

From Small Streams to Pipe Dreams – The Hydro-Engineering of the Cyprus Conflict

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Abstract

A 2008 water crisis triggered collective fears of droughts and long-term scarcities both north and south of the buffer zone dividing the Mediterranean island of Cyprus since 1974. Tectonic shifts in the island's water management were the result. Central to export oriented agricultural production since British colonial days, water has always been a policy priority throughout independence, conflict and division for all administrations on the island. With discourses of scarcity and impending doom on the rise, policy makers north and south of the buffer zone started investing heavily in non-conventional high capacity water resources. Since October 2015 an underwater pipeline from the Turkish mainland supplies the north of the island with freshwater while the Republic of Cyprus has commissioned desalination plants through public private partnerships. This article argues that both the construction of the motherland's "umbilical water cord" in the north as well as the "desalination rush" in the south are not just reactions to issues of environmental scarcity. It shows that Malthusian narratives of water scarcity leading to conflict are just as mistaken as liberal notions of scarcity leading to cooperation. Instead, relationships of power, rooted in post-colonial state formation, development, conflict and division have motivated financially costly but politically expedient investments in excess capacities, rather than improvement of water management. Both the northern and southern water infrastructure boom is understood within its geopolitical context of creating water as political capital in the peace process. This geo-politically conditioned over-engineering of water resources, finally, provides ample grounds for rethinking the relations between water, conflict and division more generally.

1 Introduction

Water shortages appear to be defining the Cypriot ecology (eg Nachmani 2000). Climate variability and changing precipitation (Pashiardis 2002: 9) combine with steadily increasing water demand. Dependent on variable rainfall, developmental ambitions since colonial days focused on export oriented and water demanding citrus cultivation. The first president of the independent Republic of Cyprus (RoC), Archbishop Makarios III coined the phrase of ‘no drop to the sea’ (Michaelidou et al 2002: 4) devising a Water Master Plan, building one of the highest per capita rates of dam storage capacity in the world (Zachariadis 2010: 789). This coincided with years of ethnic conflict between the Greek Cypriot majority and the Turkish Cypriot minority communities, resulting in a Turkish military intervention, occupation and effective division of the island from 1974 onwards. Since then, demand on artificial and natural reservoirs regularly exceeds the divided water supply and management systems. Overextraction of groundwater resources by 42mcm in the south (Demetrious and Georgiou 2004) and 20mcm in the north (Elkiran 2000: 149), and, in turn, the salination of coastal aquifers are just a few of the ecological effects.

During the 2008 drought those endemic water imbalances were dramatically aggravated when rainfall dropped to half the annual average (Michaelides and Pashiardis 2008: 124), average reservoir storage levels fell as low as 6.8% of capacity, trees died and desertification loomed (Theopemptou 2010; Maguder 2010). The water shortage forced the RoC’s Water Development Department (WDD), in charge of its ambitious infrastructure program, to ration supplies, including a complete ban on government regulated irrigation, which makes for 70% of water demand (Iacovides, 2010b: 25). As a short-term measure, drinking water was imported in large tankers from Greece - a practice already in place in the north since 1998 (Elkiran 2000: 147). These water imports from the respective ‘motherlands’ proved to be ineffective for both sides, regarding both water quality and quantity.

The 2008 ‘water crisis’ not only vividly demonstrated the island’s hydrological, environmental and climatic vulnerabilities. Cyprus’s water rescue by Greece and Turkey was revealing in a different way as well. Not only did it make the island’s chronic water shortage obvious, leading some to describe water as the island’s ‘second’ problem (Global Water Intelligence 2008). It was also a vivid demonstration of how its first, the ‘Cyprus’ problem of the division itself impacts on all policy areas, including seemingly apolitical and technocratic issues.

In the north, coping with this crisis means to further deepening a relationship of dependency with the Republic of Turkey through inter-basin water transfers. With the so-called Barış Suyu (Peace Water) project, Turkey intends to supply 75mcm per year through an 80km suspended underwater pipeline from a reservoir on the mainland to the island’s north. Maintaining independence from all water imports, the areas under the control of the RoC in the south have commissioned extensive new desalination capacities, supplying more than 90mcm per year through Build-Own-Operate-Transfer (BOOT) agreements with private contractors. The latter comes at the expense of taxpayer’s dependence on profit-seeking private operators and significantly increased CO₂ emissions (in turn increasing carbon related costs). The former not only involves risks associated with an unproven technology, but also further deepens already existing multiple forms of dependency and patronage (Bryant and Yakinthou 2012). Crucially, the pipeline not only turns a political and economic dependency into a geo-physical one, it also increases Turkey’s weight in any peace negotiations.

Taking a longer historical view, this article will demonstrate how water dependencies have developed in relation to the geopolitical realities of conflict, isolation, division and occupation, rather than any issues arising from geo-physical water scarcity. It argues that both the construction of Turkey's "motherland umbilical water cord" as well as the southern "desalination rush", are not necessarily ad-hoc reactions to the 2008 crisis. Instead they are rooted in a historical development, whereby water management practices were shaped by the conditions of colonisation, conflict and division. Using a historical sociological lens, the article demonstrates that these *social* relations cannot be understood using mainstream neo-Malthusian assumptions about water conflict and scarcity induced competition and conflict, nor by liberal assumptions about water scarcity inducing cooperation. In the Cypriot context, the opposite occurred: water scarcities emerged under the conditions of pre-existing geopolitical competition and conflict, leading to the over-engineering of expensive non-conventional resources (Djuma et al., 2014), creating new socio-political realities in turn, which re-entered the conflict and peace process. The post-2008 water infrastructure boom in particular can only be understood when taking the geo-political realities of division into account. Hence, it is not environmental factors such as water scarcity generating conflict (eg Gleick 1994, Klare 2001) or cooperation, but the socially generated conflict situation shaping water management practices and the ecology of the island.

Starting from the socio-historical origins of the conflict in relation to resource questions, this article will subsequently problematize contemporary water/conflict relations in the divided Cyprus. While the political economy of agriculture remains the main source of water demand (Zuomides et al 2014), the article argues that the geopolitical realities of division determine water management practices in Cyprus. Rather than natural scarcities determining policy, it is these political, *social* relations that generate scarcities. Methodologically, these deeply rooted complex relations demonstrate that the conventional understanding of scarcity and conflict needs to be replaced with historicised understandings of regionally specific social ecologies to fully account for the dynamic between conflict, peace building and resources. This is particularly important for the Eastern Mediterranean and Middle East if alarmist and deterministic scenarios of looming resource wars in the region are to be avoided.

2 Water Scarcity: The 'Second' Cyprus Problem

Traditionally, the 'Cyprus Problem' is defined by the island's division (eg Stefanidis 1999). More recently, the island's climate and the related water problems have gained greater attention, even though the two are rarely problematized in conjunction (Zikos et al 2015). Climate variability, droughts and water shortages are not necessarily new phenomena in Cyprus though. More recently, this variability led to claims about a linear decline and impeding crisis on the basis of reduced annual averages (Faurès et al 2010).

Beyond these island-wide issues, an ecological north/south division maps onto the political separation. Precipitation is concentrated around the centrally located Troodos mountains, with a similar, but smaller center in the lower Kyrenia mountains at the north coast. With 1100mm of annual rainfall, precipitation is almost twice as high at the highest elevation under the RoC's control compared to the highest elevation in the north. Lowest amounts are measured in the northeastern plains north of the buffer zone, ranging from 300 to 350mm annually (Cyprus Meteorological Service

2006). The island-wide average precipitation is about 460mm, though the divided capital Nicosia at the center of the island only sees 324mm (Iacovides, 2010a). The planning of post-independence water infrastructure took these patterns into account, but evidently not the territorial division. Since colonial times and especially after independence, major storage capacity was planned and built on the precipitation heavy southern slopes of the Troodos. These plans also included a water conveyor into the Nicosia plane. The division along the 'Attila Line' devised by Turkish military planners, left most of the natural catchment area, storage and transfer infrastructure under the control of the RoC, leading to a 'natural' north/south division in the island's water regime.

Variability aside, precipitation records suggest a secular decline since the early 1970s, amounting to a 'step change' (Giannakopoulos et al. 2010, Pashiardis 2002). Overall, the average rate of precipitation decreased 15-25% between 1970/71 and 1999/90 compared to the period 1916/17 to 1969/70 (Bruggeman et al 2011a: 5, Rossel 2001: 39). The rise in temperature of around 5% and the increase in above average dry than wet or normal years has yet more significant impacts on the island's water resources (Pashiardis and Michaelides 2008), causing losses during the winter months in areas where storage capacity was designed to capture high average precipitation for use all year.

Beyond the current problems, future climate change scenarios unequivocally suggest a bleak future for the Eastern Mediterranean as a whole. According to the Intergovernmental Panel on Climate Change's (IPCC) Global Circulation Models (GCMs), precipitation will further decrease by 10-19% for 2040-69 relative to 1961-90 (World Bank 2011) accompanied by a rise in average temperature of up to 2° Celsius by 2040. Potentially, this could incur water losses in reservoirs from evapotranspiration of more than 80%. At the same time, increased frequency and intensity of extreme weather events such as heatwaves and droughts are expected to further aggravate the situation (Giannakopoulos et al 2008).

The combination of an island geography, variable climate and territorial division mean that mitigation and adaptation strategies are challenging. These are further compounded by the European debt and Middle Eastern crises. Despite this, water transfers and increased desalination capacity are seen as necessary forms of climate change adaptation despite their high costs, poor economics (Zachariadis 2010, Gruen 2007). Infrastructure costs, political dependencies, but also rent-seeking opportunities are duplicated by the division.

This points to an important but poorly understood relation between the conflict and water management on the island which is the subject matter of this article. Despite the constant presence of both Cyprus problems, water shortage and division, in the everyday life of Cypriots, they are hardly ever related analytically or politically. Peter Hocknell's work studies the de-facto transboundary resource dimension of the territorial division (Hocknell 2001), without, however, clarifying the social origins of these divisions and possible solutions. More recently Zikos et al. (2015) did offer such a possible solution through the concept of asecuritising water resources by removing water resources from the level of high politics and into bi-communal identity construction. While still wedded to a liberal understanding of scarcity leading to cooperation, this article doesn't consider the wider geopolitical realities and historical conditions underlying the practice of securitising water. By contrast, this article offers to investigate the role of geopolitical conflict and division in determining water management policies. It looks at water beyond a mere necessity, as a political tool, a bargaining chip, in short a social and political, rather than merely a biophysical category.

Moreover, much of the academic literature on water and resources in Cyprus tends to work within the confines of the official policy of mutual non-recognition, sometimes due to institutional constraints or the lack of access to reliable data from the respectively non-recognized areas. If data is available, studies fail to problematize its political implications. Complying with this regime, the territory of the self-declared 'Turkish Republic of North Cyprus' or 'TRNC', is referred to as 'areas not currently under government control' denying any hydro-political relevance in what is one united water basin. Data covering only RoC territory is nevertheless referred to as pertaining to 'the island of Cyprus' (eg Giannakopoulos et al 2010), reflecting a political claim to full control. Northern analyses, by contrast, frame the problem as one of 'water shortages since the 1960s' (Elkiran and Aysen 2008), declaring a 'national' northern Cypriot problem (eg Katircioglu 2006) - as if a unified polity had never existed. While the former ignores it, the latter naturalizes the 1974 division. Ecological knowledge is, thus, reproduced within artificially confined and ill-defined spaces.

According to Neo-Malthusian readings, these broad parameters of conflict, division and climatic doom and gloom lead to pessimistic prospects for both 'Cyprus Problems'. Water mismanagement due to the pre-occupation with conflict (BBC 2010) could further escalate into a classic all-out scarcity driven resource conflict (Bell 2010). This situation would then be further aggravated if combined with a classical 'resource curse' scenario after the discoveries of hydro-carbon resources in the Eastern Mediterranean (Stocker 2012). The liberal, but by no means less deterministic understanding of the relationship between water, conflict and division in Cyprus follows the formula of mutual gains through cooperation. Applied to the 'first' Cyprus Problem, the liberal literature predicts a more than tripled GDP in case of a solution or re-unification of the island (Mullen et al 2014). This potential, especially after the debt crisis hit the RoC's economy hard, is said to have convinced many previously opposed Greek Cypriots to favour peace talks. Thus, scarcity leads to more cooperation due to mutual gains (eg Dinar 2009). The election of the left-liberal former mayor of northern Nicosia, Mustafa Akıncı into the office of president of the TRNC can be seen as supportive of this claim: Akıncı was one of the architects of the bi-communal Nicosia waste water treatment plant, the only cooperation in water infrastructure between the two sides (Hocknell, 1998). Even though topography favoured the co-funding of a joint treatment plant in the lower lying areas north of the buffer zone, this cooperation appears to have 'spilled over' into high politics.

Having helped financing the waste water cooperation, this liberal approach is also endorsed by the international community, notably the EU, the US and the UN. In freshwater supply, European water legislation already applicable in the south (and formally adopted in the north), treats Cyprus as a single river basin, implicitly encouraging the realization of efficiency gains through an integrated island-wide water management (Koundouri and Birol, 2011: 3). Current UN sponsored Cyprus talks entail an element of technical cooperation and confidence building measures relating to water saving measures.

The argument presented here takes issue with both this liberal position as well as a neo-Malthusian alarmist visions of looming conflict. Instead of forcing social realities into pre-conceived assumptions and causal mechanisms, it offers a historicisation of the conflict in its resource dimension within its geopolitical, Eastern Mediterranean context. Starting from the roots of division, it will trace the process of physical separation and resource division, paying particular attention to its hydro-political implications. It proceeds by looking at the post-division era and the peace process aimed at the re-unification under a federal arrangement, investigating both the resource division regime, the limited

forms of cooperation and the role of the European Union and Turkey. It argues, finally, that water enters both conflict and the peace process in Cyprus more as a (geo)political than as a natural resource.

3 Roots and Transformation of the Cyprus Conflict

Any understanding of resource-conflict relations has at its core an understanding of multiple actors competing over this putatively scarce (water) or abundant (hydro-carbons) resource. In many cases, such as the Cypriot, these competing actors are thought of as internally homogenous groups, sometimes with a strong attachment to a specific territory or homeland. In Cyprus, these divided groups have gradually descended into conflict once their 'ethnic balance' had been disrupted (Kitromilides 1976). Division, rather than being a timeless feature, developed during a protracted post-colonial conflict over sources of power throughout the twentieth century. It peaked in 1974 with a coup d'état, attempting to unify Cyprus with Greece (Enosis). This led to a military intervention by Turkish forces in two stages resulting in the separation of the island's northern third from its south. The south remained under the control of the internationally recognized Greek Cypriot government, whereas the north formally declared its independence in 1983, but remains internationally not recognized (Kliot and Mansfield 1997).

Various international peace initiatives have since sought a solution to the 'first' Cyprus Problem. However, most of these initiatives were largely unsuccessful since both sides had "for different reasons and in different ways, become supporters of the status quo" (Michael 2007: 593). To many, the division has become an acceptable reality, providing relative security and predictability in an otherwise troubled region. Despite the stalemate, a consensus about the aim of negotiations was established early in the process. Cyprus is to be re-born as a bi-communal federation allowing Turkish Cypriots to preserve a territorially separate constituent state alongside an equivalent Greek Cypriot authority. Both form a new sovereign federal authority over the whole island.

A similar deal was initially negotiated by the then Secretary-General Kofi Annan in 2004, supported by a newly pro-EU leadership in Turkey itself, EU support and a Turkish Cypriot population keen on swap isolation for European integration. The so-called Annan Plan had proposed detailed regulations regarding governance, the protracted property issue and had also entailed territorial adjustment in favour of the future Greek Cypriot constituent state. Simultaneous referenda in the two communities led to a 75.8% rejection by Greek Cypriots who had already secured entry into the EU regardless of the outcome. Turkish Cypriots, trying to end the damaging international isolation, voted 64.9% in favour of the plan.

Despite its failure, the Annan Plan is still used as a template for current UN-led negotiations. These 'Cyprus Talks' are structured into leader's meetings supported by negotiators, presidential advisers and confidence building measures, such as the opening of additional crossing points. Working Groups prepare these negotiations, one of which, on economic matters, also includes a natural resource dimension. With the discovery of gas reserves in the Eastern Mediterranean the resource dimension gained in importance, whereas water, despite its economic and political significance for both communities, never featured prominently. Beyond those talks, a UNDP sponsored confidence building measure (CBM) forms a Technical Committee on the environment, which also includes a water task force. Measures include exchange of officials, however, the committee has no mandate

to discuss joint water management issues. The most tangible physically visible progress to date is the re-unification of electricity and telecommunication grids.

After a dispute over offshore gas exploration had derailed the talks in early 2014, both communities are now led by pro-solution leaders, which has re-ignited negotiations. Akıncı's Greek Cypriot counterpart Anastasiades, having politically survived unpopular austerity measures after the RoC's debt crisis in 2012-13 (Michaelides 2012), was able to return to his original pro-settlement position. Tensions over offshore drilling rights were defused by the revelation that proven resources would barely cover domestic demand, making them commercially unviable, less desirable and less of an obstacle for a permanent solution. Joint exploration and marketization, on the other hand, became more attractive (Kades 2014).

Geopolitical transformations

Developments in Cyprus take place within a rapidly changing geopolitical environment unsettled by the aftermath of the Arab Spring. The RoC's traditionally good relations with Moscow, dating from its role as a leading member of the Non-Aligned Movement (NAM), are still maintained, though arguably Nicosia's foreign policy anchor is now in Brussels. The RoC re-modelled itself as a loyal Western ally in an otherwise volatile region, moving away from its 'old friends' in the Arab NAM world, as those moved closer to a 'rising' Turkey. The rift between Turkey and Israel over the Gaza flotilla and the Greek Cypriot determination to block Turkey's EU accession coincided with the joint exploration of gas fields with Israel. A new Athens-Nicosia-Jerusalem axis also started embracing Egypt due to its own offshore gas exploration and the common suspicion of Turkey's ambitious Middle Eastern expansion (Hoffmann and Cemgil, 2016). More recently Turkey's thaw in relations with both Jerusalem and Moscow have increased chances of a joint exploration and marketization of Eastern Mediterranean gas using Turkey's energy hub infrastructure.

4 Division, Conflict, Environment: Relating the two Cyprus Problems

However, none of Turkey's new foreign policy activism, even before it had reached its limits, changed anything with regards to the issue of recognizing the TRNC as an independent state. Even states allied to Turkey, such as Saudi Arabia and Qatar, maintain that the RoC is the only legitimate authority on the island. This regime of non-recognition, or de-facto occupation by Turkey, also had severe implications for the Cypriot ecology and water resources management. Given the conflictual and rapid nature of the divide, no legal transboundary or other regime regulating the division of the island's resources was negotiated. This makes the RoC the only internationally recognized sovereign authority over its onshore and offshore spaces and resources, including its Exclusive Economic Zone (EEZ). The Turkish military strategy to divide the country along the 'Atila Line', had aimed at creating a socio-economically viable northern homeland for the Turkish Cypriot community on the island (Hocknell 2001:173). The Turkish advance nevertheless stopped at the northern foot of the water rich Troodos mountains. Having occupied high yielding citrus farms, it left the sources for groundwater recharge under Greek Cypriot control.

Apart from this critical shortcoming, the isolation led to capacity and budgetary constraints for the Turkish Cypriot authorities which remain dependent on the Republic of Turkey to this day. The ‘Water Works Department’ (WWD), established already in 1963, never developed capacities and expertise comparable to the RoC’s WDD. Water allocation rights were retained by municipalities, cooperatives or individuals. Though this generated the main source of income for local authorities, the lack of central control favoured damaging practices, such as over-pumping. Unlike in the south, the north saw only little investment. These historic conditions make integrated water management a central element in any future technical cooperation, which could precede a political solution or “might contribute to it” (Nachmani, 2000: 93). The continued policy mix of non-recognition, isolation and patronage continues to have negative implications for environmental and water management, from separate data collection and analysis, to the lack of formalized cooperation and joint basin-wide water management strategies, even if individual communities may not be averse to more cooperation (Zikos and Roggero, 2012). This also includes non-conventional sources, since two discrete authorities govern even smaller parts of an already small and, crucially, isolated water basin.

Contrary to a neo-Malthusian understanding, resource scarcity never meaningfully contributed to aggravating the conflict while cooperation remained limited to Nicosia’s waste water management. Scarcity of freshwater, rather than leading to patterns of conflict or cooperation, has helped maintaining unilateral water supply strategies. This has not only helped reproducing the division itself, but also new forms of conflict and cooperation inside of the respective parts as well as with outside actors, notably the EU and Turkey. More importantly, this de-facto, but not de-jure transboundary division is fuelled by an uneven process of colonial and post-colonial development.

Even prior to division, centralizing water resources was not a common, historically grown practice in Cyprus. Going back to Byzantine, Ottoman and British rule, it was traditionally municipalities enjoying the strongest water allocation rights. Preserving these local water rights comes at the expense of a centralized or integrated water resources management regime. However, there is a marked difference between the ‘no drop to the sea’ formula of a centralised post-colonial state and the European Water Framework Directive’s (EWFD) full costing policy (European Commission 2011) currently adopted in Cyprus. By contrast to the EWFD’s neo-liberal accounting practices, the developmental state (Panayiotopoulos 1995) increased the level of centralized supply of water through the extensive infrastructure projects. Maintaining good relations with politically powerful agricultural communities was also an electoral and power strategy. In the RoC the WDD took on this task of developing an ambitious supply infrastructure, but not necessarily rationalise water management. After the division, this management capacity was inaccessible to the north, where the Turkish state water works (Devlet Su Isleri, DSI) started providing some infrastructure help. Carried out with Turkish public funds, these works remained rather patchy. Crucially, they never significantly increased the overall supply of water while leaving local structures and practices in place. This led to the sole functioning aquifer, Morphou, to be over-extracted, depleted and saline. While both parts have since increased levels of central control, local water claims continue to be socially powerful, maintaining, therefore, a conflict between central, divided authorities and local sources of demand.

Whereas the RoC’s WDD increasingly gained in power vis-a-vis other social actors, its northern equivalent, the WWD, has a low standing in the northern administration but also in relation to the activities of the DSI and, more recently, an EU funded aid project focusing on the water sector (European Commission 2011). Water management deficits are therefore in part due to a lack of

capacity, such as poor data collection infrastructure and the highly uneven collection of charges. Rural water collectives or individual boreholes of farmers remain outside of any central control. Responsibilities are patchy at best, resting with local authorities, semi-public collectives of farmers self-organising supply networks in the form of so-called ‘water unions’ or foreign donors. In the few places where data is available, it does not inform policies. The legal and administrative framework for distributing Turkish fresh water remains unclear, having been subject to a major political conflict between the north’s municipalities and the Turkish ambitions for private distribution rights (see below).

Apart from lacking management capacities, the unevenness of water supply also had natural and military reasons. Even though nominally under Turkish Cypriot control, the largest aquifer at Morphou (Güzelyürt) is recharged by streams under Greek Cypriot control (Elikran 2000). Compensating for the losses in Morphou, Greek Cypriots embarked on an ambitious agricultural development program, further increasing water demand and a matching supply infrastructure. Expanding storage and other water infrastructure was therefore not only a generic political necessity, but also related to the post-division developmental ambitions. The north, in turn, was cut off from all ambitious water development plans, including the Southern Conveyor Project (SCP). Planned prior to the division, this project supplies stored rainwater from the southern Troodos to the North-eastern dry plains around Nicosia and Famagusta.

Under these bio-physical realities of division and the political realities of mutual non-recognition, using concepts like ‘*Integrated Water Resources Management (IWRM)*’ (eg Elikran 2010, Socratous 2011) by either side represents, therefore, somewhat of a contradiction in terms. Conversely, dealing with Cypriot resources as ‘*transboundary*’ implies the recognition of a division not recognized by international law or any state apart from Turkey.

4.1 Divided We Manage

Despite all progress, unilateral water management remains the sobering reality in Cyprus. These conditions contradict letter as well as spirit of the EWFD¹ demanding the centralisation of water management within the defined river basin of Cyprus. Secondly, the ‘polluter pays’ principle (Art. 9 EWFD), aims at incentivising water saving practices, including the production and delivery of water, but also a less clearly defined ‘environmental and resource costs’ (Unerstall and Messner 2007). There are, however, exceptions to this rule to guarantee water supply to socio-economically weak parts of the society. This provision is currently used in many European countries to continue the supply of subsidised irrigation water to farmers, including in the RoC. Water legislation implementing the EWFD has been passed in the RoC and the TRNC (as part of a provisional harmonization program), leading to radical reforms to traditional water legislation. Given the strong political position of agricultural communities in both parts of the island, the implementation of certain aspects, especially regarding full cost recovery for irrigation water, remains politically

¹ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0060:EN:NOT> (10/05/2011). The south is required to do so by EU law, the northern Legislative Assembly has voted to introduce an EU harmonization package, including water legislation.

delicate. Northern Cypriot municipalities, while still formally in charge of domestic supply, also frequently lack the infrastructure to collect necessary consumption data for irrigation water. This means that a supply driven water policy is traditionally backed by the political leverage and the clientelistic networks of the surviving ‘peasant state’ (Panayiotopoulos 1995: 25) north and south of the buffer zone. Farmers and rural communities may well favour joint management as a general idea, especially if efficiency gains lead to an increased overall supply. Prioritising continued access and influence through local networks nevertheless remains the priority and weak central management favourable.

Within this broad context a concentration on financially costly but politically expedient strategies of over-supply instead of integrated management has characterized water policies in all of Cyprus since the 1960s. The division has duplicated and aggravated this tendency. Given the political realities of decision making in the water and related agricultural sectors, water saving initiatives and campaigns, including bicultural ones, are restricted to domestic use, rather than irrigation. 70% of freshwater continues to be used by agriculture despite the economic insignificance of this sector. The southern economy is dominated by the financial, shipping and tourism sectors. The latter also remains important for the north, which has also expanded a profitable higher education sector.

Compounding the picture of the relative economic insignificance of the agricultural sector, it equally doesn't employ a high number of people anymore. The number of full time farmers is low compared to part time farmers, who frequently combine public office with traditional farming activities. Unsustainable farming practices and associated water demand, thus, only survive owed to the political leverage of the farming sector. Water saving crops change is incentivised by the EU, however, the necessity for long-term investment means that farmers are reluctant to initiate such a transformation. In sum, a costly, uneconomical and unecological, almost infinite expansion of conventional and non-conventional supplies continues, not considering the “enormous scope for climate adaptation in Cyprus when looked at the water use per crop, year and community” (Bruggeman et al 2011b: 29).

Commonalities between the two sides are therefore not exhausted by the exposure to a changing climate. Any understanding of water politics in Cyprus is incomplete without considering the vested interests behind increased water demand, most importantly unsustainable, uneconomical agricultural practices. In the light of these conditions, both sides continue implementing policies of oversupply, rather than demand management. This is not only internally conditioned, however. Increasing supply, rather than improving demand management relates to the peace process insofar as adopting unilateral plans rather than bi-communal cooperation is also geopolitically opportune as long as a final settlement is still negotiated. The current plans foresee a combined national water authority. Creating and maintaining matching water capacities puts both parties at an equal footing preventing disadvantageous negotiating positions. Any increase in capacities strengthens their respective bargaining power in the sensitive natural resources chapter, which, crucially, also includes hydro-carbons.

South

Partly in response to these pressures and interests, the south has perfected water development projects. Irrigation schemes are still expanded and the policy of allocating all surface water to agriculture demonstrates the leverage of rural communities. Long before the 2008 water crisis, under the Clerides government in the 1990s, the RoC started strategically investing in desalination capacity with ambitious plans to eventually cover domestic and industrial supply, leaving surface water entirely for irrigation. Following an austerity plan, the following Papadopoulos government put them on halt, attracting much criticism in the light of the 2008 crisis. Reacting to this criticism, the government over-compensated by devising the gradual expansion of capacity up to 106.8 mcm/year (Water Development Department 2000: 36).

Keeping political and financial cost down, rather than investing public money into the projects, the RoC relies on so-called Build-Own-Operate-Transfer (BOOT) contracts for expanding desalination capacity. Actual desalination costs vary between €0.64/m³ and € 1.39/m³. As the government has a purchase obligation independent from actual demand, costs can easily soar (Zachariadis 2010: 798, 811; Fessas 2001). This price is also significantly higher than current charges of irrigation water to farmers at €0.17. This is supposed to increase to €0.24 in accordance with the principle of full cost recovery (Bruggeman et al 2011b). This way potentially complex financing arrangements and associated political costs have been avoided, enabling a quick fix to the water problem. Looked at more closely, however, it becomes clear that this solution implies not only high future financial, but also environmental costs given the high emissions stemming from the oil powered desalination plants. After COP21, this carbon cost is also likely to be financialized. The link between energy and water security was made evident when water shortages occurred in the wake of an explosion, disabling the island's main Vassilikos power station.

North

In sharp contrast to the RoC's post-colonial developmentalist ambitions, compounded by the displacement of agricultural communities, the north's hydrological expertise declined sharply after the division. Apart from leaving domestic institutions, expertise and governance underdeveloped, the high degree of dependency on Turkey had other detrimental effects on agricultural practice. Though some smaller scale DSI projects introduced water efficiency through drip irrigation, the much larger unconditional Turkish agricultural subsidies dis-incentivised investments in water management and crops change while maintaining colonial era water intensive citrus cultivation.

Since its 2004 vote in favour of the Annan Plan, the Turkish Cypriot community benefits from an EU aid program, investing in water infrastructure and crops management. This also further complicates the political and legal situation in the water sector. In the official wording, the entire island became an EU member in 2004, including its Turkish Cypriot citizens. The *acquis communautaire* has been suspended in areas not under government control, however. The largest part of the 259 million euro programme intended to overcome developmental gaps between the two communities, 59 million euro, are indeed dedicated to the renewal of fresh and waste water infrastructure (Truszcynski 2008). The biggest ticket items on the project list include the financing of a desalination plant at Sirianokhori/Kumköy near Morphou to relieve pressure on the aquifer there, providing potable water for Nicosia and Famagusta. It also funds waste water treatment plants in Morphou, Nicosia (70% part funded) and Famagusta. Urban supply and sewerage networks were upgraded (European

Commission 2011). These initiatives require cooperation with authorities the EU doesn't formally recognize, meaning integrated water resources management faces even more than the usual constraints. Similarly, these aid activities are not integrated with Turkish activities in the water sector, notably in the rural sector. Apart from the DSI, other actors include private Turkish contractors, the Turkish Presidency's Aid Commission (TAC), Turkey's international donor agency (TIKA) and, most controversially, the Turkish Army (TSK) as a de-facto authority in the north. This authority's intervention led to the cancellation of an EU funded desalination project in the Morphou bay area due to restrictions in access for the Greek Cypriot contractor (European Commission, 2012; European Court of Auditors, 2012).

This cancellation, formally on grounds of lacking work permits, may well be the result of donor competition in the water sector though (Nielsen, 2012). Providing an alternative freshwater resource in many ways clashes with the freshwater supply from the Turkish mainland. This project has led to the most significant changes in the northern water sector since the separation. Going back to the 1950s when British authorities had approached Turkey about implementing such a project (Hocknell, 2001: 183), these plans were revived in response to the 2008 water crisis. After the failed Annan plan, a construction and tourism boom started in Northern Cyprus. With Turkish capital available from a 'rising' motherland market, a new certainty about a lasting division provided incentives for investment. This also increased water demand. With the 2008 drought, water security was catapulted on top of the political agenda. After Turkey's remarkable post-2001 economic growth, considerable political and financial backbone and determination was available for implementing a project on such a scale. Additionally, Turkish economic growth came to depend heavily on Public Private Initiative (PPI) infrastructure projects. The pipeline project collects the water of the Anamur river in Turkey's Mersin province in the Alakopru storage through a 110km (68m) flexible pipeline, suspended 170 metres under the water surface, pumping it into the Geçitköy/Panagra reservoir on the Cypriot side. A similarly large part of the project is an internal Cypriot distribution network. Though numbers vary, out of the projected 75mcm annual supply only 1.5m are planned for domestic use, while providing 60mcm to allow farmers to end dry farming and turn to higher yielding irrigated crops (Rende 2007).

Inaugurated by Turkish president Erdogan on October 17, 2015, the \$450 million project was labelled the 'Project of the Century', not least due to its technologically innovative character as the first under-sea freshwater pipeline. This so-called 'Peace Water' is similarly claimed to pacify the already peaceful, though still divided island. In his inauguration speech Turkish president Erdogan claimed to share the water with "them [the Greek Cypriots] too, because the important thing for us is the humanity" (TRNC Public Information Office 2015). Mustafa Akinci also emphasized the positive effect on the peace process – a sentiment not shared south of the buffer zone. Here it is claimed that the unprecedented use of this technology for an inter-basin water transfer (especially the 'sea passage') questions reliability and water quality. Underwater threats include corrosion, shipwrecks, submarines and marine life. Other issues include potential environmental problems usually associated with large projects and inter-basin transfers (World Wildlife Fund, 2007) as well as the displacement of communities by dam construction with the involuntarily "donating" communities in Turkey.

However, the biggest problems emerged from the economics of the pipeline. Construction costs put the transfer solution not only at an economic, but, from the Turkish Cypriot perspective, also at a

political disadvantage compared to the cheaper desalination alternative. Turkish Cypriot resistance was initially motivated by Turkish construction activities despite the lack of planning permissions, disregard for environmental laws and poor community engagement. These reservations transmogrified into a veritable stand-off between Turkish Cypriot municipalities and the Turkish government over the new water regime (*Gazete 360*, 2014). Under a 2010 agreement, the latter seeks to transfer water distribution, allocation and billing from Turkish Cypriot municipalities to Turkish private contractors. This undermines the municipalities' main source of revenue.² The ensuing political stand-off has led to a change in the government in the north towards a more pro-Ankara coalition, followed by the gradual acquiescence of all northern municipalities to the new regime.

Ankara had conditioned the renewal of the general aid protocol, benefitting the strong farming communities, on settling the water dispute. Like the desalination contracts in the south, the northern Cypriot authorities have now agreed to consumption guarantees at fixed prices to a private Turkish operator. This also includes the internal distribution network, which the municipalities had hoped to operate via their own co-operative.

This earned the Turkish government accusations of rent-seeking behaviour and neo-Ottomanism (*Doğan* 2016) at the behest of contractors politically close to the current government. Though the principle of full cost recovery may be in line with the EWFD, it is unlikely that the high costs can be recovered from an economically weak community. More than bringing peace, the abundant waters running through the peace pipeline have created disruptive friction on a peace process otherwise in full swing.

In sum, even if the demand for the proposed 75mcm (or 60mcm for agriculture) did exist in the north, costs are prohibitive for irrigation purposes. More realistic estimates expect demand in northern Cyprus to potentially reach 15mcm under the most optimistic growth scenarios. Given the frequency at which policy makers refer to the pipeline as an 'opportunity for peace', rather than withholding water strategically (*Gruen*, 2004), engineering overcapacities could be part of a wider strategic calculation, creating leverage in the negotiations by removing a well-known disadvantage, namely the effective control of all meaningful water resources by the RoC. Crucially, this bargaining chip is held by Turkey, not the Turkish Cypriots. In the event of a comprehensive solution, Turkey will likely be asked to withdraw a substantial part, if not all of its armed forces. Having established full control over the north's freshwater supply will significantly improve Turkey's position in this regard. Unsurprisingly, most RoC policy makers voice their opposition to the pipeline. Apart from a political disadvantage, a costly desalination program needs to be amortised and can ill afford competition. While much has been made of the vested water interests of farming communities and private contractors' rent seeking in explaining these overcapacities, both the northern and southern water infrastructure boom must also be understood within its geopolitical context of water as political capital in the peace process. Just as much as the piped peace waters raise suspicions in the RoC, they are not always welcome by the potential beneficiaries.

² "Intergovernmental Framework Treaty on the TRNC's Water Needs" signed between the Republic of Turkey and the TRNC on July 19, 2010

4.2 The United Waters of Cyprus?

These are the conditions under which natural resource management takes place: An ongoing peace process within which natural resources, while central to the political economies of both parts, have not featured prominently. Instead, both sides implement solutions that strengthen their political positions internally and externally, even if they incur high financial cost. They run on poor economics, but are (geo-)politically expedient.

The effectiveness of these strategies depends on the political environment of the wider peace process drawing to a close in Switzerland at the time of writing. In this process, water is relevant mainly in two chapters: Governance and power sharing negotiates the distribution of competences between the constituent states and the new federal state. Natural resources, part of the economics chapter, includes water and hydro-carbons. The 2004 Annan Plan had proposed shared control and authority over natural resources within the new 'United Cyprus Republic' (United Nations 2004). Federal Laws for offshore waters and continental shelf delimitation, natural water resource management and natural resources had been drafted and powersharing in the new federal body had determined ethnic quota for the new authority. The federal solution promised efficiency gains, especially in the water scarce north. Even though Turkish Cypriot negotiators tried to retain as much control as possible for 'their' constituent state, increased access to the more developed water infrastructure in the south seemed a price worth paying to relegate authority to the shared federal authority. Conversely, despite trying to strengthen the federal authority as much as possible in the negotiations, many Greek Cypriot nationalists wanted to protect 'their' public investments in water infrastructure and opposed sharing the water it supplies. Divided waters are, therefore, not merely a 'natural' problem. They carry domestic political imperatives, but also have a direct bearing to the peace process, far beyond negotiations on sharing natural resources.

5 Conclusion: The Geo-Political Engineering of Cyprus' Divided Waters

The history of water division and potential reunification shows, first and foremost, that water politics in Cyprus is not merely about meeting resource scarcities. It enters the political process in a rather complex and intricate manner. For the time being, both communities concentrate their efforts on the costly increase of water supplies instead of politically costly, yet more effective demand management. This is not just a reflection of the political leverage farming communities exercise north and south of the buffer zone or the rent-seeking behaviour of contractors. Rather, it is intricately linked to questions of peace and conflict on the island. First, the policy prerogatives of the Cyprus problem, namely governance, property, territory and guarantor powers, limit the scope for action in other policy areas. This translates into political weaknesses in environmental and water management. Second, contrary to liberal expectations, long established forms of transboundary cooperation, like electricity and waste water treatment, rather than 'spilling over' into a wider settlement, remain isolated. Despite an overall hopeful peace process and confidence building measures, both parties continue deepening the water divide, protecting their unilateral investment in non-conventional water resources. Liberal narratives, by contrast, would see the spatial and climatic constraints in Cyprus as conducive, if not imperative to cooperation. Contra neo-Malthusians, water scarcity in Cyprus does not lead to conflict. This does not mean that water resources are not linked to conflict, however.

These findings demonstrate that questions of resource management cannot be viewed in isolation of the geopolitical environment. These 'third party', or artificial solutions are intimately linked to the geopolitics of the conflict. While the RoC aims to maintain independence at all cost, in turn maintaining water hegemony on the island, Turkey aims to maintain its relevance in the peace process, having encountered severe limits to its ambitions of influencing regional politics in the wake of the Arab Spring. With a solution on the horizon, Turkey, an otherwise highly pro-active geopolitical player, is reported to largely abstain from the current round of negotiations. With the water (or peace) pipeline project complete, Ankara seems content with a solid bargaining position. Water supply policies, thus, protect interests far exceeding water as a natural or economic resource. Water as a political resource is an intricate part of the conflict and the peace process alike, even without any open dispute. These complex conditions of water management under conditions of conflict and peace, it is finally argued, can only be revealed by studying the relations between water scarcity, management, conflict and peace-building more comprehensively.

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