.

Although Russia had been giving financial and political support to Kyrgyzstan in building its HESes, the last official stance came during Russia’s Vice-Prime Minister’s visit to Uzbekistan at the beginning of 2010. He announced that construction of large-scale HESes can not be launched without the consent of neighbouring states and Russia will not finance the projects until it receives the results of international expertise (Central Asian Portal 2010). Moscow had earlier suspended giving credit for a total sum of 1.7 billion dollars meant for the building of Kambarata-1 (Eurasianet 2010). Two possible reasons were given for that: first, Russia, after discovering unexplained spending from the first credit tranche by the Kyrgyz government, was waiting for an explanation. Second, Russia did not want to upset Uzbekistan, whose discontent with Russia was increasing due to the support Russia had given to Kyrgyzstan in building the station.

From its side, Tajikistan inclined to continue energy cooperation with Russia in the framework of the Eurasian Economic Cooperation group, but unlike Bishkek it relies on expanding trilateral cooperation with Afghanistan and Pakistan too. At the New York Summit on the Global Climate Change, Dushanbe reiterated its readiness to increase its hydro energy potential (Rengum 2009b).

During a meeting between the Presidents of Uzbekistan and Kazakhstan that took place in 16-17 March 2010, the Kazakh President announced that he totally shared the concerns of Uzbekistan in regard to the building of Rogun and Kambarata-1 and 2 HESes. He highlighted that he would support the building of the HESes subject to receiving objective international expert analysis of these projects (Panfilova 2010). If an independent international body proves that the downstream countries will not experience any negative consequences, Uzbekistan and Kazakhstan are ready to invest in the construction of large-scale HESes both in Kyrgyzstan and Tajikistan (Rengum 2009a). Thus, Uzbekistan and Kazakhstan request a guarantee that building of new large-scale dams in the upstream countries will not result in worsening the ecological environment or affect the current water usage balance, especially during irrigation seasons.

Overall, two obvious contradictory tendencies exist now in Central Asian development. The first tendency reflects the Central Asian traditional orientation towards Russia, which was demonstrated by signing a customs union agreement on 27 November 2009 by Russia, Kazakhstan, and Byelorussia with potential inclusion of Kyrgyzstan and Tajikistan (Khramkov 2009, Kirmel 2009). Simultaneously Moscow has signed an agreement with Dushanbe on the mutual cooperation in combating drugs trafficking (Khrambugyeva 2009).

The second tendency reflects efforts of the Central Asian states to reunite themselves. This can be illustrated by the intentions of the parties to continue to strengthen regional cooperation and continuation of multilateral and bilateral negotiations among all sides. It is worth mentioning that for the past many years Central Asian states have been able to find compromises, despite standing economic, tariff, customs duty “wars” and other non-military conflicts (Joldasov 2009). A certain ethno-national and religious-cultural closesness serves to soften positions of the opposing sides in Central Asia. Therefore, there is a high probability that Tajik-Uzbek water issues and other tensions will be resolved peacefully. First, Dushanbe agreed to conduct independent comprehensive assessments on the techno-economic, social and environmental viability of the Rogun HES. The World Bank is funding a study that will evaluate technical soundness, economic viability and compliance with all relevant environmental and social safeguards of the station (World Bank press release). Second, Uzbekistan is the second biggest trade partner after Russia for Tajikistan (Gazeta uz 2007). Third, the Tajik-Uzbek Intergovernmental Commission that was inactive for the last 10 years resumed its work in February 2009. Fourth, the cooperative approach of Tajikistan towards Uzbekistan has been reconfirmed recently by the Tajik readiness to sell electricity to Tashkent cheaper than to its own citizens. Forth, the President of Tajikistan proposed to announce the year of 2012 as an International year of water diplomacy during the 64th session of the General Assembly (President.tj 2009).

The former Kyrgyz leader also declared his readiness for constructive dialogue on water issues with all Central Asian states (Zpress.kg 2009). He stressed that the mutually supplemental character of a Central Asian resource is a precondition for a stable energy system (Bakiev 2009). With the current ongoing transformation in the government of Kyrgyzstan and the change of the leadership, the official stance in the water issue is still unclear.

In these circumstances much also depends on the success of Uzbek-American cooperation in construction of the railway in transit to Afghanistan. The potential success of this project can serve as an indicator for more a favourable transformation in public opinion and unite all opposing sides in the region.

Conclusion

Ongoing discrepancies and absence of compromise and unity among the Central Asian states on water issues have already spawned the growth of economic, ecological, political threats and challenges to the region that have possibilities for turning into local military conflicts. One must ask if this process is reversible and, if so, how to do so.

It is clear that the break-up of the single Soviet hydro-energy system in Central Asia and the absence of large-scale investments into the regional economy, aggravated by the global economic crisis, has forced the states into an autarkic situation in which they concentrate on their own resources, the usage and development of which still demand huge investments and material-efforts. These facts together with the current disintegrated state of the region and circumstances of geopolitical competition have led the Central Asian states into conflict with one another due to their contradictory economic interests.

Hence, external factors coupled with internal problems, including the absence of necessary coordination and political will among the players, the absence of effective control bodies over decision-making, as well as an ineffective legal basis and the underdevelopment of the Central Asian states are the main reasons for present water crisis in the region. Thus, the solution of this problem should also be found in both internal and external actions: internal efforts should be reinforced by the good will of the regional external players, such as Russia, China and the US, external financial-technical assistance, and objective consultation and expertise from the international structures under the aegis of the UN.

A related factor impeding the resolution of the issue is the direct participation of some of the external regional players in the water issue. Countries which are supporting the construction of new HESes in the upstream should realize that their assistance will only intensify the conflicts among Central Asian countries. This factor together with Chinese, European and other interests in the region can exacerbate the competition and interstate tensions in Central Asia, in case the regional actors do not find adequate balance of interests and do not elaborate compromise approach to Central Asia. The Central Asian countries can and must generate the necessary political will to resolve water problems themselves. Only when the countries in the region will have a unified agenda regarding water use, which will take into account the plans and needs of their neighbors, will the tensions be defused.

Possible prognosis. In spite of the present difficulties in Central Asia, the chances of large-scale conflicts over water are very small. First, because no country, including the Central Asian states themselves, are interested in a conflict situation. Large-scale conflict in the region could damage the stable export of fossil fuels and other raw materials to the world market. Second, in case of conflicts, the region could turn into a source of illicit drugs, terrorism, and extremism [2] and bring the borders of these threats closer to Europe, China, and Russia — main key actors in the region. Third, the necessity to maintain and expand cooperation in Central Asia is not questioned since the countries in the region are tied by common historical background that play an important role in considering bilateral and multilateral energy relations (Dorian 2006). Fourth, an uneven distribution of natural resources within Central Asia aggravates the internal economic situation, which in turn may affect the regional cooperation in the water sector (Dorian 2009). The current situation of the region indicates that the Central Asian states are not yet ready to cooperate on a regional level on such a sensitive issue as water management. Therefore, the countries should find a way to cooperate on a regional level on such a sensitive issue as water management.

Criminals have already polluted the mountainous Kyrgyzstan. Some sections of the Kambarata-2 dam dislodged as a consequence of the tremors and later in 1996 further damage to the Kambarata-2 took place. Indeed, Central Asia’s earthquake frequency is one of the highest in the world (GeoHazard International 1997). According to the USGS, a 9.0 magnitude seismic hazard map, most of the territory of Tajikistan and Kyrgyzstan can experience seismic intensity up to 9 (the highest is 12) on the Medvedev-Sponheuer-Karnik scale which is enough to cause the destruction of many ordinary buildings and heavy damage to well-structured systems such as water dams.

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References


Footnotes

[1] The ICWC substitutes for the Soviet body that used to oversee water management and was established as a result of a treaty between all Central Asian states signed on 18 February 1992 in Almaty. The main responsibilities of the ICWC are annual water allocation for each country in the region and schedules for reservoir operations.

[2] Some sources indicate much higher numbers: 50% (The World Bank 1998) and 60% (Oxford Analytica 2007).


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