

Understanding water-society nexus: insights from Turkey's small-scale hydropower policy

Ramazan Caner Sayan^a and Aysegul Kibaroglu^b

^a*Dundee Centre for Water Law, Policy and Science, University of Dundee, Dundee, UK*

^b*Corresponding author. MEF University, Faculty of Economics, Administrative and Social Sciences, Department of Political Science and International Relations, TR-34396 Istanbul, Turkey. Visiting professor, LBJ School of Public Affairs, UT Austin, USA*

E-mail: aysegul.kibaroglu@mef.edu.tr

Abstract

Turkey's recent venture involving the construction of hundreds of small-scale hydropower projects is a significant trend, both in regard to its contribution to Turkey's hydroelectricity production and the social and environmental impact of these projects at the local level. Turkey's hydropower policy was premised on a conventional understanding of water driven by science, technology, and the market. This approach, however, does not seem to have paid sufficient attention to the socio-ecological characteristics of water. Developing policies from a solely technical perspective creates political, economic, and cultural inequalities that adversely affect the social and ecological realm. Hence, this paper attempts to deconstruct the design, execution, and aftermath of Turkey's small-scale hydropower policy through the lens of the hydro-social cycle. We aim to explain various dimensions of Turkey's small-scale hydropower program in a conceptual framework that merges the concept of the hydro-social cycle with patterns of distributive environmental justice. We find that state-led, techno-centric and market-oriented approaches to water instrumentalize a rhetoric of justice in order to justify the development of small-scale hydropower ventures. Our analysis, however, demonstrates Turkey's small-scale hydropower policy falls short of delivering on its promise of distributive justice in three relevant dimensions, namely the distribution of burdens and benefits, vulnerabilities, and responsibilities at local level.

Keywords: Distributive environmental justice; Hydro-social cycle; Small-scale hydropower; Turkey; Water policy

Introduction

The development of water resources was one of the key sectors institutionalized in modern Turkey. Its role in driving economic growth and social development has been constantly emphasized at the political level. In particular, with the establishment of the water bureaucracy, *Devlet Su Isleri* (State Hydraulic

doi: 10.2166/wp.2016.235

Works, DSI, following the Turkish acronym hereafter) in 1954, hydropower projects (HPs) became an integral part of Turkey's socio-economic development. As part of the official five-year development plans, the Turkish state has invested in the construction of hundreds of large-scale dams and reservoirs, as well as launching its mega hydro-development project entitled the Southeastern Anatolia Project (GAP, following the Turkish acronym) for the benefit of the entire country (Tigrek & Kibaroglu, 2011). Turkey's ambitious program to develop large-scale hydropower has been frequently praised at political and administrative levels, while, in general, also backed by society due to its tangible contributions to the livelihoods and socio-economic development of the people (Adaman *et al.*, in press).

While hydropower investments continue to be an integral part of Turkey's development program, the neoliberalization of the global political economy and the rise of a sustainability discourse at the international level have culminated in a paradigm shift. With these transformations, state-led large-scale HPs began to be discouraged worldwide due to their socio-environmental impacts (World Commission on Dams [WCD], 2000). This shift also loomed large on Turkey's hydropower policies, as international financing, through organizations like the World Bank, were an important incentive to and resource for Turkey's HPs. Reflections of these global trends on Turkey's water management marked the start of a new phase in Turkey's economy and energy policies during the 2000s (Kibaroglu *et al.*, 2009). This phase has seen a shift with the construction of hundreds of small-scale run-of-river HPs planned by DSI and constructed and operated by private sector companies (Islar, 2012a). The small-scale HPs with a capacity of 10 MW or below typically divert water from a point close to the source of the river (at an appropriate altitude) through canals or pipes to the powerhouse where electricity is generated, subsequently releasing the processed water to the river course (Abbasi & Abbasi, 2011). This process does not involve the construction of huge reservoirs or dams to store large amounts of water.

According to official records, 1,497 HPs have been planned across Turkey, 422 of which are already in operation while the rest are in the stages of planning and construction (DSI, 2014a). In justifying their policies, the government and its water bureaucracy have consistently promoted these projects as renewable energy sources and emphasized their contributions to Turkey's socio-economic development (Islar, 2012b; Erensu, 2013; Adaman *et al.*, in press). Traditionally, the Turkish public has been overwhelmingly supportive of the government's water management practices, particularly because large-scale HPs have tangibly contributed to their livelihoods, providing power, irrigation, and jobs. In contrast, the small-scale HPs, whose economic impacts have been less tangible, have produced an unusual public backlash as they were perceived to be serving not the public's interest but those of a circle of private sector companies and state elites (Hamsici, 2010; CounterCurrent, 2011; Union of Chambers of Turkish Engineers & Architects [Turkiye Muhendis ve Mimar Odalari Birligi, TMMOB], 2011; Eryilmaz, 2012; Islar, 2012a, 2012b; Environmental Justice Organizations, Liabilities & Trade [EJOLT], 2015). Along with the perception of graft and corruption, these constructions have also received backlash for the impact they have had on the environment, as the brooks and streams being developed were integral to the locals' livelihoods and their socio-cultural activities. Moreover, the design, planning, and implementation of these HPs have drawn extensive criticism for their lack of inclusion and transparency (Hamsici, 2010; EJOLT, 2015).

Hence, we probe into the central role of injustices hidden in the hydropower policies and discourses at national and local levels in order to trace three different patterns of distributive environmental justice: (i) burdens and benefits, (ii) vulnerabilities, and (iii) responsibilities. We will explore how socio-environmental benefits and burdens are distributed among stakeholders, namely suppliers (i.e. private companies and the State) and users (i.e. local people). Moreover, we analyze how locals have

become more vulnerable to the changes in water availability as a result of the HPs. We will also disentangle how the responsibilities are distributed between stakeholders in terms of obtaining water use rights and the economic and social returns of water development.

Playing a key role in this analysis are two competing frameworks to water – technocratic and socio-political. In the technocratic framework, water is viewed as a material resource and reduced to its physical properties in the hydrological cycle (Bakker, 2007; Molle, 2009; Swyngedouw, 2009; Linton, 2010). Subsequently, this framework focuses on state-led, techno-centric and market-oriented approaches of hydraulic bureaucracies at the national and global levels ‘to govern and manage water for human benefit’ (Baker, 2013). In contrast, more recent literature, like Linton & Budds (2014) and Swyngedouw (2015), argue for a socio-political approach that construes water as inherently fluid and treats it as the vehicle of a complex web of social relations, flowing in not only a hydrological but also a hydro-social cycle. According to this approach, water and society are intertwined with each other and they ‘make and remake each other over space and time’ (Linton & Budds, 2014).

Building on this dichotomy, this paper attempts to deconstruct Turkey’s small-scale hydropower policy by focusing on the dissonance between the hydrological and hydro-social cycles. The paper articulates Turkey’s hydropower process and its socio-environmental impacts to reinforce the social dimensions of water and the hydro-social cycle and, most importantly, discuss how issues of (in)equalities, or broadly justice notions, are central to the hydro-social cycle. On this basis, it argues that the social dimensions of the hydro-social cycle can be deepened and broadened when explicitly articulated through the concept of distributive environmental justice.

The paper starts with an overview of Turkey’s water policy, explaining how the country’s hydropower policy was shaped and justified in a technocratic framework that limits water to its hydrological properties as a source of energy. After a conceptual discussion and description of methodology, the following section sheds light on how this conceptual approach reverberates at the local level, looking at first-hand information and empirical evidence obtained through fieldwork at the Kargi-Yaniklar HP in Turkey’s Western Mediterranean region. Overall, the paper’s objective is to demonstrate how the design and practice of hydropower policies alter patterns of environmental justice and discuss whether the notion of justice can be internalized in the hydro-social cycle.

An overview: implications of Turkey’s pivot from large-scale to small-scale HPs

The technocratic approach to water policy is premised on the assumption that state-led, techno-centric, and market-oriented practices would yield a fair and equitable distribution of water resources, both socially and environmentally. It is on this basis that it justifies its reduction of water to its hydrological properties. This section problematizes this approach, tracing (i) how contrasting conceptualizations of water have an impact on Turkey’s water policy, (ii) how water policy alters patterns of justice and injustice, and (iii) how water is mediated as a means of socio-environmental injustice in the country.

Turkey’s water management policies and practices differentiate over time. From the 1920s to the 1950s, Turkey was undergoing a process of state consolidation efforts, which included the mobilization of financial, administrative, and technical resources to assess the country’s hydropower potential (Tigrek & Kibaroglu, 2011). In 1954, water management was effectively institutionalized with the establishment of the country’s dedicated water management agency – DSI – which led the systematic planning and implementation of hydraulic projects in Turkey. DSI was a technocratic institution dominated by

civil engineers and water bureaucrats, who viewed water management as a technical issue and approached water policy from a distinctly technocratic perspective.

Between the 1960s and 1980s, DSI's policies, reinforced by the five-year development plans of the State Planning Organization, led to massive water development projects in Turkey, mainly for hydropower generation and agricultural development (Tigrek & Kibaroglu, 2011). These state-led development schemes reached their apex in the 1980s, when Turkey integrated its existing water projects in the Euphrates and Tigris river basin into a mega-plan that comprised one of the world's largest multidimensional water development projects: the Southeastern Anatolia Project (GAP). Alongside the country's broader objectives regarding hydropower generation and agricultural productivity, the GAP also aimed to improve the socio-economic condition in Turkey's economically underdeveloped southeast. Although the GAP had a hybrid agenda with both social and technical objectives, the cadres working on its planning and implementation were acculturated to the Turkish water bureaucracy's technocratic approach. Driven by a top-down policy process that failed to fully appreciate the complexities behind the region's socio-economic underdevelopment, the GAP mostly achieved its technical objectives in terms of hydropower generation and agricultural productivity but failed short of its social agenda (Kibaroglu, 2002).

Starting in the 1980s, the transformations in the global political economy have led to an increasing neoliberalization of Turkey's water policy (Kibaroglu *et al.*, 2009). In this context, the role of DSI and the State in water management has been redefined from a principal contractor to a market regulator. This neoliberal shift placed a premium on private sector participation and resulted in policy changes like the transition from large-scale HPs that very few private sector companies had the financial heft and technical know-how to successfully execute to small-scale HPs that are relatively easier to fund, build, and manage (Harris & Islar, 2013). Indeed, since the 2000s, these projects have become the norm in Turkey's water and energy policies and their market-centric, profit-oriented outlook has further entrenched the technocratic approach to water (Adaman *et al.*, *in press*).

Turkey's recent water development policies aim to maximize the country's hydropower potential through developing more small-scale installations and demonstrate a convincing case of water being demoted to its materiality. These policies, however, have stirred controversy due to the socio-ecological impacts associated with construction sites, the top-down approach in implementation, and the perception of graft, cronyism, and corruption. This transformation of Turkish public opinion, which has traditionally been supportive of the state's water policies, cannot be fully comprehended without reference to neoliberalization and its implications for water management practices in Turkey. Neoliberalism takes privatization, commodification, deregulation/reregulation, and competition as its central pillars. As part of the rise of neoliberal ideology, these pillars have been globally promoted as the best practices and the commodification of water, based on its material properties as an economic resource, has found traction across the world (Bakker, 2007).

The neoliberalization of Turkey's water and energy policies dates back to 1984, when the first legislation initiating privatization in the electricity market was passed (Kibaroglu *et al.*, 2009). In this period, Turkey was also undergoing an International Monetary Fund (IMF) structural adjustment program, which incentivized the neoliberalization process. Consequently, Turkey's water and hydroelectricity policies have since centered on 'the assurance of liberalization and privatization' which culminated in Turkey's transition to a small-scale hydropower policy driven by private sector interests (Kibaroglu *et al.*, 2009).

In this transition, international financial institutions such as the World Bank have played a significant role as they expanded carbon markets to developing countries. Turkey became one of the first countries

supported by the World Bank's Clean Technology Fund (CTF), which was established to facilitate the Bank's role 'in providing climate finance for developing and middle-income countries' (Eberlein & Heeb, 2011). The CTF has been a lucrative source of financing for Turkey to expand its renewable sector, reduce carbon emissions, and open up new markets for renewables (Islar, 2012a). While CTF loans were intended to support overall renewable development, Turkey has allocated these funds almost exclusively to energy efficiency and small-scale HPs, which combined account for 56 of the country's 62 CTF-funded projects (Eberlein & Heeb, 2011).

The global climate change regime under the Kyoto Protocol, has created new markets for carbon reduction and introduced new regulatory mechanisms by prioritizing market solutions to cope with climate change (Erensu, 2013). By acceding to the Kyoto Protocol on developing country status, Turkey has also been able to benefit from the market mechanisms instituted under the Kyoto regime (Kaygusuz & Arsel, 2005). As water was a central component of its adaptation to this emerging regime, Turkey passed legislation to attract both foreign and domestic investors to invest in renewable energy projects in Turkey, including hydropower. In this regard, an important development was the passing of Law No. 5346 on Renewables in 2005, wherein the state instituted a critical incentive for investments through a purchase guarantee for electricity generated through hydropower.

Another driver of the neoliberalization of Turkey's water policy was its relations with the European Union (EU). Turkey's EU accession bid catalyzed the legislative changes and reforms that restructured its natural resource management schemes and created a competitive energy market, especially within the hydropower sector, in line with neoliberal mechanisms (Harris & Islar, 2013). As Sirin & Ege (2012) observe, reform in renewable energy legislation was encouraged by the EU, and led Turkey to commit itself politically to increasing the share of renewable energy in its energy portfolio. Indeed, the 2001 Law on the Electricity Market, which began Turkey's spread of small-scale HPs in the country, was passed to harmonize Turkey's energy market with EU market conditions (Kaya, 2006).

Furthermore, the 2005 Law on Renewable Energy introduced mechanisms such as eminent domain rights and purchase guarantees to attract private investment to Turkey's renewable energy sector. It is estimated that within a year of the law's enactment, hydropower constructions quadrupled while the number of planned HPs doubled (Baris & Küçükali, 2012). These legislative changes and the funds made available through EU institutions like the European Investment Bank (EIB), which gave €135 million to support eight HPs including a mixture of small-scale HPs and large dams in southeast Turkey (EIB, 2008), have incentivized European companies to actively participate in Turkey's hydro-power sector (Harris & Islar, 2013).

In brief, water resource management and energy policies have been shaped by broader ideological neoliberalist practices, which are widely practiced throughout the small-scale HPs. Neoliberalization and its implications in global trends, therefore, have reinforced the understanding of water rather as a material entity or as an economic resource in Turkey.

The concepts of hydro-social cycle and environmental justice

The dominant approach to water management construes nature and society as separate entities, and explores the role of states, technology, and markets in manipulating nature for society's best benefit (Scoones *et al.*, 2015). The binary unit of this approach is 'the hydrological cycle'. Linton (2010) examines the history of hydrology and discusses how the rise of the discipline devalued water from its

societal context, reducing it to ‘an abstract, isomorphic, measurable quantity...the substance that flows in the hydrologic cycle’.

There is, however, a burgeoning literature investigating the water-society nexus and seeking to reinsert water’s social properties into the debate. This literature builds on the concept of the ‘hydro-social cycle’ which is premised on the inseparability of water and society (Swyngedouw, 2009). The concept of the hydro-social cycle emphasizes ‘water’s symbolic and material dimensions and has been used to reveal capital accumulation and inequalities of access to water induced by water management practices’ (Fernandez, 2014). Policies premised on the hydrological properties of water have cohered with the socio-ecological impacts of water resource management practices. Consequently, policymakers have prioritized technical metrics – like hydroelectricity generated and acres irrigated – at the expense of potential socio-ecological impacts.

Construing water as a material entity and managing it as an economic resource has critical implications for issues of socio-economic justice. Scoones *et al.* (2015) argue that green policies are legitimated for their contribution to the provision of socio-economic justice, on the conviction that they lead to a fairer and more equitable distribution of environmental resources. According to the political ecology literature, the state-led, techno-centric, and market-oriented approaches in water management inflict socio-environmental changes that are the main culprit behind social and environmental injustices in the distribution of resources (Swyngedouw, 2007).

The environmental justice literature, which emerged as a broad research agenda, traditionally focused on the disproportionate allocation of environmental hazards and benefits across society, particularly within the U.S., where the initial works were predominantly associated with the notion of environmental racism (Bullard, 2005). Despite its expanding theoretical focus, the concept of environmental justice takes the distribution of environmental burdens and benefits as its departure point (Schlosberg, 2007). Expanding the concept’s boundaries, Walker (2012) argues that analyses of distributive environmental justice have to also evaluate how environmental policy-making distributes vulnerabilities and responsibilities, contextualizing how environmental benefits and burdens are allocated among the winners and losers of the policy process. In this context, we utilize three patterns of distributive environmental justice: (i) burdens and benefits, (ii) vulnerabilities, and (iii) responsibilities, to appraise the facts and fiction of Turkey’s claims to the socio-environmental justice through its hydropower policies. The article will demonstrate how distributive environmental justice is vitalized and embedded in definitions of water in the hydrological and hydro-social cycles. In bridging the concept of the hydro-social cycle with distributive environmental justice, our main objective is to enrich ‘the social’ dimension of the hydro-social cycle by endorsing justice dimensions embedded in the cycle (See Figure 1). The notion of distributive socio-environmental justice has been either subordinated or taken for granted without sufficient elaboration regarding the hydro-social cycle. We use these merged concepts to elaborate on Turkey’s hydropower development policies and show the possibility of explicit integration of the concept of distributive socio-environmental justice with the hydro-social cycle as a component.

Method

We adopt a qualitative methodology, utilizing discourse, mass media, and document analysis to deconstruct Turkey’s hydropower policies. Empirical evidence has been mainly supplied through six weeks of fieldwork in the town of Fethiye and the Kargi-Yaniklar villages (May 2014 and October

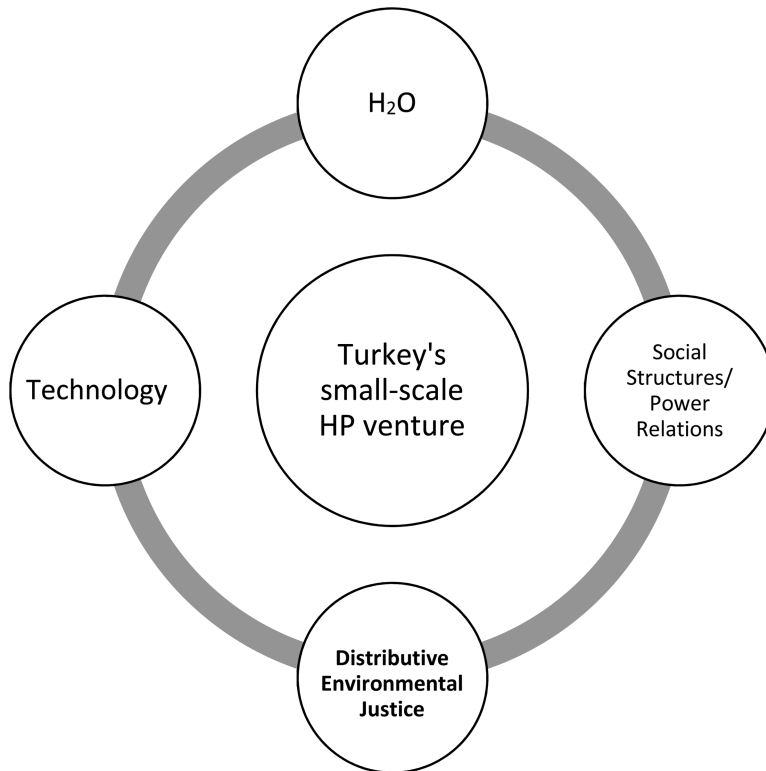


Fig. 1. Modification of the hydro-social cycle when socio-environmental justice is added as a component (based on Linton & Budds, 2014).

2014) in Turkey's southwest. That data was obtained through semi-structured interviews with locals during these field visits. Also included in field interviews were engineers from DSI's regional office in Fethiye as well as activists and environmental lawyers engaged with the Kargi-Yaniklar HP. Outside the field, the authors also drew from interviews with corporate representatives from business interests involved in HPs and high ranking bureaucrats at the DSI's national headquarters in Ankara, whose comments helped to bridge the narratives and practices on the local and national levels. Additional information came from legal documents, statistical data sheets, annual reports, and similar resources released by various agencies of Turkey's water bureaucracy.

Case study: Kargi-Yaniklar small-scale HP

Each HP results in a unique set of socio-spatial transformations, shaped by its historical, geographical, and technical particularities. Consequently, each case study would reveal different forms, levels, and patterns of socio-environmental distribution. This paper seeks to illustrate how hydropower development alters patterns of distribution and affects socio-environmental justice by focusing on a particular case study from Turkey – the Kargi-Yaniklar HP in Turkey's Western Mediterranean region, one of nearly 1,500 HPs under development in the country (see Figure 2). This region stretches across Turkey's Mediterranean coastline in the Taurus Mountains, which give the region a high



Fig. 2. Kargi-Yaniklar Basin and HPs. Source: <http://geodata.ormansu.gov.tr/>.

elevation and an abundance of brooks and streams (TMMOB, 2011). The coastal strip is dotted with resort towns, which have high electricity demand in summer, while the region's hinterland is comprised of small, agrarian communities. The dual benefits from irrigation and electricity generation have made the region one of the focal points of Turkey's small-scale hydropower policy with hundreds of HPs in planning or under construction. Whereas the HPs in the Black Sea region have received attention in scholarly studies (Eryilmaz, 2012; Islar, 2012a; Erensu, 2013), there is not a comparable body of literature that systematically surveys the HPs in the Western Mediterranean. This deficit is especially relevant considering that the Mediterranean Basin is designated as a 'biodiversity hotspot' by the International Union for Conservation of Nature. Such zones are often habitats of endemic or endangered species, subject to national legal conservation schemes (e.g. national parks, special environmental protection areas, etc.), and are under the purview of the 1976 Barcelona Convention.

The Kargi-Yaniklar HP was being developed on the Kargi brook in Turkey's southwestern region on the Mediterranean (see Figure 2 and Table 1). The project is situated close to the resort town of Fethiye, an eco-tourism hotspot that hosts more than a dozen five-star hotels and draws over half a million tourists every year. Surrounding Fethiye is a number of agrarian communities with citrus and olive groves as well as vegetable fields. The arable land cultivated by the communities is irrigated using canals from the brook. Furthermore, the brook's small basin is also significant for its *Liquidambar orientalis* trees – an endemic and endangered species – as well as pine and plane forests.

A 1.5 MW HP is currently under development on the basin's Kargi brook, which originates at the Banlica plateau on the 2,354-metre high Akdag Mountain. The Akdag Mountain is also a designated 'special environment protection area' due to its biodiversity. Therefore, it is perfectly suited to assess the social, economic, and ecological impact of Turkey's small-scale HPs. Such a case study also affords an opportunity to observe how these projects' effects on the hydro-social cycle alter patterns of distributive socio-environmental justice.

Between 2011 and 2014, the locals of the basin mobilized a series of public protests against the planned HP which they took to court. In 2014, the locals successfully argued their case and won an

Table 1. General features of Kargi-Yaniklar HP.

	HPs status	Level of Opposition	Environmental Status of the Basin	General Features of the Basin and Local Communities
Kargi-Yaniklar HPs	1.5 MW capacity of electricity generation Initiated in 2009 and court stopped the construction in 2011	High	Reproduction corridor of an endemic species, <i>Liquidambar orientalis</i> and the basin is part of a Special Environment Protection Area	A popular tourist destination Fertile agricultural lands Recreational area Relatively larger settlements with more socio-economic opportunities Kargi Stream is the most important freshwater source of the basin and socio-economic activities of local communities over-depend on it

injunction against the development. That said, there are three more HPs planned on the same brook (Demir, 2011).

The concept of environmental justice is inherently expressed by its distributive aspects, seeking to identify the appropriate distribution of environmental benefits and burdens across society (Schlosberg, 2007). Building on this notion, Walker (2012) suggests that environmental justice should account for the distribution of not only benefits and burdens but also vulnerabilities resulting from responsibilities assumed in the making of environmental policy. Following these three patterns – benefits and burdens, vulnerabilities, and responsibility – in the Kargi-Yaniklar case, it is thus possible to trace how hydro-power policy shapes outcomes of socio-environmental (in)justice.

Benefits and burdens. The main benefit from the project – as illustrated in the official documents, expert statements, and field interviews – was hydropower generation. Two interviewees at the DSI's regional office, for example, only mentioned the project's contribution to the national grid. Hydropower generation also featured prominently in the locals' discussion of the project. That alone, however, was not a sufficient benefit to win over the locals. The former head of Kargi village, for example, noted '1.5 MW electricity [referring to the capacity of that HP] cannot even meet the electricity demand of this village'. For a community that built its life and livelihood around that brook, the benefits associated with the project were not sufficient to shoulder its burden, especially considering the potential impact from the construction on tourism, agriculture, and the environment.

Indeed, the field interviews reflect how the socio-economic and environmental risks associated with the project's construction and operation loomed large in the locals' minds and mobilized their opposition. For example, the local interviewees pointed at the potential toll the project is going to take on their mode of living. One local bemoaned 'families take their children to swim during picnics' at the upstream site the project was slated to be constructed on. She also deplored, as did other local interviewees, the damage the construction is going to inflict on the village and its surroundings. Another source of worry was the adverse effect on the local economy. The villagers relied on agriculture, fishing, and eco-tourism for their livelihood – the damage from the construction and the diversion of the river would potentially affect all of these activities and therefore risk their economic well-being.

The primary concern, however, was for the environment as reflected in both the locals' comments and in the legal proceedings. The construction was expected to result in significant deforestation, which would have a tangible impact on the environment. In our interview, the former head of Kargi village bewailed that the constructors had already cut down 'approximately 800 pine trees' to open a road to the upstream construction site. Comparing the trees to the region's lungs, the village head likened the construction to a 'cancer in the lungs of the region'. Deforestation not only indicated a loss of the region's pristine nature, which was a source of revenue through eco-tourism, but it was also potentially going to reduce air quality, affecting the locals' lives. Since the diversion of the river was going to change the soilwater levels, the locals were also worried that the deforestation effect would last beyond the construction.

Particularly worrisome was the fate of the region's endemic and endangered *Liquidambar orientalis*. The environmental assessment reports and expert testimonies that resulted in an injunction from Turkey's highest administrative court – Council of State (Danistay) – provided a detailed list of the environmental risks associated with the project. The Council of State's final decision, however, especially emphasized the threat to *Liquidambar orientalis*, already endangered due to anthropogenic reasons. The Council of State's decision highlighted that the region represents a vulnerable ecosystem, that the Kargi brook is the basin's major water source, and that its diversion would have adverse implications for a region that is already designated as a 'special environment protection area' by law. After these assertions, the decision devoted a lengthy section to the *Liquidambar orientalis*, the imperative to and conditions necessary for its preservation, and the potential risk the construction posed to the species. As expressed in the decision, the proposed construction site and the brook's banks comprised the majority of the region's *Liquidambar orientalis* population since these are the only areas with phreatic groundwater levels sufficiently high for the species to maintain their lifespan. Alluding to Turkey's commitment to protect endemic species under the Convention on the Conservation of Wildlife and Natural Habitats (also known as the Bern Convention), the Council concluded the project posed an undue threat to an environment exhibiting a characteristically Mediterranean flora and fauna, and hosting a roster of endemic or endangered species. The expert report similarly pointed at adverse risks like changes to soil salinity, phreatic groundwater, erosion, forestation, and animal populations, some of which may irreversibly damage the region's ecosystem. It was on the basis of this assessment that the Council issued an injunction halting the project and as its assessment reflects, the Kargi-Yaniklar HP was a typical example of how hydropower policies designed and implemented in a top-down fashion, with utilitarian concerns, and from a technocratic perspective pass environmental burdens and risks unfairly to the local communities.

Vulnerabilities. Locals interviewed in the basin contended that the HP would divert the river's water in ways that would reduce their access and render them vulnerable to erratic flow patterns. One local interviewee pointed out 'the amount of water had already been decreasing' and that 'the [HP] would only make things worse'. The locals were particularly aggrieved by the potential impact the project was going to have on their access to water, describing it as 'disastrous'. In the words of one interviewee, 'we rely on water [for] our crops, our bread [and] people are already struggling to earn a living [which will only become worse with the HP]'. On the other hand, the former head of the village said that the villages had already experienced serious problems regarding the management of irrigation systems and provision of irrigation water. In his view, the HP was going to exacerbate these problems as '[the project] would affect the availability of irrigation water and likely limit our irrigation activities'. Other locals similarly remarked that the project 'would damage the stream' and 'destroy the natural beauty fed by the stream'. This was another source of vulnerability which was likely to adversely

affect their livelihoods, as the destruction of the region's pristine nature would have decreased their income from eco-tourism.

Other locals – especially women – pointed out that the basin was integral to their socialization. The proposed construction site and the brook's banks were fields where the locals gathered for picnics, feasts, and village events. The planned project spelled their doom. In the words of one local 'these recreational areas and the activities around them are essential parts of those people's lives, you cannot just take them away from them'.

Indeed, several interviewees expressed concern that the project would compel locals to emigrate from their localities. 'These people already expect more jobs, more amenities and social opportunities' said one interviewee, 'when they are not feeling assured about their future and their living conditions are threatened, emigration becomes the only possibility for most'. Another interviewee echoed the same sentiment: 'If there is no water, there is no life. If there is no water, you cannot practice agriculture, you cannot plant fruit trees. Then, what are you going to do? You will have to emigrate'. As the remarks illustrate, the vulnerabilities the HP created in the form of reduced access to water, negative impact on livelihoods, and limited social opportunities posed a potentially existential threat to these communities, indicating another instance of socio-environmental injustice.

Responsibilities. A third aspect to look at is the distribution of responsibilities. The local interviewees unanimously believed that the company would benefit disproportionately from the project as it was granted water use rights for 49 years whereas the locals were almost totally excluded from the decision-making process. This asymmetry aggrieved the locals as they perceived it an unfair appropriation of a resource that collectively belongs to and benefits them for the benefit of a corporate interest:

It is important who owns the water. The beneficiary of the process is obvious: the company. The locality would not benefit from the process. We want projects which may improve the locale, we do not want outsiders [referring to the companies] to get all of the benefits.

Other interviewees questioned the company's intentions, contending that it is oblivious to the toll the project is going to take on the locality, 'the electricity to be produced here will not even meet the project's cost', said one interviewee; 'the intention is to obtain profit from the water, it has nothing to do benefiting us, benefiting the region at all'. Another interviewee similarly argued that project was simply a politically-connected corporate interest reaping profits from state's coffers and at their expense: 'I do not believe this [HP] is about producing electricity. It is too small to even meet the energy demand of this village. It is all for the profit from privatization'.

One reason feeding these suspicions was the 'closed, rather secret processes' followed by the company and the State in the project's application and approval process – a secrecy criticized even by an interviewee who supported the project. The secrecy had convinced the locals that the project prioritized the corporate interests over theirs. Echoing the same sentiment, one interviewee remarked:

These projects are generally negotiated between the companies and the State in secrecy, with an aim to increase profits of the companies. We know that the ruling party's MP here acts as a mediator for the companies seeking to construct hydropower projects in this region...They [policymakers] are only after their personal gains from these projects. They could not care less about the locals, about the nature.

Discussion: uncovering social aspects of water in small-scale HPs-discourse analysis

The discourses surrounding water management practices reflect social power relations while revealing how water is defined and mediated by the different stakeholders (Mehta, 2014). Studies like Islar (2012b), Erensu (2013) and Adaman *et al.* (in press) have sought to empirically study the power structures embedded in Turkey's hydropower policies in the recent years. Islar (2012b) revealed the interplay of two competing conceptualizations of water in Turkey's water policy by contrasting the technocratic discourse embraced by politicians, bureaucrats, and the private sector, which contrast with the socio-political discourse espoused by activists, conservationists, and hydropower opponents. Building on Islar's work, we trace these discourses as reified and reproduced at the local and national levels, and demonstrate how water mediates power relations that define patterns of socio-environmental injustice. A leitmotif in Turkey's hydropower discourse, especially at the national level, is the rhetoric of 'water flowing idly by' (Milliyet, 2005). Cabinet ministers and water bureaucrats commonly characterize water not utilized for energy or irrigation as having flown idly by or in other words, as having been wasted. In this rhetoric, water is reduced to its utility, either as generating electricity or as irrigating fields (Radikal, 2009). Such an exclusive focus on water's economic utility, however, abstracts it from its socio-ecological dimensions, especially in communities where it is the lynchpin of a certain mode of living.

This political rhetoric that essentializes water's economic utility is also pervaded by nationalistic undertones. Hydropower is regularly trumpeted as a 'national' resource and a means to reducing Turkey's energy dependency (Radikal, 2010; Hurriyet, 2012; Yeni Akit, 2013). While praising the recent surge in Turkey's hydropower investments, for example, a cabinet minister played a pun on the Turks' self-deprecating idiom 'water flows, the Turk watches it' and remarked that with the recent surge in Turkey's hydropower investments, the idiom is now reversed to 'water flows, the Turk constructs' (Milliyet, 2011). This emphasis on 'national' capabilities, reversed cultural stereotypes, and the 'achievements' of Turkish engineering and entrepreneurship also reproduce a discourse that has persisted through the history of Turkish modernization. With the rise of the climate change agenda, this discourse has also gained a new dimension with hydropower being promoted as a 'national' renewable energy source (Yeni Akit, 2013).

The aforementioned political rhetoric was also reflected in the remarks of the DSI engineers interviewed for this study, all of whom described water as 'a source of clean energy', 'a national resource', and a necessary means for reducing the country's fossil-fuel energy dependency. The DSI's annual reports exhibit a similar language, with strong references to water scarcity and drought problems and an emphasis on hydropower construction as the solution (DSI, 2014b). Consistent with these notions, the water bureaucracy encourages private sector participation in the hydropower sector. Consequently, the private sector's rhetoric becomes very similar to the water bureaucracy's technocratic and utilitarian conceptualization of water:

Our rivers (in the Black Sea region and Eastern Anatolia) flow from high slopes and end up in frequent floods. We have to discipline all the rivers. For example, when you construct a regulator, you actually build a wall. I wish to see more dams...The speed of water should be slowed down by the dams, which are all beneficial in that sense. By means of dams, we are also able to produce clean energy.

These accounts converge a certain conceptualization of water based on its economic utility which defines a certain approach to its politics on the assumption of an optimal technique or technology whereby water can be managed for maximal societal utility (Scoones *et al.*, 2015).

Pitted against this approach, however, is an alternative discourse that has been central to the public opposition to HPs in Turkey, especially at the local level. This discourse opposes neoliberal orthodoxy like privatization, deregulation, and private sector participation. It characterizes the impact of this neoliberal orthodoxy in a language of authoritarianism, as reflected in its popular slogans like ‘let the brooks flow freely’ and ‘stop the brook massacre’. Against the technocratic approach’s utilitarian emphasis on material and quantifiable benefits, this discourse highlights immaterial and socio-political losses like the environmental impact and distributive environmental injustices (e.g. access and availability) (Hamsici, 2010). It is worth noting that this alternative discourse is not premised in a systematic opposition to technology but rather on an alternative narrative of science that casts doubt on the technocratic discourse’s claim to legitimacy through scientific objectivity. A point observed in our fieldwork, for example, was how the locals invoked science to legitimize their own arguments, educated themselves on the scientific arguments against hydropower development, and sought to engage like-minded academics in their movement. By this token, the socio-political discourse does not repudiate science but posits the multidimensionality of water as a scientific fact. These discursive interactions between different stakeholders revealed the social power relations embodied in Turkey’s hydropower policies. The technocratic approach empowered politicians, bureaucratic institutions, and the private sector as the actors for driving hydropower policy. In this regard, they were also aided by international actors like global credit institutions (e.g. IMF and the World Bank), the EU, and the post-Kyoto climate regime which facilitated the diffusion of neoliberal orthodoxy into national policies. With the spread of this market-centric, profit-oriented approach, the utilitarian conceptualization of water became the norm – in Turkey and across the world – and consolidated the dominant position of these actors.

As Petras & Veltmayer (2001) describe, ‘neoliberalism engenders a significant increase in inequality between the minority within the globalist loop and those exploited by it’. On the Turkish side, the losers of this transformation were the locals who were excluded from the process whereby the policies that had a tangible impact on their lives and livelihoods were designed and implemented, as if they were deemed dispensable for the sake of ‘national’ interests. This perception of exclusion and marginalization, however, redefined power relations as it mobilized the local – and the public opinion – in opposition to hydropower and in a handful of cases – including the case study in this paper – managed to block the HPs. Consequently, it is affirmed that water and the policies it is managed by cannot be understood in isolation from their socio-political context and patterns of distributive socio-environmental justice.

Conclusion

In recent years, Turkey has transitioned from large-scale HPs undertaken by the State to small-scale HPs driven by the private sector. Turkey’s hundreds of small-scale hydropower plants in operation or under construction have a significant contribution to the country’s electricity generation. These projects, however, are also important for their social and environmental consequences, especially at the local level. Deconstructing the discourses surrounding this pivot from the perspective of the hydro-social cycle, this paper has sought to explain the various levels at which Turkey’s recent hydropower policies are altering patterns of distributive socio-environmental justice.

Turkey’s politicians, bureaucratic institutions, and the private sector designed and implemented the country’s hydropower policies in a top-down fashion, with utilitarian concerns, and mainly from a technocratic perspective. This approach of restricting water to its economic utility, derived from hydrological

properties as the chemical compound H₂O, did not sufficiently appreciate its socio-political context and how water management practices affect lives and livelihoods at the local level.

The changes in Turkey's hydropower policies, enabled by the rise of neoliberalism at the global level and its diffusion into national legislation through international financial institutions, the EU, and the post-Kyoto regime, altered the existing power relations. Neoliberal orthodoxy, combined with the financial incentives presented by the emergence of a new carbon economy, empowered a state-private sector alliance circumventing and excluding existing beneficiaries (i.e. locals and the environment), a dynamic perfectly illustrated in the Kargi-Yaniklar HP which is analyzed as a case study in this paper. The locals' opposition in the field as well as in the courtroom, which managed to successfully block the Kargi-Yaniklar HP, signified the emergence of a counterweight to the state-private sector alliance's hegemonic role. This conflict also reflected a contrast between competing conceptualizations of water and how water mediates actors espousing them. Water can assume a roster of material and also immaterial meanings. It can be a source of energy, a means of sustenance, a cause of popular mobilization, an instrument of power, and a symbol of nationalism all at once. It can create opportunities and it can create threats. It is not possible to trace the power relations it embodies without following these transformations and observing water's socio-political context. Inherent in this context are patterns of socio-environmental justice. Following three patterns of socio-environmental distribution – benefits and burdens, vulnerabilities, and responsibility – it is thus possible to trace how hydropower policy shapes outcomes of socio-environmental (in)justice.

Technocratic approaches prioritize technical metrics – like hydroelectricity generated and acres irrigated – at the expense of the socio-ecological impacts, and fail to appreciate the social and political contexts each HP is inserted into. As illustrated in the Kargi-Yaniklar case study, this conflict can even result in the marginalized communities successfully mobilizing to block hydropower developments. Therefore, to develop practices that result in a fairer and more equitable distribution of environmental resources, policy planners have to embrace inclusive, transparent processes that appreciate water's dual meanings as both a chemical compound and a social component.

Acknowledgements

The authors would like to acknowledge the invaluable contributions of Selim Can Sazak who extensively reviewed and commented on the manuscript. Dr. Cecilia Tortajada provided very helpful comments on the main setting of the paper. We would also like to thank to Caroline Fell Kurban who reviewed the earlier versions of this manuscript. Centre for Water Law, Policy & Science, University of Dundee graciously sponsored the field trip. We also would like to thank to the interviewees for their collaboration. Bora Sarica has been very helpful in providing guidance during the field trip. Last but not the least, we thank two anonymous reviewers for their constructive comments.

References

- Abbasi, T. & Abbasi, S. A. (2011). [Small hydro and the environmental implications of its extensive utilization](#). *Renewable and Sustainable Energy Reviews* 15, 2134–2143.
- Adaman, F., Akbulut, B. & Arsel, M. (in press). *Turkiye'de Kalkinmaciligi Yeniden Okumak: HES'ler ve Donusen Devlet-Toplum-Doga Iliskileri (Re-reading Turkey's developmentalism: hydro-power plants and changing state-society-environment relationships)*. In *Sudan Sebepler: Kalkinma ve Cevrecilik Kiskacinda Hidro-Enerji ve HES Karsiti Mucadelenin*

- Ekoloji Politigi (Hydro-power between Development and Environmentalism and the Political Ecology of the Struggles against Hydro-Power Plants)*. Evren, E., Erensu, S. & Aksu, C. (eds), Iletisim, Istanbul.
- Baker, L. A. (2013). Hegemonic concepts and water governance from a scientific-engineering perspective. In *Contemporary Water Governance in the Global South: Scarcity, Marketization and Participation*. Harris, L. M., Goldin, J. A. & Sneddon, C. (eds), Earthscan, Oxford, pp. 25–32.
- Bakker, K. (2007). The ‘Commons’ versus the ‘Commodity’: alter-globalization, anti-privatization and the human right to water in the global south. *Antipode* 39, 430–455.
- Baris, K. & Küçükali, S. (2012). Availability of renewable energy sources in Turkey: current situation, potential, government policies and the EU perspective. *Energy Policy* 42, 377–391.
- Bullard, R. D. (Ed.) (2005). *The Quest for Environmental Justice: Human Rights and the Politics of Pollution*. Sierra Club Books, San Francisco, CA.
- CounterCurrent (2011). *Dam Construction in Turkey and its Impact on Economic, Cultural and Social Rights*. CounterCurrent-GegenStromung, Postdam.
- Demir, N. (2011). *Petition for Parliamentary Inquiry*. The Deputy Presidency of Republican People’s Party of Turkish Grand National Assembly, Ankara.
- DSI (State Hydraulic Works) (2014a). 99 Baraj ve HES Aciliyor (99 Dam and hydropower projects Opened) <http://www.dsi.gov.tr/haberler/2016/01/14/99-baraj-ve-hes-a-C3%A7%C4%B1%C4%B1yor> (accessed 4 February 2016).
- DSI (State Hydraulic Works) (2014b). 2013 Faaliyet Raporu (Activity Report of 2013). Devlet Su Isleri, Ankara, Turkey.
- Eberlein, C. & Heeb, M. (2011). *Climate Finance in Turkey: The Contribution of the World Bank Clean Technology Fund to Transforming the Turkish Energy Sector*. Berne Declaration, Zurich, Switzerland.
- Environmental Justice Organizations, Liabilities, Trade (EJOLT) (2015). Maps <http://www.ejolt.org/> (accessed various times in 2015).
- European Investment Bank (EIB) (2008). Turkey: EIB lends EUR 135 M for hydro-power project. <http://www.eib.europa.eu/projects/press/2008/2008-065-turkey-eib-lends-eur-135-m-for-hydro-power-project.htm> (accessed 13 May 2016).
- Erensu, S. (2013). Abundance and scarcity amidst the crisis of ‘modern water’: the changing water-energy nexus in Turkey. In *Contemporary Water Governance in the Global South: Scarcity, Marketization and Participation*. Harris, L. M., Goldin, J. A. & Sneddon, C. (eds). Earthscan, Oxford, pp. 61–78.
- Eryilmaz, C. (2012). Social Ecology Challenges Environmental Participation: HES Opposition Cases in Turkey. PhD thesis, Middle East Technical University, Ankara, Turkey.
- Fernandez, S. (2014). Much ado about minimum flows...Unpacking indicators to reveal water politics. *Geoforum* 57, 258–271.
- Hamsici, M. (2010). *Dereleer ve Isyanlar (Brooks and Revolts)*. Nota Bene, Ankara, Turkey.
- Harris, L. M. & Islar, M. (2013). Neoliberalism, nature and changing modalities of environmental governance in contemporary Turkey. In *Global Economic Crisis and the Politics of Diversity*. Atasoy, Y. (ed.). Palgrave MacMillan, London and New York, pp. 52–81.
- Hurriyet. (2012). ‘Su Akar, Turk Yapar’ (‘Water flows, Turk constructs’). <http://www.hurriyet.com.tr/ekonomi/22145097.asp> (accessed 15 August 2015).
- Islar, M. (2012a). Privatised hydropower development in Turkey: a case of water grabbing? *Water Alternatives* 5, 376–391.
- Islar, M. (2012b). Struggles for recognition: privatisation of water use rights of Turkish rivers. *Local Environment: The International Journal of Justice and Sustainability* 17, 317–329.
- Kaya, D. (2006). Renewable energy policies in Turkey. *Renewable and Sustainable Energy Reviews* 10, 152–163.
- Kaygusuz, K. & Arsel, M. (2005). Energy politics and policy. In *Environmentalism in Turkey: Between Democracy and Development?* Adaman, F. & Arsel, M. (eds). Ashgate, Aldershot.
- Kibaroglu, A. (2002). Building bridges between key stakeholders in the irrigation sector: GAP-RDA’s management operation and maintenance model. In: *Water Resources Management: Crosscutting Issues*. Olcay Unver, I. H. & Gupta, R. K. (eds), METU Press, Ankara, pp. 172–199.
- Kibaroglu, A., Baskan, A. & Alp, S. (2009). Neo-liberal transitions in hydropower and irrigation water management in Turkey: main actors and opposition groups. In: *Water Policy Entrepreneurs: A Research Companion to Water Transitions around the Globe*. Huitima, D. & Miejerink, S. (eds). Edward Elgar Publishing Limited, Cheltenham, UK, pp. 287–304.
- Linton, J. (2010). *What is Water? The History of a Modern Abstraction*. UBC Press, Vancouver, BC.
- Linton, J. & Budds, J. (2014). The hydrosocial cycle: defining and mobilizing a relational-dialectical approach to water. *Geoforum* 57, 170–180.

- Mehta, L. (2014). *Water and human development*. *World Development* 59, 59–69.
- Milliyet (2005). Erdogan: ‘Bu cevrecilerle ne yapacagiz? Hayat mucadele’ (Erdogan: ‘What are we going to do with these environmentalists? Life is a struggle’) <http://www.milliyet.com.tr/2005/01/08/son/sonsiy10.html> (accessed 14 August 2015).
- Milliyet (2011). ‘Su Akar, Turk Bakar’ sozu artik gecerli degil. (The motto of ‘Water flows, Turk watches’ is not valid any more). <http://www.milliyet.com.tr/-su-akar-turk-bakar-sozu-artik-gecerli-degil/siyaset/sondakika/27.03.2011/1369765/default.htm> (accessed 14 August 2015).
- Molle, F. (2009). *River-basin planning and management: the social life of a concept*. *Geoforum* 40(3), 484–494.
- Petras, J. & Veltmayer, H. (2001). *Globalization Unmasked: Imperialism in the 21st Century*. Zed Books, London.
- Radikal (2009). Cevre Bakani cevrecilere kizdi (The Minister of Environment is angry with the environmentalists). <http://www.radikal.com.tr/Radikal.aspx?aType=HaberYazdir&ArticleID=921943> (accessed 14 August 2015).
- Radikal (2010). Taner Yildiz’dan Baykal’a HES tesekkuru, Kilicdaroglu’na Mesaj (Taner Yıldız thanked to Baykal while sending message to Kilicdaroglu). http://www.radikal.com.tr/ekonomi/taner_yildizdan_baykala_hes_tesekkuru_kilicdarogluna_mesaj-1012062 (accessed 26 July 2015).
- Schlosberg, D. (2007). *Defining Environmental Justice: Theories, Movements, and Nature*. Oxford University Press, Oxford.
- Scoones, I., Newell, P. & Leach, M. (2015). The politics of green transformations. In *The Politics of Green Transformations*. Scoones, I., Leach, M. & Newell, P. (eds). Earthscan, London and New York, pp. 1–24.
- Sirin, S. M. & Ege, A. (2012). *Overcoming problems in Turkey’s renewable energy policy: how can EU contribute?* *Renewable and Sustainable Energy Reviews* 16, 4917–4926.
- Swyngedouw, E. (2007). Technonatural revolutions: the scalar politics of Franco’s hydro-social dream for Spain, 1939–1975. *Transactions of the Institute of British Geographers* 32(1), 9–28.
- Swyngedouw, E. (2009). *The political economy and political ecology of the hydro-social cycle*. *Journal of Contemporary Water Research & Education* 142(1), 56–60.
- Swyngedouw, E. (2015). *Liquid Power: Contested Hydro-Modernities in Twentieth-Century Spain*. The MIT Press, Cambridge, MA and London.
- Tigrek, S. & Kibaroglu, A. (2011). Strategic role of water resources for Turkey. In: *Turkey’s Water Policy: National Frameworks and International Cooperation*. Kibaroglu, A., Scheumann, W. & Kramer, A. (eds). Springer-Verlag, Berlin Heidelberg, pp. 27–42.
- Union of Chambers of Turkish Engineers, Architects (Turkiye Muhendis ve Mimar Odalari Birligi, TMMOB) (2011). *TMMOB Hidroelektrik Santraller Raporu (Turkish Union of Chambers of Engineers and Architects’ Report of Hydroelectric Power Plants)*. TMMOB, Ankara.
- Walker, G. (2012). *Environmental Justice: Concept, Evidence and Politics*. Routledge, London and New York.
- World Commission on Dams (WCD) (2000). *Dams and Development*. World Commission on Dams, London.
- Yeni Akit (2013). Eroglu: HES’ler olmasa ‘enerjide disa bagimlilik’ daha fazla olurdu (Eroglu: If hydropower projects did not exist, ‘energy dependency’ would be much more). <http://www.yeniakit.com.tr/aktuel/eroglu-hesler-olmasa-enerjide-disa-bagimlilik-daha-buyuk-olurdu-h2064.html> (accessed 26 July 2015).