IPP Investment in Turkey's Electric Power Industry

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Introduction

This paper is part of a larger study on the historical experience of Independent Power Producers (IPPs) in countries undergoing transition in their institutions of governance. The study seeks to explain the patterns of investment in IPPs and project outcomes with the aim of using this information to plot alternative future models for IPP investment. This paper follows the research methods and guidelines laid out in the research protocol.[1]

Like all of the country experiences examined in the IPP study, Turkey is moving towards a new era in how it structures and governs the power sector (and the economy more widely). The restructuring program has required a radical overhaul of the whole industry—which continues to be mostly state-owned—and complimentary reforms in regulation, financing, and other areas. The reasons for such a fundamental change in the legal and regulatory framework of the electricity industry are threefold: the Turkish government has sought to encourage private investment in the sector to meet the growing demand in energy; it wants maximize proceeds from the disposition of state assets to bolster the nation's balance sheet; and it wants to encourage competition so that electricity prices fall.

The first section of this paper reviews the Turkish energy picture and provides a history of the electricity sector since Turkey began reforms in the mid-1980s. We also discuss the different electricity laws that govern IPP participation and describe the current efforts to implement "textbook" electricity reforms through the new ([2001]) Electricity Market Law. The second section covers the major factors that affect Turkey's general investment climate in Turkey, notably the domestic political environment, the macroeconomic context faced by all investors and not just power generators, and the legal system. The final section takes account of the sector-specific and general variables that might affect IPP investment and introduces a few specific hypotheses concerning the factors we believe drive IPP outcomes in Turkey. We then introduce the universe of Turkish IPPs and propose a sample for more in-depth study. Our aim with the more in-depth analyses—to be done in the next phase of the larger IPP study—is to assess the factors that explain IPP outcomes in Turkey.

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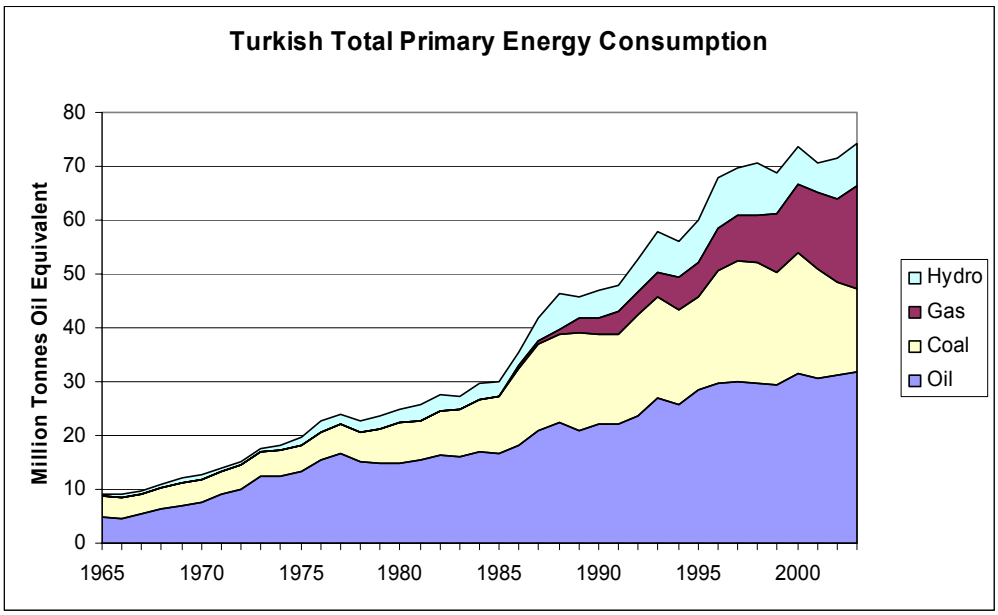
[1] The research protocol, "The Experience with Independent Power Projects in Developing Countries: Introduction and Case Study Methods" can be found at http://pesd.stanford.edu.

The Turkish Electricity Market Context

Overall Energy Picture

Turkey has limited domestic energy resources and relies on imported oil and natural gas to meet most of its demand. Figure 1 below shows primary energy consumption by fuel in Turkey from 1965 to 2003. Most of the coal consumed in Turkey is produced domestically; coal, along with hydro, was the dominant fuel used in electric power generation until around 1990.

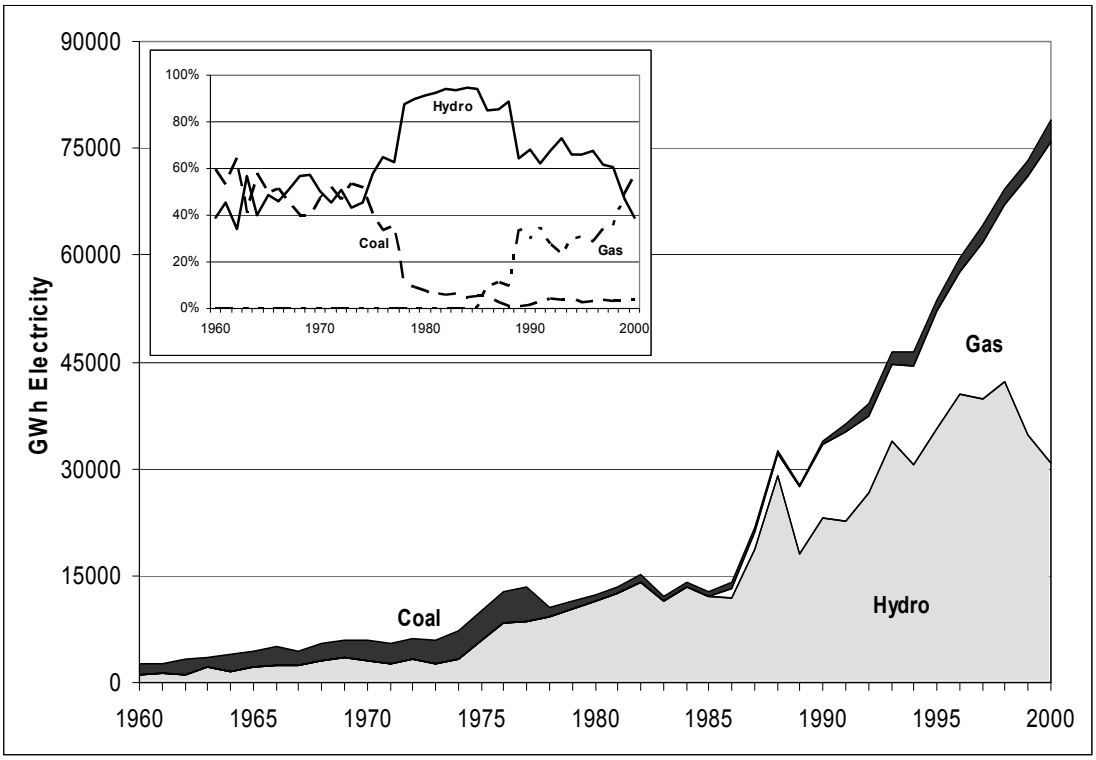
Figure 1



Source: BP Statistical Review of World Energy 2004

Figure 2 shows electricity generation by fuel source in Turkey from 1960 to 2000, in both absolute and relative terms.

Figure 2: Electricity Generation in Turkey by Fuel since 1960.



Source: IEA. Note: the inset chart shows electricity generation by fuel as a percent of the total amount generated. Turkey also generates a small amount of electricity from wind, biomass, and geothermal power.

Turkey has an estimated 1% of the world's hydroelectric power potential; the government's Southeastern Anatolian Project is one of the world's largest water resource development projects and when completed will include 19 hydroelectric dams and 22 irrigation dams.[2] And although it has limited domestic gas reserves, Turkey's geographic location is favorable for extensive use of natural gas—it lies between the gas rich areas of central Asia and the Middle East and the demand centers in Europe. Currently, Russia supplies most of the gas demand; however, Turkey is trying to diversify its sources of supply and currently imports gas from Iran and Algeria (in the form of LNG). Turkey is also considering gas imports from Turkmenistan and Kazakhstan; this gas would be piped under the Caspian Sea to Baku, and then to Erzurum in the eastern part of the country. There are two LNG regasification facilities, in Izmir and Ereglisi. Until the late 1990s, hydro was the largest single electricity source, when it was supplanted by natural gas.

[2] EIA (2003), "Energy Overview of the Republic of Turkey." Washington, D.C. (EIA) Available at http://www.fe.doe.gov/international/turkover.html

Overview of the Turkish Electricity Market

Like in many developing and reforming countries, Turkey's electricity sector has been and continues to be dominated by state-owned enterprises (SOEs). Until recently, most governments thought that electricity provision was too economically and strategically important to be left to the machinations of private enterprise and free markets. Even today, after almost two decades of attempts at reforming the sector, state ownership does not fall below 60% in any part of the electricity value chain.

A law setting up a framework for private participation in the electricity sector was introduced in 1984. The Turkish government, with an eye toward attracting private investment to ease strain on the budget, passed Law No. 3096. This law created three separate forms of private participation in the electricity sector: the Build Operate and Transfer (BOT) framework for new generation ("greenfield IPPs"), the Transfer of Operating Rights (TOOR) framework for existing generation and distribution assets ("brownfield IPPs"), and the autoproducer framework for companies to produce their own electricity.[3] For the purposes of this study, which examines greenfield private projects we are only interested in the BOT framework, which we refer to as the "first IPP framework". Under the first framework, private companies were allowed to build and operate power plants and sell electricity to the state-owned grid manager, at the time named TEK (Turkish Electricity Authority). At the end of the contract term, the assets would be transferred to the state at no cost.[4]

The first framework was unsuccessful in attracting significant private investment in the power sector due to the Constitutional Court's interpretation of the law, which held that the generation, transmission, and distribution of electricity was, according to the Turkish Constitution, a public service. Thus any arrangement for private electricity generation must be in the form of a concession. Concessions, under the Constitution, are subject to approval by a multitude of government agencies, including the Ministry of Energy and Natural Resources, the High Planning Council, the State Planning Organization, and the Treasury. In addition, investors had limited recourse to international arbitration, and contracts had to be approved by the Danistay (the Supreme Administrative Court), which can be a rather lengthy process.[5] Because the first IPP framework failed to attract much private capital, Turkey found itself in a very dire situation. At the time, electricity demand had been growing at 8% annually, and the Ministry of Environment and Natural Resources expected this growth to continue into the future.[6] In order to meet this demand, installed capacity would need to rise rapidly. But because of budgetary constraints, Turkey's only option was private (in particular, foreign) investment.

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[3] Atiyas, Izak and Mark Dutz (2003). "Competition and Regulatory Reform in the Turkish Electricity Industry." Paper prepared for the Conference on EU Accession, Ankara, Turkey, 10-11 May 2003. Available at http://www.cie.bilkent.edu.tr/electricity.pdf

[4] According to the law, the contract term was 99 years after which the state would assume control. In practice, however, most contracts were for 20 years.

[5] OECD (2002). "Regulatory Reform in Electricity, Gas, and Road Freight Transport." *Regulatory Reform in Turkey*. Paris (OECD). Available at http://www.oecd.org/regreform/backgroundreports

[6] OECD (2002)

In 1994, the Turkish Parliament passed a new law (No. 3996)—which we call the "second IPP framework"—aimed at enhancing the attractiveness of BOT projects by authorizing Treasury guarantees for the obligations of the off-taker and fuel-supplier (in the case of gas-fired IPPs), and providing tax exemptions. Contracts under this second IPP framework were typically 15 or 20 years in length and called for TEAS—the renamed state-owned generation and transmission company—to buy 85% of the power output. The law also called for the IPP to transfer its assets to the state after a specified period. In an attempt to bypass the Danistay, the law contained language that laid out certain arrangements that would be non-concessionary and thus subject to private law.[7] However, the Constitutional Court struck down the framework as unconstitutional in March 1996.

The Danistay did not interfere with IPPs that were developed in between the passage of the second IPP framework in 1994 and the Constitutional Court's decision in March of 1996. Thanks to the "vested rights" doctrine, four larger IPPs—Doga Enerji, Birecik Hydro, Uni-Mar, and Enron's Trakya plant—were able to keep their private status because they had signed contracts before the Court's decision was reached.[8] By 1996, only six IPPs (five hydroelectric and one natural gas-fired) had been built.

In June of 1996, the Turkish Council of Ministers issued Decree No. 96/8269 concerning a new model for private participation in the power sector—the "third IPP framework". The Decree created the Build-Operate (BO) framework, whereby private firms would retain ownership of the facility rather than transfer it to the state. After a paltry response to the first government tender for power plant construction under this third framework, the Ministry revised the terms. One important change was that companies would be eligible for dispute resolution under the UN Commission on International Trade Laws (UNCITRAL) rather than in the Turkish administrative court system. The new tender also offered the possibility of 100% Treasury guarantees for the obligations of TEAS for the duration of the sales contract.

However, before any companies had a chance to build any power plants under the new BO terms, the Danistay suspended the Decree, claiming that the previous BOT law was applicable and that an alternative model should be passed by Parliament and not by ministerial fiat.[9] Parliament passed the BO Law (Law No. 4283) in July 1997, which mirrored the revised ministerial decree except that it exempted hydroelectric, nuclear, and geothermal plants from consideration. In 1999, the Turkish Parliament passed a Constitutional Amendment that applied private law to infrastructure investment in the electricity sector and that limited the role of the Danistay to a limited review process.

This third IPP framework has been successful at attracting foreign investment, but that success has come at a very high price. Since 1997, Turkey has received around 6000

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[7] Gulen, S. Gurcan (1998). "Electricity in Turkey; A Legal Battleground in an Ongoing Privatization War." *Power Economics* (December 31, 1998).
[8] Osma, Bulent. Turkish Power: Developments in the Turkish Energy Sector. *Infrastructure Journal* (On file with authors.)
[9] Gulen (1998)

MW of foreign sponsored power. The foreign investors were motivated by the above-market prices and take-or-pay contracts for electricity off-take backed by Treasury guarantees. These obligations are putting an immense financial burden on the state monopoly TEAS. Yet so far, the Turkish government has not been able to attract significant investment from abroad without offering these guarantees. These guarantees are necessary because of the financial weakness of the state-owned offtaker, TEAS. Its financial weakness can be traced to two factors: first, a high level of electricity losses, due to technical factors as well as theft and non-payment; second, the repeated macroeconomic shocks Turkey has experienced over the past decade have weakened the the federal budget. (The macroeconomic shocks will be discussed in the next section on the wider investment climate in Turkey.) In 2000, losses amounted to 19.4% of total generation, and about half of this was due to theft.[10]

Lack of competition is a huge impediment to Turkey's reform process. As noted above, IPPs entering the Turkish market since 1994 have had Treasury-backed, take-or-pay contracts with the state monopoly, TEAS. These contracts do not provide a framework for competition *in* the market, but potentially for competition *for* the market if these contracts were subject to competitive bidding. For IPPs under the 2nd framework, there was no rigorous process in place for competitive tendering. Rather, the first tranche of these were awarded on the basis of solicited bids from pre-selected companies. The few projects that have been approved and have begun operations have high electricity prices that have adversely impacted the financial viability of TEAS. However, IPPs tendered under the 3rd framework were bid on competitively, and electricity prices are about 60% of those projects built under the 2nd framework.[11]

By the end of the 1990s, it became clear that these types of contracts with long-term sales arrangements and pre-determined fixed prices did not serve the overall objective of developing competition in the electricity market. In addition, privatization with Treasury guarantees was not going to be feasible given the rapidly deteriorating fiscal stance inside the country. A succession of economic crises (to be discussed later) further weakened the budget, and as part of an IMF loan the Turkish government agreed to phase out these guarantees in future power-purchase agreements. It is at about this time that the Turkish government began to recognize the need for deeper structural reforms in the electricity sector.

This resulted in the complete overhaul of the electricity laws and the creation of a new model, put forth in the Electricity Market Law ("EML") in 2001 (for our purposes, the "4th IPP framework"). The law provides the basis for a radically different framework for the design of electricity markets, and establishes a new independent Energy Market Regulatory Authority ("EMRA"). The law calls for the unbundling of the state owned electricity assets, opening the market for consumers above a certain level of electricity consumption (the threshold for which will gradually decline), and allowing third party access to the grid. In response, the state unbundled TEAS into three separate state-owned

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[10] OECD (2002). Average electricity losses in OECD countries in 2002 were 10%. Around 4% of total losses in Turkey can be accounted for by street lighting, which is not paid for by municipalities.

[11] Venkataraman, Krishnaswamy, and Gary Stuggins (2003). Private Sector Participation in the Power Sector in Europe and Central Asia. World Bank Working Paper #8, Washington, D.C. (World Bank).

entities: EUAS (generation), TETAS (wholesale trading and contracting), and TEIAS (transmission). TEDAS continues to be in charge of distribution. This 4th framework follows broadly the "textbook" model of electricity reform that has been attempted throughout the world but implemented fully in only a handful of markets.

The Turkish power industry will face several challenges over the next few years. Among them are the issue of stranded costs and the politically difficult issue of tariff rationalization. Table 1 shows the distribution of power generating capacity across publicly and privately owned facilities—today and projected into the future. (It is interesting to note that the most of the assumed growth in private generation is coming from autoproducers, which suggests that the newest IPP framework will not have much success attracting private investors.) IPPs under each of the four frameworks—which in total accounted for about 20% of the generating capacity in 2002—all have Treasury guarantees that would need undoing before these units could be included in a competitive market. For competition to emerge, the playing field between new entrants that will be subject to market forces and incumbents with favorable contracts must be leveled, but so far the government has not announced its plan for how to do that.

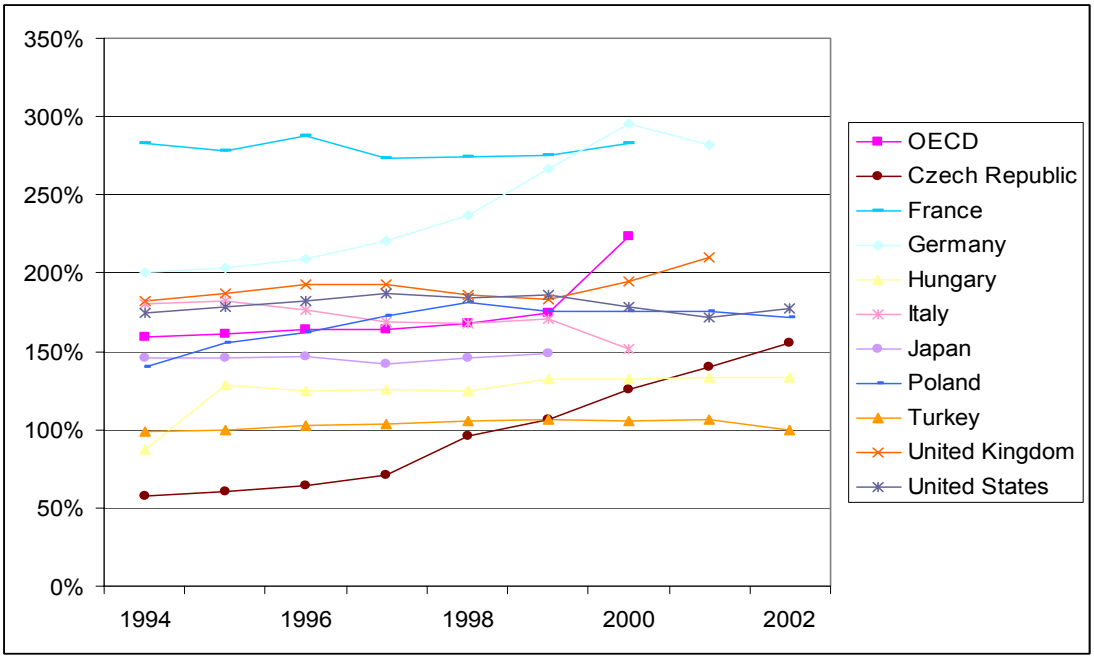
Table 1: Power Generation Capacity in Turkey by Owner

Private Plants	**2002**	**(%)**	**2005**	**(%)**	**2010**	**(%)**
Brownfield IPPs	650	1.9	650	1.6	650	1.5
Autoproduction	3944	11.7	5344	13.2	6844	15.9
Second IPP Framework (BOT)	2349	7	2349	5.8	2349	5.5
Third IPP Framework (BO)	3830	11.3	5810	14.4	5810	13.5
Mobile	623	1.8	823	2	823	1.9
Kepez and Cukurova	1120	3.3	1120	2.8	1120	2.6
Subtotal	*12516*	*37*	*16096*	*39.8*	*17596*	*40.9*
State-Owned Plants						
Natural Gas	3983	11.8	3983	9.8	3983	9.3
Hydro	10326	30.6	11685	28.9	12762	29.7
Coal/lignite and fuel oil	6972	20.6	8692	21.5	8692	20.2
Subtotal	*21281*	*63*	*24360*	*60.2*	*25437*	*59.1*
Total Capacity	**33797**	**100**	**40456**	**100**	**43033**	**100**

Source: ECA (2002), as reprinted in Dutz (2002).

Tariff rebalancing is likely to be another difficult issue. Figure 4 below shows residential electricity prices as a percentage of industrial prices in select OECD countries.

Figure 4: Residential Electricity Prices as a Percentage of Industrial Prices in Select OECD Countries, 1994-2002

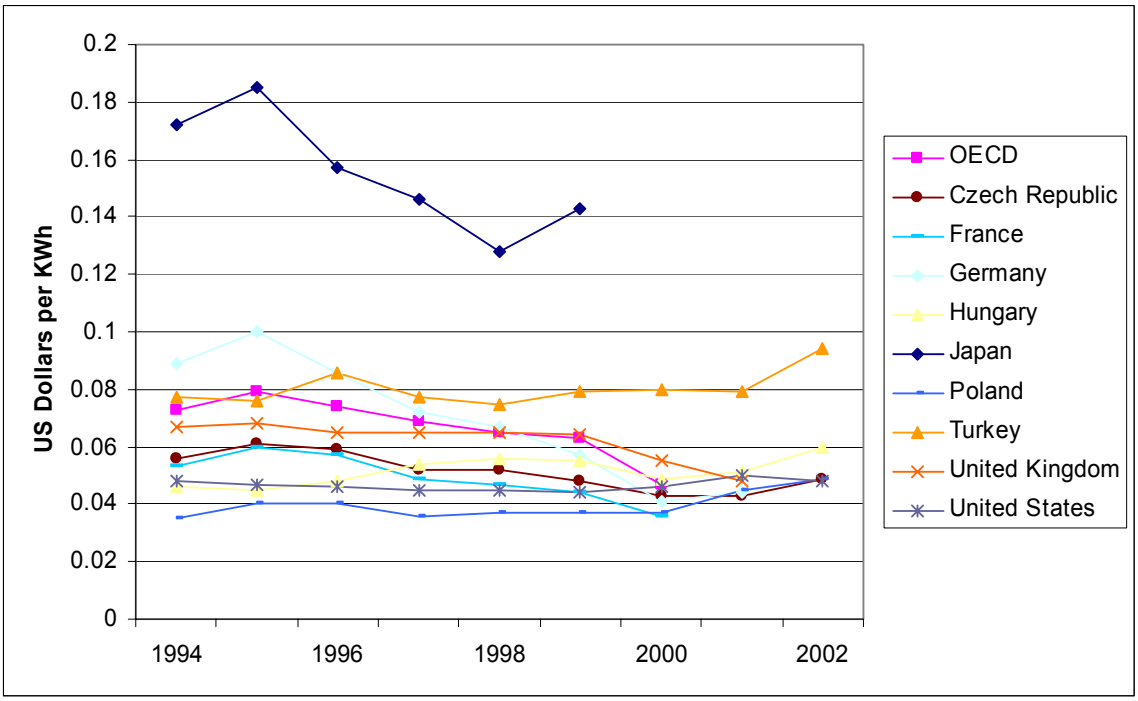


Source: EIA

In Turkey, electricity prices for industry are similar to prices faced by households, which is a politically popular measure among Turkey's politically active middle class. In most of the OECD, by contrast, the price for households is at least one and a half times the price for industrial users. This cross-subsidy will not survive as larger users are allowed to switch to cheaper producers and very large users are allowed to generate their own power if grid services are too costly. Yet the political support for the reform could be jeopardized if the politically difficult issue of raising household prices is not handled carefully.[12] Turkey has much higher prices for industrial consumers than in all other major OECD countries except Japan (Figure 5).

[12] Turkey is fortunate in that it has decided to reform the electricity market at a time when there is excess generation capacity. Reform in tight markets is difficult because electricity prices are more likely to rise, which can erode the political support necessary to implement policy changes.

Figure 5: Industrial Electricity Prices in Select OECD Countries, 1994-2002



Source: IEA

General Turkish Investment Climate

Foreign direct investment (FDI) in Turkey has been relatively low over the past decade compared to its developing country peers.[13] Between 1997 and 2000, FDI averaged less than $1 billion annually—barely enough to offset outflows from the foreign investments of Turkish companies. In 2001, FDI inflows were $3.3 billion, most of this accounted for by two large acquisitions. In 2002-03, FDI inflow fell again, this time to just over $1 billion.

Investors cite Turkey's uncertain political environment, high levels of corruption, inflation and the associated accounting problems, and the unpredictability of the legal system as reasons for low levels of foreign investment.[14] In this section, we detail three areas of the investment climate that can affect the success or failure of an IPP: the

[13] Hunt, Erik (2003). "Turkey Country Commercial Guide FY 2004: Invest Climate." Washington, D.C. (Department of State).
[14] Economist Intelligence Unit (2004). "Turkey: Country Profile 2004." London (Economist Intelligence Unit).

macroeconomic context, corruption and the rule of law, and the domestic political environment.[15]

Macroeconomic and Fiscal Policy

Turkey has suffered from persistently high inflation over the past 20 years. Between 1989 and 1993 inflation averaged 65% per year; between 1994 and 1999 that figure was 85%. High inflation has been fueled by the repeated devaluations of the Turkish lira necessary to keep the economy competitive.[16] Inflationary expectations, in turn, have led to repeated wage and price increases. And fundamentals in the Turkish economy are weak, rooted in a public debt that swelled during the late 1990s, in part due to an expansionist and populist spending policy that multiplied the soaring costs of servicing government debt at high interest rates.

Turkey has experienced numerous macroeconomic shocks over the past 15 years that have given foreign companies pause when investing. In 1994, the government's attempt to force down interest rates and support the lira failed, which led to a large devaluation. Because Turkey had gained the respect of the international financial community as a result of liberalizing measures, the IMF concluded a stand-by agreement with the government aimed at ameliorating the situation. As part of the agreement the government had to reign in its fiscal policy and agree to limit spending. However, the agreement was abandoned one year later (1995) with rapid government turnover and the rediscovery of populist economic policies.[17]

There were several more rounds of IMF assistance in the late 90s and early half of this decade, almost all aimed at cutting inflation and all requiring the government to get its financial house in order. By 1999, most Turkish leaders agreed that substantial structural reforms would be needed. Large business interests—beneficiaries of government-created demand—also supported the idea as they too became concerned about stability, lower interest rates, and national competitiveness.[18] By the end of 2002, Turkey had become the IMF's largest creditor. However, the economy began to rebound and inflation came under control in 2002 and 2003. Table 2 below shows selected macroeconomic indicators for Turkey between 1999 and 2003.

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[15] Victor, et al (2004). The Experience with Independent Power Producers in Developing Countries: Introduction and Case Study Methods." PESD Working Paper #23, available at http://pesd.stanford.edu/publications/workingpapers.html.
[16] Economist Intelligence Unit (2004)
[17] EIU (2004)
[18] EIU (2004)

Table 2: Selected Macroeconomic Statistics for Turkey, 1999-2003

	1999	2000	2001	2002	2003
% Change, Total GDP	-4.7	7.4	-7.5	7.9	5.8
% Change, Per Capita GDP	-6.2	5.7	-8.9	6.5	4.3
Money-Market Interest Rate	73.5%	56.7%	92%	49.5%	36.2%
Average Consumer Price Change (%)	65.1	54.9	54.4	45	25.3
Average Wholesale Price Change (%)	62.9	32.7	86.6	30.8	13.9

Source: Economist Intelligence Unit

The Legal Context and Corruption

Throughout the 1990s, the court system and the Turkish bureaucracy were seen as major obstacles to foreign investment. The court system is overworked, which results in slow decisions. Judges are often not given enough time to make complex decisions, and are often seen as vulnerable to outside political and commercial influence.[19] However, the highest courts are seen as being independent—the Constitutional Court and the Danistay (the Supreme Administrative Court), have not hesitated to overturn acts of Parliament and the Council of Ministers where they have seen fit. For example, the Constitutional Court intervened after the first IPP law (the BOT model) was passed. And according to one analyst, the Danistay has acted like a "ball and chain" holding back the private sector.[20]

Corruption is widely seen as a major problem in Turkey. The Turkish government conducted two anti-corruption investigations in 2001, leading to the resignation of the Energy Minister and the Minister of Public Works, both of whom were accused of wrongdoing and corruption in the offering of government contracts. Corruption is most serious in public procurement, and companies allege that contracts are often awarded on the basis of personal relationships rather than commercial competence.[21]

Table 3 below shows Transparency International's Corruption Perceptions Index for all of the countries in the IPP study.[22] This index combines numerous surveys (sometimes more than a dozen for an individual country) on corruption from 13 independent institutions, and reports a three-year rolling average.

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[19] Hunt (2003)
[20] Gulen (1998)
[21] Hunt (2003)
[22] Full report available at http://www.transparency.org.

Table 3: Transparency International's Corruption Perceptions Index 2003

Malaysia	5.2	**Thailand**	3.3
Brazil	3.9	**Turkey**	3.1
Mexico	3.6	**India**	2.8
Poland	3.6	**Argentina**	2.5
China	3.4	**Philippines**	2.5

Source: Transparency International. Note: 10 is a prefect score—only Finland and Iceland received a perfect score in any of the surveys used to compile the Index.

Domestic Politics

Turkey is a parliamentary democracy led by a President and a Prime Minister. The President is largely a figurehead, but has the power to appoint the Prime Minister (usually the leader of the majority party in Parliament) and the power to delay—but not veto—legislation. Turkey's parliament is generally comprised of a handful of minority parties, which must form coalitions in order to gain a majority. Parties must receive 10% of the national vote in order to be eligible to serve in Parliament.

There are several major political forces in Turkey. The current governing party, the AKP, is a moderately conservative party with an Islamist past that party leaders now disavow. The AKP was elected into power in 2002, following a landslide victory in parliamentary elections due to public disgust over mismanagement and corruption. The coalition it replaced was led by a center-left party, the DSP, which was successful in implementing some of the reforms necessary to become a candidate for EU accession. The AKP has continued this process, further bringing Turkish laws into line with those of the EU and continuing the implement the policies of the IMF backed economic reform plan.

Other important political groups include the ultra-nationalist political parties, whose economic populism is attractive to many Turks. The two parties that occupy this slice of the political spectrum gained a combined 15.6% of the vote in the March 2002 general election, although neither group gained the 10% necessary to obtain seats in Parliament. Kurdish political groups also play an important role in Turkey. The Kurdish region in southeast Turkey has been a region of enormous conflict over Turkey's past, and Kurdish parties have often resorted to violence to achieve their political goals.

The Turkish Army is an important political force as well. The Army staged three coups between 1960 and 1980 and played a role in bringing down the government in 1997. The Army has recently backed off of its opposition to human rights reforms and its opposition to the UN settlement proposals regarding Cyprus. However, the military is likely to remain in the background unless the current, or future, government takes action to undermine Turkey's secular status.[23]

[23] EIU (2004)

EU Accession

In the fall of 2004, Turkey was granted permission to begin EU accession negotiations. While accession is not guaranteed and would happen many years from now if it is granted, the announcement has enormous ramifications. Turkey must now begin the process of aligning its laws with over 80,000 pages of EU law that cover several areas relevant to IPPs, including electricity market reform and state aid to companies. While EU accession negotiations are a positive development for future foreign investors because they can expect stable institutions and an attractive business environment, the situation is more complicated for existing IPPs. As part of accession, Turkey must take steps to implement a competitive electricity market, which they have already begun to do through the Electricity Market Law. However IPPs with state-guaranteed take or pay contracts might face re-negotiation of cancellation of these contracts because, as see in the case of Poland, these contracts tilt the playing field toward the older plants by guaranteeing their revenues. EU law allows for the Turkish government to compensate the IPPs for stranded costs as a result of contract cancellation, but in all likelihood (as is the case in Poland) IPPs are unlikely to receive revenues they would have had their state guarantees remained in place. This process will unfold over the course of the next few years, and will have enormous implications for the Turkish power market.

Case Selection

There are several factors that we believe might affect IPP success in Turkey. First is the regulatory system that governs the project—either BOT or BO, which we refer to as the 2nd and 3rd frameworks. As we mentioned before, there are subtle but important differences between the two, such as access to commercial courts (third and fourth frameworks) in case of dispute rather than administrative courts (first and second frameworks). Some BOT projects do not have access to commercial arbitration because electricity, at the time investors agreed to build the project, was considered a public service by the Constitutional Court. Under Turkish Law, public services by private firms are concessions, and subject to administrative rather than commercial law. Another difference is the bidding process. Under the 2nd framework, companies simply negotiated terms with the government; as a result of this uncompetitive process, the prices these projects get are much higher. Thus one important variable in selecting cases is the IPP framework.

Another important factor is fuel. As was shown in Figure 2, coal and hydro were the dominant fuels used in electricity generation until around 1975. Between 1975 and the mid 80s, electricity production was relatively flat; however as a percentage of total primary energy used to generate electricity, coal use dropped precipitously. Over the same period, hydro use more than doubled. Around 1985, natural gas usage began to grow rapidly. This is due to environmental concerns and the desire to diversify energy sources. In Turkey, fuel can impact outcome for several reasons. For example, natural gas turbines have different economic characteristics than a coal-fired plant—construction times are shorter and capital costs are lower. Natural gas generators also contract with a state-owned pipeline company whose contractual obligations are guaranteed by the government framework. The incumbent fuel in Turkey—hydro—is vulnerable to droughts. We also might see companies with hydro assets fight to carve out special laws that give them priority dispatch (wee see this in Brazil, for example). Because Turkey is import dependent, we would expect Turkey will give priority to utilizing indigenous energy resources—primarily hydro, but coal and renewables as well. Thus a second important variable for selecting cases is fuel type and fuel contracts.

The third and final variable is project sponsor. As we briefly discussed above, Turkey has a dynamic political and regulatory climate, and in most cases IPP investors have built projects with a local partner. Presumably this could, in the best case, provide valuable local knowledge and expedite the bureaucratic processes. On the other hand, we see that in some cases a politically powerful local partner could become a liability when the government changes or if the main investor does not have confidence that they can exert oversight over local processes. By studying IPPs with different project sponsors—some purely foreign projects, others with local partners—we will be able to test the effect a Turkish project sponsor has on the project outcome.

With these variables in mind, we have compiled a list of all significant Greenfield IPP projects in Turkey and compiled a bulleted list of relevant attributes. The list appears here as an appendix. Table 4 below shows all of the projects, and the variation on the relevant variables we believe affect project outcome.

Table 4: Turkish Greenfield IPP Projects Larger than 100MW

Project	IPP Framework	Fuel, Technology and Size	Sponsor	Selected for In-Depth Study
Baymina Plant	Third (BO)	770MW Natural Gas Combined Cycle	Foreign and Local	No
Birecik Power Plant	Second (BOT)	672 MW Hydroelectric	Foreign and Local	Yes
Doge Enerji A.S.	Second (BOT)	180MW Natural Gas Combined Cycle	Foreign and Local	No
Gebze, Adapazari, and Izmir	Third (BO)	1555MW, 780MW, and 1525MW Natural Gas Combined Cycle	Foreign and Local	Yes
Iskenderun Enerji	Third (BO)	1300MW Coal	Foreign and Local	Yes
Trakya Elektrik	Second (BOT)	478MW Natural Gas Combined Cycle	Foreign and Local	Yes
Uni-Mar Power Plant	Second (BOT)	480 MW Natural Gas Combined Cycle	Foreign Only	Yes

We have selected five projects for further study, which exhibit diversity across the above three variables. The first is the Birecik hydro project, a BO project with minority Turkish ownership. The second project (or group of projects) is the Intergen and Enka sponsored Gebze, Adapazari, and Izmir plants. All three are natural gas fired, BO plants. They were packaged together in the bidding and the financing, and we will study them as if they are the same facility. The third project is a large coal-fired BO plant sponsored by the German firm STEAG. We will also examine the Uni-Mar power plant, a natural gas project with exclusively foreign ownership. Enron's Trakya project—which was one of the two projects built under the 2nd framework before the Constitutional Court ruled against the law—has very high electricity prices and guarantees for both fuel supply and electricity sales. This project will help us to understand the role of competitive bidding in project outcomes.

Appendix 1: Outcome of Legal and Regulatory Frameworks[1]

Framework	Year	Characteristics	Electricity Generation Capacity (MW)[2, 3]	Operational Greenfield IPPs (>100 MW)	Assesment
I	1984	Build Operate and Transfer (BOT) framework for greenfield IPPs		None	Unsuccessful due to Constitutional Court's Interpretation of law - concessions subject to approval by government agencies
			2,349		
II	1994	BOT projects with state guarantees		Birecik Power Plant Doge Enerji Trakya Elektrik Uni-Mar Power Plant	Constitutional Court struck down framework as unconstitutional
III	1997	Build Operate and Own (BO) framework. Treasury-backed, take-or-pay contracts with state monopoly, TEAS. Change in constitution clarified the legitimacy of private ownership of energy assets and generation	5,900	Gebze Plant Adapazari Plant Izmir Plant Baymina Plant Iskenderun Enerji	Successful in attracting foreign investment. More than 6,000 MW of foreign sponsored power
IV	2001	Electricity market Law (EML). Establishment of a new, independent Energy Market Regulatory Authority (EMRA). No state guarantees. No foreign majority in IPPs. Framework broadly follows "textbook" model of electricity reform	490	None	Privatization programme going slowly. No foreign IPPs to date under the new framework

[1] *Source: EMRA; Ministry of Treasury, Turkey; ECA (2002)*

[2] *Data insufficient to make the distinction among which operational BOTs built under which framework. Please note that there are some 30 BOT projects with a capacity of 2771 MW with incomplete and unclear legal status.*

[3] *12 projects with 140 MW of capacity completed as of 2003. 350 MW of capacity is expected to be operational in 2004 with a further 500 MW expected in 2005*

Appendix 2: Universe of Operational Turkish Greenfield IPPs larger than 100MW

Baymina Plant

Location: near Ankara
Fuel and technology: Natural gas combined cycle
Plant size: 770 MW
Type of investment: BOO
Value at financial close: $465 million

Notes:

- Plant originally developed by International Power (50%), Bayindir (45%), and Mimag (5%). Tractebel now owns 95% of the project and Mimag continues to own the rest. The total cost to Tractebel was around $500 million. Tractebel announced it would "fast-track" the construction in order to bring it on-line by year-end 2003. The plant started commercial operation in February 2004.
- International Power and partners bid for project rights in 1997 and signed a 15-year PPA with the state-owned grid company TEAS.
- They also signed a gas-supply agreement with BOTAS, the state-owned natural gas supplier.
- Both contracts with TEAS and BOTAS are guaranteed by the Turkish Treasury and are linked to U.S. dollar values.
- The project received $84.8 million loan guarantee for the project, which went toward the purchase of GE gas turbines. Financing of this 500 million USD project has been provided for 75% by a consortium of international banks, and supported by the World Bank (MIGA) and export credit agencies of Belgium, USA, Germany and Austria. It was the first major industrial installation to be financed since the currency crisis in 2002 and constitutes an important basis for further international investments in the country.

Birecik Power Plant

Location: SE Anatolia
Fuel and technology: Hydro
Plant Size: 672 MW
Type of Investment: BOT
Value at financial close: $1.09 billion

Notes:

- As of 2001, the project company, Birecik AS, was owned by Philipp Holzmann (30%), Strabag, and Gama (13% together) and TEAS (30%). The remaining shares are distributed between mechanical suppliers and planners.
- The dam is part of the Turkish government's efforts to develop the region through wider supply of electricity and water for irrigation. Birecik is one of several damn built on the Euphrates.
- Birecik is located downstream of Ataturk dam.
- The dam is 2.5km long and 62.5 m high. The retaining volume of the dam is 620 million cubic meters.
- The duration of the BOT contract is 15 years. The project was completed in October 2001.

Doga Enerji A.S.

Location: Esenyurt suburb of Istanbul
Fuel and technology: Natural gas combined cycle
Plant Size: 180 MW
Type of Investment: BOT
Value at financial close: $182.4 million

Notes:

- Doga Enerji is owned by Edison Mission Energy (80%), the rest is owned by Turkish investors.
- The plant began commercial operations in May 1999.
- The plant sells electricity to TEAS and distributes heat to 14,000 homes in the Esenkent housing complex.
- Doga was the first project under Turkey's BOT scheme.
- The project was financed by $45.6 million in stakeholder equity and non-recourse project financing of $136.8 million.
- OPIC provided loan guarantees of $95 million, and the Dutch export credit agency provided partial risk guarantees for $35 million of the loans.

Gebze, Adapazari, and Izmir

Location: Gebze and Adapazari are co-located 150km east of Istanbul; Izmir is on the Aegean Sea, near the city of Izmir
Fuel and technology: Natural gas
Plant Size: Gebze (1555 MW), Adapazari (780 MW) and Izmir (1525 MW)
Type of Investment: BOO
Value at financial close: More than $2 billion

Notes:

- The three projects are owned by Intergen (which is a Shell and Bechtel co-venture) and Enka, a Turkish construction company.
- The projects were awarded through a competitive tender.
- Construction of the plants began in 2000 and all three plants began operations in October 2002.
- The financing for the three projects was done together, and the projects represent the largest private power sector investment in Turkey's history.
- The three projects together provide around 14% of Turkey's electricity needs.
- BOTAS provides natural gas to all three facilities, and the three facilities have 20 year PPAs with TEAS.
- Financing for the project was partly arranged by OPIC and the Ex-Im Bank.

Iskenderun Enerji (ISKEN)

Location: Eastern Mediterranean region near Adana
Fuel and technology: Coal
Plant Size: 1300 MW
Type of Investment: BOO
Value at financial close: $1.5 billion

Notes:

- Originally developed by STEAG and RWE with local partner Gama. The project was part of the first BOO tender, along with the Intergen trio of plants and the Baymina project.
- The current owners are STEAG (51%), RWE (25%), and Oyak (24%), which is Turkey's largest private pension fund.
- The plant took just 39 months to construct.
- Viewed in the national context, the power plant can cover as much as 8 percent of Turkey's current power demand. Every year, the two generating units of the plant convert 3.3 million tons of hard coal into electricity.
- The power plant has been in operation since November 2003, and was dedicated in Feb. 2004 at a ceremony attended by Gerhard Schroder and the Turkish Prime Minister, Tayyip Erdogan.
- One quarter of the investment was financed by STEAG equity. Poliical risk guarantees were provided by the Republic of Germany and various supplier country export credit agencies.
- ISKEN signed a 20 year PPA with TEAS, whose obligations are guaranteed by the Turkish Treasury. Payment is in U.S. dollars.
- The plant uses imported coal.

- On 13 May 2004 STEAG sold 24 percent stake in the project to Oyak[24], Turkey's largest private pension fund.

Trakya Elektrik

Location: Ereglisi, on the Sea of Marmara
Fuel and technology: Natural gas combined cycle
Plant Size: 478 MW
Type of Investment: BOT
Value at financial close: $600 million

Notes:

- Owned by Enron (50% - now Prisma Energy), Wing International (9%), Gama (10%), and Midlands Generation (31%).
- The project signed a 20 year PPA with TEAS, and received financial guarantees from the Treasury covering the payment obligations of TEAS.
- BOTAS is the natural gas supplier to the project.
- The plant began commercial operations in July 1999.
- Financing for the project includes $250m through the US Ex-Im Bank and $85m from OPIC.

Uni-Mar Power Plant

Location: Ereglisi, on the Sea of Marmara
Fuel and technology: Natural gas combined cycle
Plant Size: 480 MW
Type of Investment: BOT
Value at financial close: $620 million

Notes:

- The plant is owned equally by Unit International, Marubeni Corp., and National Power.
- The project began operations in the first half of 1999.
- 25% of the project was financed through owner's equity. Export credits were received from Japan, Belgium, the UK, Germany, and Switzerland.
- The project has a 20 year PPA; when this expires the plant will be handed over to the state.

[24] Military pension fund which administers total funds of $4 bn and holds stakes in more than 40 international companies.