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INSTITUTIONAL COMPLEXITY AND GOVERNANCE MECHANISMS: THE CASE OF TURKISH ELECTRICITY SECTOR¹

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Abstract

This study has been carried out to reveal what kinds of mechanisms have been used in the management of institutional complexity in the Turkish electricity sector where multiple institutional logics have been effective since 2001. In this study, especially, it has been shown that how companies has coped with the conflictual demands of the environmental, public and market institutional logics. Qualitative research methods have been used in the study. An answer to the research question has been produced with the data collected from 2 companies in the Cukurova Region of Türkiye. The data has been collected with face-to-face interviews and document examinations. In the research, document analyzes were made in order to determine how the institutional logics in the Turkish electricity sector were effective. After determining what kind of pressures caused by environmental, public and market logics, which were determined to be effective in the Turkish electricity sector, a total of 6 face-to-face interviews were performed on how the companies were able to manage these pressures. These interviews were also supported by the examination of the documents belonging to the companies. In this way, it was tried to increase the reliability of the research findings by providing the research triangulation. The research results have indicated that the organizations have used grafting, hybridization, and bridging mechanisms. Although this study in the Turkish electricity sector didn't bring a new mechanism to the institutional complexity literature, an empirical contribution could be made to how the mechanisms identified in previous studies could be realized in a different context.

Keywords : Institutional Complexity, Multiple Institutional Logics, Mechanisms in the Management of Institutional Complexity, Turkish Electricity Sector.

Jel Classifications : M00, M190, Q4.

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KURUMSAL KARMAŞIKLIK VE YÖNETİM MEKANİZMALARI: TÜRK ELEKTRİK SEKTÖRÜ ÖRNEĞİ

Öz

Bu çalışma, Türk elektrik enerjisi sektöründe 2001 sonrası alanda gelişen çoklu kurumsal mantıkların yönetiminde ne tür mekanizmaların kullanıldığını ortaya koymak için yapılmıştır. Bu çalışmada Türk elektrik sektöründe geliştiği görülen çevreci, kamu ve piyasacı kurumsal mantıkların hangi mekanizmalarla yönetildiği gösterilmiştir. Nitel araştırma yöntemlerinin kullanıldığı bu çalışmada Çukurova Bölgesinde yerleşik 2 firmadan toplanan verilerle araştırma sorusuna yanıt aranmıştır. Bu doğrultuda veriler toplanırken yüz yüze görüşmeler ve doküman incelemeleri yapılmıştır. Araştırmada önce Türk elektrik sektöründeki kurumsal mantıkların nasıl etkili olduğunu tespit edilebilmek için doküman incelemeleri yapılmıştır. Türk elektrik sektöründe etkili olduğu tespit edilen çevreci, kamu ve piyasacı kurumsal mantıkların firmalar üzerinde ne tür baskılar gelişimine sebep olduğunun tespit edilmesinin ardından firmaların bu baskıları nasıl yönetebildiklerine dair toplamda 6 yüz yüze görüşme yapılmıştır. Bu görüşmeler firmalara ait dokümanların incelenmesi ile de desteklenmiştir. Bu şekilde araştırma bulgularının güvenilirliğinin araştırma nirengisinin sağlanması ile artırılmasına çalışılmıştır. Verilerin analiz edilmesiyle çoklu kurumsal mantıkların etkisi altındaki örgütlerin aşılama (grafting) melezleşme (hybridization) ve köprüleme (bridging) mekanizmalarını kullandıkları tespit edilmiştir. Her ne kadar Türk elektrik sektöründe yapılan bu çalışma ile kurumsal karmaşıklık yazınına yeni bir mekanizma kazandırılmasa da, önceki çalışmalarda tespit edilen mekanizmaların farklı bir bağlamda nasıl gerçekleşebildiğine yönelik görgül bir katkı verilebilmiştir.

Anahtar kelimeler : Kurumsal Karmaşıklık, Çoklu Kurumsal Mantıklar, Kurumsal Karmaşıklığın Yönetiminde Kullanılan Mekanizmalar, Türk Elektrik Sektörü.

Jel Sınıflandırması : M00, M190, Q4.

INTRODUCTION

When the institutional logic theory carefully examined, there has have been great effort to understand how the organization could cope with the institutional complexity (Battilana & Dorado, 2010; Durand & Jourdan, 2012; Greenwood, Raynard, Kodeih, Micelotta, Lounsbury, 2011; Jay, 2013; Mitzinneck & Besharov, 2019; Pache & Santos, 2013; Purdy & Gray, 2009; Smets, Jarzabkowski, Burke, Spee, 2015; York, Hargrave, Pacheco, 2016). It has been shown that organizations could synthesize the conflicting demands in the one logic or could differentiate them not to bring together the contradictory elements in the organizational practices or phenomena (Battilana & Dorado, 2010; Purdy & Gray, 2009; Mitzinneck & Besharov, 2019; Smets et al., 2015; York et al., 2016). Besides that how the managers can manage these complexities have been pretty much indicated (Purdy & Gray, 2009; Jay, 2013; Pache & Santos, 2013). It can be concluded that all the things have been cleared up by these studies and there haven't been any hidden points about the management of institutional complexity. However, it is required to confirm these facts by new empirical studies in different contexts. Parallel to this necessity, an empirical study has been performed in the Turkish electricity sector.

The study has gone on with theoretical fundamentals, and then some information has been presented about the Turkish electricity sector. After that, the methodology of the study has been told, and then findings and conclusion have been reported.

II. THEORETICAL FRAMEWORK

Thornton and Ocasio have defined institutional logic as structure include ‘material practices’, ‘cultural symbols’, ‘beliefs’, ‘values’ and ‘rules’ (1999: 804; Friedland & Alford, 1991: 248–249). When the more than one institutional logics are effective in an organizational field, institutional complexity could arise in the formation of organizational identities (Glynn, 2008), and practices (Greenwood et al., 2011; Marquis & Lounsbury, 2007; McPherson & Sauder, 2013; Pache & Santos, 2013; Thornton, Ocasio & Lounsbury, 2012). This complexity might induce contradictory and competing demands in the formation of organizational phenomena (Lewis, 2000: 760; Smith & Lewis, 2011: 382; Smith & Tracey, 2016: 456). These contradictions can transform into the tensions in the organizations that require to be reduced by some mechanisms (Greenwood & Suddaby, 2006; Monios & Ng, 2021; Pratt & Foreman, 2000; Purdy & Gray, 2009; Smets et al., 2015; York et al., 2016). These mechanisms could be about the organizational identity formation (Battilana & Dorado, 2010; Jay, 2013; Pratt & Foreman, 2000: 18) designation of the organizational structure (Greenwood & Hinings, 1996; Westphal & Zajac, 2001) and implementation of organizational practices (Marquis & Lounsbury, 2007; Pache & Santos, 2013; Purdy & Gray, 2009; Smets et al., 2015). The practical implications about these studies could be seen in Table 1.

Purdy and Gray have indicated to four mechanisms -Transformation, Grafting, Bridging and Exit- (2009: 368) to lessen the conflicts arisen from the multiple institutional logics. A new structure is developed which is completely differentiate from the existing one in the transformation mechanism (Purdy & Gray, 2009: 368). However, the different elements are instilled into the existing structures and the existing structure has been formed into the new structure in the grafting mechanism (Purdy & Gray, 2009: 368). Actors try to navigate between the conflicting institutional logics by negotiating the contradictory elements of the institutional structures in the bridging mechanism (Purdy & Gray, 2009: 368). However, the organization completely leaves the organizational field in the exit mechanism (Purdy & Gray, 2009: 368). Smets et al. (2015) identified three mechanisms such as ‘segmenting, bridging and demarcating’ in their ethnographic studies at Lloyd in London. Actors lessen the conflicting demands of the contradictory structures in the ‘segmenting mechanism’ (Smets et al., 2015: 958). While actors try to set connection between the structures in the ‘bridging’ mechanism, however in the ‘demarcating’ mechanism, the borders are clearly set not to enter the field of contradictory logic (Smets et al., 2015: 958).

York, Hargrave and Pacheco (2016) performed a study which is about the understanding that which mechanisms could be used in the management of the multiple institutional logics. The first identified mechanism is the reconciliation (compromise) mechanism. Organizations try to find a solution that satisfies the representatives of different institutional logics in the compromise mechanism (York et al., 2016). Choice is made between the institutional logic in the competition mechanism; however contradictory institutional logics are synthesized in the separate logic in the hybridization mechanism (York et al., 2016).

Greenwood and Suddaby (2006) described some mechanisms in the management of the institutional complexity. Actors develop parallel practices to both structures in order to show consistency to the both institutional logics in a same time in the boundary bridging mechanism (Greenwood & Suddaby, 2006: 37–38). However, actors try to find an alternative solution to escape from the institutional pressures of multiple institutional logics in the boundary misalignment mechanism (Greenwood & Suddaby, 2006: 37–38).

Table 1. The Practical Implications of Some Studies about Institutional Complexity

Study	Research Topic	The Empirical Field of the Study	The Identified Mechanisms
Purdy and Gray, (2009)	The evolution of a new organizational population (offices of dispute resolution) in a developing institutional space has been investigated.	The interaction between entrepreneurship efforts, strategic responses to resource dependencies and institutionalization mechanisms for 22 years are explained.	Transformation
			Grafting
			Bridging
			Exit
York, Hargrave and Pacheco, (2016)	They have previously investigated the hybridization of logics that combine incompatible logic within an organizational field.	Wind power in Colorado	Compromise
			Hybridization
			Contestation
Smets et al., (2015)	The processes by which competitive logic is managed has been investigated.	An ethnographic study at Lloyd in London	Segmenting
			Bridging
Greenwood and Suddaby, (2006)	The change initiated from the center of mature organizational areas has been investigated.	By combining network layout theory and dialectical theory, the elite corporate entrepreneurship process model is explained.	Demarcating
			Boundary bridging
			Boundary misalignment

III. TURKISH ELECTRICITY SECTOR

It has been seen that public logic, market logic and environmental logic carve out the regulations and practices in Turkish electricity sector. As seen in Table 2, the economic system of public logic is the central budget consisting of the budgets of public administrations (See attachment of the law on public financial management and control No. 5018, (Official Gazette, 2003). However, it is tried to minimize the cost, and maximize the revenue regardless the type of the energy resource that have been used in the production in the market logic. In order not to damage nature renewable energy resources should be used in the environmental logic.

Table 2. Institutional Logics in Turkish Electricity Sector

Criteria *	Public Logic**	Market Logic**	Environmental Logic**
Economic System	Central budget	Market revenues from any kind of electricity production	Market revenues from electricity which is generated from renewable energy sources
Logic of Investment	Providing the required electricity to the public	Earning profit (Interview Notes).	Reducing the carbon emission and earning profit
Sources of Mission	Providing a kind of public product	Creating value to the investors	Protecting the nature
Source of Legitimacy	Providing public service to the public	Generating commercial revenue	Being environmentally friendly
Focus	Providing electricity to meet the needs of households and business organizations	Maximizing income level	Producing the environmentally friendly electricity
Sources of strategy	Increasing the wealth of the nation	Increasing the wealth of the investors	Hindering the climate change
Sources of identity	Public electricity company	Commercial electricity company	Green electricity company
Event Sequence	<ul style="list-style-type: none"> ● State purchase of concessions granted to private companies in 1935 ● Establishment of the Turkish Electricity Authority by the state in 1970. ● Split of Turkish Electricity Corporation (TEC) into two in 1993. 	<ul style="list-style-type: none"> ● Law No. 3096 (Official Gazette, 1984). ● Law No. 4628 (Official Gazette, 2001). <p>In 2004, the electricity distribution network within Turkish Electricity Distribution Corporation (TEDC) was divided into 21 regions and privatized.</p>	<ul style="list-style-type: none"> ● The Kyoto Protocol in 2009.

*: These criterias have been taken from the study of Thornton and Ocasio (2008: 128-129).

** : During the written of some criteria of logics, researcher took help from the study of Mitzinneck and Besharov (2019: 386) and document examinations.

How the ratios of types of electricity energy production have changed could be seen in Figure 1. When the figure carefully examined, it is seen that the usage of liquid fuels has been dramatically fallen, and that the usage of natural gas has been raised, since 1985. Hydro is the other main energy resource has shown drop since 1985. Despite of this development, the usage level of coal hasn't shown dramatic change between the 1970 and 2015, except the period of 1980-1985. The other remarkable point is that renewable energy and waste has been included in the production since 2005. This is the indication of environmental institutional logic has gained importance in Turkish Electricity sector since 2005. Since climate change induces drought, natural disasters and global warming, the countries has encouraged the usage of renewable energy in the electricity production (Cubukcu & Yetkin, 2018) instead of fossil fuels (Kumbur, Ozer, Ozsoy, Avci, 2019). Especially, Türkiye had signed the Kyoto Protocol in 2009 has effected the market conditions since the government offers monetary incentives in the usage of renewable energy sources (Interview Notes).

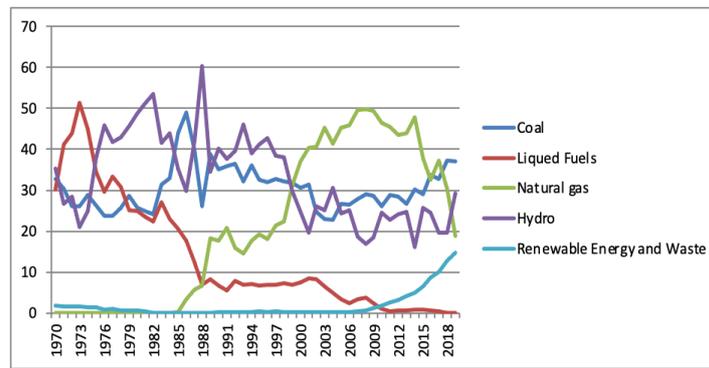


Figure 1. Types of Electrical Energy Production

Source: Turkish Statistical Institute (2020)



Figure 2. Change in the Shares of Public and Private Sectors

Source: Turkish Electricity Transmission Corporation (TETC-TEİAŞ) (2020)

Figure 2 shows the change of shares of state and private sectors in electricity generation in Türkiye between 1970 and 2020. It has been seen that share of the state was dominant until 2003; however share of the private sector has been front of the state since 2003. One of the effective dynamic is that with the decision of the Supreme Planning Council No. 2004/03, the electricity distribution network within TEDC is divided into 21 regions and the regions outside Kayseri are privatized (Yavuz Gürkan & Şimşek, 2017). The other dynamic is that with the Law No. 3096 on “tasking organizations with electricity production, transmission, distribution and Trade” published in the official gazette No. 18610, hence the private sector has been paved the way for the provision of electricity service (Dogru, 2010).

The government entities that are the representative of public logic make investment into the electricity production to meet the electricity demand of the households and business organizations as well as to sustain their legitimacy. While entrepreneurs make investment to the electricity production to increase the wealth of investors by the earning profit in the market logic, renewable energy organizations try to achieve this by protecting the nature (Mitzinneck & Besharov, 2019).

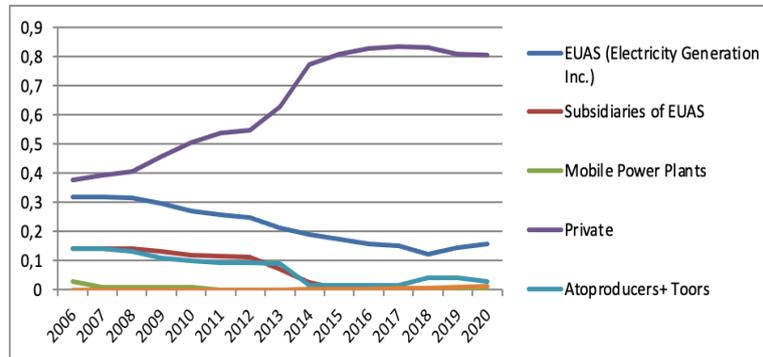


Figure 3. Distribution of Thermal Energy Plants

Source: TETC (TEİAŞ) (2020)

Figure 3 shows the distribution of thermal power plants according to the organizations in Türkiye's electricity generation between 2006 and 2020. It is seen that the private sector has more investment than the government organizations in the thermal power plants as well as the hydraulic plants (See Figure 3 and 4).

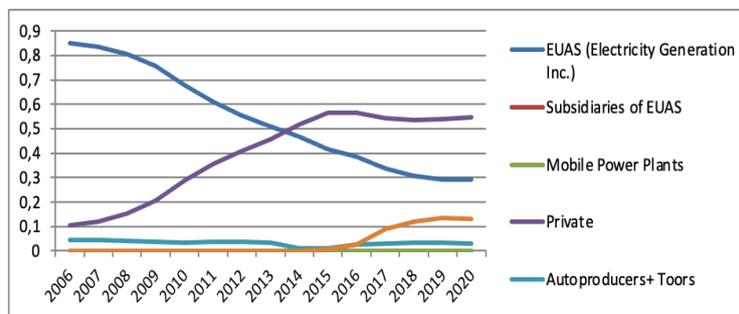


Figure 4. Distribution of Hydraulic Plants

Source: TETC (TEİAŞ) (2020)

All in all, it has been seen that governmental entities aim to produce electricity from any sources to accordingly their mission. Private organizations produce electricity from lowest cost energy sources to create value for investors, however renewable energy organizations aim to produce electricity from renewable energy sources to reduce the carbon emission beside the earning profit (Mitzinneck & Besharov, 2019).

It can be said that institutional complexity has arisen in the Turkish electricity sector since multiple institutional logics are effective in the same time (Greenwood et al., 2011; Kraatz & Block, 2008). It is seen that the organizations have to find a way out for this institutional complexity by using some mechanisms. A research has been performed in order to find out what types of mechanisms have been used by the organizations to cope with this complexity.

IV. METHODOLOGY OF THE STUDY

IV.I. Data Collection

During the research, qualitative research methods have been used. Document examinations and face-to-face interviews have been conducted in the data collection. The details of data collection can be seen in Table 3. How institutional change has induced the multiple institutional logics in the Turkish Electricity sector and which management mechanisms have been used by the companies have been tried to be understood in the data collection process. It should be noted here that two private electricity energy generation companies, which have operations around the Cukurova Region of Türkiye, were selected in order to find out answer to the research question. Companies have been named as ‘A’ and ‘B’ not to be deciphered their real names in the research. Company A generates the electricity through the hydroelectric power plant, however Company B has thermal power plant. Semi-structured interview form had been used during the interviews and necessary approval taken from the ethics committee of Adana Alparslan Türkeş Science and Technology University. Then, permission has been taken from the Company B in order to make planned interviews on any time. As seen from the Table 3, interviews have been conducted with Plant Director, Deputy Plant Director, Planning Manager, Operations Manager, and Assistant Operations Manager in Company B. Only one interview could be conducted with the Regional Manager Responsible for Occupational Health and Safety in the Company A. 6 face-to-face interviews have had lasting 4 hours and 10 minutes. The questions were about-how the company sees the electricity generation in terms of profit, public service or carbon emission-what type of energy resources have been used during the production-what practices have been implemented in the management of the conflicting demands. Besides that, it has been also asked to the interviewees that how the Turkish electricity sector evolved from 1920s to the nowadays. During the visit to Company B, the opportunity has been had to observe how the electricity generation process is accomplished, how the mechanisms have been appeared in the practice, and the effects of them on the generation facility. Also, a video, which is about the company’s practices to protect the nature and diminish the carbon emission, has been watched about 15 minutes.

It has been tried to be found out how the institutional change has been come out in the field, and how the companies have coped with institutional complexity. Some of the examined documents are 13 sector reports about the Turkish electricity sector, and 6 laws and decrees about the Turkish electricity sector, and 12 WEB news. Besides that, there has been performed a deep search to find the related news in the electronic archive of Milliyet newspaper (gazetearsivi.milliyet.com.tr, 2019). Hence, 38 news was reached.

Table 3. Data Collection of the Study

Scope of the Data	Interviews	Document Examinations
Turkish Electricity Sector	N/A	Electronic archive of Milliyet newspaper: 38 news, Journals for the Turkish electricity sector: 5, Sector reports about the Turkish electricity sector: 13, Laws and decrees for the Turkish electricity sector: 6, Data Collection about the Turkish electricity sector: 44, WEB news about the Turkish Electricity sector: 12
Company A	1 interview with the Regional Director Total Time: 40 Minutes Date of Interview: 21.03.2019	Annual report of 2017 of Company A, and 7 News
Company B	5 interviews with Power Plant Director, Deputy Power Plant Director, Planning Director, Operations Director, Deputy Operations Director Total Times: 210 Minutes Date of Interview: 02.07.2019	Annual reports of Company B

IV.II. Data Analysis

During the coding process, data and theoretical fundamentals of the study have been examined and analyzed (Gioia, Corley, Hamilton, 2013; Reay, Zafar, Monteiro, Glaser, 2019). The main idea of this is that bringing the new concepts to theory from the facts of the fields (Carmichael & Cunningham, 2017: 67; Charmaz, 2006: 60-62; Scott & Medaugh, 2017). The all coding has been done by the researchers in separate places. After the coding, researchers have discussed the differences in the coding to achieve the consensus.

Table 4. Institutional Pressures in the Turkish Electricity Sector*

The practice in which Institutional pressure occurs	Public Logic	Market Logic	Environmental Logic
Resource used in the Production	Domestic resources should be used in production.	The source, which gives maximum energy output, should be used in the production.	The least damaging source should be used in production.
Production Process	The production process should be designed according to public facilities.	The production process should be designed to provide minimum resource utilization while producing maximum energy.	The production process should be designed to do minimal damage to nature.
Quantity of the Production and Pricing Strategy	Electricity energy generation should be done to ensure the user's electricity consumption at as low price as possible and also with the uninterrupted in line with the public service.	While the price of electricity should be priced to bring maximum revenue to the producer, the amount of production should be planned according to demand level.	The price and quantity of electricity should be determined according to the use and process of the resource that causes little harm to nature.

*: In designing this table, researcher inspired from Pache and Santos (2013: 984–986).

Resources used in the production, production process, quantity of the production and pricing strategy have been used to understand how the companies manage the institutional complexity. As seen from the Table 4, public, market and environmental institutional logics have confrontational demands from the organizations for these practices. These ideal demands of the institutional logics have been considered during the finding out of the mechanisms. If the companies have used the any resource by regarding the type of the resource in terms of renewable energy resources, it has been coded as only environmental logics is effective, however if the company have used the efficient and environmentally friendly resources, it has been coded as hybridization mechanism (Battilana & Lee, 2014). If the company adds new elements of the different production system into the production process by transforming the existing one into the different one, it has been coded as ‘grafting mechanism’ (Purdy & Gray, 2009). If the companies have tried to comply with the quantity of demand level of the public with the optimum price level, it has been coded as ‘bridging mechanism (Purdy & Gray, 2009; Smets et al., 2015). However, if the companies ignore the demands of the other logics, and just obey the demand of single institutional logic, it has been coded as ‘ignoring’. How the coding has been developed based on the empirical data could be seen in Figure 5.

The reflections of the institutional logics had been also coded. Parallel to the public institutional logic, company might see the electricity production as a public mission and government enacts the regulations to make guarantee of the electricity supply. If company sees the electricity production as a product to make a profit, and private power houses are opened to produce electricity, it has been coded as market institutional logic have gained a place in the field. If the regulations have been made to protect the environment during the generation of the electricity, government gives the purchase guarantee in case of producing the electricity from the renewable resources; it has been coded as environmental institutional logic has become dominant in the field.

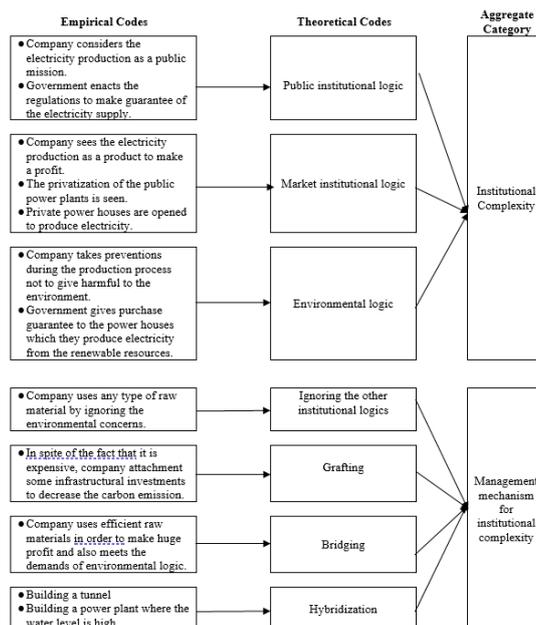


Figure 5. Data Structure

V. FINDINGS

Analyses have indicated that multiple institutional logics have been effective since 2001 in the Turkish electricity sector, and Companies could differ in terms of chosen mechanisms in the management of this institutional complexity.

V.I. Increasing Effects of Market and Environmental Institutional Logics in the Turkish Electricity Sector Since 2001

Market institutional logic has increased its dominance level in Turkish Electricity sector after the enactment of 4628 numbered law. Before the enactment of this law, it has been observed that governmental organizations were mostly take part in the production, transmission and distribution of electricity. However, this condition has changed after the enactment of 4628 numbered law. The other remarkable point in this period is that government gave rights to private actors in order to open new power plants. The following words of an interviewee confirmed those (The words in parentheses in the interviewee's statements given in the next part of the study are added by the researchers):

“Electricity generation, which is regarded as a public service, started to be managed with market and environmental logic along with privatizations. The public has always been involved in the energy sector as a market organizer. The distribution is divided into 20 regions and is completely privatized. Its transmission is in the hands of the public, but the transmission in Germany is in the hands of the private sector. 80% of electricity production is privatized. Dams are not privatized. If we look at the reason, it totally depends on political reasons. The main reason for switching from public to private is that the resources of the state for electricity production are inadequate and insufficient. At the same time, the state's electricity production facilities were very old and inefficient.”

These conditions have induced some challenges for the power plant owners in the sector, since the confrontational demands have been arisen. In fact, owners of private power plant see sector as a

profit earning field, where the public expected the electricity service from these companies. This brought such a challenge that power plant owners should operate under the uncertain demand level, and if the any demand comes out, they have to make necessary actions to meet it. This confrontational condition shows that market and public institutional logics are conflicting for this dynamic. An interviewee explains this with the following words:

“The state is able to sell at the price it wants because there is no investment cost in the dams it produces electricity. It is not good for the state to be an actor in the market, it would be better if free market conditions were valid. There's an electricity exchange. The state buys electricity on demand. If there is not enough demand, the state is telling private companies to stop producing electricity. This causes huge losses for private companies. The cost of opening is a separate cost. The state covers the fixed cost of private companies stopping electricity production. When firms produce electricity, the state pays the variable costs.”

The remarkable point in this statement is that government has constituted some mechanisms for the sustainable electricity supply in the sector. Government has given some subsidies to the private power plants for it. However, interviewees' statements have indicated that since the pure competition has not been in the sector, private companies have had some amount of loss. These conditions have incited the companies to reduce the costs for the purpose of profit. Apart from this, it could be understood that the price level of the sold electricity has been emerged based on the market mechanism. However, since the government has a role in determining the demand level, and the pressure of sustainable supply condition on the private power plants, the sold price level of electricity has been affected from elements of the public institutional logic. These conditions have effects on the private power plants to constitute some ways to reduce costs. An interviewee explained this with the following words:

“Full liberalization is beneficial. Price will be formed in the market and offers will be given according to those prices. The presence of large power plants in the state affects the market negatively. The fact that the state, who regulates prices, is an actor. And this disrupts the balances in the market. Liberalization is a controversial issue. Prices may rise if there is complete liberalization. Therefore, the legislator must avoid all speculation. Even if the state is not a direct actor, it can balance the law. Use taxes. Strategies should be implemented according to supply and demand relationship. Free market can set any price. Therefore, the state can set lower and upper limits.”

Another interviewee tells the effects of government interventions to the markets as follows: *“In 1998, because of the energy bottleneck, the government guarantees the purchase and buys electricity from companies. Today, the state is still an actor and has not withdrawn from the market. The price is determined by the state. The private sector is complaining that this is disrupting the market.”* It has been realized that macro environmental dynamics also have affected the electricity sector. Kyoto protocol, which was signed in 2009 by Türkiye, brought the carbon emission criteria in the electricity generation. Hence, companies would be subsidized, if they use environmentally friendly resources (renewable energy resources), if the companies use the fossil fuels, the carbon emission level must be under the legal level. The regulations such as these have strengthened the environmental institutional logic in the field. In fact, these conditions vary according to the type of electricity production. Document examinations have revealed that hydroelectric power plants might disrupt the ecosystem of the nature where it has been built. Since the less quality of the coal could leave the high-level carbon to the nature, thermal power plants should use higher quality of coal and installed a system that reduces the carbon emission. The other effect of environmental pressure on thermal power plants is that in case of the usage

of the sea water in the process of electricity production, the heat of the wastewater that has been left to the sea must be optimum level. Hence, the creatures that live in the sea could be protected. All these terms have some costs to the companies. Therefore, the companies have been under the confrontations of environmental and market logics. An interviewee describes the potential damage of the hydroelectric power plant to the environment in the following words: “...When Suleyman Demirel has been elected, electricity production from dams such as the construction boom has exploded and has become more important. However, it was later realized that hydroelectric power generation was harmful to the environment. In addition, the land of the fertile plains might be inundated, and the yield might not be obtained...”. Some interviewees told the dilemma of the cost of the production and being harmful to the environment in terms of the used lignite coal “...Using domestic coal is far more costlier and does not save firms in an economy of scale (...) Imported coal is preferred because it is easier to be picked up and then processed through the port in the region where electricity is produced. And that's how the cost goes down...”. In this way, it can be said that environmental logic, which has found considerably place in the field since 2009, puts pressure on the enterprises in terms of low cost, efficiency and usage of renewable energy resources. This can be understood from the interviewee's words: “...Due to environmental pressures rather than cost, production has been shaped according to type of the resource. The signing of the Kyoto Protocol in 2009 also had a lot of impact on the emergence of environmental pressures. Business turned to environmental concerns from economic aspects in electricity power generation...”. It has been understood that the increasing dominance level of the market institutional logic and environmental institutional logic as well as the ongoing effects of public institutional logics have put pressure on the companies since 2001. These pressures have been seen about the resource used in the production, production process, and quantity of the production and pricing strategy. Since these institutional logics have conflictual demands about these issues, the organizations should use some mechanisms to cope with this institutional complexity. Document examinations and face-to-face interviews have revealed the types of mechanisms.

V.II. Mechanisms in the Management of Institutional Complexity

Since the research companies used different kind of resources for the electricity production, differences in the mechanisms have been observed by analysis (See Table 5).

Table 5. Mechanisms in the Management of Institutional Complexity

Practice	Source of institutional complexity	Practice of Company A	Mechanism used by Company A	Practice of Company B	Mechanism used by Company B
Resource Used in Production	Environmental and market logic	Building dam where the water supply is high	Hybridization (Battilana & Lee, 2014)	Using coal with high efficiency which is less harmful to the environment	Hybridization (Battilana & Lee, 2014)
Production Process	Environmental and market logic	Building a tunnel	Hybridization (Battilana & Lee, 2014)	Adding an environmental system to an existing structure	Grafting (Purdy & Gray, 2009)
Quantity of the Production and Pricing Strategy	Public and market	Compliance with the amount of production and price according to the demands of the public and the market.	Bridging (Purdy & Gray, 2009; Smets et al., 2015)	Compliance with the amount of production and price according to the demands of the public and the market.	Bridging (Purdy & Gray, 2009; Smets et al., 2015)

Companies have been forced from the environmental and market institutional logics for the resource used in the production and production process. Since the Company A produces electricity energy through the hydroelectric energy, there is some possibility of damaging the nature, where the dam has been built. Especially, the since the ecosystem of the nature has been damaged, many creatures could lost their lives because of the hydroelectric power plant. It has been observed that these issues

have induced the Company A to escape from the environmental concerns by building the new type of dam. This type of dam has been built as a tunnel where the water supply is high. Hence, the higher speed of the water, the more electricity power could be generated in a tunnel. This would bring the efficiency in the production as well as protect the nature. This kind of mechanism includes the both elements of the environmental and market institutional logics together. Therefore, it has been decided that hybridization mechanism (Battilana & Lee, 2014) has been used by Company A. An interviewee from Company A confirmed this argument by these statements: “... *When it became clear that the electricity produced from Hydro was harmful to the environment, there were some changes in the form of production. Power generation was carried out in the tunnel. The low cost of investment and protection of the environment has been the most important feature of this system...*” Since the Company B has generated electricity from the thermal power, the type of the coal and constructing a system that reduces the carbon emission are critical points to meet the demands of the environmental and market institutional logics. According to this Company B has consisted a ‘denox’ system which holds dust, and in the following process ‘gypsum’ has been produced and gypsum sold to the cement factories. Although this system has some cost for the power plant, Company B has gained some amount of money and reduced the carbon emission. On the other hand, it has been seen that Company B has given more attention to use imported coal from South Africa and Colombia which are more efficient as well as the less harmful to the nature. Therefore, it can be said that Company B has applied the ‘hybridization’ mechanism (Battilana & Lee, 2014) for the resource used in the production. In addition to this, since the Company B has placed a new system into the existing system to reduce the carbon emission and bring the cash to the Company, it has been concluded that ‘grafting’ mechanism has been used (Purdy & Gray, 2009). These following statements supported these arguments:

“...At the power plants, imported coal come from South Africa and Colombia. Imported coal comes by ships, is taken by crane, turned into powder and brought to the dock. It's being moved to a closed manufacturing facility. The Denox system holds sulfur, the electrosteryl system holds dust. Environmental investment in the power plant is greater than the area from the power plant and costs almost more. The power plant has no well water, they take all the water from the sea and leave it back to the sea. Care is taken to the temperature of the water and it is harmlessly transformed into the sea. Limestone is produced for gypsum and sold to cement factories. New processes are being produced from waste. Waste is being recycled and sold as a new product. Products suitable for storage are emerging. So there's a landfill waste facility. It's stored even if it's not sold. The ash that emerges in the process of electricity generation is very valuable and is exported...”

“...Foreign sources such as imported coal and natural gas were encouraged in the 2000s. (Company B) was founded in 1999-2000 with government incentives and was based on imported coal. It was established as a build - operate power plant. Sources with low sulfur content are being used, productivity is too high and environmental damage is being minimized. There is regulation but it falls even lower. Environmental Protection is very high.”

The following notes were taken from the watched video at Company B also support this conclusion:

“...When transporting coal, precautions are taken to avoid dust with a completely closed system. The coal mill is heated at 1300 degrees Celsius. The water evaporates and the steam goes into the bleachers. The high temperature and steam are spinning the wings. It's transferred to the generators and turned into energy. An interconnector system is used to

cool seawater. The quality of the water is maintained and dumped back into the sea. It doesn't affect seawater in any way and it doesn't damage the ecosystem. The gases that come out of the chimney filter out into the air. Pollutants in the flue gas are retained and turned into gypsum..."

Companies have operated under the public and market institutional logics for the quantity of the production and pricing strategy. The document examinations and face-to-face interviews have indicated that Company A and B show compliance with the amount of production and price according to the demands of the public and the market. In fact, it has been seen that public authority has subsidized the usage of renewable environmental resources. It is possible to understand this dynamic from the following words of an interviewee:

"...The state guarantees the purchase of electricity to the private sector, which is why the government directs all sources of electricity production. But the government applies different purchase tariffs per KW. Hydroelectricity is purchased by the state for 10 cents per KW. Electricity production from Thermic is purchased by the state for 13 cents per KW. The state buys electricity from wind and solar energy by paying 15 cents per KW. The reason is to promote the generation of electricity from renewable energy sources. In order to protect the environment, the state applies tariffs in this way."

It has been understood that if the company generates electricity from wind and solar energy, it will have a right to sell first with the higher prices. However, if the company generates electricity from hydroelectricity, the possibility of sell will decrease as well as the earnings will be lower. The considerations of these issues with the participation of the state and demand uncertainty make the issue difficult. This condition could be understood from these following words of an interviewee:

".....The government encourages renewable energy sources and buys them at higher prices. EEI (Energy Exchange Istanbul), the state institution, determines the electricity prices on a daily basis. 200 pounds in the market because of environmental pressures selling the goods to 350 pounds. The state says that if electricity is being produced by RES (Renewable Energy Sources), you have to buy it. So in this case the market is deteriorating. The state regulates the last price. SMRES (Supporting Mechanisms for Renewable Energy Sources) sets the entry price. The government sets the selling price. There are missing fugitives. Unpaid rate in the East is 30%. The total installed power in the production part is 90,000 Megawatts. The peak load is 40,000 Megawatts. 50,000 Megawatt is wasted. While EEI determines the supply and demand, the firms make bids 1 day in advance. The lowest price gives hydro's, more than natural gas. When nuclear power comes into play, the government will guarantee to purchase and the market will deteriorate again. 300 pounds in the public market 650 pounds of goods are guaranteed to purchase. Market logic finds balance in a competitive environment. But the public business is disturbing..."

"While the emission limit was set at 1000 milligrams, even in the 2000s it operated with an emission limit of 400 milligrams. Environmental measures in accordance with European standards have been taken by the board with foreign investment. (B Company) after the establishment of 5 more electricity generation plants in the same model was established. Because (Company B) has been the model. But in others, there was no guarantee of purchase by the state. In others, less cost, more production and environmental

damage are minimal. When the Model was successful, it was modeled by other companies and found value for use... ”

The document examinations for the Company A and the face-to-face interviews for the Company B have revealed that Companies have tried to establish a dialogue channel with the actors to set the effective system under this complexity. With this system, Companies found a chance to deal with the dual institutional logic. Hence, the company can meet the electricity demands of the public in a specific time with an acceptable price. But this type of mechanism hasn't reflected the perfect compliance with the public and market institutional logics. Because of the bargaining with the actors as well as the transmitting the expectations to the other side, organizational actors could support their institutional logics. However, this type of mechanism also has brought the decreases in the effect of being profitable or maximizing the revenue. The company found itself providing the electricity to meet the demands of government without the perfect market mechanism. This mechanism can be named as bridging (Purdy & Gray, 2009; Smets et al., 2015).

"...Company B is an efficient power plant that works for 8000 hours. Public relations are important and there is constant communication. The Ministry of energy, TETCC and TETC are agreement partners. There are also requests that are appropriate for the public interest and we contribute. There are official requests for the environment and we act in partnership with the Ministry of Environment and Urban Planning. Environmental policies are being pursued and supported. Reports are being shared with the ministry and hard work is being done..."

Building dam where the water supply is high, and building a tunnel by the Company A have reflected the hybridization mechanism (Battilana & Lee, 2014, York et al., 2016). It has been observed that elements of the environmental and market institutional logics have been in the one practice. And also, using coal with high efficiency which is less harmful to the environment by the Company B has been also called as hybridization mechanism (Battilana & Lee, 2014, York et al., 2016). In this study, how the grafting mechanism (Purdy & Gray, 2009) could be applied by the organizations also has been shown. It has been seen that Company B didn't completely change the existing system, however Company B has added denox system which can reduce the carbon emission and produce the gypsum to sell cement companies. The bridging mechanism (Smets et al., 2015: 961), has also been shown by the Companies, as well. It has been observed that Companies accept the elements of controversial institutional logics in deciding the amount of production and price level. It has shown that there was not a clear boundary to obey the opposite institutional logic in deciding the amount of production and price level. Hence, it could be said that demarcating mechanism hasn't be applied by the Companies (Smets et al., 2015). The demands of the public institutional logic have to be absorbed by the Companies, although it wasn't an acceptable by the market institutional logics.

CONCLUSION

It has been seen that multiple institutional logics have been effective in the Turkish electricity sector since 2001. Public, market and environmental institutional logics have had pressures on the companies to shape the practices. These confrontational pressures have induced the companies to give responses to the institutional complexity (Greenwood et al. 2011). It has been found out that hybridization, grafting and bridging mechanisms have been applied by the companies (Battilana & Lee, 2014, Purdy & Gray, 2009; Smets et al., 2015; York et al., 2016). There are some unclear points about how the organizational identities have effected these mechanisms (Battilana & Dorado, 2010; Jay,

2013). Another point that cannot be determined in this study is that whether there is a relationship between the usages of different mechanisms in different practices. The indications of this study could be tested in the different sectors, as well. Hence, robustness of the findings of this study could be seen better. This study also contributes to how the grand challenges, which have been discussed a lot in recent years, can be managed at the organizational level (George, Howard-Grenville, Josh, Tihanyi, 2016; Gümüşay, Claus, Amis, 2020). In particular, it has also been shown how organizations can continue their activities while achieving emission reduction using the grafting mechanism (Purdy & Gray, 2009).

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