博士論文

Shortcomings in initial stage of power sector reform and their influence on the following process: case studies of Chile and the Philippines

電力セクター改革の初期段階における欠陥とその後のプロセスに対するその影響

金　　玟　住
キム　ミンジュ

Minju Kim

Supervisor

Professor Hideyuki HORII

Advisors

Professor	Hironori KATO
Professor	Kazumasa OZAWA
Professor	Shunsaku KOMATSUZAKI
Professor	Toshiro NISHIZAWA

Abstract

About 70 of the 150 developing countries have embarked on reforming of the power sector since the early 1990s. The drivers of this reform movement are disenchantment with the poor performance of state-owned power utilities, the need for new investments and modernization to meet the rapid growth in demand, and fiscal pressure, along with the desire to protect and help the poor(Gratwick and Eberhard 2008). However, various technical and economic evaluations of power sector reform indicate that they are still facing difficulties even after the reform. These power problems in developing countries especially affect the industrial production in the developing countries who aim to economic growth. In some developing countries, another huge amount of money is provided for the re-design of the roadmap and technical assistance for restoration from multilateral institutions.

Although the power sector reform has been introduced in order to escape from the existing problems and challenges of the power sector, still those problems have persisted for a long time throughout the developing countries. Some researchers, in a skeptical perspective, strongly criticize the reform itself in developing countries and insist that the reform should be backward (Eberhard and Gratwick 2007). In many cases from the literature reviews, the main question and issues in reform have not been ‘whether’ but ‘how’ to do it. In this point, we still need to answer this question by a more critical assessment from empirical experiences; can unfavorable initial condition of developing countries truly be overcome by good design and implementation of the reform? Also, recent study mainly focuses on how to solve the problems as a feedback for the reform. Despite the importance of design and execution of reform in the initial stage is generally agreed by researchers and reform participants, its mechanism is not yet clearly clarified. Hence, the following questions can be posed; how do the reform design and execution in initial stage contribute to the result of the reform?

To answer for these two research questions above, following three objectives are established:

1. Identify unfavorable initial conditions that developing countries typically face in their power sector reforms.

2. Clarify unfavorable initial conditions in which shortcomings in policy design and implementation are critically important in that lead to failure in the following process.

3. Suggest important aspects to avoid the shortcomings in design and implementation of the initial stage.

In order to select case study area, an eligible country list was first prepared that satisfied the following conditions: (a) developing country that have already initiated the power sector reform, (b) the country has a long enough history that allows us to understand the whole process, (c) the country has a similar size of economy and power capacity, which indicate market demand and economy of scale of power. As a result, Chile and the Philippines were selected, which can show how the implementation and design in initial stage brought out different initial results.

After cases are selected, case study using causality analysis was conducted based on the result of literature review, in-depth interviews. Obtained data were firstly classified into three phases: initial condition, initial implementation and initial result. Using identified factors, causality diagram was derived. Throughout drawing the causality diagram, subsequently, some fundamental findings from the proposed causality diagram were suggested. To decide an analytic dimension in causality diagram, initial implementation and initial results corresponding to an initial condition is set as a domain. This domain setting can be verified by the stakeholders' analysis results that derive four main stakeholders in initial stage. Moreover, all links of factors in causality diagram were also investigated by applying weight to determine critical factors.

In Chile case, the initial condition of Chilean power sector reform could be characterized with absence of clear regulation governance, vertically integrated monopoly by state-owned power company and its fiscal constraints. On top of that, less political supports for the national human resources, Chile's unique political condition under the dictatorship, general social comprehensive reform before the power sector reform in security service and education are initial condition that can be differentiated from the other developing countries. Among these initial conditions, the unfavorable regulatory governance was improved by establishing independent regulatory body and capacity building by utilizing local human resources who are qualified in economics and engineering and by funding form the domestic business group. Besides, Chilean regulatory body in initial stage had to build their capacity by themselves because they did not have any reference

cases and supports from outside. Through the internal capacity building process, consequently, they could have high institutional capacity enough to regulate the tariff with simple and logical economic rules. Fiscal constraints of state-owned power company were improved by promoting private investment on generation capacity, since they successfully fostered investor's confidence in the power market through the initial implementation. That credible environment could be developed by many incentives for the investors. First of all, the market signal was accurate with marginal pricing model, which was empowered by electricity law. Moreover, the investors was able to be protected by the jurisdiction and explicit regulatory framework imbedded in legislation. We also cannot deny the influence of the abundant domestic capital market on the initial success in attracting new investment on generation capacity which was resulted from the general and comprehensive reform in social security and education prior to the power sector reform. With regards to the political interference, Chilean unique political environment ironically had positive influence on the power sector reform, promoting quick decision making under the dictatorship. Regulatory body also could maintain their independency under the military government. Lastly, fulfilling competition in the market were failed to meet the expectation that the reform would bring more efficiency throughout competition in the market. Vertical integration maintained in the power market due to an inadequate allocation of property right and loopholes in law enactment that allow cross-ownership between generation and distribution caused limited competition in the market.

In the Philippines case, the initial condition of the power sector reform could be characterized as frequent changes in energy governance, weak regulatory body, insufficient funds for capacity building, IPP contracts and its burden to state-owned power company, and vertically integrated monopoly by conglomerate. Absence of well-organized political party and family oriented political activities is also a unique feature of the initial condition that influences on the power sector reform. Other external factors such as Asian financial crisis, supports from ADB and USAID were also reflected on the causality analysis. Philippines had concerns on techno-economic design of regulation, when the independent regulatory body was created, because the regulatory responsibility had been unclear before the power sector reform. Due to the inability of funding on capacity building, ADB provided technical assistance but this caused high dependence on external consultants without building internal competency. Regulatory body's organizational features for example, salary policy also failed to attract qualified personnel

because of relatively lower salary than other sector's utility regulatory body. Moreover the regulatory body's independence and autonomy was threatened by political appointee of the chair and high dependency on government supports. These strong political influence is also one of the characteristics of the Philippines that hamper the quick decision making process. Especially in the initial stage, there was severe delay in decision making on whether to initiate the reform or not, prior to the reform. Before the official enforcement of the reform, the political interest groups could had information about the future industry and easily involve in rent seeking behavior. Delay intensified the coalition of the interests group, thus delays in decision making iterated. In terms of the investment expansion on generation, the Philippines failed to increase the private investment by privatizing state-owned generation assets. Due to the risky contract with the IPPs made NPC too much focus on generation's privatization, rather than transmission assets. Moreover, with high transmission loss problems, private investors hesitated to invest on generation. External shocks such as Asian Financial Crisis and Enron in 1997 also influenced on the financial feasibility of Distribution Company who is the main purchaser of the generation and deteriorated the investment climate. Consequently, as the number of the private participants in wholesale power market, competition in the market was also not fully accomplished. On top of that, the Philippines mandated the law that allowed cross-ownership between distribution and generation in a certain percent but the permitted ratio of Distribution Company's purchasing electricity from bilateral contracts with affiliated generation company over the total requirements was raised up to 50% by lobbying and political reasons.

Based on the result of each case study, comparative study was conducted by each domain, focusing on whether unfavorable initial condition was overcome by what implementation in initial stage. First, regarding to the capacity of the regulatory body, the most contradicting execution in the initial stage of power sector reform in the two cases is the resource of capacity strengthening process. Impact of political factors on the regulation cannot be overlooked too. Political interference on the regulatory body in the Philippines impeded the independence and transparency of the regulation. Second, with regard to the political interference, the pace of progress and decision making especially at the initiation was different within two cases. Besides, we could clarify the influence of political interference and conclude that political factor is the most difficult to avoid. Third, about the investment expansion, a notable comparison is the difference in other operational sector's influence on investment. In short, in the Philippines, they

focused on privatization on generation more to settle the liability by selling NPC's generation assets to private. In that process, NPC's transmission assets' privatization was slowed down and the technical loss of the transmission line was not improved. Thus, this unbalanced privatization, too much focusing on generation caused side effect that investment on generation is reversely decreased, because the unstable line network was felt like another risk for the investment. Moreover, financial inability and low credit of Distribution Company (Meralco), who is a main customer of the generation, also highly influenced on the investment in generation. Fourth, vertically integrated monopoly structure by the conglomerate was a prevailing feature of the power sector in both cases. They mandated laws that included clauses mentioning about establishment of competitive power market and its operation. However, the legislated law provisions had shortcomings and difficulties in controlling abuse of market power because of some loopholes in law allowed the existing conglomerates to keep their market power. In initial stage, the conglomerates' market power as a dominant industry player did not show much changes by establishing the competitive market.

Through case studies and their comparative analysis, this study showed the roles of policy design and implementation in the initial stage of power sector reform in developing counties. Main findings can be summarized as follows:

1. Common unfavorable initial conditions that developing countries faced in their power sector reforms are identified: 1) Limited capacity of the regulatory bodies, 2) Lack of investments to infrastructure and business, 3) Conglomerates dominate the country's business, 4) Political intervention

2. Reform design and implementation critically influence on some of the unfavorable initial conditions that developing countries often face in their power sector reforms.

    - Careful design and implementation can overcome unfavorable initial conditions for capacity building in regulatory body and provide incentives for investment in business and infrastructure, while shortcomings in policy design and implementation lead to inappropriate initial results.

3. In power sector reforms in developing countries, policy design and implementation need to be done considering the following aspects:

- Since power sector reform can be done in step by step, goals in the initial stage are not necessarily full competition in power market in developing countries, where political interventions are difficult to avoid.
- Capacity of regulatory body: Aids in knowledge and money are necessary, but should be carefully designed so that the given resources strengthen domestic capacity in developing countries.
- Establishing investment environment: Legal and judicial backups carefully designed considering the whole power provision are effective to overcome lack of investments. We emphasize these are especially important in power sector since connection among generation, transmission and distribution matters in the sector.
- Even when it leaves rooms for benefiting conglomerate or political intervention, successful initial results can be achieved if the decision making is done in a speedy manner.
- It is difficult to avoid political interference and to ensure competition in market by policy design and implementation.

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List of Abbreviation

ADB	Asian Development Bank
AFP	Administradoras de Fondos de Pensiones
CNE	Comisión Nacional de Energía(Chile)
EPIRA	Electric Power Industry Reform Act(Philippines)
ERC	Energy Regulatory Commission(Philippines)
ESMAP	Energy Sector Management Assistance Programme
IPPs	Independent Power Producers
JICA	Japan International Cooperation Agency
MERALCO	Manila Electric Company
NPC	National Power Cooperation(Philippines)
SIC	Sistema Interconectado Central(Chile)
SING	Sistema Interconectado del Norte Grande(Chile)
SOE	State-owned Enterprise
WB	World Bank
WESM	Wholesale Electricity Spot Market(Philippines)

Other abbreviations used in the paper should have also been spelled out, when it is first used.

1 Introduction

1.1 Overview of the issue

Advancement of a country could be measured in terms of per capita consumption of electricity. Many previous researches have demonstrated a strong correlation between economic growth and electricity consumption in different countries, though the assumption on the direction of the causal relation is compatible depending on the researchers (Kraft 1978, Murry and Nan 1996, Wolde-Rufael 2004). Especially in developing countries, securing power sector has more significant meanings for two reasons. First, capacity of power generation and well-organized power system is one of the most critical endowments for the developing countries in a growing economy. Second, electrification in rural area and improvement of access and affordability to electricity services for poor households is another significant issue in developing countries.

Many developing countries underwent difficulties such as imbalance of power demand and supply, periodic blackouts, and poor operational performance under a long period of state-owned electric power company without competition and incentives to improve performances (Newbery 2006; Jamasb 2006). All these irrationalities were the motivation and reason for the reform (Wamukonya 2003). Since these kinds of problems especially gave serious threat by depriving the country of a driving force to economic growth, movement towards restructuring and breaking up existing market structure absolutely matters in developing countries (R. W. Bacon and J. Besant-Jones, 2013; Basnet-Jones, 2007).

Starting from the early 1990s, a set of institutional reforms – including unbundling, privatization of ownership, and the introduction of competition into the generation sector – began to be promoted as a global solution to the problems of the electricity industry (IEA 2001; Littlechild 2001; Patterson 1999; Joskow 1999; Bacon 1995). The power sector reforms based on the 'standard textbook model' became a global trend during the 1990s (Hunt 2002). Reform became a 'normal prescription' of the multilateral donor agencies, such as IMF and the World Bank, and the reform agenda has been pursued vigorously for more than two decades since 1990s. The textbook model was first applied in the Chilean power sector in 1982 and also became the reference model for reform in other energy sectors. Since 1982, when Chile began radical program of restructuring and privatization, more than half of the world's developing countries

have introduced reforms in the power sector (Kessides 2012). ESMAP (1999) reported that 73 countries among 115 developing countries in the world had already introduced reform process in any level, based on a questionnaire survey with World Bank staff with experience in the energy sector. As shown in Figure 1 below, countries that introduced higher level of reform steps are scored 6 points and remarked with dark blue in the world map. The opposite means less reform process and colored with light blue.

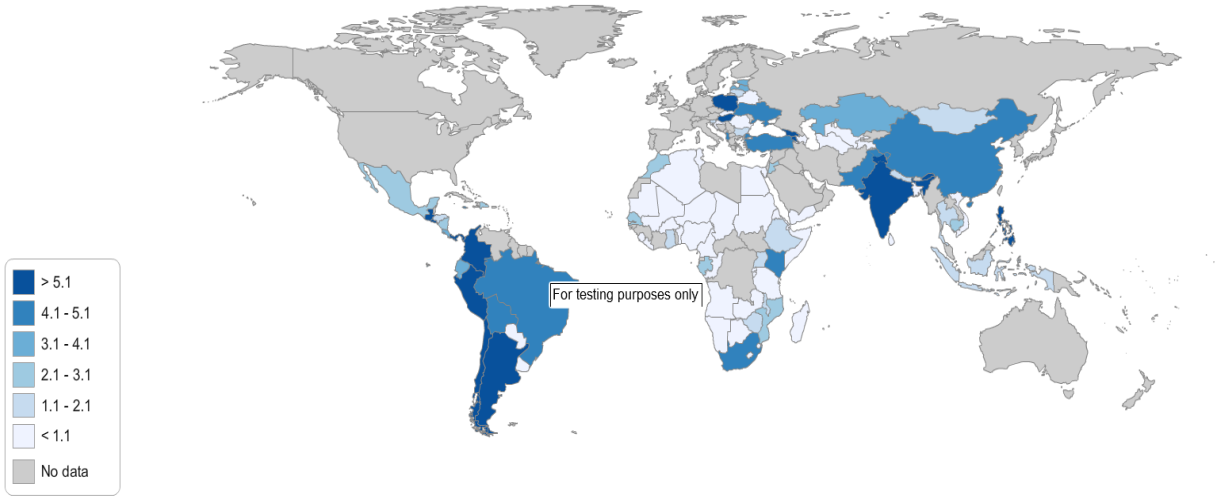


Figure 1 Level of power sector reform of developing countries

Source: ESMAP (1999), "Global Energy Sector Refom in Developing Countries: A Scorecard."

The textbook model for reforms involved the following reform sequence and steps: i) corporatization of state-owned enterprise, ii) law for electricity sector liberalization, iii) establishment of an independent regulator, iv) unbundling of the main segments, v) incentive regulation of electricity networks, vi) establishment of a wholesale electricity market, vii) privatization and viii) introduction of independent power producers (IPPs). The model brought about a fundamental paradigm shift in terms of electricity sector market structures, the role of the state, and the regulation of the sector (Joskow, 1998; Newbery, 2002; Jamasb et al., 2015).

Nearly 30 years since the first power sector reform in Chile, the reforms have proven much more difficult than first anticipated and most remain work in progress. The experience with power sector reform, however, has frequently included chronic underinvestment in power supply, price hikes, unreliable service, and reduced access, particularly for the poor (ESMAP 1999, Hall 1999; Jamasb 2015; Jamasb, Nepal, and Timilsina 2015)

1.2 Review of the literature

Since the power sector reform started in developing countries about two-and-a-half decades ago, many existing studies have been dealing with the power sector reform from various perspectives. Previous researchers have mainly approached the power sector reform using the methodology of cross-country econometric study or country case study. In the econometric model study, several influencing factors for the successful reform, such as regulation, the state of economic development and energy governance were examined. These models have advantages that they can capture the important factors in general, but have relative weakness to deal with the multiple factors because of the difficulties in data collection and measurement. On the other hand, the country-specific context and details are able to be suggested by the case study. In this section 1.2, previous studies are broadly discussed in order to provide the relative positioning of the research topic.

1.2.1 Review of assessment on the result of the power sector reform

Literature reviews that evaluate the result of the reform in developing countries have commonly been conducted through intensive and detailed case studies. Though it is hard to generalize from a few of cases and also each case country should be understood depending on their own reform context, some similarities in achievements and limitations of the power sector reform are found.

Main achievements

Some studies report that technical improvements, such as decrease in total distribution and transmission loss, an increase of the length of the transmission network and installed capacity. Those literatures showed that improvement in sector operation had been accomplished through the power sector reform in their cases. In the successful case of Chile and Brazil, social effect such as increase of labor productivity was reported as shown in Table 1 below.

Table 1 Country case studies and their outcomes from the power sector reform

Country	Studies	Main achievements
Chile	Fischer, Gutierrez and Serra (2003), Nagayama (2007), Pollitt (2004)	- Increased labor productivity - Reduced total energy losses

		- Decreased wait time for repair service
		- Increased installed capacity
		- Increased length of transmission network
		- Investment expansion
		- Average node prices declined
Argentina	Rudnick and Solezzi (2001), Fischer, Gutierrez, and Serra (2003), Pollitt(2008)	- Reduced non-availability of thermal plants
		- Increased Installed capacity
	Toba (2007)	- Reduced distribution losses
		- Decreased spot price of electricity
Peru	Perez-Reyes and Tovar (2009), Anaya(2010)	- Reduced Distribution losses
		- Reduced Interruption time
	Pombo and Taborda (2006)	
Brazil	Mota (2003)	- Increased labor productivity of distribution and supply
	Jamasb, Nepal, and Timilsina (2015)	- Improved competition in the sector,
		- Provided incentives for investors by auction process in transmission
		- Distribution companies procure electricity at competitive price
India	Bhatia and Gulati (2004)	- Decrease of distribution losses
The Philippines	Toba (2007)	- The reform with private sector participation increased social welfare.

Limitations and Challenges

However, various technical and economic evaluations of power sector reform indicate that they are still facing difficulties even after the reform. Recent reviews indicate that not much progress has been made in many parts of the world (Bacon and Besant-Jones, 2001; World Bank, 2003), although most of the countries have initiated reform of their power sector. In some developing

countries, another huge amount of money is provided for the re-design of the roadmap and technical assistance for restoration from multilateral institutions. Some case studies that focus on the same countries sometimes suggest different assessment on the reform results depending on the author and viewpoints. They commonly report challenging situations such as underinvestment in power supply, poor performance of the sector, price hikes, and unreliable service for the consumers (Table 2).

Table 2 Case studies and their Limitations and challenges from the power sector reform

Country	Studies	Limitations and challenges
Chile	Joskow (2008)	- Post-reform market involved less restructuring - Concentration of the market power in a few players - Very limited instruments from the government side.
The Philippines	Roxas and Santiago (2010), Ma. Rowena M. Cham (2007) Fe Villamejor-Mendoza (2008)	- Post-reform market involved with less restructuring and less competition - More regulation than some of the subsequent reform cases - Tariff increase/ Price hike - Concentration of the market power in few players
India	Yang (2006)	- Technically and financially less efficient system - Weaker economic and political institutions. - Technical losses above 35% of power generation, - Power theft on-going, state-level corruption, subsidized tariffs
Vietnam	Tuan(2012)	- More regulation than some of the subsequent reform cases.
Thailand	Jamasb, Nepal, and Timilsina (2015)	- Political turmoil affecting reform implementation, - Regulatory institutions remain weak and not independent, - State enterprises are favored, - Promoting market competition difficult
Brazil	Jamasb, Nepal, and Timilsina (2015)	- Excessive reliance on hydro can lead to energy crisis in the face of rising demand as in 2001-2002, - Issues associated with security of supply and diversity in generation, - Attracting private investments a necessary condition for the growth of the sector

1.2.2 Review of determinants for the successful power sector reform

In econometric model study, several influencing factors such as regulation, state of economic development and energy governance are examined. The literature focusing on cross-country economic estimation on the effects of power sector reform is limited to the relationship between price and power sector reform. In this kind of study, the effect of power sector reform on electricity price has been the main topic to discuss.

Steiner (2001) shows a relation between reform and industrial electricity price using 19 OECD countries data in the period of 1986–1996. Zhang et al(2005) say that the power sector reforms generally resulted in a decline in the industrial price and an increase in the price differential between industrial customers and residential customers, indicating that industrial customers benefit more from the reform.

Hattori and Tsutsui (2004) developed an econometric model using 19 OECD countries for period of 1987~1999, and indicated that expanded retail access and a large share of private ownership is likely to lower the industrial price, whereas unbundling of generation and introduction of a wholesale power market result in higher prices.

There is also model specification studies conducted in terms of multifaceted nature of the situational reforms implemented and the diversity of electricity sectors across countries. There are also severe data and measurement problems (Kessides 2012). Bacon and Besant-Jones (2001) indicate that country policy and institutional factors are positively correlated with reform and country risk is negatively correlated with reform. They give an example of comparison among region to show regional effects on the power sector reform, saying that Latin American and Caribbean countries are more likely to reform while countries in the Middle East and Africa are more likely to take fewer reform steps.

Henisz et al.(2004) focus on the relationship between a country's power sector reform and international background situation using 205 countries and territories data. They indicate that the domestic adoption of market-oriented reforms is strongly influenced by international pressures of coercion and emulation. The forceful effect of multilateral lending is increasing over time, a finding that is consistent with anecdotal evidence that multilateral organizations have broadened the scope of the "conditionality" terms specifying market-oriented reforms imposed on borrowing countries.

Mendoza and Pardo (2010) proposed that restructuring did not bring about environmental benefits related to a decrease in CO2 emissions because this depends on the existence of committed policies, and dedicated institutional and regulatory frameworks.

Cambini and Rondi (2010) indicate that investment rate is higher under incentive regulation than under rate of return regulation. Gugler et al.(2011) clarified the relationship between electricity

price and investments. They indicated that higher electricity end-user prices in a country subsequently lead to higher investments in the capital stock, for example, in generation, distribution and transmission assets.

According to Cambini and Rondi (2010), there is a trade-off between vertical economies and competition. Ownership unbundling and forced access to the incumbent transmission grid increase competition but come at the cost of lost vertical economies. Nagayama (2007) identified that independent regulator together with unbundling reduces electricity prices using 83 countries data from 1985 to 2005. Nagayama (2009) also indicated that higher electricity prices are one of the main reasons for governments to adopt liberalization models, a conclusion also noted by Joskow in the context of the US. The liberalization process in the electricity industry does not necessarily decrease electricity prices. Instead, there is a propensity for the prices to increase in every market model. Nagayama (2011) proposed reform variables such as the entry of independent power producers (IPPs), unbundling of generation and transmission, the establishment of regulatory agencies, and the introduction of a wholesale spot market are the driving forces of increasing generation capacity, as well as reducing transmission and distribution loss in the respective regions. Different electricity industry reform policies/measures have different impacts on geographically and economically diverse countries too. A country's state of economic development has a different impact on policy effects of reforms. Coexistent with independent regulatory agencies, reform policy becomes more powerful in realizing sector performances. The summary of the influencing factors are presented in Table 3 below.

Table 3 Summary of influencing factors for the successful power sector reform

Factors	Author	Summary
Regional effect	Bacon and Besant-Jones (2001)	Country risk is negatively correlated with reform. Regional effects matter. For instance, Latin American and Caribbean countries are more likely to reform while countries in the Middle East and Africa are more likely to take fewer reform steps.
Regulation	Cambini Rondi(2010), Nagayama(2007, 2011)	Incentive regulation Existence of independent regulator
State of economic development	Bacon and Besant-Jones(2001)	system size, income per capita

Power resource	Roxas(2005a)	Negative natural endowments(fuel sources, geography, geomorphology, meteorology) affect the reform.
Administration	Cham (2007), Bacon and Besant-Jones(2001)	: Good governance and sound management
External factor	Henisz et al.(2004), Roxas(2005a)	: International pressures of coercion and emulation : Asian Financial Crisis

1.2.3 Review of the reform process

Whatever the evaluation of the reform may be, many researchers agree that the power sector reform should be regarded as a 'work of progresses rather than a 'short event', because a certain situation is bound to have a close relationship with the other event in the context. Therefore, recent countries who introduce the power sector reform more have a tendency to establish a step by step reform agenda on the modest way, deliberating a proper pace of the reform process. Previous studies about reform process were derived from policy process research presented by Dawson and Robinson (1963), Dye (1966) and Sharkansky (1970). They suggested models that explain the serial policy processes including external environment, political system, and its recurrent feedbacks. On the contrary, recent studies have developed the reform process considering different viewpoints.

Table 4 Terminology about reform phase used in literature

Terminology used in literature	Source	Meaning
Initial Condition, Prior Condition	ADB(2013)	Conditions and performance prior to the reform programs
Ex-ante	JICA guideline, ADB(2009), EU(2014)	
Post-action condition	ADB(2009)	The situation after the policy or program was selected.
Initial stage of implementation	ADB(2009)	
Interim stage	ADB(2009) EU(2014)	
Post-program condition	ADB(2009)	
Sustaining reform	ADB(2009)	
Initial Reform	EU(2014)	
Sustained reform	ADB(2009)	

Rodrik (2003) defines the policy reform process in an aspect of institution since he focused on lending based policy reform led by multilateral institutions and international development banks. Abonyi(2005) distinguishes reform process into five stages; initiating, managing issues, endorsing, implementing and sustaining. USAID(2007) defines reform process as four steps that include diagnosing, design, implement and evaluate. ADB(2009), EU(2014), and JICA(2009), who have been actually involved in power sector reform generally distinguish the reform process as ex-ante, mid-term and ex-post, following the definition of the project cycle.

As shown in the previous research, the definition of the reform process and terminologies used in those literatures are different depending on the organization and authors. Table 4 above shows the various terminologies that used in working papers and articles published. Terminologies such as initial condition, prior condition, and ex-ante are indicating the same phase of the reform. In ADB's working paper, they defined the initial condition as an economic condition and performance prior to the reform program. Terminologies indicating a situation after the policy or program are also different depending on the organization and authors. Though there are diverse terminologies, but the meaning of the words indicates the almost same phase of the power sector reform or policy reform. Abonyi (2005) says that some common phenomena could be found between the initial stage and the post-initial stage of the power sector reform. That includes legislation and regulations, or institutionalized changes. Abonyi (2005) also presented some distinct characteristics of the post-initial stage, which include sustained capacity development of service providers through government, political changes, and improved legislative enabling environment.

Importance of the initial stage

Sabatier and Mazmanian (1980) suggested two scenarios that provide examples of the manner in which policy objective and its output interact as the implementation process moves through the stages of the process (Figure 2). One is gradual erosion scenario that proposes relatively negative result after the time has been passed. In this scenario, typical start-up problems in initial stage are sustained for a long time. The other is a comparably successful scenario that assumes high conformity of policy objectives and the results, and the duration of initial start-up problems is shorter than the erosion model. This shows that inappropriate implementation in initial stage

influences on the result of the reform. Consequently, it is critically needed to minimize the initial start-up problems throughout proper design and implementation in the initial stage.

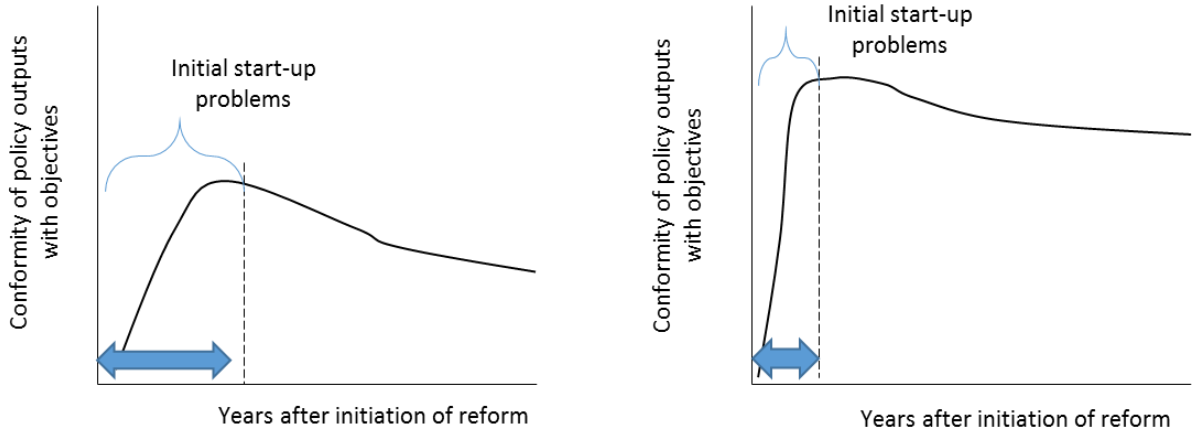


Figure 2 Two types of Policy process scenario
Source: Sabatier (1980)

Depending on the result of the initial stage, the serial stage could have a different result. Besant-Jones (2006) also mentioned that the initial stage is critical to the success of power market reform and the most vulnerable period for treatment of the reform process in many developing countries. While some systemic and institutional issues may be improved in the process later, undertaking reforms in the wrong design and implementation of the initial stage require a huge amount of expense of time and money to recover. In the case of the Philippines, they had earlier support from ADB for the Power Sector Restructuring Program implemented in 1998~2002, however, the later Restoration Program implemented in 2005~2007 was not achieved to a significant extent. ADB (2012) evaluation report says that overall assessment on that restoration program is less than successful because of the earlier interventions. Thus, the initial implementation of the power sector reform should be carefully studied for the successful reform.

1.3 Study Setting

1.3.1 Research question and objective

As literature reviews suggested, power sector reform has been introduced in order to escape from the existing problems and challenges of the power sector, but still those problems have persisted for a long time throughout the developing countries. Some researchers, in a skeptical perspective,

strongly criticize the reform itself in developing countries and insist that the reform should be backward (Eberhard 2005). In many cases from the literature reviews, the main question and issues in reform have not been ‘whether’, but ‘how’ to do. In this point, we still need to ask ourselves to answer this question by a more critical assessment from empirical experiences. Also, recent study mainly focuses on how to solve the problems as a feedback for the reform. Despite the importance of design and execution of reform in the initial stage is generally agreed by researchers and reform participants, its mechanism is not yet clearly clarified. Hence, the following two questions are posed to guide this research:

a) Can unfavorable initial condition of developing countries truly be overcome by good design and implementation of the reform?

b) How do the reform design and execution in the initial stage contribute to the initial result of the reform?

To answer these questions, this research aims to:

a) Identify unfavorable initial conditions that developing countries typically face in their power sector reforms.

b) Clarify unfavorable initial conditions in which shortcomings in policy design and implementation are critically important in leading to failure in the following process.

c) Suggest important aspects to avoid the shortcomings in design and implementation of the initial stage.

1.3.2 Initial Condition, Initial Implementation, and Initial Result

Time scope and definition

In this research, the time scope of the analysis is 'initial stage', which is defined by the author as shown in Figure 3. The initial condition means the status quo which describes the condition and performance prior to the reform. However, identifying and diagnosing issues about initial condition could be included in the initial stage. Therefore, in my study setting, initial stage starts with identifying issues and problems of initial condition. The initial implementation is actions done by various stakeholders of power sector and it can be categorized into various actions which include industry restructuring, the formation of new institutional roles, attracting private capital in the sector, and operating power market. Detailed actions are described in former section 1.1, which explains main steps and sequence of the power sector reform. When the initial stage ends, there could have evaluation on the output from the initial stage. ADB(2013) describes the transition period from initial stage to the post-initial stage that systemic or institutionalized changes such as legislation, amendments on law and regulation, re-design of the road map and/or introduction of additional policy changes happen between the initial stage and the post-initial stage.

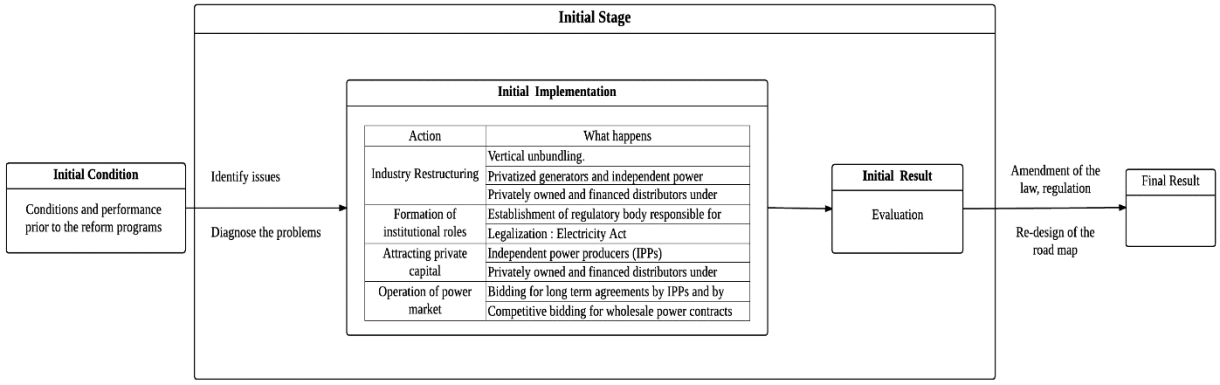


Figure 3 Definition of the 'Initial stage' and the time scope of the analysis

Source: ADB (2013)

1.3.3 Features in Initial condition of the power sector in developing countries

To identify the initial condition of the power sector reform in developing countries, internal and external factors will be considered. Each factor's dimension and common features are presented in Table 5 below. Internal factors are mainly country specific aspects such as power sector structure, policy regulation, physical organization, operational performances and so on. External factors are mostly about macroeconomic situations, such as oil shock, financial crisis worldwide, inflation. International forces by multilateral structural adjustment, commitment from lending policies by multilateral financial institution are also investigated.

Table 5 Characteristics of the initial condition of the power sector reform

	Dimension	Common Features in Initial condition of the power sector in developing countries
Country Specific Internal Factors	Sector structure	State owned, Highly bundled, Vertically integrated
	Government priorities for sector	National industrialization, Universal access to electricity, Counter-cyclical employment Technology indigenization, Improved standards of living, National prestige, nation-building
	Policy and regulation	National energy ministry Provincial electricity authorities
	Revenue and tariffs	Tariffs set by ministry, Direct subsidies from state budget Cross-subsidies from industry, Metering and collections constraints
	Financial and investment conditions	Utility finances tied to national budget Self-financing limited by revenue generation, tariff arrangements
	Physical organization	Extent of grid integration determined by geography of load and generation Urban-centered with grid expansion pattern outward from primary and secondary cities
	Operational performance	Operational performance tied to utility financial conditions, national technical capacity, physical and geographical endowment, national economic conditions, and management practices
	Consumption and access	Per capita consumption and access show a straight-line function of per capita GDP
	Fuel mix and sources	Fuel mix a function of domestic resources, bundling of energy sector, energy security concerns, finances Most countries moved away from oil generation in response to 1970s oil price shocks
	Environment	Access to clean fuels and technology limited by finances, resources, subsidies for domestic fuels Emergent environmental movements

External Factors	Catalytic macroeconomic events in worldwide
	International investment climate
	Multilateral structural adjustment/commitment lending policies

Source: Williams and Ghanadan (2006)

1.4 Selection of Cases

In order to select case study area, an eligible country list was first prepared that satisfied the following conditions: (a) developing country that have already initiated the power sector reform, (b) the country has a long enough history that allows us to understand the whole process, (c) the country has a similar size of economy and power capacity, which indicate market demand and economy of scale of power.

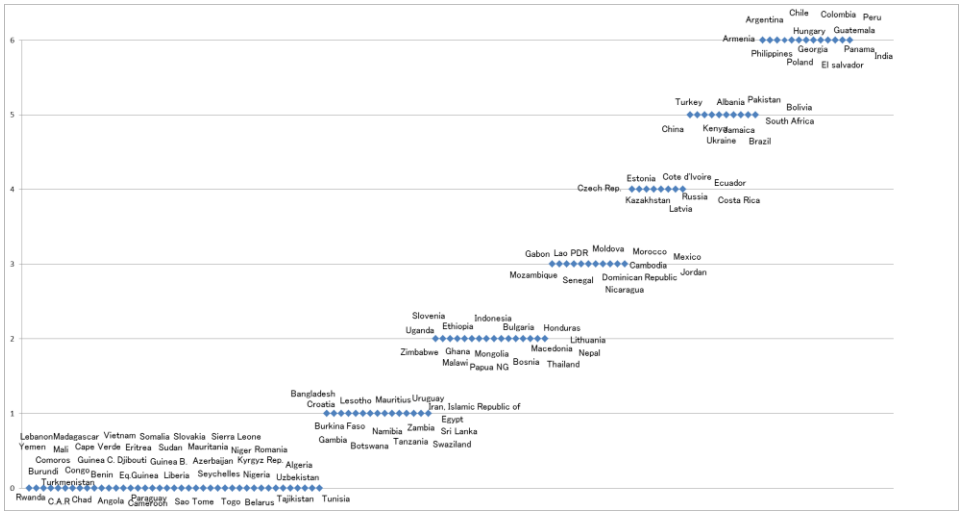


Figure 4 Grouping of countries in the same level of reform process
Source: ESMAP report (1999) and recent data adjustment by author

Based on the ESMAP report (1999), which conducted survey research to develop a reform indicator in 115 countries, and its updated recent data, countries in the same level of reform process are grouped into the same category. As you see in the Figure 4 above, Chile and the Philippines belong to the same group, a high level of reform country scoring 6 points.

To find out the countries have a similar size of economy and power capacity, thresholds values are used for categorization. Besant-Jones (2006) presented this empirical threshold values on 'income level' and 'system size': the threshold values of 1,000 MW and US$900, which shows the influence of scale economies on market reform. Country income level has a relatively stronger influence on the roles of the public and private sectors and on access and affordability to electricity services. It can also have a stronger influence on the regulation of power markets on

the basis that institutional capacity increases with income level, whereas power system size has a relatively stronger influence on market structure.

Following the thresholds values suggested by Besant-Jones (2006), developing countries in eligible list were categorized into four groups respectively. Figure 5 shows the result of categorization. It is identified that Chile, the Philippines, and Thailand have similar size of per capita income and power system size. Based on these results, among the countries that had already reached a similar level of reform, Chile, and the Philippines were selected as case study areas because it satisfied all the conditions.

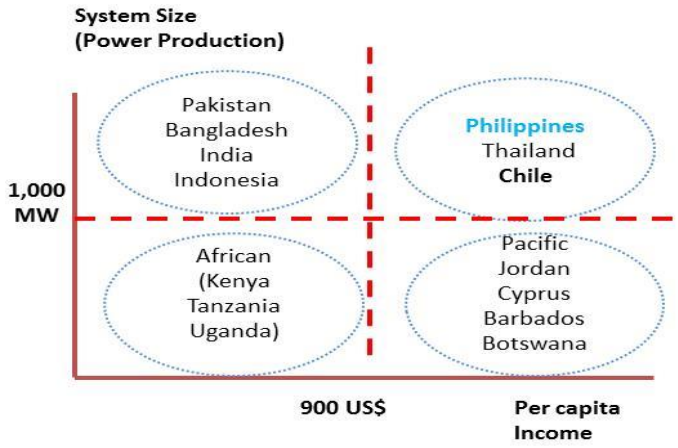


Figure 5 Group categorization by system size and income thresholds values
Source: Besant-Jones 2006, Reforming power market in developing countries: What have we learned?

Selected cases, Chile and the Philippines, are often agreed by the researchers in that have shown different result of the reform. Chile case is referred as one of the successful case with long history especially regarding to remarkable increase in investment on new generation plants (Schmidt-Hebbel 2007; Read and Rudnick 2000). On the other hand, the Philippines case has shown a different evaluation on the result of the reform from Chile case. The Philippines is one of the most ambitious country in the region that initiated the reform process (ADB interview 2014), but struggling in challenging situation (Roxas 2010, Sharma et al 2004)

1.5 Research Methodology

The objectives of this research have been described in section 1.3. To systemically and logically achieve those objectives, framework of analysis is designed carefully. Key conceptual flows and process of the analysis in this research are described and justified in this chapter. To fulfill the objective of the research, proper data collection process was first selected and then data were collected. After obtaining the data, data processing for the analysis was conducted. Causality analysis was completed with processed data and the conceptualized causal relationship among factors was clarified by categorized issues that were put emphasis in this study.

To accomplish the goal of the research objectives, comparative case study methodology was adopted. The process includes case study on each case and comparative study for the two cases; Chile and the Philippines in this research. Case study part is an in-depth examination, undertaken over time, of a single case –such as a policy, design, regional features, implementation process and stakeholders. Comparative case study section covers two cases in a way that produces more generalizable knowledge about causal questions –how and why particular power sector reform program work or fail to work. Adoption of this methodology is feasible and appropriate in that comparative case studies are undertaken over time and emphasize comparison within and across contexts (Goodrick 2014). Derived information from the comparative case study would be valuable in tailoring the next power sector reform to support the achievement of intended outcomes in developing countries.

1.5.1 Case study

To be able to do this well, the specific features of each case will be described in depth. This case study has meaning in that understanding of each case is important in establishing the foundation for the analytic framework that will be used in the comparative study.

1) Finding factors from the sources

As shown in the previous section, data were collected by the literature reviews and in-depth interviews. Based on the collective information, the factors were identified in two cases. Here, both qualitative and quantitative data were incorporated. Given the focus on generating a good understanding of the cases and case context, methods such as fieldwork visits, observation,

interviews and document analysis dominated among the various data collection methods employed.

Qualitative data

From the in-depth interview results, transcriptions were made and critical statements from interviewees were extracted from it. Extracted words were given a suitable title. These entitled factors and literature reviews were used for conducting causality analysis. An example of interview data processing is shown in Figure 6 below.

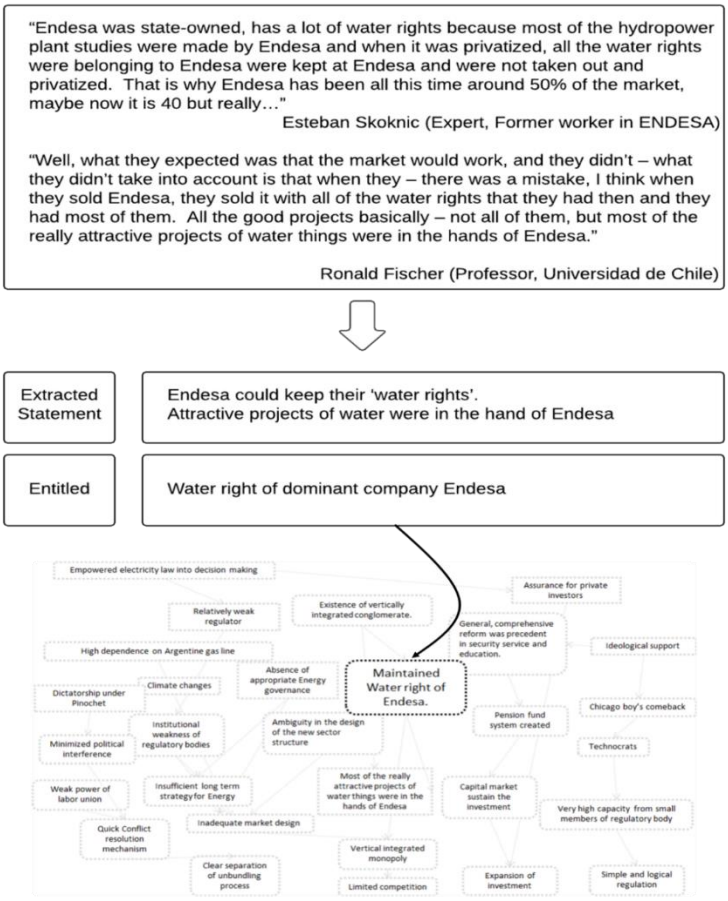


Figure 6 Example of data processing and its application into causality analysis

Then, as shown in Table 6, all grounded reason for judging the initial condition and the results of the initial stage were considered following prospects appeared in a 'Guideline for power sector

assessment' published by ADB. By answering for the criteria suggested in this guideline, evaluation on the initial condition and the result of the initial stage was conducted.

Table 6 Qualitative Criteria for evaluating the results of the reform

Dimension	Criteria	Checkpoint
Institution factors	Policy	- Does newly introduced policy necessitate the adequate framework? - Was policy making conducted under the transparent and favorable process?
	Law	- Do laws comply with the legal framework? - Could laws promote the sector efficiency and stability?
	Regulation	- Does regulatory body have autonomy? - Are the regulation procedures consistent and transparent?
Organization factors	Planning	- Was planning conducted well with an understanding of objectives of planning and forecast of future demand for power? - Estimated power demand was appropriate?
	Financial management	- Financial management capacity of the sector is sufficient? - Are sector participants financially viable?
	Human resources	- Is the hiring process transparent and consistent? - Are staff members qualified and perform well? - The number of staff is sufficient to handle ongoing activities? - Are staffs educated to the levels required?
Operation factors	Generation	- Power generation assets are kept maintained? - New investment for power generation is achieved without bias information?
	Transmission	- Transmission maintenance is reliable? - Investment for the transmission line is attracted by private?
	Distribution	- Substation and distribution line are maintained for the reliable power supply?
	Supply and customer	- Is customer service competent? - Electricity tariff is increased or not?

Source: ADB 2009 Guidance note: electricity sector risk assessment

Quantitative data

Furthermore, for the quantitative assessments, some performance indicators with regards to efficiency of the power sector, investment rate, power price and the market share were used (Table 7). Whether the initial condition and the result of the initial stage are appropriate or not was determined by the comprehensive judging criteria including organizational and operational elements of the power sector.

Table 7 Quantitative Criteria for evaluating the results of the reform

Dimension	Referred Indicators

Operation factors	Market Structure	-	Ownership structure: % market share
		-	HHI (Herfindal-Hirschman Index)
	Generation	-	Generation capacity
		-	Increase in investment of generation assets
	Transmission	-	Total length of transmission line
		-	Transmission loss rate
	Distribution	-	Distribution loss rate
	Supply and customer	-	Electricity rate
		-	Electrification rate(rural area)

2) Classification of the factors by phase

In my research, the identification of the power sector reform stage does matter. As shown in Figure 7, the reform stage cannot be classified only by the time serial distinction, because the reform involves politics requiring collective choices in an environment characterized by conflicting perceptions and interests, with no simple unifying incentive scheme for resolving such differences (Rodrik 2003, ADB 2013). Therefore, those changes, which are accompanied by stakeholders' choices, would be utilized as a transition boundary to distinguish the phase in my research. In macro-level, by understanding the significance of the historical context, political-ideological climate, political-institutional culture, and economic and social makeup of the power sector, this study investigates the 'initial condition' of the country. With starting initial implementation of the power sector reform, rules are changed and incentives are introduced. In this stage, therefore, I identify the governing rules and mechanism of the reform, conto predictable organizational cultures and social norms. Meso- and micro-level tools help with analysis of the distributional impacts of policy reform, identifying winners and losers, and explaining the dynamics of poverty in local settings.

3) Links and Causality diagram

Based on the results from the previous classification, causal relationship among the initial condition, initial implementation and the initial result of the reform will be clarified in this section throughout the causality analysis. Drawing the causality diagram, subsequently, some fundamental findings from the proposed causality diagram will be suggested and further discussion will be followed. The whole causality diagram that shows the overall picture of the causal relationship among the initial condition, initial implementation and the result of the initial stage of the power sector reforms.

4) Categorization of the factors by domain

To set the domain for the causality analysis, stakeholders' analysis was firstly conducted. In this section, different stakeholder's impact on the initial stage of the reform will be assessed. Following the result of stakeholders' analysis, what to be focused on in the next causal analysis will be decided. In order to specify the decision-making process of the initial stage of the reform, the main stakeholders were identified based on the previous research, as shown in Table 8, the government, regulatory body, politicians, development bank donors, existing industry participants and potential market investors are the main actors to be considered.

Table 8 Stakeholders' Analysis (source: Clemente 2009)

Stakeholder	Stakeholder's Interests	Stakeholder's Influence in initial stage	
Consumers: - Public - Industries - Households	Reliable and affordable electricity supply Quality services	B-Medium	
Government and Other Gov't. Agencies	Provide basic services Collect taxes from the participants Attract foreign investments Economic growth and stability	A-High	(①)
Regulatory Body	Regulation on power market Tariff setting	A-High	
Donor Agencies	Interest on loan Influence policies to their favor (e.g. institution of reforms, such as privatization) Provide consultancy services	A-High	
Existing Industry Participants / Electric Utilities(monopoly) - Distribution Utilities - Generation Companies - Electricity Suppliers	Profit optimization Recovery of investments Business stability	A-High	(②)
Potential Investors	Market expansion and profit	A-High	(③)
Politicians	Popularity Political stability	A-High	(④)
Financial Institutions	Profit out of interest from loans granted to industry participants	A-High	
Media/Journalists	To promote their publications or TV networks Gain recognition for career advancement	C-Low	

First, government has the most critical impact in initial stage of the reform. The government commitment is assumed to be the guarantor that planned reforms will be implemented and sustained, providing a level of stability of expectations and reducing risk and uncertainty for stakeholders such as potential investors. Changing government commitment to reforms is a key proximate cause of risk in reform. Second, many reform cases in developing countries, it firstly involved introducing new regulations and laws intended to change the institutional foundations of the sector. Regulatory body has a high influence in ensuring the new rules to be effectively implemented to bring desired changes over long time. Third, the power sector reform involves political decisions, a problem in collective choice. It involves as players not only the government but also the political party, different levels of government (especially in Philippines case, the remote island region), and labor union. Some of these players may themselves include differing perspectives. This may be able to able to delay, block, or even reverse the action of the reform. Last, media people and electricity consumers relatively have less impact in initial stage of the reform. Electricity consumers also have less impact in initial, because they are still insufficient to exist as an active actor in the power market.

Table 8 summarizes the analysis of the stakeholders' interests and the level of influence that they have in the decision-making process. Based on this result, the viewpoint of the causality analysis was derived. First, power sector's restructuring including unbundling of existing state-owned power company, establishment of new regulatory body and legislation is considered. Second, power market third, the participation of private investors, last, the political impacts and power game between government and political power will be mainly focused and to be compared. With regard to these aspects, the initial condition, initial implementation and the initial result will be identified in both Chile and the Philippines case and compared each other in the following chapters

1.5.2 Comparative Study

After complete the case studies on both cases, comparative study will be conducted. This comparative study involves the analysis and synthesis of the similarities, differences and patterns across the two cases (Goodrick 2014). Based on the result of the causality analysis by domains that were categorized, the initial condition will be firstly compared. Then how those initial conditions were changed and what implementation made the different result are compared.

1.6 Structure of Dissertation

This dissertation has six chapters and is organized as follows (Figure 6).

Chapter 1 is an introduction to the whole dissertation. It also presents the overall picture of the targeted issue and an ultimate vision of this research. Chapter 1 explores the research area that has relatively less covered and has limitations in the previous research. The narrowing down process to reach research questions will be presented in this chapter. Then, it gives an outline of research questions and objective along with its methodology and the thesis structure.

Chapter 2 is allocated for a case study preparation. This chapter introduces the kind of data used for the case study and data processing method. Summary about in-depth interview is also presented here.

Chapter 3 and 4 are allocated for case study. Each case study will be conducted following a same process. Brief background knowledge about power sector reform, including history and sector structure in each case country is firstly summarized. Then identification of causality analysis among initial condition, implementation, and the results of the initial stage will be presented. It provides the identification of causal factors in the initial stage of power sector reform and clarifying of the causal relationship among factors.

Chapter 5 is allocated for a comparative study between two case countries based on the result of chapter 3 and 4. Using identified factors, which include initial condition, influencing factors in the initial stage and the result of the initial stage, their impact of influence on the result of the initial stage will be compared. This chapter investigates what factors had made different results in two case countries and how the initial implementation contributed to the result of the reform in initial stage. A policy implication will be derived through the comparison of Chile and the Philippines case.

Chapter 6 summarizes the research outcomes and contribution of those outcomes. It also discusses future work needed for the improvements of this research.

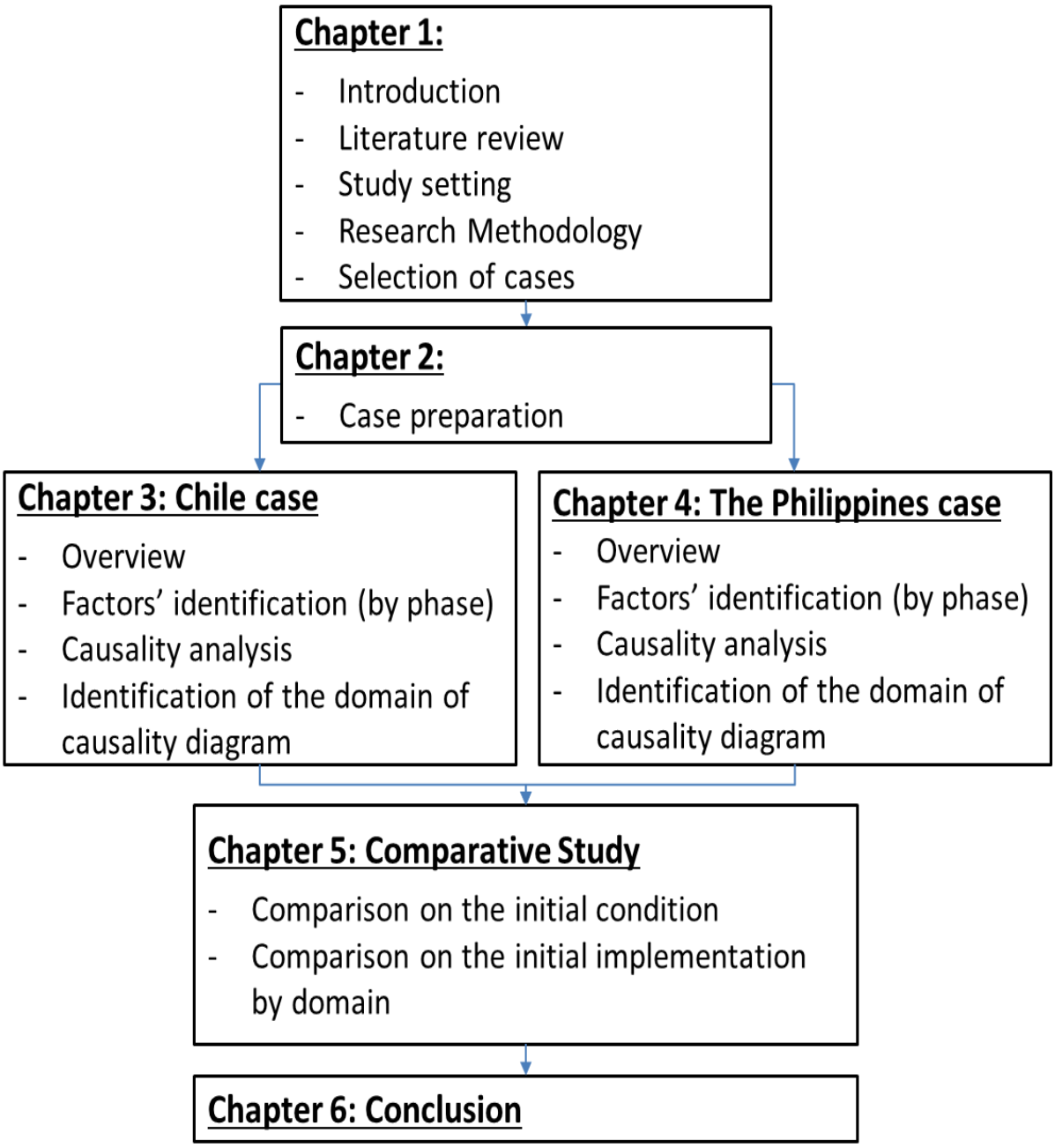


Figure 6 Structure of the research

2 Case Preparation

Firstly, to accomplish the research objective; to identify the relationship among 'initial condition', 'influencing factors', and the 'result of the initial stage' of power sector reform in Chile and the Philippines throughout causality analysis, in-depth interview was conducted. Throughout the in-depth interview, precious oral data was obtained from interviewees such as former Minister of Energy and regulatory body's main founder, economists and professors in academic field. From the interview results, a transcription was made and critical statements from interviewees were extracted from it. Extracted words were given a suitable title and categorized into several factors. These entitled factors were used for conducting causality analysis.

In-depth Interview

The primary data collection method for this study was achieved through face-to-face in-depth interviews. Individual interview approach has an advantage in terms of allowing the researcher have the opportunity to use semi-structured question guide (St John 2007), and such guide avoids the potential of the researcher limiting discussion to a set of pre-determined questions based upon researcher bias. According to Morgan (1997), interviewer bias occurs in situations where the emphasis is placed on the researcher's perceptions of the issues being investigated, instead the focus being on the participants' perceptions of the issues.

For the Chile case, the interviews took place at Washington D.C. and Santiago. Interviews for the Philippines case mainly took place at ADB headquarter office in Manila, university of Manila and Asian Institute of Management. Depending on the interviewees' preferences, interviews were conducted either at their office or at neutral settings such as coffee shops. Interviews typically lasted from 60 minutes to 90minutes each, and upon agreement, some of the interviews were recorded and then transcribed during the analysis stage. In addition, follow-up discussions and information exchanges were conducted through e-mail for areas that required further confirmation and clarification before finalizing the analysis.

Interviewees' profile

Demographics of interview participants for this research are presented in Table 9 and 10. These tables show the nationality and profession of the interviewees.

Table 9 Interviewees' statistic by nationality

Chile		Philippines	
Nationality	Number	Nationality	Number
Argentine	2	Pilipino	2
Chilean	7	Korean	2
Japanese	3	Australian	1
Philipino	2		
Korean	2		
Total	**12**	**Total**	**5**

It is to be noted that real experts and knowledgeable interviewees were found through snowball sampling. Interviews with professional in the real field of the power sector reform and related person, former prime ministers were the precious opportunities to check the important aspects of Chilean power sector reform. They truly served as valuable resources, since their viewpoints helped balance the viewpoints of economist, policy maker, academic researcher, and engineer workers.

Table 10 Interviewees' statistic by profession

Chile		Philippines	
Profession	Number	Profession	Number
Economist	2	Economist	2
Energy specialist	1	Energy specialist	2
Former engineer	1	Professor	1
Former executive secretary of regulatory body	1		
Former Minister of Energy	1		
International trading company	1		
JICA Officer	1		
Professor	2		
Regional Specialist	2		
Total	**12**		**5**

Data Processing

Data processing method have been already mentioned in Section 1.5. Transcription of the interviews verbatim greatly assisted with the analysis of the interviews as the exact statements made by the participants were available (Sim, 1998). Audio recording the interviews also reduce the danger of the 'data' being forced based on the researcher's bias (Charmaz, 2014) and reliance on the memory. Therefore, the recorded interview contents were transcribed into documents and analyzed.

Next two chapters will identify the causal relationship among initial condition, influencing factors in the initial stage and the result of the initial stage of the power sector reform. It was accomplished by causality analysis on two case countries, Chile and the Philippines. These chapters also cover brief introduction on reform history of each case, collecting data method through in-depth interviews.

3 Chile Case

3.1 Summary of the power sector reform

Historical context

Chile is a pioneer country of the power sector reform and usually identified as a country that first started power reforms (Kessides 2012). Their reform process started with establishing regulatory body (the CNE; Comisión Nacional de Energía) in 1978. Electricity Law was enacted in 1982 and privatization of state-owned enterprises followed by. Since this research focuses on the initial stage, from the establishment of regulatory body in 1978 to the year of 2004, when the amendment on the Electricity Law was mandated, would be regarded as the initial stage in this research. The definition of the initial stage has been already done in the previous section 1.5. Table 11 below summarizes the history of power sector reform in Chile.

Table 11 Chile's power sector reform history

Year	Event	Description
1929	The great depression: rapid economic downturn frustrated the middle and working classes	The price of copper fell from 17.47 cents per pound in 1929 to 5.6 cents per pound in 1932. Nitrate production halved from 1930-1931
1930-1973		Chile's politics became increasingly divided but more inclusive.
1932-1938	President Alessandri	
1938-1958	Trade protectionism	
1939	Establishment of CORFO(Corporación de Fomento)	CORFO created a national steel industry, electrical plants, and transportation and communication systems. This industrialization required a variety of restrictions, controls, and regulations. Because of these import restrictions, domestic industries survived and grew.
1950-1960	Hyperinflation	
1970	Election of Allende	Unstable society Increased state intervention
	Nationalization of the copper mine	
Initiation of the power sector reform		
1978	Creation of the National Energy Commission(CNE)	Designed the basic institutional, legal and policy framework that changed the energy sector during 80's.
1980	Change of tariff calculation criteria	The criterion to determine tariffs based on minimum return on investment of 10% is changed to marginal cost pricing.
1981	Unbundling of distribution	The distribution business was separated into 9 companies.

	from Endesa (major utility)	
	Unbundling of Chilectra (major distribution company)	The company was transformed into a holding composed of Chilgener(G), Chilectra Metropolitana(D) and Chilectra V Region(D)
1982	Electricity Power Service Law(DFL 1) was enacted	Legal framework for the restructuring process.
	Endesa registered as a per-share society	The stock market, especially through institutional buyers (AFP: International investment funds, etc.) would play a key role in the privatization process.
	Separation of some of Endesa's generation facilities	Three generation units were separated from Endesa, but remained as subsidiaries
1982-83	Economic recession	Delayed the privatization process
1985	Separation of two of Endesa's generation subsidiaries	The subsidiaries remained as state-owned companies under CORFO(State development agency)
	Creation of CEDE in SIC region	All major generators became subject to central cost-based dispatch. Application of marginal cost wholesale pricing regulation
1985-87	Privatization of Chilectra	The shares were sold to its employees and in the stock market
1986	Introduction of retail supply competition	Limited to consumers with a demand over 2MW The state absorbs US$500 million of Endesa's external debts.
1987-90	Privatization of Endesa	Shares were initially sold or exchanged for compensation to selected groups(workers, public officers, armed forces, etc) and later floated in the stock market
1988	Creation of Enersis	Created from the transformation of the Companía Chilena de Electricidad S.A.. Later became a major actor in Chile and Latin America
1990	Privatization process practically completed	
	Enersis single largest shareholder of Endesa	Enersis has interests in generation, Transmission and distribution
1993	Separation of Endesa's transmission business	Created a separate company(Translec) and transferred the ownership to its shareholders
1997	Privatization of Edelyasen	With the sale of this small utility, privatization reaches 100%
1999	Endesa-Spain single largest shareholder of Enersis and Endesa-Chile	Endesa-Spain owns 63.9% of Enersis, which owns 60% of Endesa-Chile.
1998-1999		
2004	Amendments of the Electricity Law	The Ley Corta was to modernize the mechanism used to solve regulatory disputes that arise between the companies and regulator of among companies.

Source: The historical context of Chile case from the early 1920s to the late 1990s was highly influenced on the summary report by APEC (2000).

Power sector Structure

Before the restructuring, ownership was mixed with dominant state companies in generation, transmission and distribution through vertically integrated utilities. Regulation and long-term planning for future were undertaken by the government and state-owned company. In operation, Endesa and Chilectra were main actors in the system. Endesa was a state-owned electricity company responsible for not only constructing and operating most of the system, but also of prospecting hydrological resources and developing a long-term electricity plan (APEC 2000). Chilectra was the major distribution company supplied by Endesa and its own generation facilities.

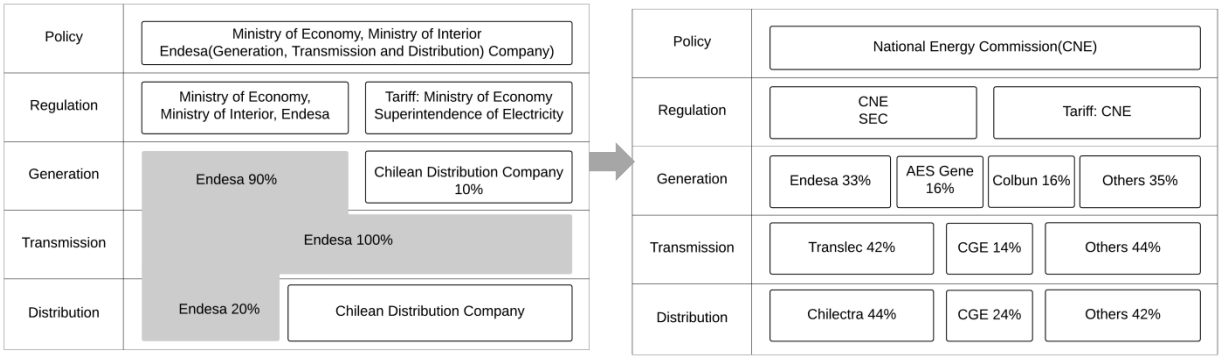


Figure 3 Chile's Power sector structure before and after the reform
Source: Vagliasindi and Besant-Jones (2013)

After the reform, the structure was unbundled from the vertically integrated structure dominated by state-owned company, Endesa. The structure of the power sector became less concentrated, particularly in the transmission segment. The ownership of the assets had changed hands with more players involved, as indicated in Figure 10. Authority for energy policy and regulation also changed after the power sector reform. The CNE became a key organization for policy making and regulation works, which had been in charge of the Ministry of Economy, Ministry of Interior and Endesa before the reform.

The restructuring of the sector was conducted in two stages (Perry and Leipziger 1999). The first between 1974 and 1979, was intended to adjust prices to allow the public utilities to achieve self-financing and to prepare the groundwork for private sector participation. The second stage between 1979 and 1990, dealt with the restructuring and privatization of the sector in addition to the main institutional changes. Generation and transmission were in principle, separated from distribution.

The two existing utilities, Endesa and Chilectra, were decentralized and regionalized. Endesa, the largest company was divided into 14 companies. Six of the fourteen were generation companies. Privatization started in 1986, after the introduction in 1982 of the regulatory framework. Three main mechanisms were used to privatize the power industry; public auction, packages on the stock market, auction of share packages. Endesa and its transmission system, the largest one in the country, were privatized as a package because the transmission pricing rules had not yet been fully defined. This erroneous decision had been continuing to haunt Chile's regulators.

3.2 Finding Factors from the sources

Based on the literature reviews and the in-depth interview shown in Chapter 2, factors from each source or evidence were identified. These identified factors were also classified into three phases, following the definition that was set for this research in the previous section 1.3, which is initial condition, initial implementation, and initial result. The identified factors are shown in Table 12 below.

Table 12 Factors from source and classification by phase and domain

#	source	BOX	Phase	Domain
1	Soto(1999), APEC (2000)	Absence of clear regulation governance: Regulation by state-owned power company and government.	I.C	A
2	Soto(1999), Interview with Skoknick(2015)	Experienced operation workers involved in regulatory work	I.I	A
3	APEC (2000)	Establishment of independent regulatory body	I.I	A
4	Interview with Skoknick (2015)	Practical base for the regulation was done by former engineers in Endesa	I.I	A
5	Interview with Skoknick (2015)	No supports from outside and no reference of price setting regulation	I.I	A
6	Interview with Philippi(2015)	Very high capacity from small members of regulatory body(CNE) with Simple and logical regulation	I.R	A
7	Reinhardt(2012)	Sent students to Chicago	I.C	A
8	Fourcade-Gourinchas and Babb (2002)	No political support Chicago boys	I.C	A
9	Reinhardt(2012)	Ideological support from US	I.C	A, B
10	Silva 1991, Kurtz 1999, Silva (1991)	Not appointed elite: Chilean Chicago boys moderate influence before the reform implemented	I.C	A
11	Fourcade-Gourinchas and Babb (2002)	Financial support from business organization(CICYP) and media groups	I.I	A
12	Fourcade-Gourinchas and Babb (2002)	Establishment of Research Institute(CESEC) :Served as a forum to disseminate economic ideas	I.I	A
14	Fourcade-Gourinchas and Babb 2002, Interview with Esteban Skoknic(2015)	Accepted idea by Pinochet regime and appointed to positions	I.I	A,B
15	Rudnick, O'Ryan, and Bravo (2001)	Provide economical theoretical base	I.I	A
16	Philippi(Interview,2015), Anonymity(Interview,2015)	Provide overall philosophy that gave coherence	I.I	A
17	Reinhardt (2012), Solimano(2012), Anonymity (Interview,2015)	Dictatorship under Pinochet	I.C	B

18	Bitran et al. (1999),	Long tradition of judicial independence	I.C	B
19	Bitran et al. (1999),	Electoral system with party fragmentation	I.C	B
20	Bitran et al. (1999),	Enacting law with the degree of specificity	I.C	B
21	Read & Rudnick(2000), Bitran(1999)	Explicit regulatory framework imbedded in legislation	I.I	C
22	Bitran et al. (1999)	Judiciary as arbiter	I.I	C
23	Solimano (2012), Heller and McCubbins (1996), Spiller and Guasch (1999)	Minimized political interference	I.R	B
24	Anonymity interview(2015)	Weak power of labor union: Few conflict on treatment of utility employees	I.I	B,C
25	Interview with Skoknick(2015)	Formation of Technocrats	I.I	A
26	Vagliasindi and Besant-Jones (2013)	Detailed regulations for tariff setting, settling disputes	I.I	A
27	Anonymity interview(2015)	Clear separation of unbundling process	I.R	C
28	Schamis (2002), Silva(1991)	General reforms: 7 modernization	I.C	C
29	Bruno Philippi(Interview 2015), Schamis (2002)	Pension fund system created abundant domestic financial market	I.C	C
31	Lalor and Garcia (1996)	Electricity Law permitted cross-ownership	I.I	C
32	Bitran et al. (1999)	Empowered electricity law into decision making	I.I	C
33	Bruno Philippi, Schamis(2002)	Capital market enough to sustain the investment: whereas overseas investment was restricted	I.I	C
34	Bitran (1999)	Strong protection of private investors by jurisdiction	I.I	C
35	Schweppe et al. (1988), Vagliasindi and Besant-Jones (2013)	Market design with system marginal pricing	I.I	C
36	Schweppe et al. (1988), Vagliasindi and Besant-Jones (2013), Interview with Philippi(2015)	Provide incentives for the entrance of new capacity	I.I	C
37	Rudnick, O'Ryan, and Bravo 2001 Bitran (1999)	Increased investor's confidence	I.I	C
38	Read and Rudnick(2000) UNCTD (2009)	Expansion of investment on Generation	I.R	C
39	Fernando Lefort (2004)	Tradition of Conglomerate in Chilean economy. Existence of vertically integrated conglomerate.	I.C	D
40	Lefort and Walker(1999)	Protectionism on Conglomerates	I.C	D
41	Larrain and Schaeffer (2010)	Water Code Act of 1981	I.I	D
42	Larrain and Schaeffer (2010) interview with Fischer	Maintained Water right of Endesa	I.I	D
43	Newbery, 1999 interview with Fischer	Most of the really attractive projects of water things were in the hands of Endesa	I.I	D
44	Basanes et al(1999)	Barrier to the new entrance	I.I	D
45	Lalor and Garcia (1996)	Limited competition in power market/Vertical	I.R	D

46	Raul O'Ryan(2003)	integrated monopoly Privatization of Discos, and Transmission as a package	I.I	C

***Phase- I.C: Initial Condition, I.I: Initial Implementation, I.R: Initial Result**

***Domain-A: Regulatory capacity, B: Political interference, C: Investment expansion, D: Power market**

3.3 Link of the factors

Here, I will investigate each link in detail. Whole links are summarized in Table 13.

Table 13 Links of causality diagram on Chile case

From	Box	To	Box
1	Absence of clear regulation governance: Regulation by state-owned power company and government.	2	Experienced operation workers involved in regulatory work
3	Establishment of independent regulatory body		
5	No supports from outside and no reference of price setting regulation		
2	Experienced operation workers involved in regulatory work	4	Practical base for the regulation was done by former engineers in Endesa
4	Practical base for the regulation was done by former engineers in Endesa		
5	No supports from outside and no reference of price setting regulation	6	Very high capacity from small members of regulatory body(CNE) with Simple and logical regulation
15	Provide economical theoretical base		
16	Provide overall philosophy that gave coherence		
9	Ideological support from US	7	Sent students to Chicago
8	No political support Chicago boys	10	Not appointed elite: Chilean Chicago boys moderate influence before the reform implemented
10	Not appointed elite: Chilean Chicago boys moderate influence before the reform implemented	14	Accepted idea by Pinochet regime and appointed to positions
25	Formation of Technocrats	15	Provide economical theoretical base
15	Provide economical theoretical base		
21	Explicit regulatory framework imbedded in legislation	16	Provide overall philosophy that gave coherence
23	Minimized political interference		
20	Enacting law with the degree of specificity	21	Explicit regulatory framework imbedded in legislation
18	Long tradition of judicial independence	22	Judiciary as arbiter

17	Dictatorship under Pinochet		
19	Electoral system with party fragmentation		
21	Explicit regulatory framework imbedded in legislation	23	Minimized political interference
22	Judiciary as arbiter		
14	Accepted idea by Pinochet regime and appointed to positions	25	Formation of Technocrats
23	Minimized political interference		
24	Weak power of labor union: Few conflict on treatment of utility employees	27	Clear separation of unbundling process
28	General reforms: 7 modernization	29	Pension fund system created abundant domestic financial market
29	Pension fund system created abundant domestic financial market	33	Capital market enough to sustain the investment
21	Explicit regulatory framework imbedded in legislation	35	Market design with system marginal pricing
35	Market design with system marginal pricing	36	Provide incentives for the entrance of new capacity
24	Weak power of labor union: Few conflict on treatment of utility employees	37	Increased investor's confidence
34	Strong protection of private investors by jurisdiction		
33	Capital market enough to sustain the investment		
36	Provide incentives for the entrance of new capacity	38	Expansion of investment on Generation
37	Increased investor's confidence		
39	Tradition of Conglomerate in Chilean economy. Existence of vertically integrated conglomerate.	40	Protectionism on Conglomerates
41	Water Code Act of 1981	42	Maintained Water right of Endesa
42	Maintained Water right of Endesa	43	Most of the really attractive projects of water things were in the hands of Endesa
43	Most of the really attractive projects of water things were in the hands of Endesa	44	Barrier to the new entrance
31	Electricity Law permitted cross-ownership		
39	Tradition of Conglomerate in Chilean economy. Existence of vertically integrated conglomerate.	45	Limited competition in power market /Vertical integrated monopoly
44	Barrier to the new entrance		

(#1→#2) Before the reform was introduced in the power sector, there was no independent regulatory body concerning energy issues in Chile. Instead of it, the Ministry of Economy and the state electric company (Endesa) collectively exercised regulation and policy making on

power sector as regulatory agencies (APEC 2000). Consequently, the regulation was under an informal oversight and the objectives of the regulation imposed by state-owned company were unclear. Absence of independent regulatory agency made the regulation work as a function of command and control without accountability. Especially regarding to the pricing, the price setting methodologies and arrangements had severe distortion. Inappropriate negotiation process among government, state-owned company, and consumers made the regulatory situation worse. Above all, it was in an ironical situation that regulation was conducted by state-owned electric company which is involved in operation itself. Oil, gas, coal and electricity prices mostly set by large state companies were completely distorted. Cross subsidies produced an inefficient use of resources. Unnecessary investments were being made and capital was being diverted from other social needs. The regulation of the sector evolved from an initial supervisory role regarding tariff levels and quality standards to full nationalization of the three segments of the industry (generation, transmission, and distribution). Until the early 1930s the role of the State remained largely passive and, according to Soto (1999), the government lacked of sector policies. By 1971, the stated had built, bought, or acquired through indirect means all major facilities in the country.

(#5→#2) Regarding to the power sector reform program, Chile could not have any financial and technical supports from the outside of the country, because there was no perfect reference at that time. This situation also partially influenced on the organization of the regulatory body and its functioning. This was referred from the interview with Skoknick.

> *There was nobody thinking about this kind of reporting, there wasn't at that time. Even people from the – I remember talking with people with the World Bank at that time that came from time to time, I think they were not sure that this was a good idea. They doubt about this, and afterwards they were expanding the idea all over the world, but at the beginning some of them at least were not so sure that was a good idea. There were not at all – not at all – there was no influence. (**Source:** Skoknick(2015), **interview note #7**)*

> *There was the idea of a market, especially in a market, where you can set margin cost, you can easily calculate that and you can implement that and the general idea. But nobody, even in I think in France, where the idea of economics in the power sector, calculating marginal cost, economics of power plant, I think it was a modest economic application in the power sector. They didn't think at all in single really splitting the market with several competitions in the generation market, not at all.*

Even in the idea of generation, but even the idea of model of to set tariffs in distribution companies, not with the historical account values, like in the state is that historical rate of return, but in theoretical model system was not something that were applied anywhere. They apart from the generation sector, the distribution setting the tariff were also a complete new idea at that time.

(#1,#3,#5→#2→#4) When the power sector reform embarked, the first institutional change in regulation was the establishment of an independent regulatory body. At the same time, unbundling of the state owned Endesa started, which was referred as a standard model by many researchers (Hunt 2002; Joskow 2006). The regulation function of the Endesa transferred to the independent CNE and many experienced workers in Endesa also moved to the CNE, who took charge in practical works later. Along with the practical base given by the former Endesa workers, the theoretical base from the concept of marginal pricing was led by technocrats who were appointed under the Pinochet regime.

(#25→#15→#16) On the other hand, there were a group of economists that gave an overall philosophy for the reform, who are called as technocrats. Many existing researches have mentioned about the influence of the technocrats on Chile's social transformation in late 1980.

(#17→#25, #14→#25) Then, how those technocrats were formed at that time and what were directly related with the power sector reform? It has been a general and common agreement on that the appearance of the technocrats was possible mainly due to the political supports under a very specific political environment; dictatorship by Pinochet regime (Solimano 2012).

(#9→#7) However, It should not be overlooked how it was possible. Chile apparently had potential capacity of regulation, which was not yet activated. Even though more than twenty years had already been passed since the first three young Chileans students were selected and left for Chicago to study economics from 1965 by the ideological supports from U.S., economical and technical ground for effective regulation were not established yet (Reinhardt, 2012). They are called as Chicago boys.

(#8→#10) When the Chicago-trained economists returned to Chile, those Chicago Boys had trouble finding political supports for their proposals. Some of them found their jobs as professors

at the Catholic University and others found lucrative jobs within Chilean private firms(Silva 1991). Their knowledges and ideological social movement were not accepted by political leaders and were not utilized as a technocratic policy maker. In 1970s, when the young Chilean economists who studied at Chicago returned to Chile, most of the Chicago boys came back to the Universidad Católica. In that situation, they established their own think tank, but they did not have enough supports at that time (Fourcade-Gourinchas and Babb 2002). At first, the Chicago Boys had trouble finding political backing for their proposals. The political parties initially supporting the military regime included the Christian Democrats and the right-wing National Party, neither of which was "neoliberal" (Kurtz 1999, Silva 1991). As a result, during the first two years of the dictatorship, the influence of the Chicago Boys on economic policy was quite modest.

(#11→#12) Under the highly polarized political environment of Chile, a business organization, known as the Inter-American Committee on Trade and Production (CICYP), helped finance a new campus for the School of Economics at the Catholic University and helped found an institution for social and economic study; the CESEC (Center for Social and Economic Studies), which served as a forum in which the Chicago Boys could disseminate their ideas to a broader public (Fourcade-Gourinchas and Babb 2002). After 1968, the news daily *El Mercurio* and the weekly *Que´ Pasa* (both owned by a prominent business group active within the Monday Club) published articles on economic analysis that educated businessmen on the Chicago point of view. Some of the Chicago Boys were also important participants in the Monday Club meetings, for which they prepared a post- coup recovery plan under Pinochet.

(#12→#14→#25) Consequently, the political fortunes of the Chicago Boys began to rise. The Chicago boys started obtaining positions as advisers in several ministries and state agencies after the military Pinochet government overthrown the Allende government. During the in-depth interview with snowball sampling, name of Hernán Büchi, former Treasury Minister, was often mentioned by some interviewees. He is a representative technocrat selected as the presidential candidate of the Pinochetista forces. Büchi was an engineer than an economist and had studied not in Chicago, but at the University of Columbia. He was appointed head of the economic team in early 1985, and conducted the economic recovery process that began the following year. He developed basic ideas and had a wider vision for the power sector reform. Specific

implementation of power sector reform in regulation level was mainly developed by Bruno Philippi and Sebastián Bernstein. The followings are the quote from interview and literature review.

> *"Hernán Büchi after that, they were mainly in the Ministry of Finance and they had the general idea that this should be done, but the specific implementation to the power sector was mainly I think Bruno and Sebastián." (Source: Interview with Esteban Skoknick, Note #7)*

> *In 1975, Pinochet appointed Chicago graduate Sergio de Castro as minister of the economy. The following year, de Castro rose to the even more important position of minister of finance, and fellow Chicago graduate Pablo Baraona took over at the head of the Economy Ministry. From 1975 through 1982, a series of Chicago graduates headed the Chilean central bank. (Source: Fourcade-Gourinchas and Babb, 2002)*

(#25→#15) As quoted in the interview above, Bruno Philippi, an engineering professor at Catholic University of Chile and a Stanford Ph.D. in engineering took over as an executive director of the newly created regulatory body for all practical purpose. Under Philippi's leadership, a nationwide energy strategy was formulated(Rudnick, O'Ryan, and Bravo 2001). A key element was that decentralized decisions by energy consumers and producers had to yield economic efficiencies. Sebastian Bernstein, an engineer with the state company who joined Philippi at the CNE, formulated solutions (ibid.) Bernstein was influenced by the French economic school, which stressed use of market prices in regulated sectors. He considered that an efficient and coherent electricity price policy could be based on the use of marginal supply costs. Consequently, the idea of competitive electricity market at the generation level was born and actions were taken to facilitate the development of such a market.

> *"They have a vision of the power sector, especially Büchi because he was very tight, in connection with Bruno Philippi, when one was the Ministry of Finance and the other was the energy commission, they worked together a lot. I think he's very liberal and he is in a sense Chilean leader. For the market, nothing like that. Maybe some of the ideas they discussed with Bruno were from Hernán Büchi." (Source: Interview with Esteban Skoknick, Note #7)*

(#4,#15,#16→#6) In conclusion, in initial stage of the power sector reform in Chile, they were possible to practice regulation with simple and logical rules and human resources who have the practical base from the engineering side and theoretical base from economics side. Those technocrats could provide overall philosophy that made coherent and consistent reform possible.

(#17→#23) Chile was the only Latin American country where power was repeatedly handed over peacefully from one political party to another (Reinhardt 2012). Until the military coup of 1973 led by Augusto Pinochet, Chile was an exception to the dictatorial governments that characterized other Latin American countries. Unlike its neighbors, Chile had maintained smooth constitutional power shifts throughout most of its history. The military coup of Pinochet in 1973 overturned an admirable history of democratic politics. This led to a host of societal problems, including both civil unrest and human right violations. However, the legacy of Chile's nearly two decade of dictatorship is a high degree of stability in both the political regime and in regulatory policy (Solimano 2012). Ironically, Chile could minimize the political risk under the dictatorship of Pinochet(Heller and McCubbins 1996). Spiller and Guasch (1999) also argue that Chile has had "strong political support for maintaining the financial viability of the companies" and regulation is decentralized. This following quote also describes a similar situation.

> *"This is not just an economical behavior. The political factor is key, with or without support, how they control this oligopolistic situation, but how to handle the worker unions. It's not the same, though, a reform under democracy and under military regime, it's absolutely different. It's not comfortable, the changes in Chile, vis-à-vis Argentina. Argentina was under democracy under Menem in the '90s. Chile was under Pinochet, so these are key."(Source: Anonymity interview, Note #1)*

(#23, #24→#27) According to the interview with anonymity, weak power of labor union of Chile also influenced on the process of restructuring as quoted below. In Chile, minimized political interference made clear separation of unbundling process.

> *The presence and the impact of the labor union. For example, in Argentina labor union are very important. That's part of the balance of power. But in Chile, they don't. (Source: Anonymity interview, Note #1)*

(#28→#29→#33) Before the power sector reform in Chile, the Chilean government conducted comprehensive program of institutional reform in various sectors in society. The "Seven modernizations" was the title given to this ambitious effort(Schamis 2002). It includes 1) a new labor code, 2) the privatization of the social security 3) and the health systems, 4) the introduction of market incentives in education, 5) a reversal of past land reform policies, 6) regional decentralization, 7) and the design of new legislative acts. This previous privatization of social security accelerated the privatization of SOEs over time. The most important economic event in terms of shaping financial market and explaining capital market evolution in Chile was the early pension fund reform. Since its inception in the early 80's, significant pension funds have been accumulated in Chile, representing an important source of funds for companies that are channeled through the Chilean financial system. The following is the quote:

> *"The pension fund savings – personal savings of each of you, but they need to invest this money. But at that time, obviously, most of the investment was done in Chile. Now, they're allowed to invest everywhere, or roughly. But they didn't have much to invest in Chile. The big corporate company belonged to the state and they didn't open it. But the energy sector, particularly the electrical sector, is ideal for pension fund, long-term, single-firm, relatively small. They need a lot of money for capital, bonds, so they started emitting bonds, and then they started floating shares. The government had to transform the state companies in corporation and the government retained the control of those companies for many years." (**Source: interview with Bruno Philippi, Note #4**)*

(#33→#38) The healthy economic situation of the time and abundant domestic financial market which was prepared by the reform of pension fund system also accelerated privatization process and increased the investments on power sector at the initial stage. The parallel privatization of Chile's pension system in 1985 provided an important domestic source of private funds for the electricity sector. Initially restricted to investing inside the country, newly privatized pension companies generated capital for equity purchases on Chile's stock exchange, quickly becoming the most important institutional investors. In the initial stage of the power sector reform with sufficient domestic sources of finance and proven technical expertise in operating established firms, the government did not need to seek FDI through special incentive policies. Several AFPs were controlled by foreign banks, thereby only linking FDI indirectly to electricity sector privatizations. Other equity sales occurred directly to company workers as well as to public

employees, members of the military and other private citizens. This diversification of ownership helped provide legitimacy to the privatizations and made their reversal more difficult (UNCTD 2009). Read and Rudnick(2000) evaluate the result of the initial power sector reform in Chile as a success in terms of investment for rapid expansion, despite the security was not fully fulfilled.

(#37→#38) Assurance for private investors from strong protection of private investors by jurisdiction is empowered by electricity law(Rudnick, O'Ryan, and Bravo 2001). According to (ibid.), Transmission investments were often linked to new generation plants being developed, and thus were included as part of those actions.

(#24→#37→#38) The treatment of the utility employees affected by privatization raises important issues. Sorting out employment issues before privatization through formal agreements with labor unions helps attract investors to power sectors. In Chile, state-owned utility Endesa allocated to staffs some shares in privatized entities and it was an important element in some of the participation deals.

(#33, #36, #37 →#38) In conclusion, Chile showed remarkable expansion of investment on generation capacity in their initial stage of the reform. According to Rudnick, O'Ryan, and Bravo (2001), from 1982 to 2002, generation capacity grew 4.4% in SIC and 10.7% in SING. (#35→#36→#38) The early electricity market design in Chile was fundamentally centered on system of marginal pricing. Short-term electricity markets were created, trusting that spot prices would promote the efficient use of existing generation resources and provide signals to foster the interest of investors in building new capacity if needed (Schweppe et al, 1988; Vagliasindi and Besant-Jones, 2013). This capacity payments complemented generators' energy revenues and provide incentives for the entrance of new capacity. The need to ensure efficient generation adequacy forms the backbone of electricity markets. This includes the establishment of correct mechanisms and incentives to allow the entrance of new generation in order to meet load growth. This is particularly crucial in developing countries, where the primary challenge is to ensure sufficient capacity and investment to reliably serve their fast-growing economies. The basis of competitive electricity markets is that, under system marginal pricing, short-term energy spot prices promote the efficient use of existing generation resources and provide signals to foster the interest of investors in building new capacity if needed (Schweppe et al., 1988). An imbalance

between supply and demand because of demand growth, for instance, results in spot price increases and thus creates incentives for the construction of new plants. Moreover, the optimal amount of capacity can recover total costs, expected spot market revenues are enough to remunerate investment and cover operational costs. Despite this fact, different economic arguments regarding electricity pricing introduce additional explicit capacity remuneration methods or capacity requirements (or obligations) as needed mechanisms on electricity markets to incentivize investment and so ensure generation adequacy (Oren, 2000; Tezak, 2005).

(#39→#40) Conglomerates have been a traditional business structure in Chile for a long time(Fernando Lefort 2004). During the first half of the 20th century, a number of large state-owned companies were created in the context of a national plan of industrialization under the supervision of a public entity, CORFO(State development agency). Their origins and evolution importantly respond to the political and economic events. Lefort and Walker(1999) say that Chile have shown that conglomerates have been able to grow and increase their scope and self-intermediation practices even during times of fierce economic reform and deregulation. This kind of evidences has supported a more favorable view of conglomerates in emerging economies sustaining that economic groups are a natural and efficient way for firms to deal with imperfect capital markets, poor institutions, corruption and other imperfections that plague emerging economies (Fernando Lefort 2004). Among the traditional Chilean conglomerate groups, Luksic family, a traditional Chilean group, and Endesa, controlled by multinational Endesa Spain are the major Chilean conglomerates. Figure 11 below shows ownership structure of Endesa and it seems to be clear that the gigantic conglomerate group occupies most of important companies in power industry.

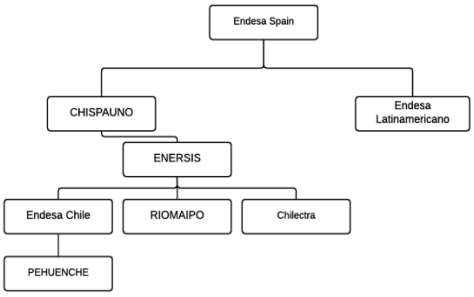


Figure 11 Ownership Structure of Endesa Chile Group

Source: Fernando Lefort (2004)

(#41→#42) the conception on these water resources as an essential basic right and social good was changed by the enactment of Water Code in 1981. Water Code of 1981, empowered water management according to the rules of private property, legally backed-up by the Constitution of 1980. The most critical aspect in the Water Code of 1981 is that it defines water as "a national public good", but at the same time as "a market asset", authorizing the privatization of water through the granting of rights for free and in perpetuity, not setting limits on said grant(Larrain and Schaeffer 2010). According to the Chilean Water Code, once water rights are given to an individual or a private company, the state no longer intervenes. The reallocation of these water resources is done through what is called the "water market" where the private owner of the water rights can rent, buy or sell them, the same like any other asset. This transaction mechanism between private water rights favored an extreme concentration of ownership of this resource. As shown in Table 14, only three companies concentrated 90% of the ownership of water rights for power generation nationwide.

Table 14 Principal Owners of Water Right (for Non-consumptive Use)

Water right Users	Sector	Total Volume	%
Endesa	Energy	6,256	81.00
Compañía General Industrial	Industry	370	4.80
Chilgener S.A.	Energy	320	4.16
Pehuenche	Energy	188	2.40
Fisco Riego	State	107	1.39
Jorge Wachhoitz B., CMPC	Celulose	100	1.30
Codelco Chile	State Mineral	77	1.00
Unión Nacional de Coop. Exportadoras de Algas	Pesca	54	0.70
Hidroeléctrica Guardia Vieja	Energy	46	0.59
Chilectra	Energy	45	0.58
Sociedad Austral de Electricidad	Energy	30	0.39
Total		7,683	100

Source: Larrain and Schaeffer (2010)

3.4 Causality diagram in Chile case

Based on the links of the factors identified in the previous section, the final causality diagram is presented in Figure 12 below. From the proposed causality diagram, each element that connected to the related factors can be grouped as same category, setting aside some external factors and exceptional outliers. Here in this research, each categorized group is designated as a domain. The result of the causality analysis could be classified into four domains on: A) regulatory capacity, B) political interference, C) investment expansion, and D) power market.

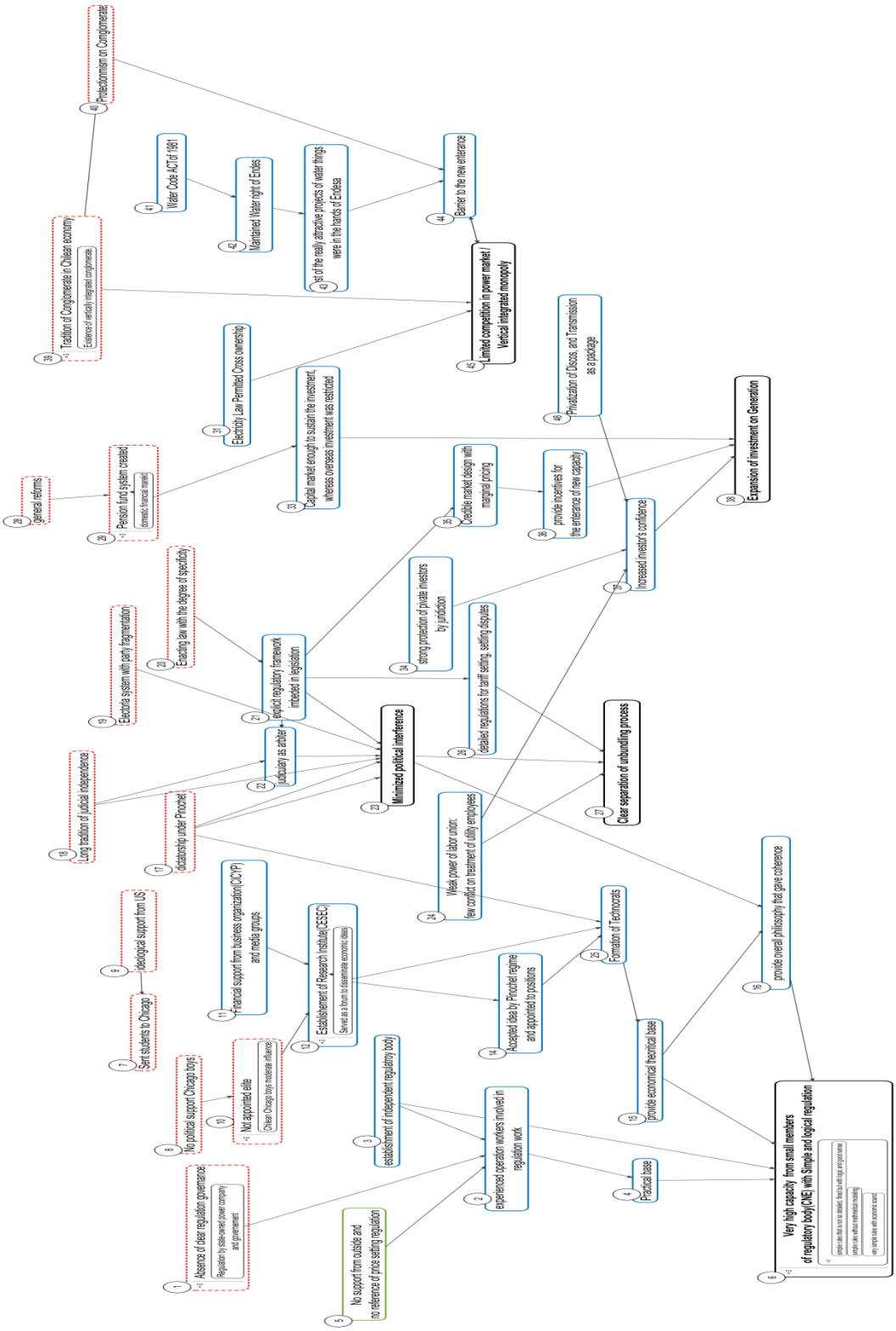


Figure 9 Causality diagram on Chile case

3.5 Analysis results of Chile case

After derive the causality diagram, all links of factors were also investigated by applying weight to determine critical factors of the case. For this, criteria were set as shown in the table 15 below. If a factor was mentioned as one of the critical/important/ key/essential factor in the in-depth interview and also appeared in the references, it was considered as a high weighted factor. If a factor was mentioned in the in-depth interview or confirmed from the other references, it was classified into moderate factor. Besides, a factor that could be presumed relevant from logical consideration also was regarded as a low weighted factor.

Table 15 Criteria for the weight

Weight	Criteria
High	Factors that mentioned as 'one of the critical/important/key factor' in the in-depth interview. AND also appeared in the references.
Moderate	Factors that were mentioned in the in-depth interview. OR Factors that were confirmed from the references.
Low	Factors that indirectly influence on the process from logical consideration.

3.5.1 Identification of the initial condition

Table 15 and 16 describes the characteristics of the initial condition in Chile's power sector reform. The initial condition of Chilean power sector reform could be characterized with absence of clear regulation governance, vertically integrated monopoly by state-owned power company, Endesa and its fiscal constraints. On top of that, less political supports for the national human resources, Chile's unique political condition, general social comprehensive reform before the power sector reform in security service and education are initial condition that is distinct from the other developing countries.

3.5.2 Analysis on the initial implementation by domains

Causality was investigated separately by following domains that categorized in the previous section. Each part of the causality diagram and its detailed explanation is shown in Figure 10 to Figure 13.

(1) Capacity of regulatory body domain

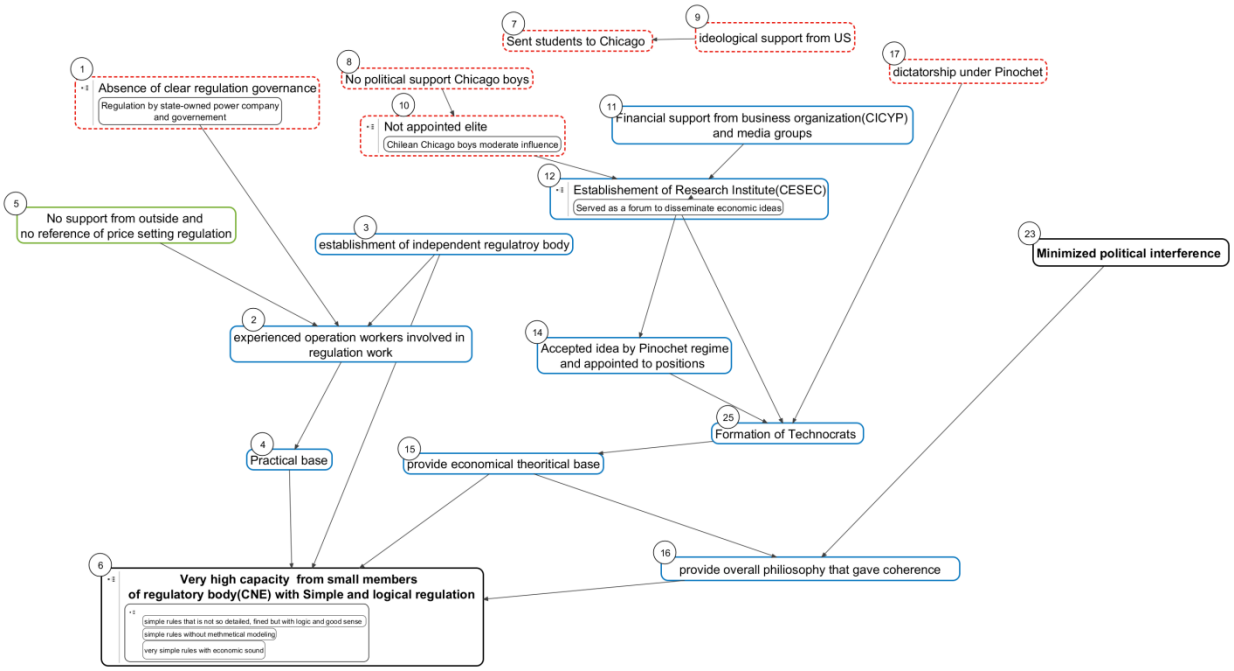


Figure 10 Causality analysis on Chile case: capacity of regulatory body domain

As identified in the previous section, there was no clear regulation governance because the regulation on the power sector was done by the state-owned company and government. And also, the elite human resources could not be utilized because of the less supports from the government. However, after reform started, there was financial support from the business organization. They helped Chicago boys to establish a research institute and it enabled them to disseminate their economic ideas to the public. This effort influenced on the formation of technocrat appointed by Pinochet regime. Without supports from outside and with the strong political supports, Chilean regulatory body could have high capacity with logical regulations and could keep continue stable regulation and regulatory policy.

Consequently, in the initial stage of the power sector reform in Chile, the regulatory body's institutional capacity was high enough to regulate the tariff with simple and logical economic rules. This was influenced by a body of technocrats who were capable of highest level of policy making rationally and coherently. They were so-called Chicago boys who were a group of young neoliberal economists came back to Chile from the University of Chicago in 1960s. Therefore, the Chile case can be concluded that rational and consistent regulation was possible in initial

stage due to the ability of technocrats and political supports for them. Minimized political interference in Chile contributed to make unbundling and privatization process go smooth.

(2) Political interference domain

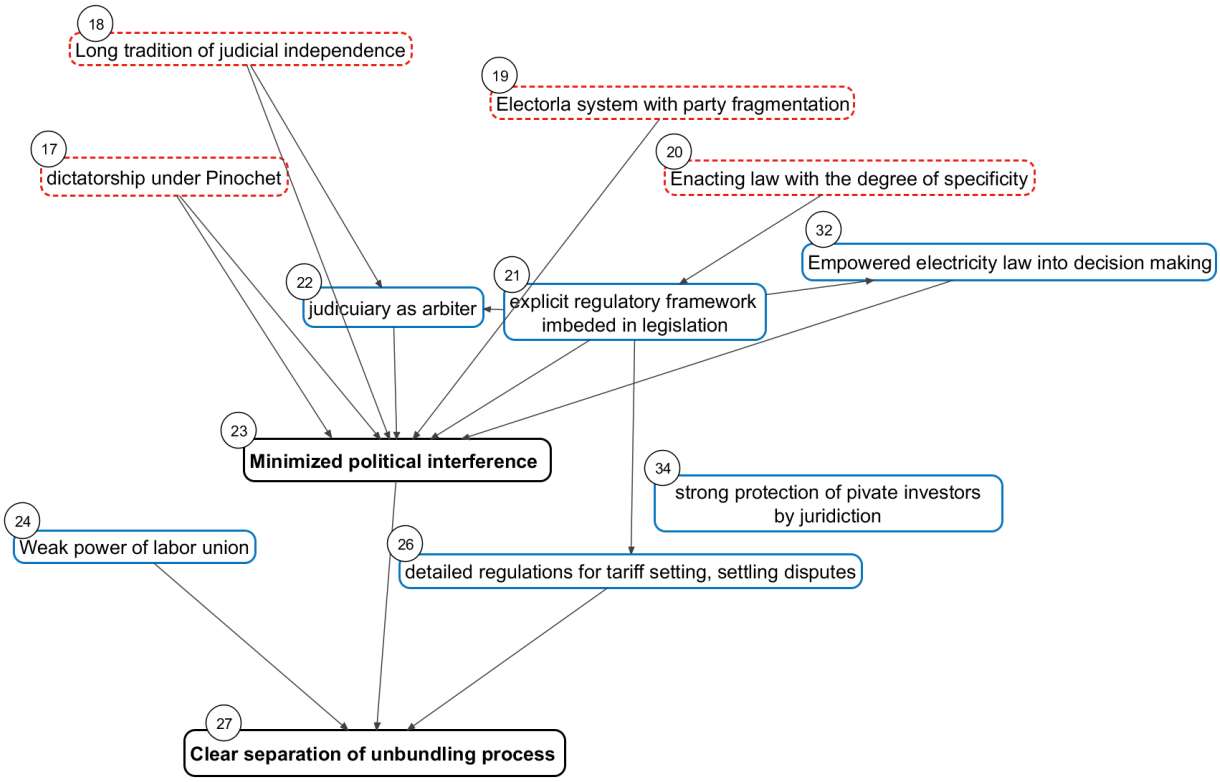


Figure 11 Causality analysis on Chile case: political interference domain

The political initial condition that was under the dictatorship is very distinct with other countries. Ironically, the dictatorship government strongly supported the Chicago economists who made theoretical and ideological basis for the power sector reform. On top of that, when the regulatory body was established, the main human resources were transferred from the engineers and technician from the former state-owned companies so, Implementation of the regulation was well conducted by them who gained practical experiences in former state-owned companies and this could minimize political interferences.

The political system that was separated into independent legislation, administration also influenced the organization of the regulatory body. The regulatory body at the initial stage was able to be very independent from the political influence because of the existence of military government as well.

(3) Investments Expansion domain

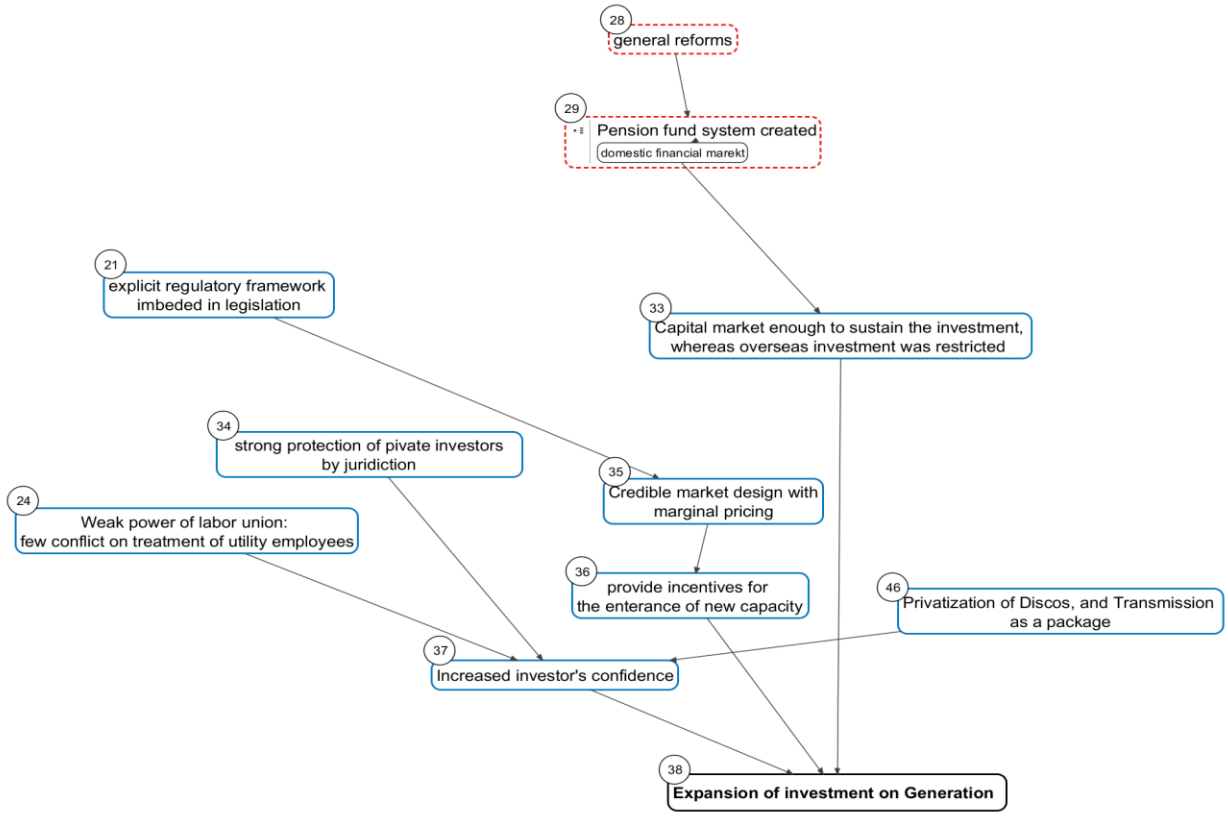


Figure12 Causality analysis on Chile case: investment expansion domain

Chile succeeded in making assurance for the potential private investors in the market in their initial implementation. That credible environment could be developed by many incentives for the investors. First of all, the market signal was accurate with marginal pricing model, which was empowered by electricity law. Moreover, the investors was able to be protected by the jurisdiction and explicit regulatory framework imbedded in legislation. We cannot deny the influence of the abundant domestic capital market on the initial success in attracting new investment on generation capacity which was resulted from the general and comprehensive reform in social security and education prior to the power sector reform. This precedent condition influenced on the domestic capital market and created reliable environment for private investors.

(4) Competition in the power market domain

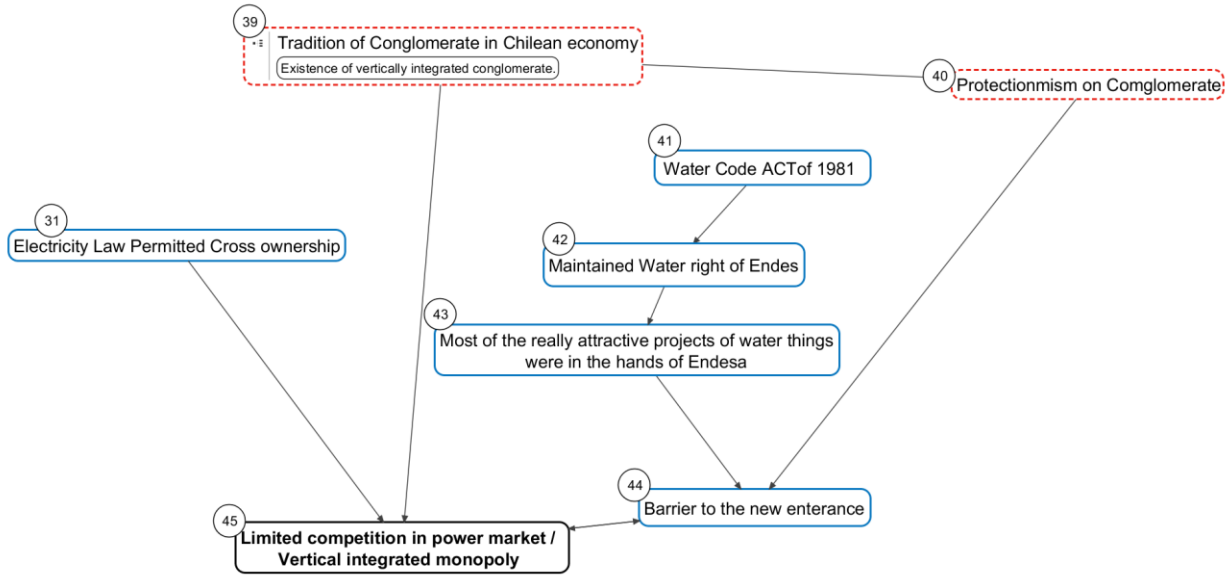


Figure 13 Causality analysis on Chile case: competition in the power market

Contrary to the expectation on the power sector reform to promote more competition in the power market, Chile could not successfully achieve the competitive market. Vertical integration maintained in the market because of an inadequate allocation of water right, which deterred any other newcomers from entering power market. Endesa, dominant power Distribution Company, maintained their power position through profitable contracts and it caused limited competition in the market. The vertically integrated monopoly by the conglomerate formulated before the reform steadily prevailed the result of the reform

3.6 Chile Summary

In Chile case, the initial condition of Chilean power sector reform could be characterized with absence of clear regulation governance, vertically integrated monopoly by state-owned power company and its fiscal constraints. On top of that, less political supports for the national human resources, Chile's unique political condition under the dictatorship, general social comprehensive reform before the power sector reform in security service and education are initial condition that can be differentiated from the other developing countries. Among these initial conditions, the unfavorable regulatory governance was improved by establishing independent regulatory body and capacity building by utilizing local human resources who are qualified in economics and engineering and by funding form the domestic business group. Besides, Chilean regulatory body in initial stage had to build their capacity by themselves because they did not have any reference cases and supports from outside. Through the internal capacity building process, consequently, they could have high institutional capacity enough to regulate the tariff with simple and logical economic rules. Fiscal constraints of state-owned power company were improved by promoting private investment on generation capacity, since they successfully fostered investor’s confidence in the power market through the initial implementation. That credible environment could be developed by many incentives for the investors. First of all, the market signal was accurate with marginal pricing model, which was empowered by electricity law. Moreover, the investors was able to be protected by the jurisdiction and explicit regulatory framework imbedded in legislation. We also cannot deny the influence of the abundant domestic capital market on the initial success in attracting new investment on generation capacity which was resulted from the general and comprehensive reform in social security and education prior to the power sector reform. With regards to the political interference, Chilean unique political environment ironically had positive influence on the power sector reform, promoting quick decision making under the dictatorship. Regulatory body also could maintain their independency under the military government. Lastly, fulfilling competition in the market were failed to meet the expectation that the reform would bring more efficiency throughout competition in the market. Vertical integration maintained in the power market due to an inadequate allocation of property right and loopholes in law enactment that allow cross-ownership between generation and distribution caused limited competition in the market.

4 The Philippines Case

4.1 Summary of power sector reform

Historical context (Sharma, Madamba, and Chan 2004)

Table 17 below summarizes the history of power sector reform in the Philippines. In 2001, the Congress enacted the Electric Power Industry Reform Act of 2001 (EPIRA), which was meant to achieve a total overhaul of the power industry and wrest control of the generation and transmission sectors from NPC. There were, therefore, argued the proponents of reform, an imminent need to restructure the electricity industry. Such restructuring will:

Pursuant to the Electric Power Reform Act 2001 (EPIRA), Power Sector Assets and Liabilities Management Corporation (PSALM) were mandated to reform and restructured the sector. Since its formation, PSALM has privatized generating plants. The Wholesale Electricity Spot Market (WESM) commenced its initial operations in Luzon in 2006. In the Philippines case, from the period of early 1990s, when the IPP contracts and BOT were introduced to the year of 2006, when the competitive power market was set, would be regarded as the initial stage and the post-initial stage in this research.

Table 17 The Philippines' power sector reform history

Year	Event	Description
1936	NPC was established	
1960	Meralco was transferred to a new company owned by local private interests	
1965	NPC's preeminent position in the power industry	
1980	Power shortage in 1980s	
1990	Severe power crisis	4 up to 8 rotating brownouts
1986	Mothballed Nuclear Power Plant	This exacerbated the power demand/supply situation.
1992	President Aquino	Allowed private sector participation in generation Economic activity increased power demand
1987	NPC's debt increased	NPC had accumulated billions in debt and hence lacked the financial capability.
1987	Aquino permit and encourage private sector	
1995	NPC's operation subsidies	NPC had spent a total P1.36 billion in operating subsidies.

1990	BOT scheme was introduced	
1999	IPP contracts	NPC contracted a total of 5583 MW of IPP contracts with the form of take-or-pay provision. In 2002, NPC had already signed 43 IPP contracts.
1992	Energy demand high	Energy demand quickly outpaced energy supply
1993	The height of the POWER CRISIS	The country experienced 103 days of blackouts resulting in 251 GWh of lost energy sales. Projections based on the 1993 and 1996 Philippine Development Plan estimated that the power demand and supply gap would increase in the succeeding years. [Source: DOE]
1993	Electric Power Crisis Act of 1993	Ramos administration pushed the act, which gave the president the power to enter into negotiated contracts for the construction, repair, rehabilitation, improvement or maintenance of power plants, projects and facilities and to reorganize NPC.
1993	Activate the IPP contracts	A total of US$6 billion in investments in approximately 4,800MW of installed generation capacity had been made by independent power producers (IPPs)
1997	ASIAN FINANCIAL CRISIS	
1998	World Bank sent AID to the Government	World Bank document noted that NPC is having severe difficulty in meeting its commitment to lenders and the IPPs.
2001	President Estrada	
2010	President Arroyo	Arroyo approved the NPC's privatization plan.
Initiation of the power sector reform		
2001	EPIRA	EPIRA became mandated Rate Reduction: leadership need to rationalize power rates.
2002	NPC's operating deficits	1. The non-recovery of operating and fuel expenses of some IPP contracts 2. The reduction in NPC's effective rates. 3. PPA cap 4. Fuel cost increases 5. Further decreases in sales following the full operation of Meralco's own IPPs.
2004	DELAY of implementation of EPIRA	While EPIRA was promulgated in 2001, the first significant step to address NPC's financial crisis was not taken until September 2004.
2006	Wholesale Electricity Spot Market started	DOE has commenced establishment of WESM. The Wholesale Electricity Spot Market (WESM) commenced its initial operations in Luzon in 2006.
2012	PSLM had privatized 70% of the total capacity of generating assets of NPC	

Source: This was written based on Sharma, Madamba, and Chan (2004), "The Energy Report: Philippines Growth and Opportunities in the Philippines Electric Power Sector" (2013), and the website of Department of Energy of the Philippines government (https://www.doe.gov.ph/)

Power sector Structure

Figure 17 below shows how the power sector structure in the Philippines had been changed after the reform. Before the reform, the state-owned generation and transmission company (NPC) and

distribution company (Meralco) mainly consisted the power sector. Regulation and long-term planning for future energy policy were undertaken by the government (Department of Energy) and Energy Regulatory Board (ERB). The distinct changes after the reform are unbundling the sector into generation, transmission distribution and retail supply. The generation and retail were opened to competition to both domestic and foreign companies and the transmission and distribution were remained as natural monopolies subjected to the regulation of the ERC, which is a new independent regulatory body. The role of department of energy as a policy making agency remained but the role of supervision and administration of the sector was redefied after the reform started.

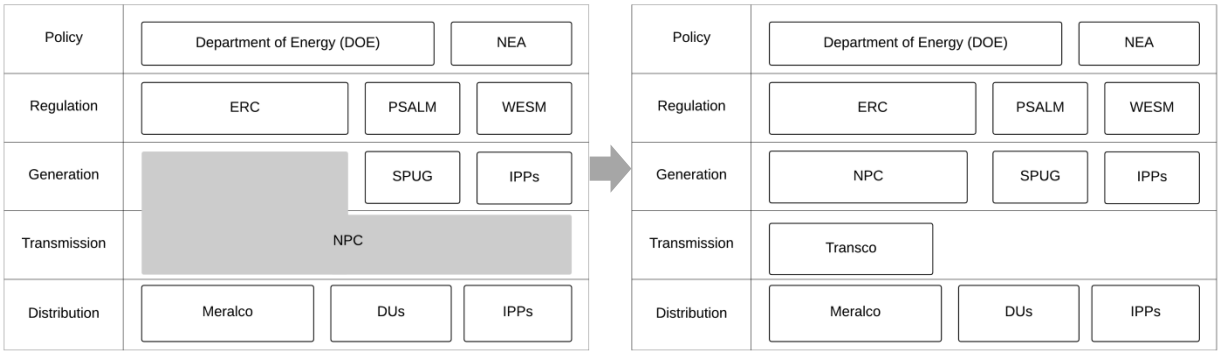


Figure 17 The Philippines's Power sector structure before and after the reform

Source:Vagliasindi and Besant-Jones (2013), Power market structure

4.2 Finding Factors from the sources

Based on the literature reviews and the in-depth interview shown in Chapter 2, factors from each source or evidence were identified in a same with Chile case. These identified factors were also classified into three phases, following the definition that was set for this research in the previous section 1.3, which is initial condition, initial implementation, and initial result. The identified factors are shown in Table 18 below.

Table 18 Factors from source and classification by phase and domain (The Phlippines)

#	Source	Description	Stage	Domain
1	ERC (http://www.erc.gov.ph:8099/Pages/history)	Numerous reorganization and changes in its mandate: changes in responsibility for the forecasting from NPC to DOE	I.C	A
2		Poor institutional coordination: regulatory bottleneck	I.C	A

3		DOE's insufficient institutional strengthening	I.C	A
5	Republic Act No. 9136: Electric Power Industry Reform Act of 2001, Pascual (2006)	Establishment of ERC	I.I	A
6	Cham (2007)	High dependence on president's decision	I.I	A
7	Cariño (2005), Minogue (2006)	Failure to attract and retain qualified and experienced professionals	I.I	A
8	Pascual (2006), Geoffrey Brown, de Dios, and Valderrama (2011), Diokno-Pascual (2006)	Technical Assistance from ADB	I.I	A
9	Clemente (2009)	Newly hired graduates and high turn over	I.I	A
10	Clemente (2009)	Use of external consultant: No procedures to review the recommendations	I.I	A
11	Johannsen (2003), Minogue (2006)	Lost Autonomy of regulation	I.R	A
12	Cham (2007) Diokno-Pascual (2006)	Internal Institutional weakness: difficulties in tariff setting	I.R	A
13	Diokno-Pascual(2006), ADB (2004)	Too much dependence on foreign consultants	I.I	A
14	Cham (2007)	wrong demand forecasting methodology	I.I	A
15	Cham (2007)	Planning failure: countries generation needs are inappropriately planned	I.I	A
16	Roxas, (2010)	Delay on decision making: Legal disputes regarding award of the franchise	I.C	B
19	Roxas, (2010)	EPIRA delayed: delay of legislation and implementation	I.R	B
20	Minogue (2006)	Interest coalition and political interference intensified	I.I	B
21	Cariño (2005)	EPIRA gives ERC very strong powers to regulate market operation	I.I	B
22	Sharma, Madamba, and Chan (2004), David Celestra Tan, (Article 17. Feb. 2014)	Corruption and lobbying	I.R	B
23	David Celestra Tan (Article 17. Feb. 2014)	Changed cross-ownership percentage: allowed distribution utilities (the main buyers of power) to enter into bilateral supply contracts with affiliated generators of up to 50 percent of their power requirements	I.I	B, D
24	SEPO, the Policy Brief (2008), Republic Act No. 9136	Allowed cross-ownership between G&D	I.I	D
26	Geoffrey et al. (2011)	Defective wholesale Spot Market structure and rules	I.I	C
27	Geoffrey et al. (2011),	Entrance barrier to the new market participants	I.R	C

28	Roxas(2010)	Insufficient number of market participants	I.R	D
29	Mendaza (2008)	Market violations or abuse by the dominant industry players	I.R	D
30	Cham (2007)	Limited competition in the power market: Ineffective WESM(wholesale market)-	I.R	D
31	Cham (2007)	Couldn't provide guidance for allocation of investment resources	I.R	D
32	Roxas(2005)	Changes in Economic situation: fixed exchange rate collapsed, depression of Peso, high fuel price	I.I	C
33	Roxas(2005)	poor finance feasibility of NPC: NPC's DEBT	I.C	C
34	SEPO, the Policy Brief (2008)	EPIRA promulgated	I.I	A,D
36	Roxas(2010)	Structure dominated by leading business families	I.R	D
37	Geoffrey et al. (2011)	Interest groups' opposition	I.I	B
39	Mendaza (2008)	Unreliable investment environment	I.R	C
40	Cham (2007)	Underinvestment on Generation	I.R	C
41	Mendaza (2008), Cham (2007)	Insufficient electricity supply, Blackout and risk of power crisis	I.R	C
43	Mendaza (2008)	Affect industries and national economy	I.R	C
44	Geoffrey et al. (2011)	low electrification in rural area:	I.R	C
45	Cham (2007)	privatization of Transmission was slowed	I.I	C
48	Abrenica(2004), Sharma et. al., (2004), Abrenica(2004)	financial, technical problems	I.C	C
33	SEPO, the Policy Brief (2008)	Inability of financing	I.C	C
48	SEPO, the Policy Brief (2008)	poor performance of SOE	I.C	C
49	Abrenica(2004), Sharma et. al., (2004), Abrenica(2004)	Executive order 215: permit private sector participation through IPP	I.C	C
50	Abrenica(2004), Sharma et. al., (2004), Abrenica(2004)	Introduction of IPPs	I.C	C
50	Woodhouse(2005)	take-or-pay provision	I.C	Ct
33	Cham (2007)	Poor finance of NPC position	I.C	C
53	Cham (2007)	Political concern: politicians' populist	I.I	B
54	Roxas(2005)	Natural endowment	I.C	C
55	Cham (2007)	ERC did not permit the power tariff increase	I.I	B
57	Cham (2007)	Transmission loss problem: need better transmission system	I.I	C
58	Clemente (2009)	Delayed Privatization of NPC's generation facilities	I.I	C
59	SEPO, the Policy Brief (2008)	NPC's dominant market power	I.I	D
60	Cham (2007)	Financial disability of Distribution company :nonpayment of electricity bills by consumers/low credit : MERALCO's credit rating was bad BB+ _> CC/low credit/ financial inability	I.I	C

		of 18 other private distribution utilities and 119 RECs		
63	Clemente (2009)	Regulatory body(ERC)'s lower salary than other regulated entities	I.I	A
64	Clemente (2009)	insufficient fund for capacity building	I.C	A
62	De Vera (1997), Cariño(2006), Basilio(2005)	political ties with the president	I.I	B
61	Clemente (2009)	Inability of funding to undertake the capacity building	I.C	A
65	Minogue (2006)	political appointee of the regulatory body	I.I	B
66	Clemente (2009)	Least autonomy of regulation: high dependence on president's decision	I.I	A,B
67	Cham (2007)	exclusive focus on privatization of Generation	I.I	C
68	Cham (2007)	slow resolution of legal issues on the privatization of Transmission	I.I	C

***Phase- I.C: Initial Condition, I.I: Initial Implementation, I.R: Initial Result**

***Domain-A: Regulatory capacity, B: Political interference, C: Investment expansion, D: Power market**

4.3 Link of the factors

Here, I will investigate each link in detail. Whole links are summarized in Table 19 below.

Table 19 Links of causality diagram on the Philippines case

From	Box	To	**Box**
1	Numerous reorganization and changes in its mandate: changes in responsibility for the forecasting from NPC to DOE	2	Poor institutional coordination: regulatory bottleneck
		3	DOE's insufficient institutional strengthening
3	DOE's insufficient institutional strengthening	5	Establishment of ERC
		8	Technical Assistance from ADB
8	Technical Assistance from ADB	10	Use of external consultant: No procedures to review the recommendations
10	Use of external consultant: No procedures to review the recommendations	13	Too much dependence on foreign consultants
13	Too much dependence on foreign consultants	12	Internal Institutional weakness: difficulties in tariff setting
12	Internal Institutional weakness: difficulties in tariff setting	14	wrong demand forecasting methodology
63	Regulatory body(ERC)'s lower salary than other regulated entities	7	Failure to attract and retain qualified and experienced professionals
7	Failure to attract and retain qualified and experienced professionals	9	Newly hired graduates and high turn over
9	Newly hired graduates and high turn over	12	Internal Institutional weakness: difficulties in tariff setting
14	wrong demand forecasting methodology	15	Planning failure: countries generation needs

			are inappropriately planned
15	Planning failure: countries generation needs are inappropriately planned	31	Couldn't provide guidance for allocation of investment resources
12	Internal Institutional weakness: difficulties in tariff setting	31	Couldn't provide guidance for allocation of investment resources
61	Inability of funding to undertake the capacity building	8	Technical Assistance from ADB
34	EPIRA promulgated	5	Establishment of ERC
16	Delay on decision making: Legal disputes regarding award of the franchise	19	EPIRA delayed: delay of legislation and implementation
19	EPIRA delayed: delay of legislation and implementation	20	Interest coalition and political interference intensified
20	Interest coalition and political interference intensified	65	political appointee of the regulatory body
65	political appointee of the regulatory body	66	Least autonomy of regulation: high dependence on president's decision
66	Least autonomy of regulation: high dependence on president's decision	12	Internal Institutional weakness: difficulties in tariff setting
20	Interest coalition and political interference intensified	22	Corruption and lobbying
22	Corruption and lobbying	23	Changed cross-ownership percentage: allowed distribution utilities (the main buyers of power) to enter into bilateral supply contracts with affiliated generators of up to 50 percent of their power requirements
24	Allowed cross-ownership between G&D		
34	EPIRA promulgated	24	Allowed cross-ownership between G&D
23	Changed cross-ownership percentage: allowed distribution utilities (the main buyers of power) to enter into bilateral supply contracts with affiliated generators of up to 50 percent of their power requirements	29	Market violations or abuse by the dominant industry players
36	Structure dominated by leading business families	29	Market violations or abuse by the dominant industry players
26	Defective wholesale Spot Market structure and rules		
29	Market violations or abuse by the dominant industry players	30	Limited competition in the power market: Ineffective WESM(wholesale market)-
23	Changed cross-ownership percentage: allowed distribution utilities (the main buyers of power) to enter into bilateral supply contracts with affiliated generators of up to 50 percent of their power requirements	30	Limited competition in the power market: Ineffective WESM(wholesale market)-
28	Insufficient number of market participants	30	

58	Delayed Privatization of NPC's generation facilities	28	Insufficient number of market participants
27	Entrance barrier to the new market participants	28	
23	Changed cross-ownership percentage: allowed distribution utilities (the main buyers of power) to enter into bilateral supply contracts with affiliated generators of up to 50 percent of their power requirements	27	Entrance barrier to the new market participants
48	financial, technical problems	49	Executive order 215: permit private sector participation through IPP
49	Executive order 215: permit private sector participation through IPP	50	Introduction of IPPs
50	Introduction of IPPs	33	poor finance feasibility of NPC: NPC's DEBT
32	Changes in Economic situation: fixed exchange rate collapsed, depression of Peso, high fuel price	33	poor finance feasibility of NPC: NPC's DEBT
33	poor finance feasibility of NPC: NPC's DEBT	67	exclusive focus on privatization of Generation
67	exclusive focus on privatization of Generation	45	privatization of Transmission was slowed
57	Transmission loss problem: need better transmission system	40	Underinvestment on Generation
60	Financial disability of Distribution company :nonpayment of electricity bills by consumers/low credit : MERALCO's credit rating was bad BB+ _> CC/low credit/ financial inability of 18 other private distribution utilities and 119 RECs	40	Underinvestment on Generation
		39	Unreliable investment environment
39	Unreliable investment environment	40	Underinvestment on Generation
59	NPC's dominant market power		
40	Underinvestment on Generation	41	Insufficient electricity supply, Blackout and risk of power crisis
41	Insufficient electricity supply, Blackout and risk of power crisis	43	Affect industries and national economy
40	Underinvestment on Generation	44	low electrification in rural area:
68	slow resolution of legal issues on the privatization of Transmission	45	privatization of Transmission was slowed

(#1→#2, #3) In order to understand the initial capacity of power sector regulatory body in the Philippines, many past changes in their energy governance should firstly be investigated, since

when the electricity had been introduced in the Philippines in 18901. The first governmental organization was Electrification Administration (EA), which was established in 1960 and in charge of rural electrification. At that time, the population enjoyed the benefits of electricity was concentrated mostly in Manila and only cities around Manila, so the government needed to expand electricity to a larger part of the country and it contributed to make EA as a main institution in charge of the nation's energy policy. Turning to the 1970s, the radical increase of imported oil price changed energy governance of the Philippines. High oil prices in early 1970s underscored a need for a strong institution to manage the country's energy needs. Therefore, the Department of Energy (DOE) was created in 1977. In late 1980s, high economic growth accelerated the demand of electricity and hastened the need for new generation, transmission and distribution capacity. As part of its restructuring efforts, the government issued Executive order in 1987 for the creation of the Energy Regulatory Board (ERB) whose responsibilities included electricity tariff settings. The ERB was primarily responsible for determining the rates and other cost adjustments of the National Power Corporation (NPC), private and public electric utilities and rural electric cooperatives; prices of coal and other energy resources under the most economic and competitive terms as possible. From 1992, when the Department of Energy (DOE) was re-created, ERB's policy-making authorities transferred to some part of the DOE. It is apparent that since its establishment, the ERB took on new responsibilities to adapt to significant changes in the energy sector while fulfilling its mandated functions. Before the reform started, regulation of power rates and service of electric utilities were conducted by ERB. Thus, the power to regulate the power rates and services of electric utilities was transferred to the ERB. In June 1998, the Philippine oil industry was fully deregulated, thus, ERB's focus of responsibility was centered on the electric industry. These numerous reorganization and changes in its mandate caused poor institutional coordination and insufficient institutional strengthening of DOE.

(#2, #3, #34→#5) The major reforms in the power industry were embodied in the newly-enacted law, namely, the restructuring of the electricity supply industry that calls for the separation of the different components of the power sector, and the privatization of the National Power Corporation (NPC), which involves the sale of the state-owned power firm's generation and

[1] The causal relationship between numerous changes in regulation responsibility of the Philippines case was summarized based on the ERC(Energy Regulatory Commission) website (http://www.erc.gov.ph:8099/Pages/history)

transmission assets to private investors. These reforms were aimed at bringing down electricity rates and improving the delivery of power supply to end-users by encouraging greater competition and efficiency in the electricity industry[2]. The enactment of Republic Act No. 9136 introduced a new regulatory framework and provided for new government roles in the industry. As a result, ERC was established as an independent regulator in the power sector to improve the regulatory framework.

(#63→#7→#9→#12) After the ERC was established, their organizational insufficiency in low salary policy than other sectors' regulatory entities caused unsuccessful results to attract and retain qualified and experienced professionals in regulatory body. As a result, ERC hired new graduates and there is a very frequent turn over and this connected to internal institutional weakness.

> *"At the same time, the turn over of experienced and well-trained personnel pose a big challenge to ERC since it still lacks capacity to attract and retain qualified and experienced personnel. The high turn over can be attributed to personnel demoralization and poor motivation mechanisms in the ERC and the more attractive incentives being offered by other companies, particularly the regulated entities." (Source: Clemente 2009)*

(#65→#66→#12) With regard to the appointee to the chairperson of the regulatory body, president's decision was highly and decisively reflected. This presidential appointee also caused unqualified and inexperienced (Cham 2007).

(#61→#8) A related concern was the availability of funds to undertake the capacity enhancement project. Insufficient funds for capacity building Reforms that were introduced in the Philippines, particularly in the electric power industry, have always emanated and patterned from developed countries. Given the novelty of such reforms, plus the fact that the electric power industry is dynamic (keeps on changing) by nature, gaps in the technical knowledge and skills have to be filled. Thus, the local and traditional brains need to be upgraded correspondingly and constantly to ensure the successful implementation of such reforms (Clemente 2009) . The ERC is

[2] Republic Act No. 9136: Electric Power Industry Reform Act of 2001 (http://www.neda.gov.ph/wp-content/uploads/2013/12/R.A.-9136.pdf)

inordinately influenced by the USAID, the World Bank, and the ADB as these institutions provide the technical assistance for ERC's capability building (Pascual 2006). These development financing institutions have actively assisted the Philippines power sector. ADB mainly took lead in providing policy advices to the government on power sector restructuring while support to NPC prior to its privatization(Geoffrey Brown, de Dios, and Valderrama 2011). The World Bank, the other hand, would focus on providing assistance in rural electrification. Since 1997, World Bank has not lent to NPC, while ADB has kept approving technical and financial assistance as shown in Table 20.

Table 20 ADB's technical assistance to the Philippines energy sector after WB quitted lending

Year	Project Title	$'000	Type
1998	Electricity Pricing & Regulatory Practice in a Competitive Environment	600	TA
2000	Consumer Impact Assessment	720	
2000	Rural Electrification Institutional Strengthening	750	
2000	Rural Electrification	600	
2001	Competition Policy for the Electricity Sector	990	
2002	Transition to Competitive Electricity Markets	800	
2003	Promoting Good Governance in the Restructured Power Sector	800	
2003	Rehabilitation of Renewable Energy Projects for Rural Electrification and Livelihood Development	800	
2003	Institutional Strengthening for the Development of Natural Gas Industry	800	
2004	Institutional Strengthening of ERC and Privatization of NPC	1,200	
1998	Power Sector Restructuring Program	300	Lending
2002	Electricity Market and Transmission Development	40	

Source: Geoffrey Brown, de Dios, and Valderrama (2011)

From the financial and technical assistance by the external organizations, the Philippines started their institutional strengthening program. The ERC was inordinately influenced by the USAID, the World Bank, and the ADB as these institutions provided the technical assistance for ERC's capability building (Diokno-Pascual 2006). These development financing institutions have actively assisted the Philippines power sector. ADB mainly took lead in providing policy advices to the government on power sector restructuring while support to NPC prior to its privatization(Geoffrey Brown, de Dios, and Valderrama 2011). The World Bank, the other hand, would focus on providing assistance in rural electrification. Since 1997, World Bank has not lent to NPC, while ADB has kept approving technical and financial assistance.

(#8→#10) With regard to regulatory body's capacity, ADB provided technical assistance to the Philippines government for "institutional strengthening of energy regulatory commission and privatization of NPC" in 2004. This technical assistance included an adoption of same regulation model with pioneered reform countries and education program for working staffs of the regulatory body, the ERC. Table 21 below shows the summary of the technical assistance including input of human resources and funding. The technical assistance program was designed to improve accountability and transparency of regulation and also included training programs for staff members in ERC and PSALM. About 1.7 million USD was granted by ADB and the Philippines government funding in total. In terms of human resources, international consultants who were a group of experts in various fields were involved in building capacity of regulation, including market monitoring, information technology and financing. Domestic consultants and ADB staffs were also associated with this project.

Table 21 Summary of Technical assistance to the Philippines by ADB

Design summary	Performance indicator	Monitoring Mechanism
Improving accountability and transparency of regulation	Greater public disclosure	ERC web site
Training programs	50 ERC/PSALM staff members trained	ERC annual reports
Inputs		
ADB grant	$1,200,000	ADB disbursement records
Government funding (in kind)	$515,000	TA progress reports
International Consultants:		
- Institutional expert for power utilities regulation	10 person-months	Consulting contract and billing records
- Regulatory expert for dispute resolution	5 person-months	
- Market monitoring expert	2 person-months	
- Information technology expert	5 person-months	
- Privatization advisor	7 person-months	
- Financial advisor for asset valuation	3 person-months	
- Technical advisor for power generation	3 person-months	
- Technical advisor for power transmission	2 person-months	
Domestic consultants: Legal and regulatory advisors, asset appraiser	20 person-months	
ADB staff input	20 staff-days per year	Technical assistance performance report

Source: ADB (2004), "Proposed technical assistance to the republic of the Philippines for Institutional strengthening of energy regulatory commission and privatization of national power corporation"

As shown in Table 22, in the ADB's technical assistance, two external consulting firms were involved for ERC and PSALM respectively. The detailed contents and activities of each consulting were different. For the ERC, a guideline of 'Rules of Practice and Procedure' was published and IT equipment and software were purchased as a procurement procedure. Staff trainings and human resource development program were provided as well. For the PSALM,

which was created to oversee and manage the privatization of NPC's generation and Transco's transmission assets, proper asset evaluation method and advisory services were provided.

Table 22 Contents of Technical Assistance by ADB

	For ERC	For PSALM
Inputs	Two consulting firms were engaged respectively	
Activities	Issued 'Rules of Practice and Procedure' and put in place a computerized case tracking system IT equipment and software were procured Relevant staff trainings were conducted Human resource development program was provided.	Asset evaluation of NPC generation plants and provided advisory services to PSALM for the privatization of NPC and TRANSCO (2005) Termination -> additional financial valuation requested Expertise of the Consultant team did not match the requirement

Source: ADB (2004), "Proposed technical assistance to the republic of the Philippines for Institutional strengthening of energy regulatory commission and privatization of national power corporation"

(#10→#13) In the Philippines, tones of amount of money and efforts for upgrading the local human resources had been correspondingly and constantly invested by multilateral financial institutions such as ADB and World Bank. According to the project evaluation report of ADB, they defined the result of the technical assistance as a very successful (ADB 2004). They evaluated that key expertise and knowledge have been effectively transferred to the recipient of technical assistance within the contract cost, whereas some mismatched results were found. Despite the positive evaluation of ADB's assessment, the ERC depended so much on its foreign consultants in order to walk through and go about the reforms, most especially during its inception period. The consultants who generally came from the donor agencies shaped the policy of reforms and regulatory processes. This could be said that major decisions of the ERC have been written by its external consultants. Further, it was also noted that there was no established procedure that can review the recommendations made by the consultants (Diokno-Pascual, 2006).

(#13→#12) However, it is hard to tell that the capacity strengthening program was thoroughly and successfully assigned, because the ERC started to demonstrate some institutional weaknesses. Internally the ERC employers had difficulties in understanding new tariff setting methodology and were not able to undertake relevant regulation works. The quote is like below:

> *"ERC employers are unable to undertake thorough analysis because of a lack of knowledge and skills in regulation and tariff setting methodologies. ERC's document tracking and filing system was poor as business processes are not clearly defined. The*

staff is inexperienced in handling consumer complaints and dispute resolution. ERC has yet to establish ground rules for the effective implementation of performance-based regulation. Market monitoring is also a new area of responsibility that ERC has to learn while WESM is still not operational".(Source: Cham 2007)

While it is true that the ERC benefits from the donor agencies' technical assistance for capacity building, which the ERC for itself cannot afford to provide, the alleged influence of donors can be very difficult to establish and prove as the ERC's actions is guided by and is consistent with its mandate prescribed under the EPIRA. (Source: Assessment Report on the Electricity Governance in the Philippines by Diokno-Pascual 2006)

(#12→#14→#15) All these weaknesses affected the function of the regulatory body; especially on the demand forecasting of the electricity and after all, it was eventually connected with inappropriately planned power generation capacity of the country due to the planning failure (Cham 2007).

(#20→#65→#66) Assessment Report on the Electricity Governance in the Philippines by Diokno-Pascual noted that though the ERC claims to be an independent body, appointments thereat are highly political as it is left to the sole prerogative of the President. Such being the case, there is no transparent and clear process of appointing ERC officials (Diokno-Pascual, 2006). This notion affirms the argument of Cariño (2005) that regulation is also a political process. In the same light, Johannsen (2003) argued that:

"Bearing the label "independent" is not completely without practical implications for the regulatory authorities, but the label is definitely no guarantee of full autonomy."
Moreover, Johannsen (2003) further claimed and that: "The establishment of regulators who are independent in name has not necessarily led to independent regulation in actual fact."

(#20→#7,#11) Minogue (2006) also affirmed the possibility that the political executive retains basic control through the power of appointment, and such political intervention will always be inherent in any area of regulation. Thus, when regulators owe their positions to the political-bureaucratic elite, the possibilities of independent judgment and action are somehow reduced or, in worst cases, totally absent. It is, therefore, apparent that: "national political and bureaucratic

cultures themselves can and do hinder the release of economic functions from government control, making independent regulation unworkable." (Source: Minogue, 2006).

(#20→#65) This concern pertaining to political appointments in the ERC is due to the fact that two of the previously appointed Chairpersons of the ERC were former Congressmen who belong to the same political party that the current President, i.e. Pres. Arroyo is affiliated with (Minogue, 2006). It must be pointed out, however, that the President cannot be faulted for such action as she is merely exercising her privilege to appoint the Chairman of the ERC, as provided for in the EPIRA.

(#62) De Vera (1997) argues that "Regulatory practice in the Philippines has shown that whenever controversial issues arise, the ERC adopts a hands-off policy and leaves the final decision to the President. This has made the President a powerful interventionist in resolving conflicts and has made the President and not the ERC as the final regulator." (De Vera, 1997). This upholds Cariño's (2006) claim that: "The Philippine style of regulatory governance is complex, with regulators adequately endowed with power and independence deferring or being forced to deter to higher or parallel authority." Thus, also affirms the notion that regulation is a political exercise (Cariño, 2005). This claim of the ERC taking "hands-off" policy on controversial issues, however, is highly improbable, aside from being unfounded as the author did not lay her basis for such claim. The ERC is the sole regulator and is mandated under the EPIRA to address concerns relating to the electric power industry. Thus, the ERC cannot simply avoid and pass the burden of resolving controversial issues to the President or to any other person or institution, as long as the issue/s falls within its jurisdiction. Moreover, decisions on matters concerning the EPI, whether controversial or not, have to be duly supported with facts, figures, and appropriate underlying principles. Hence, it is only the ERC who is in a proper position to technically address concerns in the EPI.

(#62) Political Ties with the President: The report also claimed that the political tie between the President and the Chairman politicizes regulation, and pointed out that there is a perception among academics in economics and the industry players that tariff setting is influenced by the populist political stance of the Presidency, resulting to low tariffs. Again, the notion of Cariño, (2005) about regulation being a political process holds true with this claim in the subject report. Nonetheless, this can also be linked to the concept of Regulatory Capture, particularly coming

from the government or state. The state has its own interests and demands that can make it influence the regulatory process (Basilio, 2005).

(#20→#21,#37, #53) The civil society organizations, as reflected in the said report, perceives that the ERC is prey to regulatory capture by influential industry players thereby resulting to poorly regulated pricing, particularly in the determination of rate base and automatic recoveries. This upholds Cariño's (2005) concept of Regulatory Capture which could either come from the private sector, i.e. regulated entities, or from the state itself. An illustration of the former case would be, the captor and the capturer couching their mutual demands in neutral language and provide rationale that may seem acceptable on the surface, e.g. one legislator's recourse to philosophy in defending a valued monopoly. A similar situation occurs when, for instance, advice from international consultants that serve the interests of their agencies are accepted without question by staff whose knowledge of new developments come mostly from the same source. On the other hand, the latter case occurs when the government tries to protect itself by appointing allies as the highest officials in the regulatory agency. Cariño argued that the state is not necessarily a neutral party, but also has interests and demands which taints the regulatory process. One manifestation of this claim, particularly in the Philippines' ERC is the President given the power to appoint the heads of the said agency.

(#32→#33) Roxas(2005) describes the economic changes such as Fixed exchange rate collapsed depression of Peso, high fuel price and their influences on the fiscal status of the NPC. Moreover, it has put the government into large debt during the 1997 Asian financial crisis. The situation worsened when countries faced currency devaluation but payment was still dollar-pegged. Although the Philippines were not severely affected, the 1997 Asian economic crisis had a contagion effect. Economic growth slowed, unemployment rose, and controls over credit and foreign exchange markets were tightened. The economic slowdown led to decrease in the demand for electricity at a time when many IPPs were beginning to operate their newly commissioned power plants. IPPs were shielded from the effects of the Asian economic crisis because of take-or-pay clauses in their contracts with NPC, together with government guarantees. The remains of the vigorous IPP contracts were financial burden of NPC.

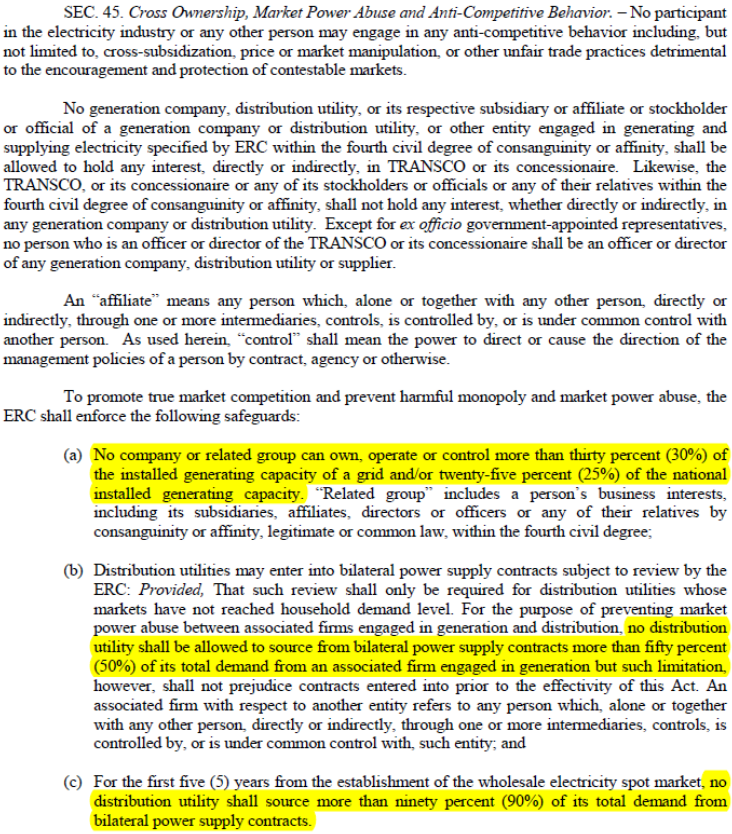
(#48→#49→#50→#33) During the late 1980's to early 1990's, the government of the Philippines legalized IPP to allow private participation in the electricity sector. During the late 1980's and early 1990's, the country's rapid economic growth led to high electricity demand. Blackouts of up to 10 hours were common and their economic cost was substantial (Sharma et. al., 2004). In 1989, the first IPP contract was signed. By the end of 1993, more than 25 IPPs were producing electricity in the Philippines and the power shortage problem seemed to be resolved (Abrenica, 2004). However, inequitable contracts such as take-or-pay clause which forces the government to buy all the unutilized energy brought about large financial burden to the government (Abrenica, 2004). In 2001, about 41 percent of electricity is produced by IPPs and the rest by NPC (Woodhouse, 2005). The take-or-pay clause, which forces the government to buy all the unutilized energy, caused the state-owned enterprise to shut down its plants and buy electricity at higher prices from some IPPs even when the electricity demand was low.

(#16→#19) A thing of note is the time required to pass an enabling law. The earliest version of the reform act was filed for congressional debate in second half of 1994 but the EPIRA was passed in June 2001. This took more than seven years of congressional hearing and consultations. Major reason for the delay in the EPIRA's enactment is the delicate balancing act between protecting the vested interests of the private sector participants and the reform outcomes desired by government. (Roxas, 2010)

(#19→#20→#22) In the Philippines, corruption is rife in the country (Sharma, Madamba, and Chan 2004). The Corruption Perceptions Index for Philippines for the year 2001 was 2.9 (0 represents the worst value and 10 represents the best) (Transparency International, 2001). The legal system of the country, despite its liberal leanings, is viewed by the outsiders with skepticism. Sharma, Madamba, and Chan (2004) revealed that 71 percent of the 21 multinationals surveyed viewed Philippine courts as 'capricious'

(#34→#24) SEPO, the Policy Brief 2008 reports that the EPIRA strictly restricted market share and cross-ownership in the power industry to prevent market power abuse so that EPIRA limited generation companies to a 30% share of the market in a single grid and a 25% share of the national grid as shown in Figure 15. Regarding to cross-ownership, while the EPIRA disallows generators of Distribution utilities from participating in the transmission sector, cross-ownership

between generator and Distribution utilities is allowed as also shown in Figure 15. 'Distribution utilities were not allowed to source from bilateral power supply contracts more than 50% of its total demand from an associated firm engaged in generation but such limitation.'



SEC. 45. *Cross Ownership, Market Power Abuse and Anti-Competitive Behavior.* – No participant in the electricity industry or any other person may engage in any anti-competitive behavior including, but not limited to, cross-subsidization, price or market manipulation, or other unfair trade practices detrimental to the encouragement and protection of contestable markets.

No generation company, distribution utility, or its respective subsidiary or affiliate or stockholder or official of a generation company or distribution utility, or other entity engaged in generating and supplying electricity specified by ERC within the fourth civil degree of consanguinity or affinity, shall be allowed to hold any interest, directly or indirectly, in TRANSCO or its concessionaire. Likewise, the TRANSCO, or its concessionaire or any of its stockholders or officials or any of their relatives within the fourth civil degree of consanguinity or affinity, shall not hold any interest, whether directly or indirectly, in any generation company or distribution utility. Except for *ex officio* government-appointed representatives, no person who is an officer or director of the TRANSCO or its concessionaire shall be an officer or director of any generation company, distribution utility or supplier.

An "affiliate" means any person which, alone or together with any other person, directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with another person. As used herein, "control" shall mean the power to direct or cause the direction of the management policies of a person by contract, agency or otherwise.

To promote true market competition and prevent harmful monopoly and market power abuse, the ERC shall enforce the following safeguards:

(a) No company or related group can own, operate or control more than thirty percent (30%) of the installed generating capacity of a grid and/or twenty-five percent (25%) of the national installed generating capacity. "Related group" includes a person's business interests, including its subsidiaries, affiliates, directors or officers or any of their relatives by consanguinity or affinity, legitimate or common law, within the fourth civil degree;

(b) Distribution utilities may enter into bilateral power supply contracts subject to review by the ERC: *Provided,* That such review shall only be required for distribution utilities whose markets have not reached household demand level. For the purpose of preventing market power abuse between associated firms engaged in generation and distribution, no distribution utility shall be allowed to source from bilateral power supply contracts more than fifty percent (50%) of its total demand from an associated firm engaged in generation but such limitation, however, shall not prejudice contracts entered into prior to the effectivity of this Act. An associated firm with respect to another entity refers to any person which, alone or together with any other person, directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, such entity; and

(c) For the first five (5) years from the establishment of the wholesale electricity spot market, no distribution utility shall source more than ninety percent (90%) of its total demand from bilateral power supply contracts.

Figure 15 EPIRA clauses on market power abuse and anti-competitive behavior

Source: Republic Act No. 9136 (http://www.neda.gov.ph/wp-content/uploads/2013/12/R.A.-9136.pdf)

(#22→#23→#29) The political culture in the Philippines is a critical factor that cannot be ignored. There was so much lobbying against strict cross-ownership that is was weakened. Only the transmission company was prohibited from owning generation and distribution assets. Section45 of EPIRA, under a pretentious premise of promoting true market competition and preventing harmful monopoly and market domination, allowed distribution utilities(the main buyers of power) to enter into bilateral supply contracts with affiliated generators of up 50% of their power requirements. Originally the number of percentage was set as 30% but it became 50% by active lobbying of distribution utility companies. The quote is below:

A senior senator was against any form of cross-ownership but that would require Meralco and Davao Light to divest themselves of generation assets, a sure way to incite formidable opposition to the law. He compromised on grandfathering the existing generating companies and allowed up to 30% of generation to be bought from a sister company. Meralco itself had been lobbying only 35%. It was a mystery how it became 50% in the last two days of finalizing the law at the bicameral conference committee. (Source: David Celestra Tan, (17. Feb. 2014) Article, retrieved from http://opinion.inquirer.net/71667/righting-whats-wrong-with-the-epira)

The influence of political factors on deciding budget was also strong. Requests from politicians are, almost, compulsory, as they can influence the budget to be granted to the ERC. Thus, any request has to be considered and granted in order to maintain good relations with them.

(#36→#29) EPIRA allowed cross-ownership between generation and distribution companies. Thus, most of the winning buyers of NPC generation assets are distribution utilities such as Aboitiz, First Holdings, and Clalca. For example, Manila Electric Company (Meralco), the giant distribution company with franchise covering most of the main island of Luzon, has figured in controversy involving high electric rates. Meralco would hide from the public the fact that it had been generating power from its own sister generation companies. The WESM is also an indication that the major players in the supply sector are also the main players in the generation and distribution sectors such as Aboitiz, Lopez and their foreign counterparts as shown in Table 23. Limited competition in WESM was caused by market structure with dominant conglomerate company owned by Lopez family and Aboitiz. Lopez family had generation assets mainly in Visayas and occupied almost 53% of market share.

Table 23 Market share of dominant generation firm by region

Region / Gencos	Luzon	Visayas	Mindanao	National
Lopez	19.8%	**53%**	5.6%	15%
Aboitiz	12.3%	6.53%	**35%**	14%

Source: Roxas(2005b)

In distribution also, Meralco the largest distribution utility owned by Lopez family had dominant share in Luzon area as monopoly integrated. This is shown in Table 24 below.

Table 24 Market share of dominant distribution firm by region

Luzon	Visayas	Mindanao	National
Lopez – Meralco:largest distribution utility			
	VECO	Davao Light&Power Co	

Source Roxas(2005b)

(#27→#28→#30) Therefore, most of the winning buyers of NPC Gencos are distribution utilities such as Aboitiz, First holdings, and Calaca. For example, Manila Electric Company (Meralco), the giant distribution company with franchise covering most of the main island of Luzon, has figured in controversy involving high electric rates. Meralco would hide from the public the fact that it had been generating power from its own sister generation companies (Quezon Power and First Gen) and NPC-bought Gencos to a level that may have breached the 50 percent cap and had been reneging on its supply contract with NPC. The WESM is also an indication that the major players in the supply sector are also the main players in the generation and distribution sectors such as Aboitiz, Lopez and their foreign counterparts. EPIRA might have eliminated subsidies and unbundled generation, transmission and supply, with over 80% of assets privatized, but the liberalization programmer has failed in its affordability objective. Therefore the market status of dominant players could be maintained.

(#39, #60, #57 → #40) Meanwhile, exclusive focus on privatization of generation caused relatively slow down of privatization of transmission assets, which led to transmission loss problem. Ironically this transmission problem affected the private participation making the private investors hesitate investment (Cham 2007).

(#40→#41→#43, #40→#44) Unfortunately, in the Philippines, very few companies had shown the willingness to invest into the power industry. Foreign investors also hesitated to invest in the development stages when it was needed the most. Under the proposed industry reform, new generation must be constructed by the private sector. However, there was little appealing for such investment because of tariff regulation, poor credit and financial difficulties of distribution

company. Especially investment in generating capacity was urgently needed in the Visayas and Mindanao region, which were experiencing outages due to generating capacity problems. This brought out severe economic loss for the national and regional developments.

4.4 Causality diagram in the Philippines case

Based on the links of the factors identified in the previous section, the final causality diagram is presented in Figure 16 below. From the proposed causality diagram, each element that connected to the related factors can be grouped as same category. Here, each category is indicated as a domain same with Chile case. Setting aside some external factors and exceptional outliers, the result of the causality analysis could be classified into four domains such as: a) regulatory capacity, b) political interference, c) investment expansion and d) competition in the power market.

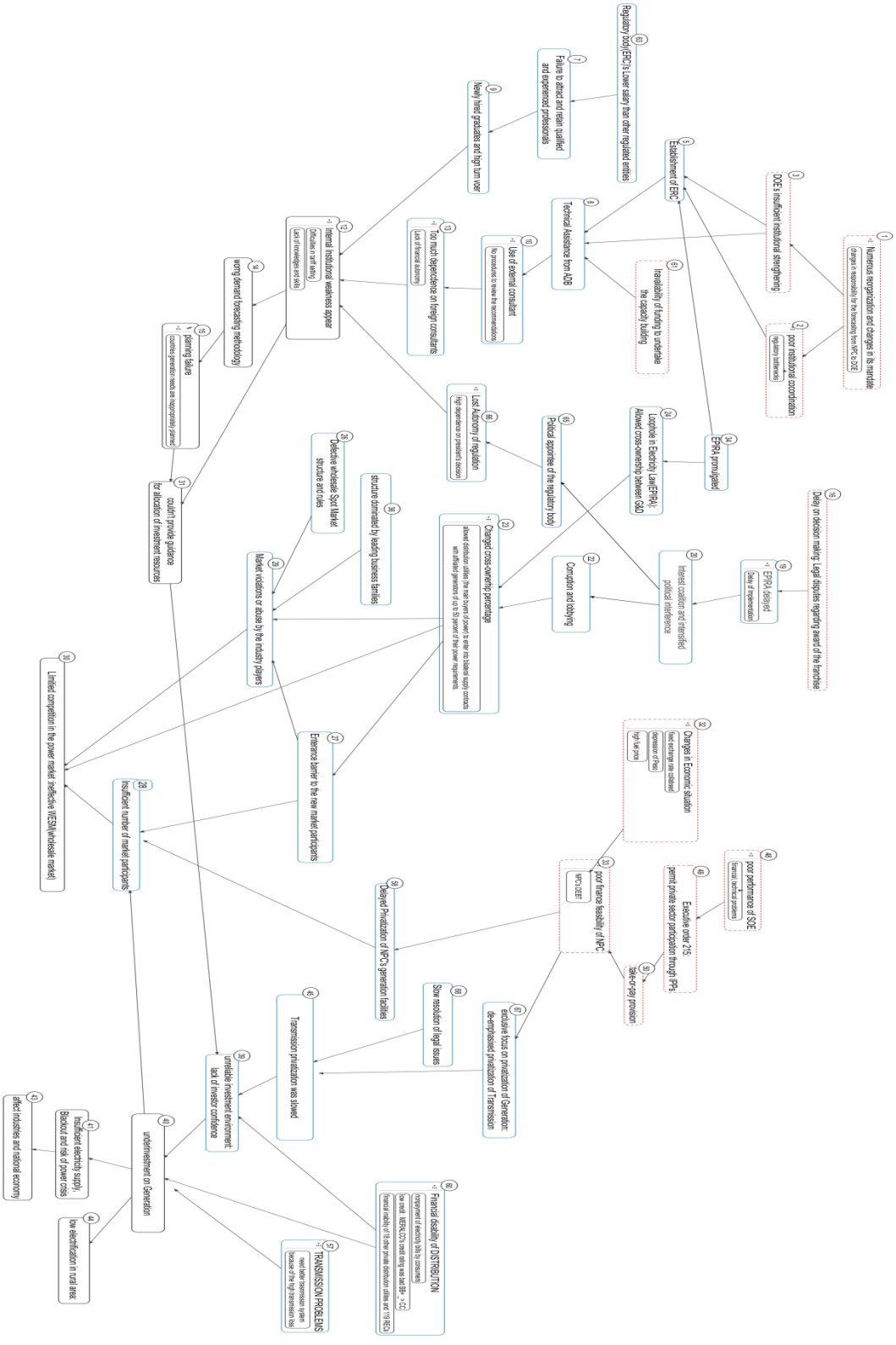


Figure 16 Causality diagram on Chile case

4.5 Analysis results of the Philippines case

Causality was investigated separately by following domains that categorized in the previous section. Each part of the causality diagram is shown in Figure 17 to Figure 20. In this section, whether and how the initial conditions have been overcome by the initial implementation with regards to each domain is the main concern in this analysis. Moreover, it was investigated that which factors or action in the initial implementation was critically influential based on consistent criteria with Chile case. When the factor was mentioned as a critical or important or key element by the interviewee in the in-depth interview and also argued in the related literature, it was identified as a factor which has high weight in the causality diagram. In case a factor was argued by an interviewee or referred from literatures, it was seen as a moderate factor. Even when a factor has indirect influence on the other factor, if it has logical validity, I considered that as one of the low weighted factor that cannot be ignored in the analysis of the causality diagram.

4.5.1 Identification of the initial condition

The initial condition of the Philippines power sector reform could be characterized as frequent changes in energy governance, weak regulatory body, insufficient funds for capacity building, IPP contracts and its burden to NPC, and vertically integrated monopoly by conglomerate. Absence of well-organized political party and family oriented political activities is also a distinct feature of the initial condition that influences on the power sector reform.

4.5.2 Analysis on the Initial Implementation by domains

(1) Capacity of regulatory body domain

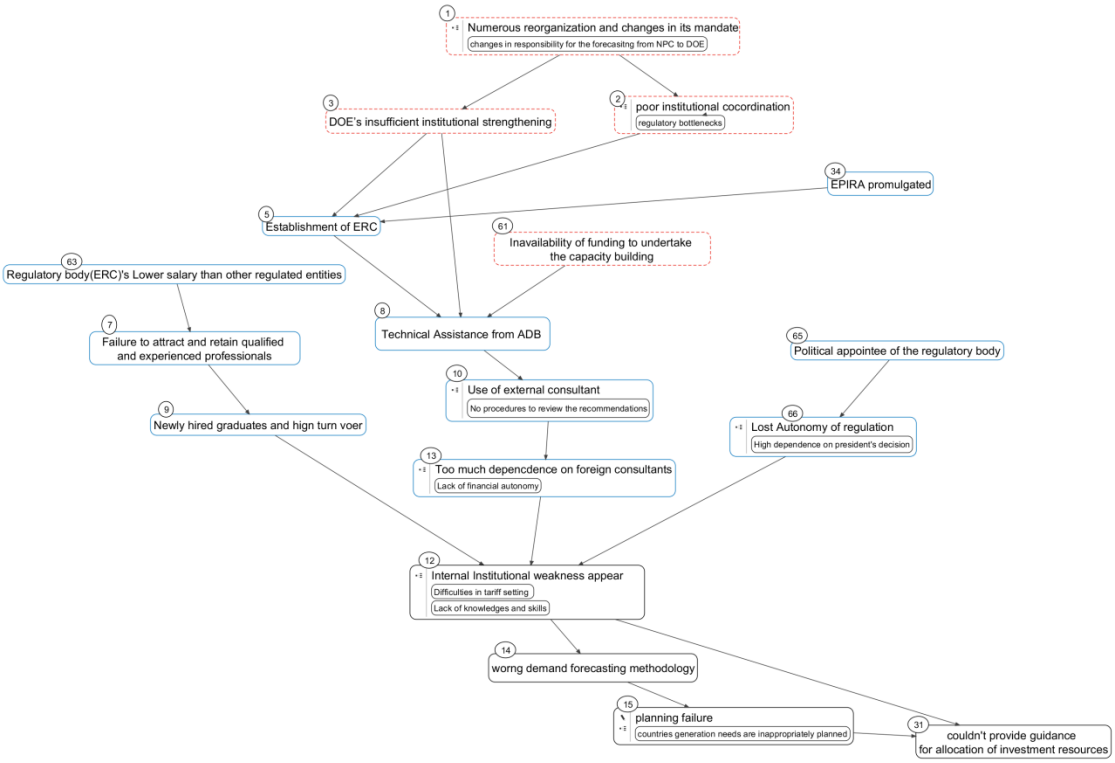


Figure 17 Causality analysis on the Philippines case: capacity of regulatory body domain

According to Besant-Jones (2006), when the developing countries are adopting power sector reform, techno-economic design and implementation issues are main concern that mostly and firstly considered. The Philippine also did concern these issues and created ERC as an industry's independent regulator to deal with existing problems. Through a test year and technical assistance, ERC changed the electricity rate-setting methodology from traditional return-base to performance-based one. However, the technical assistance from ADB did not effectively raise the capacity of the regulatory body. Some weakness in rate setting appeared and the employers were lack of knowledges and experiences. After the technical assistance session was over, high dependence on the external donor consultants was exposed, showing several shortcomings in policy making. This was also caused by failure in attracting qualified and experienced professionals when the ERC was established. The salary of the ERC was lower than other regulated entities and this brought about movement of experienced professional. New employers

who have undergraduate level of education were hired and there was high turnover. Moreover the regulatory body's independence and autonomy was threatened by political appointee of the chair and high dependency on government supports.

(2) Political interference domain

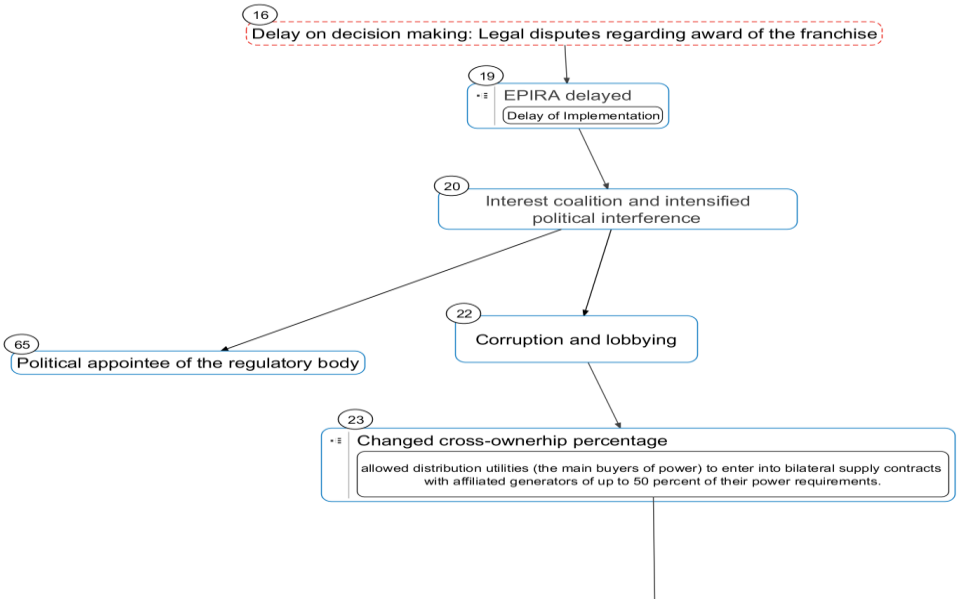


Figure 18 Causality analysis on the Philippines case: Political interference domain

The result of causality analysis proves the notion that the power sector reform is a political process. The political actors sometimes support or oppose the reform. Reform policies are implemented within institutional context- utilities, markets, court, and regulatory body. All of these policy processes are profoundly influenced by political concerns. Politicians who are motivated by popularity from voters and strongly related with existing conglomerates made an interest group, which is not quite relevant with economic theory. Thus the regulatory body that should have kept the autonomy with transparent and consistent regulation was interfered by political concerns such as presidential appointees of chairpersons, decision making matched with political objectives. After the power market was opened, involved with privatization of the unbundled entities, the decision making process becomes extremely difficult by coalition of interest groups. The scheduling of privatization is very sensitive problems to the employers of the power company and sometimes it brings about severe backlashes. Therefore, incumbent politicians who face on reelection against politicians who oppose the market reform and

privatization have a tendency to put the privatization schedules behind. The delay of the privatization caused insufficient number of private participants in the market and finally limited competition was observed, which was not matched with original objective of the reform.

(3) Investment from private investors domain

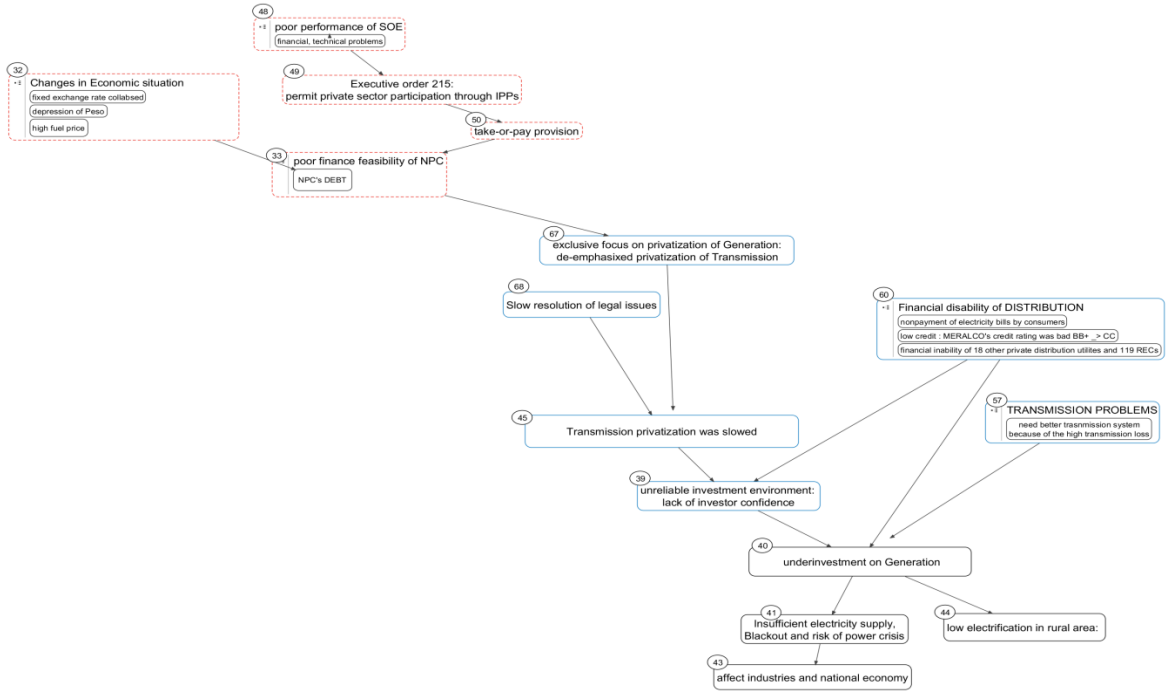


Figure 19 Causality analysis on the Philippines case: investment expansion domain

In initial stage of the power sector reform, the Philippines failed to create a reliable environment for private investors. This caused underinvestment on generation and finally slowed down the privatization process. Meanwhile, exclusive focus on privatization of generation caused relatively slow down of privatization of transmission assets, which led to transmission loss problem. Ironically this transmission problem affected the private participation making the private investors hesitate investment. Financial disability of distribution utilities also influenced on the In addition to that, weak ability of strategic planning on future energy use brought about paucity of information to investors who want to invest in generation assets, because there were no guideline for them how to allocate their investment resources. Those comprehensive factors influenced on the invest environment in the initial stage of the power sector reform and resulted in underinvestment. External shock such as Asian Financial Crisis and Enron in 1997 would be another critical factor for those unexpected results in the Philippines.

(4) Competition in power market domain

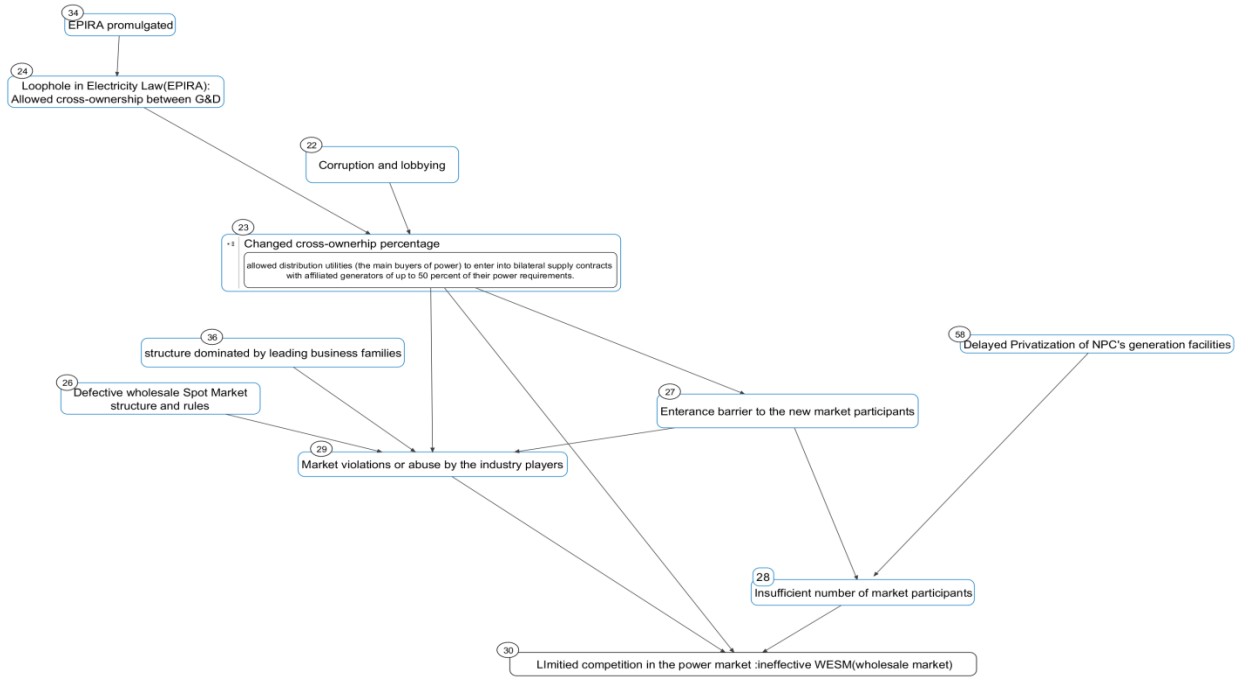


Figure 20 Causality analysis on the Philippines case: competition in the power market

With regard to the establishment of competitive power market after the sector reform, limited competition was caused by the market structure with dominant conglomerate company, which had already been formulated before the power sector restructuring. As an initial implementation, the Philippines mandated the law that disallows cross-ownership between transmission and generation to deal with those ownership problems. However, there was a loophole in the law clauses that allow cross-ownership between generation and distribution. Besides, the permitted ratio of distribution company's purchasing electricity from bilateral contracts with affiliated generation company over the total requirements was raised up to 50% by lobbying and political reasons. By the critical impact of the initial condition, the conglomerates could maintain their market status and even manipulate the market price. These hindered fair competition and caused an entry barrier to newcomers in the power market.

4.6 The Philippines Summary

In the Philippines case, the initial condition of the power sector reform could be characterized as frequent changes in energy governance, weak regulatory body, insufficient funds for capacity building, IPP contracts and its burden to state-owned power company, and vertically integrated monopoly by conglomerate. Absence of well-organized political party and family oriented

political activities is also a unique feature of the initial condition that influences on the power sector reform. Other external factors such as Asian financial crisis, supports from ADB and USAID were also reflected on the causality analysis. Philippines had concerns on techno-economic design of regulation, when the independent regulatory body was created, because the regulatory responsibility had been unclear before the power sector reform. Due to the inability of funding on capacity building, ADB provided technical assistance but this caused high dependence on external consultants without building internal competency. Regulatory body's organizational features for example, salary policy also failed to attract qualified personnel because of relatively lower salary than other sector's utility regulatory body. Moreover the regulatory body's independence and autonomy was threatened by political appointee of the chair and high dependency on government supports. These strong political influence is also one of the characteristics of the Philippines that hamper the quick decision making process. Especially in the initial stage, there was severe delay in decision making on whether to initiate the reform or not, prior to the reform. Before the official enforcement of the reform, the political interest groups could had information about the future industry and easily involve in rent seeking behavior. Delay intensified the coalition of the interests group, thus delays in decision making iterated. In terms of the investment expansion on generation, the Philippines failed to increase the private investment by privatizing state-owned generation assets. Due to the risky contract with the IPPs made NPC too much focus on generation's privatization, rather than transmission assets. Moreover, with high transmission loss problems, private investors hesitated to invest on generation. External shocks such as Asian Financial Crisis and Enron in 1997 also influenced on the financial feasibility of Distribution Company who is the main purchaser of the generation and deteriorated the investment climate. Consequently, as the number of the private participants in wholesale power market, competition in the market was also not fully accomplished. On top of that, the Philippines mandated the law that allowed cross-ownership between distribution and generation in a certain percent but the permitted ratio of Distribution Company's purchasing electricity from bilateral contracts with affiliated generation company over the total requirements was raised up to 50% by lobbying and political reasons.

5 Comparative Study

5.1 Overview

The research objective to be achieved in this chapter is to clarify the initial implementation and design that influence on the initial results by comparing two cases and finally to derive a policy implication for better design and implementation of the power sector reform in developing countries. For the comparative study in this chapter, the causality analysis results from the previous chapter will be utilized to determine the comparable dimension.

5.2 Comparison on the initial condition

In this section, the situation of the power sector including power resources and endowments, electricity use and demand, existing problems and crisis as a trigger for the reform, and the state-owned power company's financial and technical situations will be compared. Moreover, the country's political situation, cultural and organizational background, institutional factors such as legislative, executive and judicial institutions were compared as well. Table 25 summarizes the comparison on the initial condition and the external factors.

With regarding to regulatory body in the reform process, two case countries commonly had institutional weakness before the reform despite the reason of weakness and background was not exactly similar each other. Chile did not have clear and independent regulatory body because some part of regulation on power sector had been conducted by state-owned power company. The Philippines as well had ambiguous regulation system, which was not well organized. As already mentioned by Clemente(2009), power sector reform in developing countries would be defined as a capacity building process because reform itself needs human resources to adopt and implement new system. Thus, of course, the capacity building necessitates financial supports to undertake reform and authority at least to make smart brains to be maintained in regulatory body without other interferences.

Both case countries mandated laws that included clauses mentioning about establishment of power market and its operation. They intended to introduce competition to power market to achieve price reduction and general improvements in electricity service, whereas vertically integrated monopoly structure by conglomerate was a prevailing feature of power sector in both cases. However, only limited competition worked in power markets. Investment through private

participation in the power market is meaningful in two aspects. One is for market operation with competition and efficiency. In order to make efficient and competitive wholesale power market, it should firstly be needed to increase market participants to an enough level. The other one is for smooth electricity supply with respond to high electricity demand in developing economy for economic growth. Underinvestment on generation capacity in a rapid growing situation cause severe threat for the economic growth.

Table 25 Summary of the comparison on the initial condition

Dimension		Internal Condition		External Condition	
		Chile	The Philippines	Chile	Phil
Power sector situation	Main resources	Water	Geothermal		
	Electricity use	Growing demand with economic growth	High demand Temporarily decreased due to the Asian financial crisis		
	Crisis as a trigger	Fiscal constraints of state-owned power company.	IPP contracts and its burden to national power company.		1997 Asian crisis
	State-owned power company's situation	Conglomerates have been a traditional business structure	Conglomerates owned by family		
Country specific	Legislative and executive institutions	Competency in legislation and its enforcement	The legal system is viewed by the outsiders with skepticism.		
	Judicial institution				
	Custom or general norm	Protectionism on private investors	Family oriented political activities		
	Character of the contending social interests	Weak labor union Dictatorship under Pinochet		Ideological supports from US	
	Administrative capabilities		Unclear responsibility of regulatory body, Insufficient funds for capacity building.		

5.3 Comparison on the initial implementation

5.3.1 Capacity of regulatory body domain

The most contradicting execution in the initial stage of power sector reform in the two cases is the way of institutional strengthening process. In Chile, economists studied in Chicago could organize their academic circle by funding from the business group and voluntarily develop their

neo-liberalism economic ideology, which became the grounded basis of regulation in CNE (Fourcade-Gourinchas and Babb 2002). Moreover, as Skoknic(2015), Fourcade-Gourinchas and Babb(2002) and Rudnick, O'Ryan, and Bravo (2001) mentioned, economists and engineers could have political supports by being appointed as advisers in government. On the other hand, in the Philippines, the capacity building for the regulatory body was pretty much supported from financial loan and technical assistance from ADB and World Bank. That technical assistance usually included foreign consultants' involvement in policy making process. Thus, in some extent the autonomy of the country's decision-making process was limited even after the transition period was finished. The staff training and rate-setting methodologies injected by external consultants was not able to last long, showing many challenges and difficulties in real operation of regulation after all. An impact of political factors cannot be overlooked too. Political interference on the regulatory body in the Philippines impeded the independence and transparency of the regulation. Chairperson's and commissioners' security of tenure was not kept because they did not finish the fixed-term appointment. Instead of it, political appointees with no background in regulation of public were involved in regulation. Table 26 summarizes the analysis above.

Table 26 Comparison of causality analysis regarding regulatory body

		Initial Condition		Implementation	Other domain's influence		Result
C	X	Absence of clear regulation governance (Box #1,Source: Soto(1999), Silva (1991))	☐	Economists and engineers appointed by government with political supports.(Box #13,#14,#15 source: interview with Skoknic(2015), Fourcade-Gourinchas and Babb (2002), Rudnick, O'Ryan, and Bravo (2001))		O	Relevant capacity of regulatory body and advanced regulation with simple and logical rules.(Box #6, source: interview Philippi(2015)
			☐	Financial supports from domestic business groups. (Box#11, #12 source: Fourcade-Gourinchas and Babb (2002))			
P	X	Unclear responsibility of regulatory body. Insufficient funds for capacity building (Box	☐	Financial loan and technical support from ADB and World Bank.(Box #8, source: Pascual (2006), Geoffrey Brown, de	Less independence due to	X	Insufficient ground rules for effective implementation of performance-based

#1, #61 source: Clemente (2009))	☐	Dios, and Valderrama (2016)) High dependence on foreign consultants' involvement in policy making process. (Box #10, source: Diokno-Pascual, (2006), Minogue and Cariño (2006), Cariño(2005))	political interference(Box #7, #20, source: Johannsen (2003) Minogue (2006))	regulation (Box#12, source: Cham (2007), Diokno-Pascual(2006))

5.3.2 Political interference domain

Political factors influence overall reform process, sometimes supporting the process and sometimes intervening the smooth progress. Therefore, the pace of progress is critically affected by this political issue. Chile's unbundling process was clear and conducted much faster whereas the Philippines experienced severe delay in serial process of power sector reform. The reason of this distinct difference is largely affected by influencing factors in initial stage, which is the extent of political interference and decision-making process. As explained in the previous chapter, the political background originated from absence of well-organized political party and family-based political activities in the Philippines is the most contradicted aspects as initial condition. This difference in initial condition caused different decision-making process and contradicting environment of political interference. Therefore, it can be concluded that the initial condition as political structure and tradition of political activities strongly influence on the result of initial stage. Table 27 summarizes the analysis above.

Table 27 Comparison of causality analysis regarding political interference

	Initial Condition		Initial Implementation	Result
C	O	3 party separation Weak labor union (Box #19, 20,	Less opposition (Box #24, source: Anonymity interview)	Quick decision-making(Jadresic interview 2015)
	X	source: Holburn and Spiller(2002)) Dictatorship under Pinochet	Less political interference (Box #17 source: Reinhardt 2012, Solimano 2012, Anonymity interview) Political supports (Box #14. Source: Fourcade-Gourinchas and Babb 2002, Interview with Esteban Skoknic)	
P	X	Family oriented political activities (Box #36, source: Cham (2007))	Delayed decision-making process (Box #16, #19 source: (Roxas, 2010))	Coalition of interest groups (Box #20, source: Minogue (2006))

5.3.3 Investment expansion domain

Investment through private participation in the power market is meaningful in two aspects. One is for market operation with competition and efficiency. In order to make efficient and competitive wholesale power market, it should firstly be needed to increase market participants to an enough level. The other one is for smooth electricity supply with respond to high electricity demand in developing economy for economic growth.

However, the outcomes with regard to the investment expansion showed distinct results in each country. In Chile's initial stage of power sector reform, they could expand new investment on generation. The expansion of generation capacity was achieved under implementation of general social reforms in security, education system. Especially abundant domestic financial market developed by reform in pension fund system critically influenced on establishing financial basis. In the Philippines, under EPRIA, the responsibility for new investments in generation was transferred from state-owned power company to the private sector. However the financial burden and poor management of the distribution companies and technical loss of transmission line prevented new investment in power sector. In other world, the market could not provide an reliable environment to investors. Pricing signals might not be timely or sufficient incentive for new investment in generation. Therefore the successful result in expansion of generation capacity should start from well-established sector restructuring first, handling poor initial conditions and preparing distribution and transmission. Table 28 summarizes the analysis above.

Table 28 Comparison of causality analysis regarding investment

		Initial Condition		Implementation	Other domain's influence		Result
C	X	Fiscal constraints of state-owned power company.	☐	General social reforms and domestic financial basis (Box #28, #30 source: Schamis (2002),		O	Expansion of new investment on generation (Box #28,#29,#33,#38 source: interview with Philippi(2015), UNCTD (2009), Read and Rudnick(2000))
			☐	Reliable environment by judicial backup (Box #18, source: Pollitt (2004))			
			☐	Marginal pricing signal to investors			

				(Box #35, #36 Schweppe et al, (1988))			
p	X	IPP contracts and its burden to national power company. (Box #33, #49 source: Roxas(2005a), Sharma et. al.(2004))	☐	Unreliable investment environment and marginal pricing signal(Box #60, source: Cham(2007)) ☐ Slowdown of privatization of transmission assets (Box #39, source: Cham(2007)) ☐ Renegotiation of contracts, risk reduction with long-term contract(Box #32, source: check)	Global economic changes such as Fixed exchange rate, depression of Peso, high fuel price(Box #32, source: Roxas(2005a))	X	Insufficient investment on generation. (Box #40, source: Cham(2007)) Slowdown of privatization. (Box #45, source: Cham(2007))

5.3.4 Competition in the power market domain

Conglomerates in both cases have been a traditional business structure and especially in the Philippines the conglomerates owned by family. Vertically integrated monopoly structure by the conglomerate was a prevailing feature of the power sector in both cases. By mandating the power sector reform both countries intended to introduce competition into power market to achieve price reduction and general improvements through the competition in electricity service.

Therefore, both case countries mandated laws that included clauses mentioning about establishment of power market and its operation with competition. However, the legislated law provisions had shortcomings and difficulties in controlling abuse of market power because of some flaws in law allowed the existing conglomerates to keep their market power. In Chile, Water Code and the Electricity Law bestowed water right to Endesa. Allowed cross-ownership based on EPIRA in the Philippines would be the example of flaw. Thus, existing conglomerate and traditional family business groups who had maintained their market status and property right in the power market cleverly used the legal shortcomings. This common inappropriate result in terms of competition among power players shows how difficult it is to break the existing power of conglomerates. The inappropriate initial condition with market structure and its ownership of conglomerate which was assigned and characterized before the reform finally caused limitation

of competition in the market. However, only limited competition worked in power markets. Table 29 summarizes the analysis above.

Table 29 Comparison of causality analysis regarding power market

	Initial Condition		Implementation	Other domain's influence	Result	
C	X	Conglomerates have been a traditional business structure(Box #39, source:Fernando Lefort (2004), Lefort and Walker(1999))	Flaws in law: Water Code, Electricity Law (Box#41, #42 source (Larrain and Schaeffer (2010))		X	Failure in establishing competitive power market
P	X	Conglomerates owned by family (Box	Flaws in EPIRA: Allowed cross-ownership between distribution and generation. (Box #34, #24, source: SEPO(2008))	Political factors: Corruption and lobbying(Box #22, #23, source: SEPO(2008))	X	Failure in establishing competitive power market (Box #27, #29, source: article David Tan 2014)

5.4 Summary of the comparative study

5.4.1 Findings from comparative case study

From the comparative study conducted in this chapter using causality analysis in two case countries, similarities and differences in each stage were investigated. Some similarities were found in Chile and the Philippines and some differences also notified by the comparison. These kinds of generalization between Chile and the Philippines help us conclude some policy implications for better design and implementation of the power sector reform, though it has country specific situations.

5.4.2 Implication

First, appropriate implementation of the reform policy could lead to better results even though the initial condition is in a bad situation. From the case study of Chile, Chile's success in power sector reform is guided by general principles, including promoting investment, ensuring fair competition, protecting the environment, and satisfying basic social needs, and by capable

regulation. Especially the initial implementation shown in the example of regulatory body's capacity and increased investments contribute to overcome the bad initial condition and lead to a successful result of the reform.

Second, the way and the source of capacity building critically matters for the regulatory body. Too much dependence on technical assistance by multilateral institutions in developing countries might cause insufficient level of capacity building and have a chance to impede the autonomy of the regulation. Developing countries, therefore, should have assessment procedure to evaluate their capacity building outcomes in their way. Furthermore, they have to prepare the efficient way to maintain the effect of capacity building program and try to develop their own capacity by themselves. These policy implications from this study would be applicable. First, to increase regulatory body's internal competency and consider the various local contexts, enhance the partnership with local universities and research organizations, NGOs, and local experts. Second, recruitment of highly qualified staff at the regulatory agencies is a main concern. Incentives should be considered, including improved salary schemes for regulators and use of external consultants for highly specialized tasks. Third, rather than attempting to extract useful lessons from the developed-country settings, referring other developing countries in a similar condition would be more adoptable.

Third, setting up a reliable environment for investors to enter into a newly opened wholesale power market is fundamental for the expansion of investment in initial stage of the reform. Especially the financial soundness of sector should firstly be accompanied with. Radical reform without preparation periods should be avoided and developing countries need to build a social and financial basis before the power sector reform.

In Chile and the Philippines, lack competition in the power market was common phenomenon even after the power sector reform. Therefore, developing countries who want to introduce power sector reform have to really carefully check their market system and prepare a system to restrict and mitigate the power of dominant players. To attract more private investment in power market, these policy implications from this study below would be applicable:

1. More focus on distribution reform and privatization of distribution first, while improving the Transmission &Distribution loss.

2. Create a system to restrict and mitigate the power of dominant players in the power market.

Fourth, political factors are very critical in all processes of the reform. All selections in the process are finally led to political problems. If something is decided, some groups oppose and some other groups support it. Special attention is needed to building and sustaining political coalition that favor reform.

6 Conclusion

6.1 Conclusion

Through case studies and their comparative analysis, this study showed the roles of policy design and implementation in the initial stage of power sector reform in developing counties. Main findings can be summarized as follows:

First, common unfavorable initial conditions that developing countries faced in their power sector reforms are identified. That is 1) limited capacity of the regulatory bodies, 2) lack of investments to infrastructure and business, 3) market power of the country's dominant conglomerate, and 4) political intervention.

Second, we could clarify that reform design and implementation that critically influence on some of the unfavorable initial conditions that developing countries often face in their power sector reforms. First of all, careful design and implementation can overcome unfavorable initial conditions for capacity building in regulatory body and provide incentives for investment in business and infrastructure, while shortcomings in policy design and implementation lead to inappropriate initial results. Most of all, it is difficult to avoid political interference and to ensure competition in market by policy design and implementation.

Third, we can conclude that in power sector reforms in developing countries, policy design and implementation need to be done considering the following aspects.

Since power sector reform can be done in step by step, goals in the initial stage are not necessarily full competition in power market in developing countries, where political interventions are difficult to avoid.

Aids in knowledge and money are necessary, but capacity building of the regulatory body should be carefully designed so that the given resources strengthen domestic capacity and the recipient country ensure their own pace of the power sector reform, not just following the textbook model

For establishing favorable investment environment, legal and judicial backups carefully designed considering the whole power sector's provision across the entire electricity landscapeare effective to overcome lack of investments. We emphasize these are especially important in power sector since connection among generation, transmission and distribution matters in the sector.

Even when it leaves rooms for benefiting conglomerate or political intervention, successful initial results can be achieved if the decision making is done in a speedy manner.

6.2 Contribution of this study

Deeper understanding with new approach

This research has contributed to deeper understanding on the initial stage of power sector reform, which is a new approach to more focus on the initial stage of the power sector reform.

This research has clarified the importance of the initial stage of the power sector reform. Careful design and implementation can overcome unfavorable initial conditions, while shortcomings lead to inappropriate initial results.

Applicability to the other developing country

Based on this research, several policy implications are presented. It would be practical tips on improving implementation and design of power sector reform program in developing countries. Initial stage of the developing countries power sector reform could be a mid-way process that shows both monopoly and competitive market structure in the sector at the same time. Every developing country which has possibility to start the reform in the future might have to undertake this this period. Focusing on the initial stage of Chile and the Philippines are meaningful approach because the target of developing countries power sector reform cannot be accomplishing fully competitive market in a short time.

6.3 Limitation and Future Work

Limitations

This study has targeted two case countries and it may be difficult to determine the difference because it might be originated from the characteristics of the country. This is the weakness of the case study that can be generalized, but it is expected that if more depth study is conducted further, it will be able to offer more and better policy implications.

In this research, the post-initial stage of the power sector reform was a kind of validation process that proves the importance of the initial stage. As more intensified and complicated factors appeared in the post-initial stage of the reform, the relationship among the result of the reform and its influences on the post-initial stage should be more complicated. This study is mainly based on the in-depth interview about initial stage; therefore, the connection between initial stage and the post-initial stage was relatively weak part. If further reviews and data collection on the post-initial stage followed, this could more contribute to verifying importance of the initial stage in power sector.

Further works

Based on the limitations of this research as well as observations made throughout the progression of this research, following suggestions for future research are made. Based on these findings and extra initial factors in power sector reform, a checklist for developing countries could be developed. Moreover, since the findings of this research were based on analysis of qualitative data, conducting a quantitative study to strengthen the findings of this research through more accurate validation measures would be an appropriate next research step.

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APPENDIX A.

Interview Survey in the Philippines

1. Purpose of Visiting

My research topic is about deregulation and privatization in power sector which has been started from Chile, UK, and Australia and until now has been a hot topic in Asian countries to follow the reforms. Among the Asian countries, the Philippines had restructured their power sector through the promulgation of the Electric Power Industry Reform Act (EPIRA) in 2001. The Philippines government targeted more efficient market and encouraged greater competition by the EPIRA, which was technically designed and financially supported by ADB, but this has not resulted in the desired outcomes.

In this situation, I would like to meet experts in ADB and interview them about overall history and current situation of the power reform in the Philippines. The main purpose of this visiting was to identify what kinds of supports were given to the Philippines and what they learned from the Philippines and to examine the validity of the existing hypothesis by exploratory research.

2. Interviewer

Minju Kim(Author), Professor Shunsaku Komatsuzaki

3. Visited Places and Interviewees

I visited ADB headquarter office in Manila to have interviews with ADB experts who have various working experiences in energy and power sector. Furthermore, I had visited the University of the Philippines and Asian Institute of Management. These below are visiting institutions and the interviewees.

① ADB: Jong-Inn Kim, Kee-Yung Nam, Sohail Hasnie

② the University of the Philippines, Dilliman: Helena S. Valderrama

③ Asian Institute of Management: Fernando Roxas

4. Dates of Visit

19. Jan. 2013. – 23. Jan. 2013.

5. Interview Summary

1) For the common questions

I asked all interviewees about overall history and current situation of the reform, the role of the ADB, and what the ADB learned from the experiences in the Philippines. Experts in ADB said that the assessment on the Philippines's deregulation in power sector should not be said to be failed. It is now in the process and still going on the real world though electricity price is still high and power supply is also not stable. In the process of the technical and financial assistant from ADB, they generally provided the same model with UK and Chile's case. I assumed that roadmap design provided by ADB had influenced the result of the reform, but interviewees mentioned ADB only gave funding and advices and government made their own decision independently. About the lessons from the Philippines's case, long-term phase plan was introduced in Vietnam on the contrary to the Philippines' one-way roadmap planning.

For the successful reform, it should satisfy three measurements on supply security, accessibility and affordability. Though there is no common rule for the reform process because it is very country specific and does not have conclusions to be answered, assessment on these three measurements is needed with regards to both ex-ante and ex-post.

2) Other Issues

- Internal Motivation VS. External Force

Internal motivation is critical element of the successful power sector reform. When we approach the power sector reform, whether an internal motivation exists or not is one of the most important key factors. External forces easily distort the reform. In the Philippines' power reform, the initial motivation was from the debts of National Power Company. We should focus on the interaction between the internal motivation and external forces.

- Current Situation in Power Sector Reform over Southeast Asian Countries.

About the Validity of power sector reform, it should be investigated by the country because reform is very 'country specific' process. If the reform satisfies the ultimate goal to make competitive wholesale market, the reform should be introduced. However, we need to carefully approach each case with holistic methods.

In many Southeast Asian countries starting to restructure the power sector, it is important to apply previous experiences to a new country by making an Asian Model which is different from European Model.

According to Dr. Nam, ADB Economist, the most challenging part of the research on the power reform would be obtaining data from each country, especially in Kyrgyzstan and Georgia.

Power Reforms in Southeast Asia and its characteristics

- Existence of Mega-conglomerate (Lopez Family and MERALCO)

In the process of the reform and also thereafter, the Philippines has been struggle with controlli ng of Meralco, the Philippines' dominant power distributor. Meralco has affected the country's severe economic inefficiencies and underscores, and is still strongly controlled by a conglomerate, Lopez family. This powerful Lopez family, franchise owner and largest sha reholder of Meralco , holds 33.4% of the stake. Lopez family also maintains the largest number of seats on the power distribution company's 11-member board.

- Political backgrounds

The Philippine Government has had a long history of treating electricity prices as a political va riable. Subsidies on electricity rates may sway populist sentiments but they make matters wors e.

APPENDIX B.

Interview Survey in Chile

1. Dates of Visit
   23. Jan. 2015. – 04. Feb. 2015.

2. Interviewer
   Minju Kim(Author), Professor Shunsaku Komatsuzaki

3. Visited Places and Interviewees
   - Washington D.C.

   Federico Basanes (IDB)
   Emilio Sawada (IDB)
   Christian Gischler (IDB)
   Shohei Tada (IDB)

   - Santiago, Chile

   Alejandro Jadresic (Former Minister, Professor Universidad Adolfo Ibanez)
   Ronald Fischer (Professor, Universidad de Chile)
   Mitsubishi Corporation(Noriaki Takano, Masahiko Kinugawa)
   Bruno Philippi (Former executive secretary of CNE)
   Raimundo Soto(Professor, Universidad Catolica de Chile)
   Patricio Mansilla (IDB)
   Esteban Skoknic (Expert, Former worker in ENDESA)
   Takashi Ito (JICA, Santiago)

4. Interview note

Meeting Note #1

Date: 2015. 28. January

Time: 16:30~17:30

Place: Anonymity

Interviewee: Anonymity (A)

Interviewer: Minju Kim(M) , Shunsaku Komatsuzaki(K)

<A>: I have a couple of questions before starting on my side. I was following from the '80s until 2007 infrastructure in general, basically in the south countries. But more specifically, regarding the electricity sector, we started to looking at the more details starting from 2007 because we had a reorganization here in the IDB. We were based on geographical distribution so far and starting from 2007 we were divided in division by sector. I started more concentration in energy sector, in 2007. My first question is I know nothing about Philippine electricity sector. How is the situation of the sector and when did they started the reform?

<K>: 2001 embarked a new act, new law called EPIRA and then it has been passed more than 10 years and then they faced very price hiking and they are suffering from lacking of new investment for generation to make their economic development fully accomplished. Many researchers say Philippines case is not that successful compared to Chilean case, so. But this is the current situation, but as many references say Chilean case was evaluated as positive.

<A>: Okay. 2001, okay. Let me have one other different comment. I prefer not to be quoted in your paper.

<K>: Okay.

<A>: You can take the ideas whatever you want because we are public servant of the institution I prefer not to be quoted.

<K>

All right.

<A>: Please.

<M>

Okay.

<A>: In Latin America, several countries followed the reform being Chile, one of the first coming into the reform. At that time, a group of very young professionals, Chicago Boys started the reform, not only in this field, but in the economic in general, in Chile. Part of the reform of electricity sector in Chile is not only sectorial reform, but a general reform of the economy. This is one important statement. Hernán Büchi was the Minister of Finance at the time. He was less than 40, I think, just graduated Chicago Boy, with the group. We started with market-oriented reform. The context is I think important. I don't know in the case of Philippines it's just electricity or energy sector but it was the general reform.

<K>

Seeking for general reform.

<A>: There would be some parallel in that. Argentina followed and Brazil as well, Colombia but I think Chile started earlier. Looking to the past, in general, I would say the reform was successful but at the same time, after 20 years on, 20 year plus of the new regime, new challenges are arising because of the reform. This is if you would, the concentration of the power of the market in few players and very limited instruments from the government's side to overcome special situations. The government doesn't have so much control on the market. They can provide incentives to have a more power generation, trying to reduce the electricity costs and tariffs, but the end market created based on the law is what is leading the market.

Chile has today one of the most expensive electricity prices in the region. It started to affect the competitiveness of the productive sector, being the copper industry one of them. In the copper industry, or mining in general, you have 25%, 30% of the cost of the production is electricity. If you compare copper, Chile and Peru is very interesting to compare. They are producing the same thing for international market, but the portion of the electricity cost in Chile is at least twice higher than Peru, the energy costs. It's starting to affect the competitiveness of the copper industry. So on in the other industries as well.

For Chile, it's very important, this discussion on how-to handle the long-term future, to have less oligopolistic market and to have more players in the market, so more competition that could reduce the price of the energy. That's the challenge of this government. You know that under the market mechanism, every company is free to identify new power plant, hydro plant, thermal plant or whatever. Put that in the process of the environmental licenses and to have a compromise to the government saying for that year, this plant will start operating. But during the process, environmental license is getting more and more complicated too, to be approved. One of the cases is the HidroAysén project. I don't know if you have heard about that.

<M> HidroAysén, the southern part of system.

<A>: Yeah. This is a huge hydro plant that was key in the power sector because it is renewable but it was stopped, the process of the project because of environmental problem. The private company that was pushing the project abandoned the project because the government said; we won't support the project anymore. Then you have a lack of 2000 megawatts. In a country which does which the peak demand is nine, so it's huge.

But what happens in the market? Because of the delay of this huge project, new project has to be developed, but the prices are going up, but the private company doesn't lose money because the tariff is adjusted. This is the complicated part when you have everything on the hand of the market. They made the effort. But at the end if you look at the balance sheet, they are not losing money. But the government doesn't have an instrument to put new generation because the government doesn't have any public utility company, no one.

Now they are starting to reinforce the company, ENAP. ENAP is the public oil company. They have some own generation for the processes in the finance, for example. They are changing the law to allow them to be a better – more big player in the energy sector as well, through cogeneration and other plans. This is one of the actions.

The other natural trend of the market was the renewable, wind power and solar, PV, photovoltaic, they are increasing now. This is the new act, which are generating more competition. If you look at – if you Google papers regarding the diagnosis of this power system in Chile, you will find many of them,

very good, that I can send you later some of the name of the papers. Most of them are in Spanish, but very good diagnosis view from the government, from the opposition parties, from the regulator side, from academician. At least 7 to 10 very good papers with a lot of information about this diagnosis.

I mentioned the mining sector, which is one of the interested parties in generating more competition in the energy sector. They started to be partners in new projects in renewables. For example, they have 50% of the equity in certain projects for solar and wind power, and even this intermittent power supply, and they assume the risk to cover the difference buy from the spot market, even though they prefer to have that and not to rely only on the few four or five big players. That's the situation.

In summary, going to the question, if this is successful, yes, but during certain period of time, in which they didn't have any major deployments was very good. But when a very special situation – stress situation arise, market only, or market 100% dangerous for the country in the long-term.

The problem started in the middle 2000, when Argentina – I am from Argentina, we got the gas supply from Argentina to Chile. This is because it was the consequence of the 2001 default on the debt, inflation, huge devaluation, the government wanted to keep the inflation low, so they frozen all the tariff of electricity, gas, water any supply and then there was no incentive to the gas exploitation companies to produce more gas.

Then the gas required special annual permission for export. Argentina government prohibited the export of gas. Then, suddenly, Chile was relied on gas from Argentina and there was no gas, so they started to replace the gas for fuel oil, which is very expensive and coal, which is very problematic for contamination. The government didn't have the way to react to that because market was [Unclear] defining in which field to invest.

For that kind of situation, market mechanisms are not strong enough. At the end the impact goes to the market, market goes to prices, and prices go to consumers, and to the industries. Then it affects the competitiveness of the whole economy. The studies reflect that 0.5 of the GDP growth rate could be affected for the situation of energy in Chile, right now, so it's affecting a lot.

<M>

GDP growth.

<A>: Yeah. This is in summary, the view of…

<K>

Where there some kind of domination by few players or were not able to be predicted at the time of the power sector reform in late '70s?

<A>: In the late '70s and the '80s, I think the situation of our previous reform was so inefficient that the people involved in the reform don't see so much detail of what could happen in 20 years ahead. You have to solve the situation in the past. The same thing happens in Argentina. We are talking about electricity system in which the losses – technical and non-technical losses was more than 30%. Most of the sector was controlled by the very inefficient public utilities. In that situation, the concentration of the reform is how to overcome that situation. The electricity losses now in Chile are less than 10%, the average of a normal country. During several years, a couple of decades the result was relatively good.

<K>

Probably, from considering the result, the government should have kept some power on the policy-making on power sector?

<A>: Yes, probably the answer looking into the past is that even if we have complete reform, the state government should keep some instrument or a company to have the possibility to challenge when the oligopolistic situation happens in the market. Chile has there.

In Argentina, we had a complete reform, most of the power generation went to private sector and distribution company, most of them also went to private sector, but nuclear was kept by the government. By national, large dams Argentina, we have two, one with Uruguay Salto Grande is almost 2000 megawatt and with Paraguay, 2800 megawatts, Yacyretá dam these are public.

Several of the smaller public utilities at provincial level, local government level were still in the hands of the public sector. Chile is a small country. They don't have a federal structure, so they don't have provincial utilities. In Argentina, we do have that. In Argentina, after the devaluation, the government started to shift and created a new public company and started to increase the presence of the public sector in the power sector. Now, the situation is very special and complicated in Argentina. This is another problem.

<K>

Generally, for instance, very large players like in Japan, we have TEPCO. TEPCO is a private company, but very closely tied with the national policy. I'm not sure, the Endesa or Enersis is also a huge company, but is there no influence from the government on the Enersis activity.

<A>: Well, they try to follow the government policy from time to time, but at the end they are private companies and their major objective is to get dividends. If the system allows that, they will do that, unless the government started with new changes in the focus.

The new government that started in March last year, the new Bachelet Administration, is trying to do the changes. For example, if you follow in the web pages, the Ministry of Energy, you will see they are trying to elaborate 2050 target strategy with a very wide consensus in the country.

For example, one of the problems is that most of the new projects are not located in Santiago area. Santiago is half of the country. But the local government and the local community are against new power plants, hydro, thermal, or whatever, because they are receiving all the negative impact of environment, but the benefit of the plant goes to Santiago. He's trying to create a new distribution of taxes so part of the benefit of the project is kept locally. You instead have some support, at municipal level, at city level to have the plant, even coal plant, if you have some additional revenue, but this is changing the philosophy of how to develop new plants. That's one of the example of how to, how new government is trying to handle the situation.

<K>

Do you have any idea about the reason why that Chile had initial success and the other countries in Latin America didn't have even initial success? Or I should say initial success for just few years and then, went to the worse situation. At least Chile had 10, or 15, or 20 years for successful period and after that Chile is now struggling. But initially Chile had better situation than other countries. Do you have any idea about the reason?

<A>: Well, that's a very difficult question to answer. I will leave you to you to make the investigation, but focus in the political situation after the reform and who was in charge of the government in the

first, let's say, a decade after the change. How the politics involved, if there was one type of government and leftist, and then rightist, or military, or whatever, that's one.

Second, the presence and the impact of the labor union. For example, in Argentina labor union are very important. That's part of the balance of power.

<M>

But in Chile, they don't.

<A>: In Chile, they change, the government, the government they started in the late '70s and there was one decade of military government until 1999. Even after the change from military government to the civil government, this was not discussed so the economic trend was to stay the same. This was very long-term stability in the rules.

<M>

How about Chicago Boys' influence on the future conditions?

<A>: It was key, yeah.

<M>

The technocrat like, but…

<A>: Yeah, same thing, yeah.

<M>

That could make a stable pursuement [ph] of the new policy.

<A>: At the end, if the situation previous to reforms, the worst is the problem, the better the possibility of success because you fill the gap. Starting from a very bad situation before, you change that and you start feeling relief because you don't have power outage. It's more stable and people are happy even today, more, if they have the service.

Let's take the example of Uruguay, which is a neighbor country of Argentina. The structure is almost the same. But they didn't go to the path of the reform. The public utility UTE is a 100 years old company, public, vertically integrated. They control generation, transmission, and distribution. Why they didn't privatize that? It went to the referendum on several times and it didn't have success in trying to change that.

They opened a little bit of participation for public sector for renewables, for power, for wind power and for solar energy. That was it. The reason behind – if you look at the past, is because even at the end of a very powerful labor union, inefficiency in the company and the situation was not that bad as Argentina. It was bad, but not that bad. Even today, nobody talks about privatization of UTE, the public utility. That's – for example, power losses is in the level of 15% or 16%. There is a room of improvement, but it's not 30%. If the company was in that bad situation probably, the public opinion will support to have a huge change from here to here because of the previous bad situation.

<K>

That sounds very similar to the situation in Costa Rica.

<A>: Yeah. We see successful stories because probably the previous was really, really bad. You have room for improvement that is noticeable for the consumers. Yeah, they will support that, yeah.

On the other hand, you will see cases of very efficient public companies. We just had [Unclear] in the region. The general idea is that private is efficient, public by definition is bad. But look at the EPM case in Colombia, Empresas Públicas de Medellín. EPM is the case of public company, 100% public, but they act as private. They even have investment abroad.

It is possible to have public sector companies with high efficiency. Little bit less than that is the case of Ecuador. Ecuador used to be private, half private half public, but under the Correa Administration, they started to change and renationalized almost everything in the electricity sector, because they consider that strategic. Being strategic, they want to have the control. They had an average of 25% of public. I use the example of power losses because it's one of very good objective indicator.

In Ecuador, the average of power losses was more than 25, 7 years ago. After that, they nationalized, renationalized, but they reduced from that level to 12% of being public, not private. There is a way to have a more efficient power sector even in the public sector, which is the key. What is the main factor for these changes? Political decision. The political decision to put in jail whoever is taking an [Unclear]. Usually when you have a public sector company and politicians in charge of all these irregular connections, because of political problem, but in the case of Ecuador, Correa decided to have an intervention and he's very strict on that. That's political decision.

<M>

But we cannot say we are going back to the nationalized era in Chilean case, we cannot say that.

<A>: No, we're not thinking in such huge transformation, but there is a consensus in the public that something has to be done, something that compensates this small group of energy oligopoly with the new players, including the government as one more player to balance that. If the public sector is not willing to do it, I will do it. That's the reaction of the government. This is because it is starting to affect the growth – the GDP growth of the country, the whole country. They have to do something.

<K>

I think there is no 100% answer to the power sector reform. Some country takes the private way, and some country takes the public way. The public way, there can be an efficient public company, even though, that the company and the country has efficient public company, but I think it also made some private investment for more development of generation of power.

<A>: Yeah. It's not black and white, exactly. The other key factor is when you privatize, 100% or part of the system, you have to have on the regulation side, public servants, technically strong well-paid, and well-paid is very important because otherwise you create corruption opportunities. That's part of the package. You cannot have private sector run public utilities, if you don't have a regulation, appropriate regulation in place.

<M>

Regarding to the regulation in Chilean case, when they make…

<A>: Was relatively good but there is certain things that is part of the discussion. They changed from governing government and then Minister of Energy is after he finished his mandate goes to the private sector, being the president of a power utility and then he comes back. That's created a conflict of interest. There is no way to avoid that.

<K>

The Minister of Energy becomes like CEO of…

<A>: That could be important officer of a private sector. For example, the current president of ENAP, the public oil company, Marcelo Tokman used to be Minister of Energy. He went back to the private sector for 4, 5 years, and he was working for Vestas, the wind power company and he came back now to the ministry. That happens. That happens everywhere.

<K>

They also have good [Unclear].

<A>: Yeah.

<M>

How about the workers of the regulatory body? In CNE, how the employees were organized at that time?

<A>: Well, I think at the beginning it was very weak. I don't remember the details of that. Today, it's relatively strong and well organized and good counterpart to the private sector. But at the beginning, I'm not sure. But…

<K>

Yeah, sometimes there is an asymmetry of information between the regulatory body and the real operator of the power sector and generally the real operator has more experience and knowledge.

<A>: Yes, exactly. The new government, the new Minister of Energy is just working on that, saying private sector has better information, better quality of information than the regulator. He wants to have the same level of information. He is creating a huge unit in the CNE, strengthening that unit of information to have homogeneous information because the information now is spread out in the dispatching center, in the ministry, in the CNE, in the local government. He wants to have every information with the same rule of more homogeneous information and open to the public.

<K>

Yeah, there are several solutions to that problem and I think Japan takes a different way. Japan utilizes self-regulation by the real operator, like TEPCO so the public regulator doesn't have a lot of information like the TEPCO. But TEPCO is somehow forced to do self-regulation, so I think that self-regulation works in Japan, but I think it's very different from the Chilean case. In Chile, the government, or the CNE tries to regulate more effectively by collecting more information in it.

<A>: Yeah.

<K>

But it's very difficult to get the updated information, keep collecting most updated information. I think that's why the Japanese government utilized self-regulation. But, of course, it didn't work in the Fukushima accident.

But I think her focus is basically on such capacity of regulatory body and maybe the capacity of operators like Endesa, for instance. There should be some difference in that capacity between the

Chilean case and the Filipino case. In Philippine, I think regulatory body didn't have or I should say less knowledge or capacity than CNE.

<A>: Yeah. How big – how large is CNE in Philippines?

<K>

CNE has about 250 employees in it.

<A>: How large is the system? How many megawatts is the system?

<K>

Do you remember that?

<M>

In Philippine?

<A>: Yeah.

<M>

Three times of Chile?

<K>

It should be more because the population is almost 30 times.

<A>: The population of Philippine is 60 million, right?

<K>

Yeah.

<A>: Chile is 15 so it's four times. Much more complicated because of the islands.

<K>

Philippine has a lot of islands. But the number of employees would be okay, but the problem is quality.

<A>: Quality, yeah.

<K>

I think, do you have something?

<A>: No, it's okay. My suggestion about the research in Chile, if you go today, with the government, the government is too busy now in this transformation, with the new government that has started last year. You have more people willing to talk to you and contribute to your research and academic field. You will find in the academic field people with my age, not that young like you guys, that knows in real-time what happens in…

<K>

Yeah.

<A>: Because I don't remember the time. It started in the '70s.

<K>

Yeah, Christian [ph] suggested the name of Professor Rodrigo Palma.

<A>: Yeah, Rodrigo Palma is a good case.

<K>

We are going to meet Ronald Fischer.

<A>: Okay. If you meet Ronald Fischer, you will have one of top.

<M>

Do you know Jadresic?

<A>: Jadresic, yeah, as well.

<M>

He is the former Minister of energy.

<A>: Before talking to Jadresic or Palma, what I would suggest is to try to read the reports, I mentioned.

<M>

The diagnosis of reform.

<A>: Yeah, because a lot of information is there, and so you start the conversation with higher level based on more accurate information and updated information.

<K>

All right. Do you have any other ideas about someone to meet in Santiago?

<A>: If you talk to Jadresic, I don't know him direct, but I read in papers, read about him and Rodrigo Palma, I think you have the tops. Yeah.

<K>

Okay. That would be fine.

<A>: They can introduce some of the people, perhaps.

<K>

Okay. We are going to meet the Professor in the Universidad, Adolfo…

<A>: Adolfo Ibañez.

<K>

Ibañez. Jadresic.

<M>

Jadresic is the professor of Ibañez.

<A>: Yes.

<K>

Tomorrow, right?

<A>: Yeah, okay. He is the writer of some of these papers as well, yeah of the diagnosis.

<M>

Okay. Can we have those papers?

<A>: Yeah, I will send you the links of the papers.

<K>

Great, thank you very much.

<M>

Oh, thank you very much.

<K>

I think you can download it in Atlanta maybe, when we transit.

<M>

But is it written in Spanish?

<A>: Everything is Spanish.

<K>

You can utilize the Google translator.

<M>

Google translator.

<K>

Spanish English would be okay. Japanese English is terrible.

<A>: Do you have any contact in CEPAL?

<K>

CEPAL, I met some last time I visited. I think I met them for another research about the regional integration. I think they are very different from her research interest.

<A>: But in CEPAL there are people with knowledge of Chilean transformation.

<K>

Oh, really. Do you have any name in CEPAL?

<A>: No, not now, but CEPAL continues to work on the power sector, beyond integration. That could be another possibility.

<K>

CEPAL. You may ask Daniel [ph] to contact past interviewees?

<M>

Yeah, actually I tried to contact someone in CEPAL, but they are having summer vacation.

<A>: Yeah, summer vacation is going on.

<K>

Okay, that's fine. Do you think is it useful to meet someone in CNE? Maybe we should meet the academic people.

<A>: Yeah. My suggestion is because what you are asking is what happened, 20, 30 years ago, so none of this people know directly. They just know it by reading. They know the problems that are facing today, but not the past. I think in that case, it is a little bit different. In summary, I would suggest to focus a little bit more the political side of the problem. This is not technical and pure economical.

<K>

You're definitely right.

<A>: This is not just an economical behavior. The political factor is key, with or without support, how they control this oligopolistic situation, but how to handle the worker unions. It's not the same, though, a reform under democracy and under military regime, it's absolutely different. It's not comfortable, the changes in Chile, vis-à-vis Argentina. Argentina was under democracy under Menem in the '90s. Chile was under Pinochet, so these are key.

<K>

She wanted to get some insight from different cases in Chile and Philippine. I think that could be, but we still are struggling to find some idea of such possible insight, generalizable idea from those two cases. Anyway…

<A>: Okay. Hope it's useful.

<K>

Yeah, thank you very much.

<M>

Thank you very much. Very fruitful time for me. Thank you very much.

<A>:

Thank you.

<M>

Yeah.

END

Meeting Note #2

Date: 2015. 29. January

Time: 4:30PM~5:30PM

Place: Universidad Adolfo Ibáñez, Santiago, Chile

Interviewee: Alejandro Jadresic

Interviewer: Minju Kim(M) , Shunsaku Komatsuzaki(K)

<M>: …already had an appointment with Professor Ronald Fischer and Raimundo Soto and someone in the IDB.

<K>: Mr. Patricio Mansilla-Caro in IDB.

Alejandro Jadresic: Are you going to meet somebody else or not?

<K>: Yeah, of course. We will have to meet but we haven't found some good person to meet.

Alejandro Jadresic: Yeah, because it would be interesting that you meet – but I know, of course, a little bit. But it's nice to talk to somebody that was involved directly when they started the privatization process. I have a good friend, but let's see if I could. Because I can tell you who it might be, but he was in the government at that time and maybe he can give you insights. Maybe he's in my. Let's see.

Okay. Because it's a very wide topic, very – there are many things that have been written. Have you been able to read the few things? Okay. I think Bruno wrote something too but I'm not sure if it's in English or in Spanish. Okay. You want to know what were the reasons why the process was started.

<M>: Yeah.

Alejandro Jadresic: It's good to talk to Bruno, because one has one idea but maybe he can tell you the real reasons. But, of course, I think many of the problems were fiscal constraints. There was at that moment, the companies were in the hands of the state. The state didn't have that many funds to invest in power because this was also a matter of ideology, because it was part of the military government of Pinochet and, of course, they implemented the policy of promoting private investment and competition.

But this is something that maybe this was a theory afterwards, but it's good. But maybe the real problem they had, you know, we didn't have funds to invest and then probably there was a problem also with the efficiency of the state-owned companies, all of that. Also they had the power to do of

this reason because it was a military government, it was a dictator and he had the power to go ahead because it's difficult in many countries to go to a privatization process. It typically starts with raising the tariffs and that usually is politically difficult.

Whatever the reasons were, because there were a few of this but the process started, as you said in the late '70s. It was at that moment was really a big innovation because I think we were the first country to apply a process like this. But really privatization took place in the '80s, not in the '70s because in order, there was [Unclear] that it was the law, but it took a while until this company was in the hands of the state. For a while, they had made the reform but the companies were in the hands of the state. They were state-owned companies. But working through a central planning system to ensure that the investments that were being done were efficient, but then by the '80s, then the government – once the system was already operating, this decision was made to start privatizing the companies.

But the system had been in place already for a few years. They had the National Energy Commission, they had the CNE. They had the law. At that time, we didn't have Congress so the law – we didn't have to go to Congress to approve the law. There was the Junta. The Junta was all the commandos in chief, they were the Congress. Of course, it was to some extent easier to approve the law like that. But the privatization started in the '70s, in the mid '80s. They started by privatizing the distribution companies and probably that was easier. I think Bruno told me once, why they wanted to – they started by the distribution companies, but I forgot.

<M>: You had worked in the distribution company?

Alejandro Jadresic: No, he was in government but the reason why did they start to privatize by the distribution company and later by the transmission and generation company. It makes sense, but it will be good to ask why, why they did it, the real reasons. I think I have a lot of my colleagues explain that. But nevertheless, they privatized the distribution companies. Endesa was like the state monopoly. One thing that they were not able to do and I'm not sure if they really tried, anyway, was to separate transmission and generation. They separated distribution, but generation and transmission remained in the same hands.

<M>: By Endesa.

Alejandro Jadresic: By Endesa. They started selling Endesa by the late '80s and when they sold Endesa. They also sold in the company were the transmission lines. Now, I joined the government in the 1990 because when democracy was recovered, there were new presidents, there was a Congress now and at that time I started working in the Ministry of Economy. At that time, I started to be involved in some of this – some of the things that went on.

The new government decided to keep on privatizing the sector. The privatization process was ended in the '90s. It was started in the '80s but by the '90s with democracy now, all the remaining companies were sold. I became a minister by 1994, and when I was minister, I think, we sold the last state-owned companies which were one in the north, which was Edelnor. Colbún was also privatized. Colbún had been part of Endesa at sometime, but then Colbún was a project that was started by Endesa, but they decided to keep it apart and Colbún was sold as a separate company. I was [Unclear]. Then I think there was one or two more companies that were sold, one in Aysén, but the late '90s, all the companies had been sold.

<M>: Market was established.

Alejandro Jadresic: The market was established in the '80s because when they created the market, even with state companies, but then you had, so the market started operating, but then later you sold

the companies, and in the '90s you sold all the companies, the market had been operating already. However, there were a [Unclear], one was – one simple problem was with transmission that because main lines were owned by Endesa, that put many constraints and created many problems with other generators. Because Endesa was competing with other generators and those generators had to agree on transmission fees with Endesa and the main competition somewhat unfair was difficult.

One of the things the government tried to do was to improve the transmission regulations. Those regulations were finally changed by 2004, 2005. At that time there was a new law for transmission.

On the other hand, it was an additional thing that the government tried to do was to separate transmission from generation. It was involved in some of that. We had some issues in the anti-trust commission, our competition commission. They started analyzing the case. We said that it would be good to separate both businesses and the anti-trust commission said, yes, this should be done. Endesa finally separated the transmission company. Its own transmission asset, it put it into a different company and Endesa sold the company. That happened in about 2000. But at that time, I would say efficient marketing, which you had in transmission, generation, distribution and several generation companies.

<M>: Doing throughout the privatization process, some researchers say the government's authority will be lost, so the power of the making policy by the government decreased from now until now. At the time of making this reform policy, what Chilean government did have like for the future policy, like these advantages from the power sector reform, so…?

Alejandro Jadresic: Yeah, you say, it has lost power, I don't know that is the when they say. Let's say the government will have less power is what you're basically, that is something good or that is something bad.

<M>: For example, the connection of the northern part and southern part, no private companies want to invest to connect the two systems, so…

Alejandro Jadresic: Yeah, but that's a matter of creating incentives because the thing is when you privatize, the government cease till there and the government is very powerful because it sets the rules or it can go to counter – to change the rules. It all depends on what – if you provide the right incentive and if you set the right rules. Now, you know, just today in the newspaper, you can read that the minister was announcing that there would be an interconnection between the northern system and the central system. I think that would be in the newspaper tomorrow, but I was reading now. That has been – that will be done by the private sector.

But incentives were created by the government. There this over by the regulations. There is now a process by bidding process and there are also market incentives because there is a price difference between the north and south. You can do more or less the same things in the private hand or the public sector. The question what you do is better or efficient, with which funds, you can do things in the private sector except but what do you do in paper. The challenge is to have the right rules.

<M>: About the regulatory body, at the time, how their workers and employees was organized and created? We guess, some people from Endesa, like private companies went to the regulatory body as chairman or technical workers, so it may affect the regulation.

Alejandro Jadresic: But you know, when they started the regulatory CNE – I when they started, there was a very small body. That's true that they came from the companies. Maybe somebody had been in the companies, but Bruno Philippi, who was the chairman of this, that's the guy encouraged, Bruno Philippi. He was a university professor. Sebastián Bernstein, maybe he had been in – probably five or six – there were many young people there that didn't come from the company, so it's not true.

Later, you started having some people coming from the companies, but I don't think that's something relevant.

<K>: I that Chile has a…

Alejandro Jadresic: It was very small, when we started. You had another agency, which was the Superintendent and that was larger, but it's more technical regulation but the reform was more were quite independent from the government – from the companies.

<K>

Chile has successful privatization of power sector and at least in the initial 15 to 20 years. But I think, generally, such past state-owned company should have the most and best expertise and experience in the power sector. I think I had a question about how the government successfully made a policy without or maybe with such an expertise accumulated in the past state-owned companies. Chile had a very successful privatization policy. But how that policy was designed? Is it in collaboration with Endesa or just created by the bureaucrats in the ministries?

Alejandro Jadresic

Of course, not everyone agrees. But, yeah, some people say that the privatization was not done very well, it could have been done better. One problem is that, it probably was difficult to do it, but, no standardized style, [Unclear] nice and modern, so it's better to have more companies and Endesa could have been splitted into two.

The price, there was also the debate on the way you privatized that; it was not very fair or very transparent, the way the companies were sold. They weren't – I wouldn't say that it was that successful. It took place, the systems casual, but if you would start looking in today, you would find some.

<K>

Yeah, right. I would say they are rather successful than other Latin American companies.

Alejandro Jadresic

But in general, it has worked well.

<K>

Yeah.

Alejandro Jadresic

It's true. But now I think, when they promoted reform, many people in Endesa were against. The state companies, they said, well, we're going to lose the power. Many times the workers or officials in the company were against this. The bureaucrats like Mr. Bruno Philippi, they had to challenge against that. Of course, you get support from the government.

But it was also the time there was a military government and some of these companies you have some general sometimes running the company and they would try to say, why are they doing this. But then in the government, there was another general saying, no, we don't agree with this. There were these things and sometimes you don't find it in the documents and Bruno can tell you nice stories like that.

<K>

That should be very interesting.

Alejandro Jadresic

Once he was telling me, I don't remember, they wanted to make reform on the tariffs, increase the tariff, or provide subsidy, then somebody in the general said, we are against this and the real reason was that his tariff was going up. There were many. One thing is couple of you hear the nice stories, but also there are other resistance.

Overall, it was the bureaucrats were pushing for this against the will of the companies, many times. The company had to adapt. To do this, they had to reduce the power of the companies. The companies were – they had all the knowledge and the capacity, but more engineering grounds, but on economic and financial matters, they didn't understand very well. Many of these companies had very good engineering, but many times they are not very good at economics of finance.

<K>

Basically, the overall design of the privatization itself was designed by the economists?

Alejandro Jadresic

Yeah, well, engineers, I don't know if it's economists, engineers, the National Energy Commission. The two very important people are Bruno Philippi and Sebastián Bernstein. Do you want to write down those names? Bruno Philippi, you write this. Sebastián Bernstein, he was the executive secretary. He was the second in charge. He was the man in charge and then he resigned and he became the executive secretary. I would recommend that you talk to them.

<K>

Sebastián Bernstein.

Alejandro Jadresic

Let me see here if I can write a mail to them.

<K>

Bruno Philippi.

<M>

Philippi and Sebastián.

Alejandro Jadresic

One is German, and the other – German names, last names. Philippi is German, Bernstein's also German. They're Chileans both but. Yeah, this one, I found one of them. What I'm going to do is send both of them a mail with a copy to you and see if we can set up a meeting with them.

<K>

Great. Thank you very much. I'm sorry, I have another question. You mentioned that until – it takes about 20 years, so until late '90s; all past state-owned companies were sold and privatized.

Alejandro Jadresic

Yes.

<K>

It took almost 20 years to sell everything.

Alejandro Jadresic

Yes.

<K>

But I think until then the government became democratized so before military to democratize. Oh, yeah, sure.

[Foreign Language]

<K>

I think you mentioned that one of the factors decreased – reduced the opposition from the Endesa or the past state-owned companies was the military government.

Alejandro Jadresic

Yes.

<K>

But in let's say '90s, the government had already been democratized.

Alejandro Jadresic

Yes.

<K>

Then how the government successfully keeps the privatization?

Alejandro Jadresic

Remember, I joined the government by that time. I was a young professional at that time. When the new government came into power, there were different views in the government. Some say, everything that was done by the military was bad, so we have to change everything and go back and go back to state hands.

There were the more extremist or more. But there was a lot of other people saying, no, of course, the people with the government were against dictatorship, but they said something that went on were right and we have to, improve the same, correct the things that were done improperly, but keep the good things. At the end, this second view was the one that prevailed.

In fact, my role, I was an economist in government by that time. Part of my role was convincing my senior officials that some of the thing had to be kept. When I was in power, I was able to do water reforms for instance. I was very much involved really from the water sector, I was involved in telecommunications, and in many of this, these things are okay, these things have to change.

I was 4 years in the Ministry of Economy and I was involved with many of these sectors and reform and we had discussions. But at the end, the idea that prevailed was we have to keep reforming and improve. In telecommunication, I was involved and I would say, yeah, this is okay, but now we have to introduce more competition. Many of the [Unclear] were done in the '90s were to say, okay, let's keep moving, but ensure there will be more competition and there will be more transparency, stronger regulatory agencies, etcetera.

<K>

But actually, the one IDB officer said that Chile now has some problems with the very dominant Endesa, still dominant Endesa because Endesa or the past state-owned companies still have a very dominant power in the Chilean power sector. Then, Chilean government doesn't have any political or administrative instrument to control the power sector policy.

Alejandro Jadresic

That's not true. I didn't say [Unclear] is true, yeah, you hear, but the government has a lot of – it's a matter of using the right instrument and knowing clearly what you want to do. But the problem is that you have to know what you want to do. I mean, the former government, I think they didn't do it very well. I was in government, but I'm not a politician.

But I think they didn't have – they didn't make very clear decisions, very great decisions. This government has been much more active in the power sector but the law and the rule is the same. It's a matter of – if the government wants to use the system or not. It's not a matter of no, but it's a problem of the government. This ministry has done good things. Today, they were doing the definition. They did the bid with renewable energy, but it's exactly the same model, you have to change the people and have a idea. But it's not the problem with the model. It's the problem with the people.

<K>

I understand. I think, the same thing can be said to the – I mean the same thing – I mean, how to say, the political will would be very important in the '90s and then also market.

Alejandro Jadresic

I was 4 years in the ministry and we wanted to do certain things and you would – I had, I was in charge of the gas interconnection with Argentina and so two governments got together, we signed and we pushed for that. The purpose – my president was supporting us. Two to three years, we were able to settle the rules to build all the pipelines on private hands, but it's a matter of decision. I have the political will and I have the clear idea. These general comments, I don't agree very much with them because it depends.

<M>

The Pinochet era, the power sector was privatized and then the telecommunication and water, as you mentioned, also started to privatize that after the Pinochet era. Even after the change of the regime, government, how they continued to keep their privatization efforts?

Alejandro Jadresic

Well, that's I think what we were talking about. The privatization was started in late 1985, more or less. Telecommunications privatization started around '88 or '89. There were two companies in telecommunications, Entel and what it was called CTC. Now it's Movistar or Telefonía from Spain.

<M>

Can we say the privatization was introduced in general in Chile at that time? I mean kind of, circumstances like environment was prepared for those privatization, eager to become privatize.

Alejandro Jadresic

Yeah, there were reforms because in order to do this, you have to first, you want to privatize, you start setup, defining the rules, you then have the law, then you have to create the regulatory agencies. Then you have to prepare the companies to privatize. But this happened, at least, in stages in all the sectors. Now, in the '80s, I would say – the energy sector little bit before, but the '80s was really the years when this was. But, for instance – and I say, when the new government came, the democracy, there was the discussion, but the decision at the end was to keep moving. The water sector was privatized in the '90s. Much later, the private sector was privatized in 1995. That was the moment, 4, 5 years after democracy. But it was a continuation of what had been before.

<M>

For example, water sector can be privatization at that time in the democracy regime; it means citizens support the privatization. Relatively in Chile, they don't have much resistance for the privatization. It means that change of price – the utility price was not that much higher – become high.

Alejandro Jadresic

No, let me tell you, I was involved in water. I was in the Ministry of Economy when water was privatized. In order to privatize the water sector, because price tariffs were very low, we had to increase tariffs in many of the companies. Because we had in the case of water companies, there was one company in Santiago and one in Valparaíso, there was the ministry that supplied water in the rest of the country.

The first thing was to split the ministry into several companies. That was early '90s. Then we had to increase tariffs, even though politically – easy to increase tariff, but a device created by which we provided subsidies.

In Chile, the water sector, you have a very good system of subsidies by which – I do know today, but at that time 20% of the poor population have big subsidy. They can get up to 75% of the tariff is paid by the government. Tariff started to increase, but the poor people had access to the subsidies.

We even, we had a timescale but it took I think 5 years to go increase tariff. Sometimes political personalities [ph], I remember at that time you had to go to the [Unclear] explain, why we would have to raise the tariff. You will say – well, then you have to say, well we have to increase tariff because it's not fair that people in the [Unclear], the water is expensive. It's not easy, but the people not necessarily they say, yeah, I'm happy with privatization, that's not true. It's a political challenge, how to do that.

<K>

Definitely.

Alejandro Jadresic

You have to do good. The water state company, when they were privatized, the President said – that was when I was in government, he said, these countries have to have wastewater treatment. We must for a developed country to have wastewater treatment. But the government doesn't have funds

to do that. The only way we can do that is privatizing the companies. That was the political message and say, okay, we're going to privatize because we want to have wastewater treatment. Wastewater treatment, at that time, was really 5%. At the present, now it's 95%.

<K>

But, yeah, I had kind of interview about the role of PPP in Chile last time I came here and I ask the questions to I think IDB person or I forgot, Ministry of Public Works. They said that the Chilean people generally accepted the role of PPP. I was a bit surprised because in other countries, sometimes privatization or PPP are a subject of opposition from the public. I think you mentioned, also, it is not easy to make people understood the rising price after the privatization. How and why the Chilean people still accept the privatization and sometimes the rise of the tariff or price.

Alejandro Jadresic

Well, one thing, when power sector reform was started, it was dictatorship, so it was a little bit different. But also that, but then you why, I was telling the water because, first, you created a subsidy scheme. So, say, no, we are aware, the tariffs have increased, yes, but you know, this subsidy, if tariff is benefiting the rich people and not the poor, we want the poor people to be connected.

You need to create political support and usually the people that are worse off are the people are the poor. The rich people often they benefit from subsidies and they are happy because they get very good service. But the poor people don't have connections. You need to find the support for it. It also depends on – well it depends, all countries are different, but in some countries have very poor services, so sometimes if you have a complaint that don't work very well, people will be happy when you privatize them. It depends. I'm sorry, let me see, if my friend [Unclear].

<K>

So far such social fairness can be understood by the general public.

Alejandro Jadresic

It's difficult. Sometimes you have. That's the political challenge. But I was telling this example with the wastewater treatment, the best part of the story; you have to have a good story. We need to privatize because we want to have clean environment.

<K>

Okay. The people chose that such wastewater treatment in trade-off between wastewater treatment or lower tariffs?

Alejandro Jadresic

Yeah, but the tariff had already been increased by that time. The tariff had already increased so that was before that. But then, let's say, okay, privatize but this is the. It's not only that older people matters because many of these discussions does takes place in Congress, in other places. So it's not necessarily you have all the people, some people yes.

<M>

But energy policy in Chile, Chile government has established 2050 plan for the future.

Alejandro Jadresic

Yes.

<M>

When it is designed? When the power sector reform started, the government has some kind of picture for future, like those strategy for 2050. Maybe, so I would like to know the future plan for the future at the time?

Alejandro Jadresic

No, one thing about the energy sector electricity – they have this 10 year plan. They have plan de obras, you know, the energy sector is – electricity development is based on a plan which is called the 10-year plan, which is used for setting price. Prices are based on a 10-year plan. But that plan is not very mandatory so private companies can do different project. This is a referential plan and you can do it.

Now, so that's something that is there and has been there for 20 years. That's for public, when the company were in state hands, that plan was mandatory. When the companies were privatized, anybody could do that an investment they want. But that plan is not very used that much, except for setting tariff. Whatever, that the last 10 years, I would say there has been a lot of political opposition to new projects.

Basically on environmental reasons or ecological reasons there need be – everybody opposes projects. Also, because of political reasons but today, any new large investment project in mining, electricity has problems, difficulties. But also because it's more difficult today to – also because we are a rich country and people like environment more so in order to gain some political support, this government has been trying to do, no, okay, we're going to build the plant and this is something we are getting consensus and we have a lot of discussions, social debate, and we are going to find a plan and all country we are moving into that direction, because there was an idea that the government didn't have plans.

But this 2050 is a lot of science fiction. Who can plan – yeah, I have a friend of mine who is a professor here, he participates in this plan. But who can guess what will happen in 2050. It's more a political – it's good that it takes place, very useful because you have people discussing, this should be better, this, this, this. But, it's a political instrument not more than if you, more than a technical or engineering instrument. Because it's very difficult to know what will happen. Maybe it makes sense for 10 years or 15 years, maybe 20, but 2050, that's too much. Maybe, okay.

<M>

We could say the political effects on the power sector would be more powerful than the policy administration.

Alejandro Jadresic

No, today I mean this has been changing over long time, but today in Chile the opinion of the people, of the communities, a lot has to do with local communities. It is very important. Probably the same thing happened in Japan…

<K>

Yeah.

Alejandro Jadresic

The government said this is good for development and yes we will do and everyone would say, that's great. Today, it's not great. Everyone say nuclear energy. Now, in Japan…

<K>

Also, we had problem of hydropower plant.

Alejandro Jadresic

Yeah, same in all countries.

<K>

I think in Chile, pension fund is one of the unique factors in power sector reform. Do you think that pension fund plays a very important role or without pension fund, it could – Chilean government could realize power sector privatization?

Alejandro Jadresic

It was useful because it was a source of…

<K>

Investment.

Alejandro Jadresic

…investment and savings but, yeah, okay. Do investment in savings and that was great saves, but not necessarily. Probably for Chile, at that time, they don't have much access to international financial markets. That was in the '80s, Chile was a dictatorship. They didn't have much access to the financial markets. In that sense, for Chile to start the process was very useful. But I think in other places, it could take place around different way.

That allows more domestic – it was interesting, but privatization process was started with national companies. It was small group of investors that brought the assets and later they sold the companies to foreign investors. But they started being local investors. Many of them didn't have much funds anyway. Also, because the pension funds were not very transparent too, some people who sat on chairs and they got and then you have these pension funds. Yeah, in Chile, it was an important element. But it doesn't have to be that way. In other countries, what they have done, they privatize and they can international bid. In Chile, it happened later.

<M>

Not much.

<K>

But I think at the initial stage, at least, I think such, how do I say, domestic process, I don't know how to say, domestic stage or whatever, at some stage in which the domestic companies buy the share of power companies, would be better for the result of privatization, because in, for instance, in Argentina or in let's say Indonesia, the all public utilities were brought by foreign investors and then finally failed.

Alejandro Jadresic

Yeah, but usually, it has to do, for a reason. They failed because of the policies. They would have failed the same, be it domestic or international. Argentina, what happened in Argentina, they privatized and then they are now going to increase the tariffs. Any company would fail, if you're not able to recover the investment.

<K>

It's not a matter of…

Alejandro Jadresic

No, it's a hands-on effect. There is nationalism sometimes, but the reason that they fail, I believe is not because they were international companies, but because the policies were very bad.

<K>

But it means Chilean government designed a very good policy at the initial stage.

Alejandro Jadresic

Yeah, good policy. I don't say it's very good and they keep change and, of course, you have to learn and you change it. It's not something that's very nice idea. Yeah, the basic ideas were right, but there were mistakes I think that were collected afterwards. Many of the law had, now, major changes, 10 years ago, has two major changes. But it's good that – but because the law was not that good. Also because, they can say, we have learned now. Now, we know much more about electricity markets than 20 years ago.

<M>

But at that time, Chile didn't have reference because they started for the first time in the world.

Alejandro Jadresic

Yeah, the UK started a little bit later, but in the '80s also, the United Kingdom, they also…

<M>

Yeah.

Alejandro Jadresic

I think they started little bit late, but there was this other case, so people started looking what was happening in the UK too…

<K>

But at least you first established the CNE.

Alejandro Jadresic

No, he was first.

<M>

Then CNE was first, and I think the process of the privatization difference from country to country and I think it might be very good that for Chile to create CNE at the beginning and probably CNE played a very important role in the designing of the privatization.

Alejandro Jadresic

Yeah, that is true. CNE were just a few people, not many. This is two of the names I was telling.

<K>

Yeah, that's amazing. Yeah, very few people.

<M>

They were economists rather than…

Alejandro Jadresic

Yeah, they were technocrats.

<M>

From Chicago?

Alejandro Jadresic

No, Bruno Philippi, he studied in Stanford. He was professor at Catholic University. Sebastián Bernstein was – well, he was a civil engineer. I think he had gone to France to study something about energy. There were a few other, Renato Agurto, was the third guy.

<K>

There was someone who appointed them to CNE, right?

Alejandro Jadresic

Who?

<K>

Someone who appointed them to CNE?

Alejandro Jadresic

You know the government of Chile, there was this dictator, but he had people close to Chicago, the University of Chicago, the technocrats and probably people from the Chicago team, they invited them probably. Probably they were closer because these guys were not close to the military, but were closer to the Chicago technocrats.

<K>

Yeah. I think it is some very interesting that Chile had some, not pure, but could have some pure environment to realize the real idea, theory of Chicago Boys because there is [Unclear], so they could do what they wanted.

Alejandro Jadresic

Well, it could have had. I don't think you cannot do it in other circumstances and no other countries can do it. We have done reforms in democracy too. But that made things different and probably in a democracy, you have less room to make mistakes, probably. If you make mistakes, well, [Unclear].

<K>

Yeah.

Alejandro Jadresic

But I think you can make reforms in other sectors too, and probably it would be well reformed because of that. Because if you need to have, convinced the Congress, at the end you have to think more carefully what you're going to promote.

<K>

But, actually, we doubt that in a democratic society, for instance, her case in Philippine, we have more political interference from the different actors.

Alejandro Jadresic

Yeah, well could be. Yeah and, of course, problems again with countries have problems with corruption. Many times, many countries, fortunately in Chile, we do not have that big a problem there, but many state-owned companies we have very corrupt people running the companies and they have different agenda and how you're able to convince or buy this guy out, it's not easy.

Mexico is now trying to do interesting things because in Mexico they have big problem. But this President was able to push forward several with reform in energy. Now his current problem is because of what we have this tragedy, they have political problems. Sometimes [Unclear] of the corruption and that could be also political liability. We want to get rid of this corrupt people and that that's a reason to do reforms. Mexico is trying to do that.

<K>

I think also Pinochet government also tried to get rid of such corrupted and inefficient state-owned companies.

Alejandro Jadresic

Yeah, but it's true. But I think in Chile, the problem was not that big because there was a tradition at least in these energy companies that they were relatively well-run and were relatively professional. This company, they were not that efficient, but they have – it was [Unclear] any would like to – a good guy would like to go to this company. They were more or less professionally run. But in other developing countries, that's…

<K>

No. I think that…

Alejandro Jadresic

Probably in the Philippines, I would say they have problems, I guess.

<K>

Yeah, I think that initial high-level capacity of state-owned company would be one of the key factors of success.

Alejandro Jadresic

Yeah, but still, it's good you talk to Bruno Philippi, when you talk to him, because he will tell you some of the problems his company had at that time. He knows that very well.

<M>

Bruno.

Alejandro Jadresic

Bruno, he had to lead negotiate with them.

<K>

Okay. One or two questions?

<M>

I saw your paper about expert panel.

Alejandro Jadresic

Okay.

<M>

Yeah. I want to ask about that. Why the government introduced the expert panel commission, even though they have independent regulatory body in CNE, why?

Alejandro Jadresic

Yeah, one thing, first of all, the CNE, unlike started independent, the regulator is part of the government. In other countries you have the more independent entities. But still, that has operated relatively independent. But it's not on in the law that the CNE leaders…

<M>

Is under the government.

Alejandro Jadresic

…is run by the government. But you will have – even if it is independent, or if it's part of the government, you will have some kind of conflict between the company and the regulator. You need to have some kind of mechanism to solve the disputes. In Chile, it was a great idea; all of these reforms introduced some kind of arbitrator or referee. Because the other alternative is to go to the courts. You can only, if you have a claim, you can go to the court, but the court will take 2 years, 3 years to dispute. It happens sometimes.

Argentina, I know the company went to court and they still, there is an international court and they have been 10 years filing. Chile has created this mechanism of independent arbitrators and I have been arbitrator many times in some of the sectors have, ad hoc commissions. You have this dispute, so we create an arbitration commission and you solve it.

Some they say, well, it's better to have, instead of having one committee for each company or each conflict, why not have a permanent arbitrator and that's the panel of experts. It has become very – I think it has been a very good solution because the good permanent is people that are there, they are very independent. They don't report to the government or to the companies and because being permanent they are able to learn and accumulate knowledge. I think it has been a very good mechanism and they already announced to duplicate this in other sectors. Yeah, I was the first president of this panel for a few years. It's very good, it's a very good model, I believe. That's worked very well.

<M>

For example, what were those disputes between company and the regulator, for example?

Alejandro Jadresic

Setting prices or setting price reviews for, sometimes its technical disputes for interconnection, it could be price reviews of in transmission or in distribution. There are many discussions in the operator, maintenance among the companies. There are many technical issues. The law states very clearly, what kind of disputes to solve there.

<M>

Is there any disputes on the introduction barrier, how to say? Entry barrier because there is Endesa in the market so small, the other power…

Alejandro Jadresic

That's more a role of the competition commission.

<M>

Anti-trust commission.

Alejandro Jadresic

Anti-trust. If they have a issue, they go there. Now Endesa today, the power of Endesa is much less than it was 20 years ago. People say Endesa, but the truth today is that the market power of Endesa is much less than in the past. Because other companies have – the big entry barrier is not the companies, more the difficulty to make projects.

<K>

There is some law to structure or to frame the right and authority of this panel of experts? There is a law.

Alejandro Jadresic

Yeah, of course. No, this is in the law and it's very well-defined in the law, what they can do but we named experts.

<K>

How they are appointed?

Alejandro Jadresic

Everything is in the law. Now, I have to go to an arbitration…

<K>

Yeah.

Alejandro Jadresic

…because I am working. At this moment I'm doing – we have some toll roads, so I am in arbitration commission in toll roads. Now I have a meeting now.

<M>

Real exercising.

Alejandro Jadresic

Yeah, because there is a dispute between the ministry and the toll roads, so we have been analyzing this for almost a year and now we are giving our final decision.

<M>

Oh, you are in the expert panel.

<K>

The critical time now. Okay, thank you very much.

<M>

Thank you very much.

Alejandro Jadresic

I'm sorry, but it's.

END

Meeting Note #3

Date: 2015. 30. January

Time: 12:00PM~1:00PM

Place: Universidad de Chile, Santiago, Chile

Interviewee: Ronald Fischer

Interviewer: Minju Kim(M) , Shunsaku Komatsuzaki(K)

<M>

Chile, done in 1980s and '78. I am doing to case of power sector reform, one is developing country Philippine's case and Chilean case would be a reference case for the Philippine's case, so Chile already…

Ronald Fischer

It's historical, so it's not the current situation, but the situation 20 years ago, 40 years ago.

<M>

Yeah. I am focusing on how the power sector reform initiated at the time. How they make their regulatory body for the new introduction for new system, so I want to hear the real situation at that time.

Ronald Fischer

Well, I don't know the details at the time. At that time I was studying in the States, I think. No, I hadn't even gone to the States to study, so I was a student here. No, but I know some people who are involved, you are interested, this guy Bernstein and this guy you would know…

<M>

Bernstein and Bruno Philippi.

Ronald Fischer

Yeah, those are the guys that were actually there. You'd probably want to talk to them, if you want to know the story in detail.

<K>

Sure. We are going to meet Bruno Philippi today.

Ronald Fischer

Okay, so he's going to tell you the story in detail. I know basically what happened later on at that time.

<M>

That's good too, I want to.

Ronald Fischer

I think at that time there was a state-owned electricity company and the distribution companies were also owned by the state. They had been [Unclear] in the '70s. But there was no clear separation and what they did in '81 was they separated into distribution companies, transmission, and generation as different sectors that were regulated at different roads.

But when they actually sold the firms to the private sector, they kept the Endesa, which was the biggest company. There were two companies at the time, Endesa and what is now called Gener. At that time, I can't remember what the name was. It was a long time ago. But they've changed the name several times. It's Gener now, but at that time, I don't know.

Gener was basically a thermal system and Endesa at that time was mainly water – a very small system at the time, I think probably 1/10 of the system. Endesa also got all the connection lines from the places where they generated electricity to Santiago because they had also the transmission lines. Because Endesa was basically hydroelectricity and the rivers are to the south of Chile so they would have the plans there and they would send electricity. Whereas Gener was the other company, it had basically thermal power plants and basically, there was one in Ventanas and I don't think small ones around and sold they didn't need the transmission because it was very close to Santiago.

What they did at the time was to setup a system on marginal cost. The system was – there was something called a dispatcher system in which the dispatcher organizes the power plants according to their marginal cost and will dispatch the different plants according to their margin cost. The cheaper plants first, and in order to fulfill the demand, they start putting plants that are more and more costly. That's efficient, in the sense that it's economically efficient and also provides incentives to invest into low-cost plants because the price at which the companies trade for electricity is the spot price, so the spot price can be very high, you have very low cost, you make a lot of money.

The other important thing is that that market is only for the generating companies. Normal users don't have access to that market, they have contracts. Either in cities, they are served by the distribution system, by the network of lines in the city, and they are subject to the regulated price or they are outside big plants like the mining companies or the forestry plants. They are somewhere else and what they do is they make a contract directly with the generating company, but it's a long-term contract. Normally, they don't see this, the spot price, the marginal cost. Those are the basics setup.

The other thing that they did is they had efficient – an attempt at efficient regulation of the distribution system. On the distribution system, what they did was they invent some – they modeled something that would be an efficient distribution company, but invented, but not a real thing, an ideal system that would serve the city and the demand for the next 5 years. They seek what the costs are; this ideal system and they use those costs to determine the price that the distribution company can charge. I don't know if this is clear to you, but basically they – so in the generating system they've made it competitive and the distribution it was regulated with efficient – kind of efficiently, it didn't work that way, but semi-efficiently.

What they didn't do was much on the transmission system because at the beginning it was just used by Endesa so Endesa it was their own plants, so they didn't have any – so it was the transmission lines were the ones that they use themselves to use electricity, nobody else used them, so there's no need to regulate them.

But in around at some point separated another company called Colbún from Endesa. Very early they separated Colbún from Endesa and Colbún was state-owned at the time. They tried to use it as control to see if the system would work, but they had lots of problems sending the electricity to Santiago because Endesa would never build enough capacity to serve them or they would charge them an enormous amount of money, so eventually what they had to do was to disintegrate the system and set up a special regulation for transmission, which is the situation now. That would be the briefest thing.

Now, the system was very inefficient before. The example that Bruno Philippi is going to tell you is probably that at the time in which there was a lot of rain in the south and therefore the reservoirs were overflowing. At that time, what you should do is just use as much as water you can for generation, the water in the reservoirs uses all of it because it has cost of zero, normal capacity in the reservoir. At that time they were burning a lot of coal, so that meant that they weren't using all the water and that was because there was – the coal miners were a political force and they couldn't. It was difficult to stop using their coal so that sort of thing, so very inefficient production of electricity. Nowadays, that doesn't happen.

<M>

In generation sector, in the initial stage, the new investment was successfully introduced, but the distribution and transmission there is some…

Ronald Fischer

The investment was at the beginning, mainly either the state company, Colbún or before they sold it in '94, '95 and Endesa or Gener, three companies, there was no entry at that time, no new companies. For a long time, it was like that and only more recently have new companies come in.

<M>

But the government established unbundled power market so only three companies have still dominant power for large generation.

Ronald Fischer

Even now.

<M>

Even now?

Ronald Fischer

But now at least, there are new companies coming in, but for a long time there were only the three companies. The rules made it very difficult because it was very difficult to connect to the system. The companies would make it very difficult for you, so people won't try.

<M>

How about distribution?

Ronald Fischer

Distribution is regulated. The theoretical idea is that its value-added distribution, so you have this cost of the distribution network and you take the electricity – the distribution companies have contracts with the generating plants so they sell them at a certain price. They add the distribution cost, and that's the final price that people see with some adjustments, but to make the account simple and basically that's what it is. You have the distribution cost, you add the cost of electricity and that's the price.

<M>

By the contract between generation and distribution will be decided.

Ronald Fischer

Right. This year, the contracts were now – it used to be that contracts were just negotiated, but now they're auctions, so companies compete for the right to have the contract. This year they got fairly good prices because it was more competitive.

<M>

In Philippines case they have wholesale power market, so selling electricity every 1 hour.

Ronald Fischer

They have a pool?

<M>

Yeah.

Ronald Fischer

This is a system, it's a managed system. It does is basically there is a dispatcher that has – that knows the cost of operating every plant and then tells you which ones have to be working at some point. They plan a week ahead. They have the schedule, who is going to be on at each moment and then they have short-term adjustments, but that's how they work.

It's administered rather than a market. It has some advantages. For instance, it's difficult to do things that are anticompetitive. You can do them, but it's more difficult because you can't do the things, for instance, that this company in the US did.

Here you have to – you are told to operate only at marginal cost, when you hit the marginal cost. How they – the type of lie they have is – the type of trick they do is they lie about the marginal costs. They lie about their how much it can go down and still operate. For instance, some companies say their plants can only work within a band of 95% to 100%. They can't operate at 80% when obviously they can, that sort of thing. But that's going to change because they're going to test them, so they're going to tell them you told me you can't operate, let's see, put it at 80% and let's see if it works.

<K>

That's lessons learned from the case of Enron?

Ronald Fischer

The Enron case, so it's difficult to have an Enron case because the central dispatcher is the one that tells went to, so they can't do fake order and things like that.

<K>

That's the merit of the current system, with powerful…

Ronald Fischer

When you don't have too much competition, this is better. If you have a lot of competition, the other one might be better. But since we usually have had very little competition in market – and the competition is in investment here, so what happens is that if I may.

What happens is the following. Here you have megawatts and here you have price, okay? Suppose the demand is here, this demand, we assume that it's not flexible, doesn't respond in the short run, so what you have is some plants has zero cost because of the run of water, the run of the river at their plants, they have zero cost. These are the solar plants, so the wind plants, those have zero cost. Then you get the ones that have cost, for instance, the reservoir, one because the water can be used in other time, and that means there is a cost of using them now, so you have this capacity. Then you have the coal plants. All of this adds capacity and then you have the gas plants around here, etcetera, so you organize the plant.

This is the plant with the highest marginal cost, and so all of these provide electricity and if this one that has the higher cost, this one is not called. If the demand increases, then this one is called. When the price is this, this plant here is making a lot of money because it makes all of this money, so for each hour. It's a lot of money. What happens is there's a lot of competition to get in here. That's where the competition is. It's not only the price that they charge, but in this part because you make them.

<K>

Yeah, but I think the initial cost for hydropower plant would be very big, and also on the other hand, I think it's very difficult to get the permission to build the new hydropower plant now, so I think the existing player would be getting more benefit.

Ronald Fischer

Exactly. Well, that's one of the problems that we've had is because of the entry limitations, the existing players have not made a lot of money. Now, that is changing now because of the solar, because those things tend to – they go here and they've fairly easy to set it up here, but of course they are erratic, so they are.

<K>

But I think on the other hand, especially in developing countries due to such entry boundary, entry barrier, whatever, the lack of electricity itself takes place, so the new generators cannot produce efficient twice electricity, so I think the seller. I'm not sure but I think Chile had Endesa produces

cheaper power using its hydropower plant, so I think Chile had – also it had some blackout, but have larger amount of electricity than other countries.

Ronald Fischer

Well, it's difficult now to have blackouts because the reason why we have blackouts here, especially before, probably not so much now is because we had a big chunk of electricity came from hydropower. When you have drought, you have less power, so you have these coal plants, that's sort of the system. Then since we don't have that many, they're big – they used to be big, not any more. If anything happen to a line or something like that, that would fail and that would produce a blackout.

Nowadays, that could still happen, but since hydropower is less important that is less likely. I think that and the other thing that happened is that because of all those – because of the drought of '99, lots of companies brought in diesel engines. Diesel engine would be like around here and there's a lot of it. What happened is, even if this disappears, you still have these things. I know it's very expensive. You have a big chunk of there and it doesn't go away because they get paid even when they don't operate.

<K>

It is not true that Chile had a huge capacity of hydropower plant by Endesa before drought and it contributed to the stabilization of power sector in Chile?

Ronald Fischer

To stabilization in what sense?

<K>

To cover the power demand in Chile?

Ronald Fischer

Well, what happens is that the reservoirs – I'm not sure if I understand you, but the reservoirs have the ability to adapt fairly easily to short-term changes in the band, but they have to have water. If there is no water and when there's no water, there's also no water in the run of the river plants so you get like perhaps this thing – the whole system shifts to the left, because there is some chunk here that doesn't exist anymore, so this moves here. But if you have enough of these plants, you can adapt, I mean, you will have very high cost, but at least it won't fail.

That's the situation now because we are stuck with them, like a lot of very cheap, very polluting plants. Nowadays they operate very little, but sometimes they do operate. That gives us security, but high costs. Because this is very expensive, this is like 260 megawatt and gas plant is like 100.

<K>

What I meant was probably something like this, so this is the amount and Chile had certain level of, this is that I think and this water, hydro by Endesa and the newcomers to power sector will produce higher price, higher cost things. But there is certain level of hydro so the total cost to the nation would be lower than in this case, only this hydro and then…

Ronald Fischer

Right, of course, yeah. No, of course, but that's something that in a sense, we can't act upon because it's the areas in which you could use hydropower as opposed to it, so it's…

<K>

Yeah, but in some country, the government tried to sell all the public companies to the private but in Chile I think Endesa still had some power.

Ronald Fischer

Yeah, but Endesa is private.

<K>

It's kind of privatized.

Ronald Fischer

Everything is privatized here. There's nothing. Now they are trying to get – they are trying to pass a law by which ENAP, which is an oil company, the state oil company would be able to participate in projects up to 49% power projects. But they couldn't do it up till now, but they're going to change the law so then there will be a bit of possibility that, there will be some intervention, but right now there is no intervention directly.

<K>

Maybe, I should have said that the there is some dominant power company exists, the existence of some dominant power company may contribute to the…

Ronald Fischer

Well, yeah, in the sense in the following sense that they don't want to invest a lot because what they want to do is if you have – suppose that there is only one company that can produce here so that company will expand its capacity very slowly so that you're always around here at this price. That's what I think what you're trying to say. It's true.

<K>

But I think that's not the main point of your research.

<M>

But in the beginning they have, Endesa has had a lot of water sources and in that point, the regulatory body or Chilean government, how expects their future energy plan for the future after the privatization?

Ronald Fischer

But the privatization, you know, it was like '87, like 30 years ago I don't know. It's a long time ago, 30 years ago or something. Well, what they expected was that the market would work, and they didn't – what they didn't take into account is that when they – there was a mistake, I think when they sold Endesa, they sold it with all of the water rights that they had then and they had most of them. All the good projects basically – not all of them, but most of the really attractive projects of water things were in the hands of Endesa. They were the only ones that could build them. That was a problem.

<M>

They sold water rights to…

Ronald Fischer

Well, they had the water rights to begin with, so they kept them and they won't sell them and they won't use them so the price would rise a bit more. What they did afterwards I can't remember when like 2000 or something like that, they put a tax on the water rights that were not used, a small tax, not very important and so the government collects, so the idea is that Endesa would leave this water right.

<K>

Yeah, transfer the water rights to different companies.

Ronald Fischer

But that hasn't happened yet. On the other hand, in any case, you can't do any projects, so water projects are very difficult to make, no matter what, so it's kind of, they have all these water rights, but they can't do anything with it.

Well, there are lots of interesting things, but you have to ask me a bit that I might be able to tell you. I have something, oops; I was just throwing it away. But look, you will probably get this. This is the report of the government of how their…

<M>

The new agenda?

Ronald Fischer

The new agenda, you are right.

<M>

The new agenda for 2050?

Ronald Fischer

Well, not 2050. That's just the agenda for this year, what they have done, what they have achieved, I don't know if you find it interesting. You'll probably get it somewhere else, but it's also in the webpage, so it's not that difficult to get.

<M>

What do you think what is the most problematic situation in power sector in Chile nowadays they fronted?

Ronald Fischer

Well, I think some of the problems have been kind of reduced in intensity in the last year. We had serious problems, but in the last year they solved some of them. But the biggest problem right now is to make some transmission lines from the north to the center of the country because we need those. They're building them but apparently there is opposition. That's the most important thing. What

they're trying to do is to compensate the areas. Way of compensating the areas through which the power lines goes through so that they won't be sole post.

<M>

Regarding to the transmission line connecting north and center, I think the problem is no one wants to invest to the transmission?

Ronald Fischer

No, they want to invest, they want.

<M>

Because it's less profit than the…

Ronald Fischer

No, it's very attractive.

<M>

Attractive?

Ronald Fischer

It's very attractive…

<M>

Why?

Ronald Fischer

Because the way it was paid now is what the company does is the way the transmission line is auctioned and the way it's auctioned is the company asks for how much money I want to receive each year for the next like 50 years. Let's say, $10 million for the next 30 years, and you receive that no matter what, so it's very attractive. It's your own choice how much you ask for and it's permanent, there is no risk.

It's very nice for pension funds. Pension funds love them because its long-term, it's very safe so and it has a high return than a bond so very attractive. The Canadians are investing a lot, the Canadian pension funds.

There is no problem. I mean so long as the transmission line belongs to what is called the Sistema Troncal, which is the basic system. It gets paid very well. Then you have the lines that – suppose that you have, so this is the central line, so Santiago is here, and this is the line that goes from south to north and there is another one from the other way. You don't have much of this way because this is a narrow country. Suppose that you have a project here, so this line that connects here, that is your own. That one, you have to pay for yourself. That's sometimes very expensive because there's a lot of opposition from the families living here, etcetera.

But this one, if they tell you, you have the right to expand this part of the line it's a very attractive business. You can get, so lots of companies participate. There is no problem with investment here. Problem of being able to make the line, but there is no problem.

<M>

But what is the real problem with this transmission line?

Ronald Fischer

That is very difficult to do them because there is too much opposition. It makes it very, very expensive and very risky because you don't know if you will be able to – suppose that you have a contract to have a line in two years and you try to put the line and there is so much opposition that you can't do it, or you have to pay so much money to go through somebody's land that the costs go up too much, so that's the big problem.

<K>

Let me ask a question. I think you mentioned about some dispute regarding the transfer of transmission, not transfer, the transmission line owned by Endesa and Colbún's privatization and I think Endesa didn't build the transmission line.

Ronald Fischer

Yeah, well, I can show it through here.

<K>

Yeah, and that transmission line dispute was solved partly by the newly established expert panel at that time I think.

Ronald Fischer

No, not by the expert panel by the anti-trust, so what they did is they ordered Endesa to sell the transmission line to transmission company and that was sold to the Canadians at that time. What happened at the time before that is that Colbún wanted to connect here, and they had an expansion and they couldn't, so they had to build their own line to Santiago. If you go to the hills, you'd see a line around the hills. It is very expensive for them, but it was better for them than going through here because they were asking them so much money. But now the rules are different. That was in the 1990s.

<K>

Yeah. I think Chile took about let's say 20 years to finish the privatization from the 1978 when the CNE was established and until I think 1999 or I forgot, but, all state-owned companies.

Ronald Fischer

Until Colbún was sold fully.

<K>

Yeah, to the privatization. During the 20 years, I think Chilean government established a CNE and utilize that anti-trust committee, I don't know, anti-trust something or as I mentioned some expert panel.

Ronald Fischer

The expert panel was later. The expert panel I was a member so…

<M>

2005?

Ronald Fischer

'04 or '05, yeah. '04. The expert panel does disputes – well, it doesn't, it wouldn't do something anti-trust. Something that's anti-trust, they won't be able to do that. That's a different thing, but it's very nice, because not only they pay very well, but also that you have complete power, you have total power. Whatever you say, not even the Supreme Court can go against it so there is no appeal.

<M>

You are saying now…

Ronald Fischer

The expert panel.

<M>

The expert panels.

<K>

That's the final decision.

Ronald Fischer

Yeah, that's very nice. That's very powerful then.

<K>

Do you think the influence of such CNE or anti-trust committee or something, or expert panel on the overall result of the privatization of Chilean power sector?

Ronald Fischer

Well, not on the privatization but on the working of…

<M>

Regulation.

Ronald Fischer

Yeah, well, the experts' panel was something that the companies wanted. It was not something that, I mean the government hadn't thought of it, it was an idea of the companies because what the problem they had was they had lots of disputes among themselves and the disputes – the government would take forever to solve them before it went to CNE and would change its mind. They would say yes, and then they would say no, and they would say no and take years and years.

If you want to go through the courts, through the judicial system, it was very slow, but also totally erratic. You didn't know what would happen. They invented this system, which takes 30 days and gives a solution. It might be the wrong solution, but the people that are on the panel are quite good and it gives 30 days, you get a solution in 20. Even if it goes against you, at least you don't waste any more money. The companies love it. They really like it.

<K>

Was there any opposition to establishment of that expert panel?

Ronald Fischer

Of the what?

<K>

The opposition to the establishment of that expert panel?

Ronald Fischer

There was no opposition.

<K>

Everyone got some benefit?

Ronald Fischer

So far, I don't know of any opposition to it.

<K>

Was the establishment – the political process to establish the expert panel was easy?

Ronald Fischer

Well, it was part of the 2004, they for about 5 or 6 years – I think around '98, '97 people had been thinking of changing the law, to take into account some of the problems that they had at the time. They worked and worked and worked and eventually, especially with transmission problems they had lots of problems with transmission and the companies were opposed.

The Gener wanted very little transmission and Endesa wanted a lot of transmission paid by everybody, so they didn't have to pay the whole amount. This whole process took about 6 years and instead of getting a big change, they got little changes. That was Ley Corta Uno 2004-2003 and that Ley Corta Uno included the penalties expected. But it didn't solve all the problems. That's why it's Corta. Corta means the short one, not the complete law that people wanted at the time, but it solved some of the more urgent problems.

<M>

Ley Corta.

Ronald Fischer

Ley Corta means short law.

<M>

Yeah, the short law was backed by the 1999s the drought and the blackout, maybe…

Ronald Fischer

Yeah, there was some, yes.

<M>

…that would be the reason…

Ronald Fischer

That, the transmission, those all things pushed to change the law.

<M>

What the short law mainly focused on regulations, so because the expert panel is mainly focusing on the regulatory body, so regulation?

Ronald Fischer

No, it's conflicts, especially with huge companies.

<M>

But even there was the already existed the CNE?

Ronald Fischer

Yeah, the CNE existed and the SEC existed, the Superintendencia de Electricidad y Combustibles, which is another regulatory body, which punishes the companies for mistakes, procedures, and things like that. I think you're right, one of the problems they had at the time was at the time of the crisis, they found out that they didn't have some of the tools they needed. For instance, there was a tool that they needed was how to preserve the reservoirs that were close to collapse. Because the reservoirs have two different benefits, one is they generate energy, but the other one is they stabilize the system. What happens is that with the rules at the time, they could only consider the role of generation, but not the roles ability.

One of the things that happened was that when they went very low, they should have stopped using the river and just used it for stabilization of the system and they continued draining it until there was no capacity and the system became very unstable and collapsed. They needed tool for that. Now, they have a tool which is [Unclear] or something like that, I think that's the name. [Unclear] means that that the reservoirs are used much more carefully, so the costs go up, but at least you have more security.

Then there were other things, for instance, what do you do when a company doesn't have a contract, I'm sorry a distribution company. The distribution companies had contracts with the electric companies, what happens if they couldn't get a contract and they found out some companies had no contract. At some point they would to renew the contract, they couldn't do it. What would they do in those cases?

<K>

Build generation by its own?

Ronald Fischer

No, it would take too long and besides, it's not part of their business. The cost would be too high. No, what they did was, the government put a rule that said that since everybody had to – all the companies had to collaborate and selling them at an average kind of price of all the other sales, so, but that was not in the law, it was just, I think that the regulator didn't because there was no option, they had to do something and then they put it in the law basically, something like that. That was another thing in Ley Corta. There were lots of things.

Then they had rules about how to expand the transmission system, that's also part of the Ley Corta. That was what they spent most time fighting about. Then they found out that there was not enough, so they had to do the Ley Corta Dos, which was like 2 years later.

<M>

Chile got initial success from the reform and then they got some problems after the power sector reform. By the new law, Ley Corta, short, they have responded to the previous fronted situation until now. I think the new enactment and new law would be main reason for the current situation so in the process they had some capacity to regulate and operate a power system. How do you think?

Ronald Fischer

I forgot one thing about the Ley Corta; they also put in the, the basic rules for having renewables, nonconventional renewable power sectors. That's very important and it's now finally working really well. I mean, the renewables have become very important and there is no subsidy here, which is quite impressive, because for instance, Japan, I think they have quite a few subsidies.

<K>

So high – highly subsidized.

Ronald Fischer

Well, here the energy is so expensive that, of course, you don't need subsidy. That's the reason.

<K>

I don't know which is better.

Ronald Fischer

At least it's not distorted. If you look at, there's a graph that appears in the latest report of the system, there is a law that says that you have to have a certain amount of renewables and we have like 80% more right now, so the law doesn't even apply, it's just.

<K>

It may finally reduce the power price?

Ronald Fischer

It's having that effect, yes.

<K>

Sorry, I think you mentioned that the regulatory bodies – before the Ley Corta Uno, the regulatory bodies didn't have or lacked some tools to control the power sector and then that was the reason why the Ley Corta Uno was created.

Ronald Fischer

Yeah, but it wasn't enough.

<K>

You mean Ley Corta Dos was created later?

Ronald Fischer

Yeah. Even then, there were some problems. For instance, one of the problems they had was that the way in which the CDEC or the systems that dispatch and they are also the kind of short-term regulators of the system. They have lots of roles. They enact when there is very little water, they put the rules and how they operate. They have rules about, something that's very important, which is the maintaining when a plant has to be repaired and they have to plan this thing a year in advance or something like that. There are lots of small details.

I mean, it's such a complicated system, you have the law, then you have the regulation, then you have another level, which are the resolutions and then you have something called the manual de procedimientos, which is like the low-level operation system, which also has to be discussed between all the companies.

What happened was CDEC with this manual de procedimientos, which is how you actually apply the rules was the big companies had lots of power in it and they used it to their own benefit in a sense. A law that came afterwards like 2 or 3 years ago kind of tried to make the CDEC, the system of dispatch even more independent of the companies. They are a bit autonomous.

<K>

What's that?

Ronald Fischer

CDEC

<K>

CDEC, was it caused by some law?

Ronald Fischer

Yes, there was.

<K>

Some law made CDEC more independent, autonomous?

Ronald Fischer

Yeah. You have good handwriting even in a different script.

<K>

Did it take place in at almost the same time of Ley Corta Uno?

Ronald Fischer

No.

<K>

Later?

Ronald Fischer

That was 10 years later that was somewhat 3 years ago. I think the Piñera government in the middle, in small laws in the last few years; they are trying to improve little things, the left, because Ley Corta was Corta, so it didn't incorporate everything.

<K>

You mean so no single solution solved everything, so just as gradual.

Ronald Fischer

There've been gradual changes.

<K>

Improvement, okay.

<M>

But in developing countries like Philippine, there was a very strong interference by the politicians, so how about the Chilean case, in this kind of?

Ronald Fischer

Well, I think, the way in which it manifests itself is by making very difficult to invest in plants. Endesa for instance, just last week decided not to continue with this project in the south, the HidroAysén project because basically because of, you could say political things. Mainly it was political. They made it very difficult for them to develop the project, so they made it impossible, actually. There are some that, there are some basically the interferences that you can't do things, you can't invest in some areas. There is a lot of opposition. That's the political system intervenes and that's the way it works. It doesn't – there is very little naked intervention. It's usually through the local opposition or even global opposition in some cases.

<K>

Well, let' say, for instance, in the selection of members of that expert panel, the large company would like to have someone who is preferable – make preferable decision to that large company.

Ronald Fischer

Yeah, but now I think it's become much more independent because now the members are chosen by I think the Alta Dirección Pública which is a kind of – it's a part of the civil service that selects the personnel. In a sense, it's more independent of the companies.

<K>

About conflict resolution, I think all companies – even the large like Endesa would like to have it.

Ronald Fischer

Yeah, they love it.

<K>

Yeah, but on the other hand, I'm not sure about like CDEC?

Ronald Fischer

I'm sorry.

<K>

CDEC. I'm not sure about the independence or autonomy of CDEC would be preferable, desirable for the large companies?

Ronald Fischer

No, they don't like it, but they are the – there has been a big push by the government and by the political system to have some independence because they feel out that there are some problems caused by the lack of it.

<K>

I think the characteristics of Chilean case would be that the Chilean government always make, let's say, good decision.

Ronald Fischer

No, not always, but, well, I would say they usually don't do stupid things, but they don't always choose the best option. They usually don't do something really stupid, that's true. Except for the – for instance, something my impression is that that doesn't change. That has been the case because, up till now, basically, the technicians, the people who are the engineers, the economists, and people like that have had the power in this thing, but that has changed now in the last year or 2 years it's the politicians who are in charge and I think that, well, things will quickly become worse. Because politicians respond to very short-term priorities, so there'll probably be some stupid things coming out.

Up till now, basically you move in the right direction, perhaps not being the best thing that you can do and you forgot to do some things and you had pressure. But I guess basically positive and now we are having, well, of course you can't invest in plants, and we can't do electrical lines and that's very costly.

We had a big problem, I don't know if you know this. We – like 15 years ago, we made a pact with Argentina to import gas from them at a very good price. We've built the pipelines and we invested in power plants, very efficient power plants, combined cycle, so very nice, very nonpolluting. They had all the benefits and the Argentineans, and so our whole system changed from being a system which was based on coal and water to one of which gas was very attractive. One of the things about gas is that you can put them very close to the cities because it don't pollute. There's one in the middle of the city, there is a power plant.

For a while, you didn't make any extension of the transmission system and then the Argentineans stopped sending gas. But at the beginning you never knew if they were going to continue sending gas or they would stop completely. For about 4 years nobody knew if they had to invest in something else, or they had to keep what they were doing. That was immensely costly. That was a huge cost and so now we – I think everybody learnt a lesson and nobody wants to depend on one country forever again. I mean, you can depend on lots of countries, but not on one.

<K>

But that would be one of the – that could be one of the incentives for Chilean government to consider more seriously about the regional power grid like from Colombia to Chile?

Ronald Fischer

Well, one point, I think that we would only consider it if we have a way of, if it wasn't one way, but it was two ways, because we don't want to have a system in which they can cut us off. But if we send, the other way, then we can punish them if they misbehave. That's the…

<K>

Yeah, regional transmission is always very difficult solution, but…

Ronald Fischer

But they have in Central America, so it's not impossible.

<K>

Yeah, SIEPAC.

Ronald Fischer

No, here the distance is very long, so that's a big problem. This is a very narrow country and it's…

<M>

Really narrow.

Ronald Fischer

It's narrow like Japan, but not as great as much.

<K>

No, we have very similar problem that we don't have much energy resources like oil, gas, coal. We only have hydro, so that's why we – not heavily but depends on nuclear power stations.

Ronald Fischer

Right, but now you're stopping no?

<K>

It stopped.

Ronald Fischer

That's a folly. I didn't think it was a good idea.

<M>

But now you know, the oil and gas price is getting down, going down so…

Ronald Fischer

Yeah, but…

<K>

It's not a long-term thing, it's a short-term influence, but.

Ronald Fischer

I mean, Fukushima wasn't so bad. I mean.

<K>

But I think probably the electricity price in Japan will go up soon, definitely. It's very difficult to restart nuclear power station.

Ronald Fischer

I've been to Japan a couple of times, but a long time ago. It was interesting, it was very nice. I liked it. No, besides I'm a great lover of history of Japan and I also read the history of Genji.

<M>

Genji, oh. As a whole, what do you think the some influential or political factors in the, let's say, partly successful privatization of Chilean power sector.

Ronald Fischer

My impression is that I think the fact that mainly people who understood the economics and weren't – they didn't have a lot of pressure from the political side, for a long time until recently basically manage the system, so those guys want to do things that are fairly good. Sometimes they work for a company and they would bias things towards the company but they don't want to get too far away from.

Now, the fact, for instance, prices would have been lower if there had been more investment in water in the early '90s, for instance. But the Endesa, which had all the water rights didn't want to or most of the water rights. Now, you can't invest any more. I don't know how you manage to dam all your rivers, nobody complains?

<K>

It's very difficult.

Ronald Fischer

No, but you have more dams, I think, no?

<K>

Yeah, but we almost building dams about 20 years ago in Japan.

Ronald Fischer

But you've damed all your rivers right now so there is not much space to do anymore.

<K>

Right.

Ronald Fischer

Here they are doing the run of rivers things, I like dams better. But nobody likes them.

<K>

Yes, they are difficult. It's difficult.

Ronald Fischer

Yeah. But the other option that we have here is because now, apparently, we're going to depend a lot on solar energy because it's the – as you know, the installation levels here are huge, so it's very – the cost of having solar is very low. In a sense that the solar cells and the photovoltaic cells operate at very high levels and also the other systems. And it doesn't work at night, so but it compliments itself very well with water so what I would – my proposal is to have in every part where you have the run of rivers thing to have a small dam, very small, but enough to work for about 15 hours. When at night, when this thing doesn't work, you have the dam to.

<K>

Yeah, that kind of the micro-hydro power station is a new idea.

Ronald Fischer

Well, no. This would even be the big ones, that you have a small pool for a few hours, doesn't have to be a reservoir, but just…

<K>

For stabilization or to cover the night demand.

Ronald Fischer

Exactly.

<K>

Yeah. But I think you mentioned about the technocrats, so I think that technocrats would be one of the key factors.

Ronald Fischer

I think that was one of the key factors and for a long time in Chile, the technical and engineering, at least in these areas have been dominant, but I think now it might be changing, so I'm not so sure. My impression is that I don't know if it's the same thing in Japan, but here the idea is that in a sense, everybody has the same right to have an opinion. Even if the opinion is, let's say, stupid, you still have the right to say it, and that is almost as valuable as the one of an expert. We're having that problem now. I don't know if that can be solved.

<K>

But until a few years ago, the economists and engineers were relatively independent of political interference.

Ronald Fischer

They could just build these things, work these things out.

<K>

Even after the Pinochet?

Ronald Fischer

At least until 5 years ago or 4 years ago or something like that and then they started losing power with it.

<K>

Is that because of some culture or…?

Ronald Fischer

A cultural thing. I mean there has been a change in the way of which people perceive – people want a more democratic country in a sense, having people who know decide is not very democratic. Of course, it gives you good solutions, but people want to have a say.

<K>

But I think the role of export would be very big to…

Ronald Fischer

No, one thing is an experts panel, but that's a very isolated thing, but in general, the experts in a sense help to design policy is I think becoming less and less important, which is not good. I don't know…

<K>

It used to be important in this country.

Ronald Fischer

Yeah, all policies were basically tested by experts, so we didn't do many stupid things. Now, my impression is that yeah, because don't want people that are experts deciding things, for them. They want to decide themselves so they elect politicians, politicians will have a free run and that's I'm not sure I think. You have that too; politicians have a lot of power and so on.

<K>

Yeah. That's our problem. Yes, any?

<M>

I think for me, for my impression, the balancing between technocrat and I mean the technologist or economist and the politician would be very appropriate in the process of Chilean power sector reform and privatization. They continuously make independent system, independent body to regulate power up to now, so I think it could be one of the interesting things.

Ronald Fischer

Conclusions, one of your conclusions.

<K>

I am not sure about that.

<K>

Yeah. Probably, I mean, I'm not...

Ronald Fischer

No, well, that's my impression.

<K>

Just last question. Do you know any article, or paper, or something in which the policy process of the establishment of creation of the Corta Uno is described, about 6 or 7 years policy process?

Ronald Fischer

I'm not sure there is a history. You will have to research, but there are not many people who would have written it.

<K>

Maybe we should have asked about this to Mr. Jadresic yesterday.

Ronald Fischer

What's important is, perhaps, let me see. We wrote – let me see, because I wrote several years ago, just I remember.

<M>

Oh, you wrote?

Ronald Fischer

No, I wrote something, but I'm not sure where that is. I also have very bad memory about what I did.

<K>

Well, I think that policy process would be very interesting.

Ronald Fischer

Some years ago, we wrote something about – at some point I wanted to write a book about what happened in Chile history of all the regulated systems, so perhaps there's something there, but I have to. It's like old stuff so I'd have to look at my old. I don't even know where it is, that's the problem I have. Let me see what…

END

Meeting Note #4

Date: 2015 01030

Time: 3:30PM~4:20PM

Place: Santiago, Chile

Interviewee: Bruno Philippi

Interviewer: Minju Kim(M) , Shunsaku Komatsuzaki(K)

Bruno Philippi

I decided to write down some of the experience we had, not in every detail, but in basic principle. In Latin America, it's very common, what you're seeing there, and probably in Africa too, and in Europe some countries too. It is a mixing of the role of the state as a regulator and the role of the state as an entrepreneur. What happens when you do separate them, the entrepreneurial side captured the regulator in a minute. At the end, the state company regulate, operate like Électricité de France for many years. Japan had some problem like that too…

<M>

Yeah, right.

Bruno Philippi

…as far as I remember. But that's the story. Essentially here what it does is a description; simplify what we learned in Chile. Some of the thing would be applied, some not. But the political problem to try to implement this story and put it to work because essentially, you destroy the system that had been used for years and the bank don't like it, the big engineering companies don't like it, the equipment suppliers don't like it because what we tried to do was to introduce more competition, and essentially deliberate the prices of the generation of electricity. The system flourished and has been applying for the last – this is '91, and this was done in '81. This was written 10 years after. Some modification has been done and probably many more could be introduced. I have that in Spanish. Spanish is longer.

<M>

Longer.

Bruno Philippi

It's longer because it's more detailed. But you can skip all the numbers, because the numbers doesn't make any sense because they're old. Spanish version of the story. I'm sure because I am

participating in a group, people in the United Nation on 9 November, and a few weeks ago. I'm sure it's here. But this is in Spanish. This is more detailed and essentially the same, but it is much more detailed.

<M>

Oh, thank you. Spanish.

<K>

Is this published somewhere?

Bruno Philippi

Excuse me.

<K>

Is this published?

Bruno Philippi

Yeah, that was a long talk in the university and they did that – they took note and then actually corrected. Alas, you will see [Unclear] and you'll see the date is very similar. Probably it was a few years after '92. But this is an expanded measure of the story, a more detailed. With the consideration that the numbers aren't relevant today, but the system is the same. How we proceed? How do we centralize?

Essentially, the main task here was to make competitive a sector that was not competitive. We were not aiming to privatization. Privatization is a political decision and we were not political authority. What we did was to create a system fourth generation company to compete and what we are describing are the problems we encountered in doing that.

When the system was working for 3 or 4 years, the government decided that it could be more advantageous to let the private sector participate, but then the government really had to provide all the money for the investment and the system regulated itself better.

At that time, the pension fund system was created so there was an incipient capital market in Chile and you could raise money to sustain the investment. The system now is 100% in the private hand.

The problem is over the years, the regulator has been introducing some changes, but not based on technical consideration, but on political. In my opinion they destroyed part of the advantage of the story. Because you know, private sector, particularly if they see the possibility to get something from the government, they grab it immediately. The idea here was to keep the government out, only as a regulator, and be very strict with regulation. That's it.

<K>

You mentioned the state should have both roles of regulator and entrepreneur, but in Chile only regulator. The entrepreneur…

Bruno Philippi

But when we started, both would meet together. The company essentially was the regulator, so then they would regulate themselves, so you never knew what was happening inside. Separating that, creating a framework for regulation, and applying that framework to the state companies – they were all state companies – and will run the system for 2 or 3 year, with a lot of fight with the companies. They went to the politician, and they put a lot of pressure, and everyone complained. But at the end, we survived and they learned how to live in the system. Once you start privatizing, the system sustained itself much better. You create a different interest and conflicting objectives, that's what you want, as long as no one can capture the other for free and that's it.

<K>

First, you started from the establishment of CNE in 1978, and then started the privatization after three or four…

Bruno Philippi

No. What we did in CNE was to organize a policy for the whole sector. We never talk about privatization. The decision was not done by CNE, it was done by the owner, and the owner is the government and the government runs his company through another organization. CNE essentially is a regulator. But once you impose the rules – well, the government had to apply the rules and they applied the rule and did end up in privatization. It was the same for the oil and gas sector, and for the coal sector, and for the rest of the stuff.

In oil and gas, we had one hurdle [ph], because we didn't have much oil and the union thing there, small oil company we have, was strong. Since they were not extremely relevant, because they had to buy the oil, no matter what, we concentrate on just forcing the state company to be competitive with import. We liberate the import and apply exactly the same rules to the state company.

The distributions were private, most of them. They started importing. There was a fight and because they – easy to say they start importing, but all the big tanks, all the facilities, all the terminals belonged to the state. We have to create the regulation to open up all those facilities under the ownership of the state, but put transfer prices the same to everyone, to the government company, and to the private company. As long as they fulfill that, they complete the stuff.

<K>

As you said, probably, obviously stream regarding the more competitive power sector and another stream of privatization, so took at the same…

Bruno Philippi

Essential, the role was creating the regulation that allows the system to operate efficiently. Once the system operates efficiently, a different decision done by different authority – I mean political authority – they say, well, this thing could be run without the government as long as government keeps their role as the regulators did that. Then they start selling shares and that's it.

<K>

Yeah, I understand it.

Bruno Philippi

They need to do that because as I said before, the government started the pension fund system and that created a capital market. I mean, it doesn't make any sense to privatize energy sector, if you don't have a capital market. Because at the end, you don't have that, the government had to provide the money so what's the difference. Have to be something that a coherent macro system, with the risk you are facing. Once, the pension system was created, probably you will have to look at that, too, the Chilean pension fund.

The pension fund savings – personal savings of each of you, but they need to invest this money. But at that time, obviously, most of the investment was done in Chile. Now, they're allowed to invest everywhere, or roughly. But they didn't have much to invest in Chile. The big corporate company belonged to the state and they didn't open it. But the energy sector, particularly the electrical sector, is ideal for pension fund, long-term, single-firm, relatively small. They need a lot of money for capital, bonds, so they started emitting bonds, and then they started floating shares. The government had to transform the state companies in corporation and the government retained the control of those companies for many years.

But again, the key story was to force them to operate as a company, not as a state company. That was a big fight. In the sense, that one we said okay, and that was done by the CNE. This is now

corporation, even though in 95% or 100% owned by the government, the rules are the same that had to be applied to the small electrical companies that are private, but the state-owned were the biggest.

We will request every year, as a government, as a main shareholder, a program what you intend to do during the year, a financial program, an investment program, and result. We would like to know what do you expect from the result to get. At the end, they thought that was very easy and they produced all sorts of numbers and they said, well, we will be able to have a profitability, I don't know, of 8%. We will generate such and such and you lend us the money for the investment, great. You say that the investment, they have to have rate of return, its okay.

Obviously, in the middle of the year, they run out of money, they use all the money. The project that should be costing 100 was over 200, so there was no way to recover the money, implying that there too. One of the thing that was done, because this company goes to the government and say, look, you are the owner and we need the money, we don't have money for electricity.

We were going to do the same that the shareholder does in a normal company. You produce a forecast of what are you go to do during the year. You need so much money for investment and you say that with this thing, you will have a rate of return of that much, right? This means so much money.

Great. Since the owner is the government, the owner decides to collect that money in advance. The company is saying we don't have the money. No, we know that you don't have the money but if what you're saying is true, borrow money, not from the government, go to the banks and explain them.

They have never done that they didn't like it because from the government, they didn't have to explain anything. When they went to the bank, they realized that the bank would like to know all the little numbers in this project and how come they guarantee that they will generate that amount of money. They start borrowing money with [Unclear] guarantee.

They run out of money, they didn't have enough money, so they said – the government said, through CNE, you don't have the money, okay, get rid of some of the things that you have. You are running a big company for transportation and you don't need them. You can secure them in the market at the fraction of the price. They did that. This one was supervised system for a few years. This things was not automatically. You have to be there to do that.

When they realized that they could do it, they became pretty competitive and also they have to reduce the number of people. Usually, you have all sorts of useless people. They have very good competent professional. But since they were public, the politicians keep sending people there to be hired, you see, people that run for the Senate and didn't get to the Senate, so they have to be hired well in some

company. They do this, it's done everywhere in the world. Well, you cannot sustain them, so decide what you intend to do.

The key story to what we learned is that you let the system free too soon, collapse. You keep an eye on them and control them, they hate you for that. After a few years, the system was running on its own. When it's running, you can privatize it. Before that, it's an issue. That was done in several countries. They privatized without the framework that made sense. At the end the government ended up transferring money to the private sector. Does not exactly use it for the sector, they use it for other thing. You didn't give anything and they will say why the hell did you privatize this. That's the key idea.

<M>

When CNE established in 1978, how does the CNE organized? Who designed the CNE and who are the main workers for the…?

Bruno Philippi

It is explained here.

<M>

You explained here.

Bruno Philippi

I mean, CNE when we started, was a very general framework and essentially we shape it, but we were – for most of this process, we were, trying to remember, six professional, two secretaries and one junior and that's it.

<M>

Very small – started from very small.

Bruno Philippi

Very small unit, with a lot of power. We have money and we have a board controlling for the – CNE was under a board of ministers. They were the Minister of Finance, the Minister of Economics, the Minister of Mining, the key ministers. You could solve the internal problem relatively easily, all with the discussions.

<M>

You are appointed by the…?

Bruno Philippi

I was appointed by the – I was at the university. I was a professor in the Catholic University of Chile in the system engineering department. I am civil engineer, but I have a Ph.D. from Stanford University in system engineering economic. The government said, well, would you like to face it? Probably I didn't have any idea about energy, probably was an advantage, they had misconception. I formed a little group. I tracked professional from the state-owned company and few of the private company and with that group of five or six, we started facing the problem. It was very dynamic. You will see that. That also you try to describe in there.

<M>

Main compositions of the workers are technical expert.

Bruno Philippi

Technical experts and let me say, the technical expert is key because in most of these companies – I am sure Japan has more than here, you may have useless people in some of the state-owned companies, but all of them have good technical people. Maybe less than what they should have. They are taking up people, good technicians; they don't have any other place to go. This is the only area that they could do well on the job. But once you recognize them and you start discussing at the technical level, with intelligent people and technically – even though you don't agree in the general concept, philosophical concept of how the economy should be run, you can reach agreement very simple, because technical matters are technical matters. That this doesn't work this work. They've tried this thing, they've tried this other.

But once we designed the system and once we had very good [Unclear], but we look at why do we did that, not before, before passing the law, we look at what was the experience in other countries. We look at the – where we had information we looked at France, England, the States, Belgium. There are several. I guess they are described in there. I sent a group of five people, spent about 1.5 month or 2 months, but they already had their own idea. If you do that before thinking about your problem, you try to copy things. It could be seen in every work and we realized that a substantial part that we are proposing was done in one way or another in different country, not in one complete coherent form.

France and England was the inventor of the marginal system. They designed the story, they started doing it, but they didn't apply it, after a while probably because Électricité de France was state-owned and didn't want to be controlled in such an efficient way. It doesn't make any sense but they did and that's what we did, to apply the concept.

I mentioned some of the key papers there; there are a few on it. One is what – the one that – you're familiar with marginal tariffication, right? One key paper, which is the basis of the coherence of the marginal tariffication system and that is the reason why it worked here, is that you charge the energy at the marginal price of energy in electricity. You charge the power at the marginal price of power. You cover investment at operational cost, with some assumption.

The problem is that the assumption had to be real. The key assumption as far as, I remember – I've been out of this story for a year, is that the system doesn't have real economies of scale. Government had the idea that you build the huge nuclear power plant is much more efficient than having several relatively small, is not true, you look at the number. It is very similar. It seems very similar, the adaptability of the system is relatively easy because you need to build huge thing for economies of scale, as it is complicated, with jumping steps.

There are some complications with the transmission system. The transmission system had that problem. You have to move in chunks. That's why it's usually solved in a different way. But you can define the marginal criteria for that too. That they did.

Well, the system, roughly, was adopted later. Its '91, right?

<K>

Yeah, '91.

Bruno Philippi

Yeah. This was quite partially enrolled that because in Argentina, they ask us how we did that, the Senate and we tried to explain them what we did. It doesn't mean that you have to do the same. But essentially, Argentina originally followed more of the same rule. No doubt, now, Argentina, as I mentioned, they just don't stay with it. But Argentina went through the same route, knowing that it would work because they looked at here, and they follow more or less the same path in privatization. Peru, the Peruvian law was essentially done with Chilean consultant. New Zealand, partially England and the States, when they understood the problem many year later. That's it.

<K>

Why do you think the result differs from country to country? Chile, it could be said be successful but if you look at…

Bruno Philippi

Why, because the political interference. I'm sure that Tokyo Electric is extremely powerful. You might be right to conceptually, and technically, and philosophically, what should be done, but they don't like it. They have to convince government officials that usually do not have the training, the knowledge, and arguments that are half argument because at the end that's the real world. You have to work with that.

Right at the end of – hopefully the rule had to be simple. Only marginal pricing, many countries apply it but not completely. And as far as I remember, Japan has been doing always that story. You look at the real marginal cost of generation at your facility, you organize and you order them in a proper way. In hydroelectric [ph] system like this, it is more complicated because you have to create an artificial marginal price for the water.

In the case of Chile, it was not that difficult because we do have one big lake – big reservoir capacity and essentially you assimilate the water at that lake to a variable marginal price. There is a lot of water and marginal price is very low and therefore the hydroelectric plant, and the low – inexpensive coal-fired plant or gas-fired are dispatched. The water is scarce, you just are using units that are more expensive to operate and that's it. No more than that.

<K>

Why do you think the Chilean government or the power sector could avoid the political interference?

Bruno Philippi

Difficult, but we've got the bank, the company, the people, the user, when you have the government on their side that happened in Chile, and probably the same everywhere. The big industrial sector, private or state-owned, they like that because they always complain to the world, we cannot be more efficient because the electricity you're selling is expensive.

<K>

Mining companies.

Bruno Philippi

Exactly. You subsidize it. At the end, the electrical company usually may not give enough to subsidize, it's not their money. They transform themselves into an engineering company. What they want to contract or to build things. The more electricity they make and the more subsidy they have, the easy it is, and it's more difficult for the government to control what are they doing. I think I saw that in many countries, in Colombia, in Europe, in several places. German probably was a good example too because they decentralized the system. They operate locally. Once they start moving in this direction, they lower the price and it's much more robust.

You need to coordinate this. This is the other part of the story, this is the dispatching – economic dispatching center, which is assimilation of the market where everyone said instantly what can they offer at what prices and that the dispatching center independently hold that and who have the contract guaranteeing continuously that they dispatch at the minimum cost. You have a run of the river plant, that you have a lot of water, you only dispatch first what is zero. If I have a coal-fired plant, which is relatively old and you have one that is new, you are next [Unclear] at the end. That's it.

With this story, probably there is a picture here. With this story, in Chile, Chile is a small country, [Unclear] like, no comparison with Japan, but when we started in '78, we started in '80 but '78, it was really. There were two big state-owned electric companies. Chilectra, that used to be private, but was set aside and Endesa. They have distribution and the distribution buyer, each one. Therefore, this was more thermal and this was more hydroelectric. Another problem we had, [Unclear] with certain license situation. Sometimes you have excess of water and this company generating is coal and you don't need that. But there is no incentive for this company to stop the generation, because stop generation doesn't have an income.

One thing that is very difficult is to try to coordinate state-owned companies. Usually you don't coordinate because they are sort of independent. After the system was transformed, I remember there was a graphic here, not here because I haven't, one second. It's also there. I get, here it is.

Now, what is the new system? We're separating the state-owned companies, big generation facility, hydroelectric and thermal, so you create several generation companies, all state-owned. They don't sell directly to anyone. They are dispatched but this Economic Dispatching Center. This is the guy who coordinates the demand from the end with the generation in every part.

Here you have, let's say, this generation company could have contract with this client and was independent, free client, but sometimes this is not the one who supply the electricity, it's this one because it's cheaper.

What this center does is a clearinghouse. At the end of the month, they said, great, you didn't supply anything but it is your client. The client is paying you, but you have to return the money to this guy. The money is the cost of the generation, plus the transmission – the use of the transmission line. This is what the dispatching unit does. I am absolutely sure that Japan does the same. Most of the electrical systems uses dispatching center. It's a state [Unclear] but otherwise is a mess.

What happened could be disturbed easily and you have another complication that we don't have, but eventually we should, are the nuclear power plants. Nuclear power is different because nuclear power you cannot stop and run them as you please. Even a big coal-fired unit too is more flexible than nuclear. Nuclear essentially you're running for the whole year until you replenish the fuel and that's it.

Coal-fired, you can stop them and run them and you have to wait sometimes 24 hours, but not a year. Therefore, you have [Unclear] nuclear power, essential in base.

Fortunately, nuclear power, as far as I remember, the generation cost of nuclear power is very similar to the hydroelectric plant. If you don't count, which is a different story, the cost of disposal of the fuel, which at that time, no one really cares. Considering, we didn't have nuclear power, we didn't you look at the problem. That is true, but you can accommodate that. The British did that. They put the nuclear power as a baseload generation and you can do that too. But that essentially is the problem.

Now, with the marginal tariffication, there should be a graph. That's it. Really, this is what's happened in Chile. You see, the prices are not flat. This is the price of energy for several years. This is the real price. This is the marginal price. This more rain, less rain, this is the hydroelectric system here, little rain, so the system gets stuck and you have to use more expensive unit deployed on top, then with very wet year, went down.

Now, for the household, it is very difficult to understand that one day the price is here and the other day the price is here. My wife would never accept that. What we did for the regulated prices, which are the distribution company, you created a moving average that anticipate, I don't remember 48 month, 4 years.

<M>

Two years.

Bruno Philippi

Just moves the whole story. Therefore, this thing is moving, but more slowly. On the other hand – well, probably you know that again, you have been looking at the system here, which have been key from the very beginning, you said, well, why do we need to regulate. You need to regulate essentially the small consumers, the household, and the small industry.

Let's free the electricity price for the big company. They didn't like it a bit, you see, because they say they could not compete, there was no way to negotiate and so on, particularly the state-owned company were the one who play with the corporate company. I would say no, you are big enough at the same time we open up the possibilities you want to build your own generation facility, build your own generation facility. But it is not easy to run a generation facility. You don't have an idea to do that.

Well, they did, probably but after a point they convinced themselves that they could negotiate because they have several generators. They're not forced to buy one. They can negotiate with anyone of

them. Once you did that – and today, I guess, today probably in the main interconnected system, 50%, at least of the price of electricity are not regulated. It is set by this.

<K>

Market.

Bruno Philippi

In the North, probably 90%. Therefore, you have a reference, if the marginal prices start getting too far away from this, there is something wrong. On the other hand, the companies frequently negotiate that price, so they look at the margin gap. This is public information. I think it would be public in the computer of the CNE or the regulator all the time. They can negotiate with you a different criteria, a different price, but the right way. But I keep that in mind.

Sometimes companies negotiate directly, strict marginal price with up-and-down because they have their own backup system. Others say, no. I will negotiate and I will ask price. We will like to update that price, not with your marginal system, but with the price of oil to mining company, because they use a lot of oil. You set the system free and it adapts much better, and if a regulator tried to regulate all the story, in this country that is relatively small. It's difficult imagining under Japan, it is impossible. With hundreds of generators big [Unclear] millions of companies, each one with a different criteria, with different needs. One would like to operate at 2 o'clock in the morning, the other at 2 o'clock in the evening; you can do things with that. Let them do it as they prefer, as long as no one gets a free ride. I'm paid.

<M>

Maybe the transparency could be…

Bruno Philippi

Oh no, it's essential and the information is always public. Before we started, the main generation company in Chile, Endesa was the one who decided the expansion plan of the system. They decided what should be built.

Now, we took that away in the very beginning, and it was transferred to the National Energy Commission. Essentially the planning was done independently of the company. What we did was to [Unclear] what to say to the company, you have project in mind, sure. Okay. Present them with this standard to make the comparison. Once you have them, you would put them in a classical optimization model and you say, according to this, with a criteria of minimum present value cost of the operation of the system for the next 30 year. With this, this should be first, this should be second, and this should be third.

What the regulator does in Chile is an indicative plan. It's not obligatory, not mandatory. The commission then he has [Unclear] when they run this story and they said, well, the more attractive generation facility, this new generation, look that should be this. The owner is right probably, not your problem.

But we also left open the possibility that if your company doesn't agree with what the regulator did and you want to build your project, you just go ahead and build it. What happens is that the information is right, you may lose money or at least not be as profitable as it should, because the system is optimized with all the information. We've used convenient to participate in this story, because indirectly, you know what your competitors are doing. The scale happened and some company decide to build the project because it's not a huge project, but relatively large. Because probably there is a huge mining consumption sector and they want to have a direct contract and they do it. They can do it, no problem.

What the planning unit does, take this all the data, include it as an offer that is for sure, run the model again and say, well, the system be delayed for a year because there is someone coming in between. That's it.

Now, I will come in and sign those contracts. He is responsible for those contracts. It happened that the same task will run and you have the contract because the mining company signed a contract with you, they need the electricity and they spend billions of dollars developing the mine. When they need they electricity, they say, sorry. The original system, that's what they modified and it's not precisely optimal in my opinion.

The original system said, okay, while you have a contract as a free client to you. But if there is no electricity, assume that the machine collapsed or it doesn't rain, if I was selling electricity at 10, and I don't have the electricity, the dispatching center keeps providing electricity to this consumer. But they know that I am not supplying that and if there is none, I take it at the price at this marginal price at the instantaneous moment. You are caught here and happen in Chile and I was selling you in the contract at this price. At the end of the month, the dispatching sent me a huge bill taking me to bankruptcy. I said, well, how come I have a contract for this price, but you don't have electricity at that price. The pricing [Unclear] for $100, but there are no [Unclear] for $100 in system, unless you provide them and we can see them. This is what I had the discussion.

One of the state-owned companies almost went bankruptcy and then the government then took a big hydro plant. We thought that was very easy to contract for the future, but they didn't realize that in hydro it's not firm power. The commission that is here has some criteria at the same in every hydroelectric plant in the world. There are some ways statistically to compete what firm power in a hydro plant would mean. But you can have a Hydro plant for 2000 megawatt and the firm power is 500.

Firm power means that you can supply them in most of the situation, let's say 90% of the case. But you can supply the 2000 only two minutes every hundred year, it doesn't mean anything, you have hit peak power and that's an history. You can sell it at peak power to back up someone and that's why it's important that tariffication system separates energy and power because sometimes you sell only power.

Let's say a guy doesn't want to – you have an old plant, very expensive to operate. You cannot compete with modern plant but you can generate electricity. If there is a collapse or a storm or some of the nuclear power plant are out, they will call for your electricity, then you can recover the money because you can sell it at big price. You have to keep the money, the company, the plant operating why they won't pay you and that's it.

The system pays you for firm power and for energy. While you're participating in this system, that you're forced to participate was very hard to sell, you get paid for power. On the independent generation not, the system calculates what is your firm power and that's it.

That's what you see sometime people that are buying diesel motors, expensive to operate and run, but those are for power. Let's say, a mining company, let's say you're going to buy electricity from the grid and the electricity of the grid is 100 and the power is so-and-so, but if the system is tight, if someone has a problem, the government convenient what is happening now to build new plant, I have to go to the system and pay a very high price for energy. If I have my own back power, what I do is I disconnect from the system and supply part of the electricity I need from my own generation facility and the big industry does a lot.

Most of the big industry has to have their own backup, independent of how the system is. Mining companies have to ensure that you have huge backup system. Because they cannot run the risk that the huge facilities stop for a day or two, immediately those machines start operating. On the city, here we have earthquake just like you and [Unclear] and finally the system collapsed, and it had to claim force majeure and it was a real big earthquake. Because the systems fail, because there are some maintenance, some small mill has a little problem, but they are up to you. The system is not easy with that. They force you to keep a very close eye to maintenance.

Now, you have an old facility and you get paid for power. No one called you because there are machines that are operating cheaper and you get money all the time. That's fine. But in the event that you need it, and the machine is not working, then you have to pay the big price at that moment, then you have to pay them big. This is more or less described in the information.

With whom are you talking in Chile?

<K>

We talked to, of course, Alejandro and then Professor Ronald Fischer in Universidad de Chile.

Bruno Philippi

Ronald Fischer is probably not familiar with the technical details. He has never been in the sector. You know, who you should talk to is Sebastián Bernstein. Sebastián, what we mean the Comisión Nacional de Energía, what's with the grid or [Unclear] the sector. Also Dr. Hugh Rudnick.

<K>

Hugh?

Bruno Philippi

From the Electrical Engineering, Catholic University. Hugh Rudnick.

<K>

Could you spell?

Bruno Philippi

R-U – I'll write it down. Engineering, Catholic University of Chile.

<K>

Is it different for Universidad Católica?

Bruno Philippi

Universidad Católica, it is. I'm saying the name, I should say Universidad Católica, you are right. Hugh is very familiar with the system. Having been a consultant in England, in the States, lecturer [Unclear]. Sebastián is the best source, you can talk with him. Have you talked with Sebastián?

<K>

No. Actually, we don't have the contact of…

Bruno Philippi

I can call him.

<K>

Oh, great.

Bruno Philippi

Do you have the number?

<K>

No.

Bruno Philippi

How long are you going to stay in Chile?

<M>

Until next Wednesday.

Bruno Philippi

Let me see. [Foreign Language]. Hopefully, he's in Chile, yeah.

<K>

Yeah.

Bruno Philippi

This is a bad time in Chile.

<K>

Yeah, it's summer vacation.

Bruno Philippi

Summer, people run away. [Unclear].

<K>

This guy is from Endesa?

Bruno Philippi

Now, no. Now he's from the consulting company run by Sebastián.

<K>

Yeah, but in the past.

Bruno Philippi

Let me write down the name. Sebastián.

<K>

Sebastián Bernstein, yeah.

Bruno Philippi

Bernstein. You have it?

<M>

Yeah, I heard his name from Alejandro.

[Foreign Language]

Bruno Philippi

Esteban Skoknic and they are in this address. This is address and this is telephone number.

<K>

At 9:30 AM, Tuesday.

Bruno Philippi

Málaga, where do you stay?

<K>

In close to Santa Lucia.

Bruno Philippi

Yeah, further down. You go all the way up in the subway – you use the subway.

<K>

Línea 1

Bruno Philippi

Right, Línea 1 and you get out in Escuela Militar. You walk a block.

<K>

Walk back.

Bruno Philippi

Back and you hit the Málaga. It's in the street on the other side and you walk half of the block and this is the building.

<K>

Okay, great.

Bruno Philippi

That's it?

<K>

Yeah.

Bruno Philippi

Hope, it is all right.

<K>

Yeah, thank you.

Bruno Philippi

This is general, but this guy can provide you many more details and update, we've been dealing with this story for many years.

<K>

I was very impressed by that you said, you called somebody, this guy from Endesa to CNE, hired that person.

Bruno Philippi

Sebastián was from Endesa too. I took Sebastián out of Endesa. That's where he worked. I took Sebastián out of Endesa; I took another guy out of Chilectra that was the other electrical company. I got a guy, very close to the state-owned oil company and the rest were young system engineers and that's it.

<K>

No opposition from Endesa or Chilectra?

Bruno Philippi

Always, but this doesn't really matter. This is a professional. Some of the people I tried to hire from Endesa, they didn't want to go because they feel much more secure in Endesa. Now, Sebastián was very open and he was the first one to go to the commission, was key. This is the guy who knows more about the whole system. Whatever I learned, I learned from him.

<K>

Sebastián.

Bruno Philippi

Bernstein.

<K>

Bernstein.

Bruno Philippi

Unfortunately, he's leaving Santiago today and he will be out for the next two weeks.

<K>

He is in some park, you said something.

Bruno Philippi

But Skoknic is the right hand. He is the second guy he has in the group.

<K>

Esteban.

Bruno Philippi

The group is called Synex.

<K>

Synex.

Bruno Philippi

This is his office.

<K>

His office.

Bruno Philippi

Because these things are general, remember I wrote this for the benefit of the country, I was dealing with the World Bank, right and I keep explaining the same story and was easier to use the Chilean example, but you don't force to them to take it. I told them, you cannot adapt this thing right away, you have to see what is your reality and there are good things, and there are things that are not that good, but we didn't it. You could do it better, that's fine.

<K>

Okay. Then, can we have your business card, if you have?

Bruno Philippi

Sure.

<K>

Maybe, she would like to send just one or two…

END

Meeting Note #5

Date: 20150202

Time: 10:00~11:00

Place: Santiago

Interviewee: Raimundo Soto

Interviewer: Minju Kim(M) , Shunsaku Komatsuzaki(K)

Raimundo Soto

I think it doesn't provide the incentives for the companies to operate a little in advance. In principle, it was supposed to have – we have this investment plan and the plan would determine the marginal cost of generation and the allocation of the different energy forms and the like. But I think it's weak in the sense that it can be manipulated, because basically what you have is you have an investment plan. You are assuming that say 5 years down the road, a new power generation unit say 100 mega will come into operation. But there is nothing guaranteed that the companies, which are private companies, in the end will do the investment and will be ready in 5 years down the road. If they do that, the marginal cost of energy goes down today, in advance of what is going to happen 5 years down the road.

The companies don't have much of an incentive to be very truthful in their plans. In that sense, the connection between future investment and short-term management, I don't think it's a very well-designed thing. The incentives are just not strong enough to produce the investment. That's one thing.

The second thing, which I have the impression that is complicating things is that there was nothing in relationship to different stakeholders, particularly the ecological movements and the local population, so it was very good from an engineering, economic viewpoint, but it has encountered a lot of problems with the way in which you have to do the environmental assessment of the project and the like. That is an area in which – so in that regard, the law fell a little short of what's needed.

If you look at it, this is one of the most expensive countries in the world in terms of power generation. I don't know if that is the result of the law or not.

<K>

But I think, at least, compared to the other countries in South America or maybe in other countries, I think Chile would be rather better than – has a lot better result than other countries.

Raimundo Soto

I think so. In the amounts of subsidies that you will see in other countries, you cannot find it here, that's true. That's why we're separating between the management, which I think it's fine. You have this conflict resolution panel, which I think operates quite nicely. That part is working well. The investment part, I don't think it's properly managed. I like the idea but I don't think it works. The idea allowing the private sector to have the strategic thinking in the sector that may not be very successful. Oh, hi.

<M>

Buenos días. Nice to meet you.

Raimundo Soto

Thank you. How are you?

<M>

Fine.

Raimundo Soto

Shall we move one chair this.

[Foreign Language]

Raimundo Soto

Gracias.

<M>

Gracias.

Raimundo Soto

Hi.

<M>

Hi, thank you.

Raimundo Soto

It was difficult meeting you.

<M>

Sorry.

Raimundo Soto

That's fine. You're also at the University of Tokyo. She's also there engineering also.

<K>

Engineering. She is more engineer than my. Oh, by the way, this is my business card.

Raimundo Soto

Oh, thank you very much. I don't think I have one. I may have one, ah, my shirt. All right.

<M>

Thank you.

Raimundo Soto

I known that the tradition is that you have to actually give the card like this.

<K>

You know well.

Raimundo Soto

Yeah, I've been to Japan a couple of times. Actually, I was there in November.

<K>

Oh, really.

Raimundo Soto

There is this annual meeting between the University of Tokyo and two Chilean universities, the Catholic and the Universidad de Chile. We have one meeting a year, one-time in Tokyo, one-time in Santiago.

<K>

Oh, really.

Raimundo Soto

It's mostly engineering. We've just started to participate in this so I went there and gave a seminar.

<K>

Yeah, I think. Just 1 month ago or 2 month ago, I think the Chilean professors came to the University of Tokyo.

Raimundo Soto

Yeah, we went there. We were like maybe 70 or 60.

<K>

Oh, you also came?

Raimundo Soto

Yeah, I was there.

<K>

We should have met in Japan.

Raimundo Soto

It would have been cheaper for you guys. But then this is really very nice. How long are you going to be around?

<K>

Until Wednesday.

<M>

In Chile, until Wednesday.

Raimundo Soto

This is not a very good time to be here.

<M>

Why?

Raimundo Soto

Because everybody is going on vacations. February is just a dead month. It's very good to be in Santiago because it's quiet, there's no traffic, no traffic jam. You go to a restaurant and you don't have to wait for a table, it's really nice, but it's not very good for working.

<K>

Actually, I briefly explained our research to Mr. Soto we are now talking about some problems and some may be not yet benefit. But some problems.

Raimundo Soto

Basically what I think is that starting from your question of, is the reform successful, it depends on which level are you talking about. If you're talking about short-term management of the grid and power generation, I would say, yes, you have a system which is fairly transparent, it delivers so the number of outage, blackouts and I think is minimal, and we have a lot of trust in the system, so it works fine.

The conflict is also contained and controlled. There is an opportunity for conflict in this sector because you have very large operators. The Chilean grid, the distribution companies in Santiago is really very strong. Then you have this transmission lines which are natural monopolies which are really very strong. Then you have three or four major companies with a different mix between water and gas. There is space for a lot of conflict and I think that is controlled and maintained within the boundaries of the electricity resolution panel. In that sense, it's fine. I would think it works much better than the rest of Latin America.

<M>

Yeah, like Argentina.

Raimundo Soto

Or other countries in which blackouts are the norm and you are very running very close to the saturation of the grid, so, okay. If you think in terms of the long term, I don't think it is really very successful because it doesn't provide incentives to be one step ahead of the demand curve and thus provide incentive to the companies to invest. That part, the strategic planning and thinking is not there.

<K>

Actually, we met Mr. Bruno Philippi.

Raimundo Soto

Oh, yeah. Know him very well.

<K>

He mentioned about that the different things, long-term strategic planning and the short-term engineering decision-making and he put more emphasis on that, engineering decision-making probably.

Raimundo Soto

He's an engineer.

<K>

Yeah, well. I think the good thing of Chilean system would be that strong independence and very high expertise of engineers and economists. But on the other hand, that makes another problem of lack of long-term vision, maybe, and that long-term vision would be created by politician, maybe. I'm not sure. But I think decision would be made by different persons, so long-term and short-term.

Raimundo Soto

Yeah, but you have to have a coordination mechanism so that whenever the authorities come up with a proposal to private sector, it has to either participate or you take whatever, but there has to be mechanism and I think the mechanism is not really very either formal or strong. The fact that we are paying so much for electricity indicates that there is something there which is not really working, right? It's not an engineering problem that we have, okay.

We put our trust in Argentinean gas for a while, that didn't work, but then the ability to anticipate that kind of thing and diversify and it took too long. It's not just there. See my point. You have to be in advance of the demand for like 5 or 6 years, because building will take 5 years to have one of the plants operating so. The mechanism in the law is very weak in my opinion.

<K>

You mean, either CNE or other law policies don't – are not enough or don't work for such a long-term.

Raimundo Soto

No, I don't think so. My concern is the following. Suppose that you have the law and suppose that you have the Ministry of Energy, which is one of within one these other ministries. Anyway, you have the Ministry of Energy, providing the guidelines for the long-term…

<K>

It's coffee?

<M>

Oh, yes.

Raimundo Soto

There you have it.

<M>

High calorie.

Raimundo Soto

Well, you need a little bit of energy. You have that. Then the connection will be of a political kind and even if you have like this guy, which is the current Minister of Pacheco, Máximo Pacheco, is very articulated, but it will depend on the availabilities of the minister or the ministry and that cannot be done. See my point? As a politician, you have to have the strategic vision, but you cannot have enough power to change the situation or don't do anything which is what happened for a long time. The ministers were really very weak. Okay. This guy could not provide long-term strategic planning according to me.

For example, they put a lot of weight on this mega units – megapower units in the South, very South and you have a lot of environmental concerns there and there is a lot of money coming out from Europe to finance the opposition to the project. You have to have an alternative, right?

In the north, you are having the same problem. All the environmental activity, which is a political kind of thing that you have to control, you have to – that part is not there. In a sense, the private companies are reluctant to doing anything because they will pay a huge reputation cost. My hunch is that the strategic political part has been really very weak. My view is that it's nowhere to be found in the law because the law operates on the managerial part and not the strategic part.

<K>

Yeah. But, do you think is it because politicians like to avoid some, how to say, the political risk or the Chilean system strongly avoids the political interference of politicians which the politicians themselves try to avoid that.

Raimundo Soto

This country works in a very hypocritical way. You have to be very careful with that. We are proud of not having corruption, which is fine, so corruption is not widespread, but there is, okay.

<M>

There is?

Raimundo Soto

There is. Not at the levels which you can find in another places in Latin America. But it's not civil. Not corruption in the ordinary use of the word. For example, capturing the regulator is possible, it's not impossible. For example, the authorities end up working for the companies or come from the companies and go to this regulator position that is not very good. Even if the guy is really, really honest, there is a shadow which is not good for the system.

You have to be very careful because they would tell you that this is a place where there is a lot of separation between the technical decision and the political decision, which in general is true. But it's not 100% true. Sometimes you have this, this is not there. Sometimes you have these ministers that have been there for a long time basically doing very little and avoiding the very complicated decisions with the thinking that well this is a short government. In 4 years, we've not going to be around, so that's not likely. My hunch is that in energy, it happened most of the time, they didn't make the decision beyond whatever the Ley Corta…

<M>

Ley Corta Uno?

Raimundo Soto

Yeah. Ley Corta means that we're not going to discuss everything; we're going to discuss a little part because if we try to discuss the whole thing, we will never pass it through the Parliament. That's why it's Corta. Corta means short and it's a short law because we don't want to discuss in open. That's because from a political point of view, that's as far as you can go without compromising the entire administration.

Yeah, so I agree with you that there is a separation between the two. At the operational level, yes, at the strategic level, I am not really sure. It's very difficult to understand how it works so slowly from a decision-making point of view.

<K>

Yeah, that problem is same in Japan. We have such, not hidden, but unclear kind of corruption and sometimes the past minister or past politician work in some board member of TEPCO, let's say, that's possible.

Raimundo Soto

what I think is possible in our case is that whenever there is some kind of scandal, then, regulation legislation is passed on to prevent that thing to happen again. In a sense, you need to have one of the scandals to build up better and institutions. But it also says that you have problems there like because you have to make adjustments. In the case of energy, my main concern is not with the

operations which I think is fairly non-corrupt. I don't want to use the word corruption in the strategic part but the inability to make decision, is also a way of in a sense corrupt, because you do not undertake the difficult decisions that you have to make. Basically, you say now, well, it's not the right time.

<M>

How much the corruption affected strategic decisions in the Ministry of energy, or any part of the…

Raimundo Soto

I don't think that corruption in a sense that the company is paying the authority, I don't think so. But you can capture the regulator without paying the regulator. It's basically because there is an implicit promise that in the future you will be working for us or. One of this guy that was there for a long time was sensitive to being flattered, so the company heads will invite him for dinner, will take him out here and there and the guy was basically under the control of this big company's CEO. There was no money involved. He just felt very good.

<M>

But the initial stage of power sector reform, when CNE was established, the initial member of CNE came from the main private companies like Endesa or Colbún or…

Raimundo Soto

Well, it was a monopoly. Everything was under the control of Endesa, except for small companies here and there, but most of the regulation was actually done by Endesa so these guys were in the private sector, yes, but at the same time, it was the only operator, so it was self-regulated. It's more than reforms, its privatization and reform, so it's two things in one go.

You can privatize, if you have the relation there, you can privatize. You can have private companies and then you impose the regulation. Here you did two things, you privatize on one hand and you impose a regulation on the other. The regulation was very unique at the time and to some extent advanced. I know that it was a lot of trial and error in the beginning. You have to talk to Bernstein. Do you know him?

<M>

Yeah.

<K>

Actually, he's now in vacation, so we are going to meet – according to Bruno Philippi, his right-hand.

Raimundo Soto

Who's right-hand of whom?

<K>

Mr. Bernstein.

Raimundo Soto

Is the right-hand of Bruno?

<K>

Yeah. Esteban Skoknic.

Raimundo Soto

Skoknic, I think. Rodrigo Agano [ph] is the other guy that you should talk to.

<K>

Yeah, Rodrigo. I forgot.

<M>

Hugh Rudnick.

Raimundo Soto

Oh, Hugh. Yeah, Hugh Rudnick, yes.

<M>

Rodrigo Palma?

Raimundo Soto

Rudnick is maybe also on vacation. You have to contact him. This is a horrible month, because Rudnick, I think I'm not sure he was at the university and the university's closing. Rodrigo Palma. But anyway, Sebastián is really very…

<M>

Sebastián Bernstein.

Raimundo Soto

He actually was one of the…

<M>

Member of CNE.

Raimundo Soto

No, one of the guys that designed the regulation. Bruno was also in that.

<K>

One thing I am interested in is the policy improvement or the policy learning and I'm studying the case of Colombia and the role of PPP and it's often very difficult to improve policies so once it's established because, you know, someone has some merit from the existing policy and private companies are some reluctant to change policies because they get some merit, usually.

But in Colombia, somehow, we are still studying, but we don't know how it may get but Colombia was not successful but gradually has improved its policy several times. Now the PPP policy of Colombia is getting better and better. I think in Chile, also the first energy power sector reform policy was okay, but let's say 20 years until finally Colbún was privatized, I think in that 20 years, I think Chilean government or CNE tried to improve the policy. What do you think the reason why the Chilean system could improve its policy of power sector, keep improving, maybe?

Raimundo Soto

I have no idea. Let me be very honest. You're talking about PPP, which is public private partnership.

<K>

No, but I just used example PPP in Colombia, but also in Chilean power sector, I think the government or CNE or someone keep improving.

Raimundo Soto

Look, at this point I would think that the main issue is the environmental assessment system. If you want to improve things in any kind of undertaking, in Chile you need to reform that unit. I mean the entire environmental system, let us assume for a minute that it works okay, it works okay, but it's extremely slow, okay. Even if the assessment is well done and probably done, it is very slow. That's one thing.

The second thing is that it's sensitive to political pressure, okay so that at this point, if I were in the private sector, I would like to work on any of this big undertakings, I would be really very concerned not with the environmental assessment, but with the result of the process of environmental assessment because the process is sensitive to political pressure. You may have a wonderful project, which is environmentally safe and clean and all that, but if there is an organized group that is, to some extent, winning something from opposition, they will go through that and that is I've often said that. It may in the end not have any importance. But that I think is far more important than anything else because there are a lot of these projects which are in different stages of environmental assessment. Without any clearance, when this is going to end, how is this going to end, what kind of mitigation.

For example, this Punta Alcalde, which is a coal unit that they would like to put in the north, in an area which basically no one lives, how far do you go with the mitigation measures, depends on how strong the political pressure is and that cannot be. You have to have rules, you have to say, well, we are about to – this is how much politician we would like to take on this, you cannot continuously change the regulation to basically accommodate the environmental agenda. At one point, you have to relax and up to here, you go beyond that, it's just not worth doing it, but I would like to know in advance. This uncertainty plus long periods of Unclear] is far more important than anything else is my view.

<K>

Yeah, but what I meant is that, let's say, in the early '90s or in the late '80s there was a problem of the lack or the problem of transmission lines and to solve that transmission line problem, I think finally, that expert panel was established. Also, there was the anti-trust, no?

<M>

Anti-trust commission.

<K>

Anti-trust commission and the CNE, I think they couldn't solve the problem quickly, so I think finally expert panel was established to solve that kind of problems.

Raimundo Soto

Fine. But again, the expert panel is only going to work for the management of the system as is. For any strategic long-term investment, the panel cannot do anything, can advise the government to have I don't know.

<M>

They did just insistence, not inconsistent.

Raimundo Soto

But this is just…

<K>

They are working at the managerial level, not the…

Raimundo Soto

It's basically a judiciary entity, there. If there is a conflict, then they will jump in and they will manage the conflict, either by some kind of negotiation or by the judgment. Say, look, you guys went overboard; this is your fine, that's it. But this is a group that beyond voicing an opinion doesn't have a say, doesn't have enough power to do the strategic plan.

The strategic part is basically in the hands of the politicians. That is, they may have a lot of supporting technical people saying, look, this is a good idea, this is not a very good idea. But in the end, it is not – I understand the political aspect as the following. We have two options and from a political point of view, we decide between the two options, once I have the options more or less clear from a technical point of view.

Here what you have is a politician being pressured by different groups, so the policy is basically based on pressure, more than anything else. That's why we have all this, I'm not saying that the project should be done; I have no idea because I haven't actually looked at it, but the inability to take the decision, that's my point. You say look this Punta Alcalde thing we're never going to build it, period. But they keep on saying, well, if you pass on this mitigation role and you do this and you do that, we

are not very sure that coal is a good idea, pet coke, no pet coke never. All this kind of discussions that lengthens the project is going to add uncertainty.

<K>

I have a thing, let's say, two things. One is that so you mean that expert panel may have solved the problem of dispute, but have not solved the problem of fundamental problem of lack of private investment, let's say.

Raimundo Soto

It shouldn't. The role of the panel is to solve the conflict that will be it.

<K>

Yeah, but I think that will reduce the risk of country risk, so it will make Chile more attractive for private investments.

Raimundo Soto

Oh, yeah, I'm not saying it doesn't work, it works in the right direction, and it's a good idea. I would like to have it. I would like to have it not only there but in other areas which you have this public-private sector specific regulation and therefore specific measures. We don't want to have it for bakeries or cinemas right, but here you have a special regulation. There is a lot of money in there, so you would like to have it. Some of this work and some they don't. I'm going to tell you a story about the other thing that doesn't work. But these guys are for conflict, not for strategic thinking. Just a second.

<K>

Yeah.

Raimundo Soto

There is another panel for highways, for the same thing, conflicts in highway. As far as I know, it's never worked. Not because of the absence of conflict, there may be conflict, there also. But for one reason or another, it doesn't have enough power to actually solve conflict.

This electricity thing maybe working fine, and it's a very good idea and you have to look at the mechanics which make the things work. I absolutely agree with you, but its role is not for the strategic part, it's not for the long-term investments, it's not for the industrial organization of the

sector, whether I would like to have three companies running transmission lines instead of one, because I don't want to have this, that is not – the architecture is not what…

<K>

You mean the Ley Corta Uno was not created based on some strategic planning idea.

Raimundo Soto

I think it avoided. But that's my reading of the law, which is, you may get a different opinion from the guys that actually work on that.

<K>

How about the establishment of CNE itself, the initial stage of power sector reform, was that any strategic planning, like let's say 20 or 30 years or more long-term vision?

Raimundo Soto

My hunch is that the guys that wrote the law at the beginning and did all the regulation thought that if you give the companies a set of rules which are very clear, may not be the optimal ones, but very clear and you take this decision away from the politicians into a technical area, the companies would, because these guys are profit seekers and maximizers, so would do the strategic planning for you.

The company would say, look, the demand is growing at say 10%; we're going to need say 500 megawatts more in 5 years, so better start working now and do it. That I think is the underlying notion of strategic planning in original thing and therefore you need the CNE, the National commission basically to give guidelines and the like. But my reading is that it was left basically on the private sector to do that.

<K>

You mean the CNE or the guys who established the CNE just left strategic planning function to the private sector?

Raimundo Soto

I think so. What they have is that they have the investment plan for all the companies and they would put that into the pricing mechanism for electricity and therefore they were expecting that whenever the future prices would go up enough then the companies would start investing. If the price goes down, then the company would slow down investment and that you can actually model the

electricity demand and anticipate what's going to happen if GDP grows at say, 10% then demand will grow in the future at 10%. With the cities expanding fast, then we need a distribution grid, which is that kind of thing was to some extent or to a large extent passed on to the private sector, perhaps with good reason. Also at that time there were no capabilities to do it in the private sector, I don't know. That's my reading.

Bernstein probably would have a very different take on this, but from a practical point of view, I think it was mainly the company saying look, we're going to build this much here, this much there.

<M>

The CNE has the role of tariff setting like a price adjustment and the role of advising to the Minister of Energy, so in terms of price setting, they did…

Raimundo Soto

There is a thing called the CDEC, C-D-E-C and it's a clearinghouse, a clearing mechanism. They basically set the spot price for electricity and then you have – at the CNE you have a model, which actually the term is marginal cost, long-run marginal cost, based on the existing capacity a forecast of demand and the investment plan. You basically say, look, the demand is growing at 5% per year, so we need an extra amount of megawatts of generation available for that 5. This is the investment plan, so the investment plan would say we are having this much of hydro, water-based electricity, and then we have gas, and then we have coal, and then we have marginal units, whatever it is, and they would say, well, this is the long-run marginal cost, and that is part of the CNE work.

<M>

Yeah. There is CNE and CDEC and Ministry of Energy?

Raimundo Soto

Yeah.

<M>

I think the CNE advises on policy planning for Minister, and they care about the price and that sort of…

Raimundo Soto

Yes, this is basically spot price.

<M>

Yes, spot price, and this is for the marginal price.

Raimundo Soto

But for the long-run, marginal price. Unless they have changed it very – I was out of the country for a number of years, so they may have changed it in the meantime, I don't know.

<M>

CNE could be more related to the long-term because they use marginal price and with – so I think CNE has more possibility to give advice to the Minister of Energy.

Raimundo Soto

No, this is short-term [ph].

<M>

The collaboration between two institutions is very important to make long-term strategic plan for energy so in initial stage of the power sector reform, they did relatively very well, but after 20 years later, this relation would be less and less. What was the main reason for this?

Raimundo Soto

For the first part, the connection was very fluent and strong, but I think two or three reasons. One is that they were redoing the regulation of the sector. So you need a lot of interaction between – I mean the CNE doesn't have any power to pass a law or pass a regulation, it's just an advisory kind of thing and that does some strategic thing. These guys would actually pass on a new regulation law. At the beginning when you're doing the changes and the like, and starting, it's very easy. That's one thing.

The second thing is that, you had a military government. That aligns very easy incentives for all people to okay and it was a relatively strong government so.

The third thing is that in a military government, there is not much role for politics, so these ministries and these places were filled with technical people.

Then came the democratic government. At the beginning, these guys were not going to do much of changes because they didn't want to shape the entire economy at once. For a rather long period of time, the Ministry of Energy was again technical kind of people so the communication was poor. But the last I would say 12 years, since 2000 probably, increasingly these guys have far more politicians than technical people. This guy here now, the last guy, Máximo Pacheco, he comes from a more technical private sector kind of upbringing. But before that it was very political.

<M>

The change of this organization, Minister of Energy from the technical expert to the more political, more administrative workers, what was the background? Does that have kind of cultural changes or what was the…?

Raimundo Soto

The Ministry of Energy is not more than an office. At one point, you have the Ministry of the Economy and the Ministry of the Energy is the same guy.

<M>

Same guy?

Raimundo Soto

Yeah. For a long time that was the case. Even telecommunications was also in there so it's never been a very strong ministry anyway. Alejandro Jadresic was the minister, and it was a small unit. It's not a powerful ministry. Most of all, when you're not running into blackouts, when you have blackouts, you have problems then the minister is a very important person. Otherwise, I mean the main complaint now is that electricity is expensive, but apart from that, you see my point? It's not a very strong ministry anyway. Also, it's a noncontroversial one. The Minister of Education is Rolf Lüders [ph], the Minister of Health, who, that guy is really important. The Minister of Energy is relatively second level.

Chilean Female Interviewee

Wow, very contradicting point.

Raimundo Soto

Yeah, I mean the ministers here are – if you think it was the President first and then there is like four ministers, which are really very important.

<K>

Like finance.

Raimundo Soto

Its finance, its foreign affairs, the Chancellor, then interior and what else, I don't know exactly. Then you have like a second here, these guys are on the frontline of the conflict, its education, health, eventually, housing, public works. Then the other guys which are not really that much important, so Ministry of Mining, really very important, agriculture, not really very important, energy and two or three.

There is this Sunday meeting. Every Sunday, the President meets with the Ministers for dinner at her place and I would think the Minister of Energy is never invited to that kind of, unless, you have a really tremendous problem. Probably, after the earthquake, when the power grid was nowhere to be found and then you say well, bring this guy in because we want to talk to him, no more than that.

<K>

Do you think the lack of strategic planning is true in any other areas in Chilean government, energy areas, education, healthcare, and public works?

Raimundo Soto

I don't know. What else do you think might be there?

<K>

I don't know, maybe, let's say, healthcare. There should be some long-term vision.

Raimundo Soto

We are in the middle of the process of reform, very deep kind of reforms which requires strategic thinking. I may not like it but there is some strategic thinking, wherein education and health. Some other things have a strategic planning that's been there for a long time, labor markets or housing or you have this kind of that every once in awhile. Well, let's take a look at this.

What I think is important in the connection between the private sector investment on public policy is that you have to have a mechanism so that regulations and strategic planning comes in advance to the situation and not as a response of a situation. In energy, I think it's been the response more than plans for a long time, but that's my reading of it.

For example, we have had this problem with the Argentinean gas that is no longer there, but it took a while to develop this natural gas plan to import from Indonesia or Jamaica, where they are bringing in the gas. I would think that diversifying the energy matrix and the kind of things response to a situation more than in advance.

We have been discussing nuclear energy for the last 20 years, without any serious attempt or making a decision. I don't mind if you say, look, I don't want to have nuclear energy because we don't want to have the same problems that Japan had during the tsunami and the earthquake. Fine, I don't mind that, just say it and make the decision that we're not going to do that, and therefore our producers will have to be far more efficient than needed to compensate for the extra cost of energy, fine. No problem, right. But it's that kind of policy is not there.

<K>

I don't know how to say in English, but something policy or policy in advance is necessary.

Raimundo Soto

Of course.

<K>

But my question is, can you see the examples of such a policy advance in other areas or in any areas in Chile that is working? Only in energy or in…?

Raimundo Soto

No. Look, the ability to, you can, for example, think of telecommunications, right. You say, well, these guys knows 4G technology is coming and you need to auction the spectrum and that you need to pass on the law for digital TV and whatever you want. They know that, they can anticipate that this is coming but the speed at which you make the decision is too slow.

We've been discussing the norm for digital TV for 10 years. Is there any strategic thinking or what? They're looking ahead and saying, well, okay. But the speed at which it works makes it completely irrelevant because it's so slow that by the time we make the decision on digital TV and the like, it's going to be obsolete.

<K>

The problem is that the speed of decision-making is very slow.

Raimundo Soto

In some cases, yeah. We all know what's coming; we just don't react fast enough, that's one way to put it. Or the other way to put it is that these guys are waiting for the next crisis to have the political power to do the changes. It's very reactive kind of thing.

In the case of energy, because we have this long-term marginal cost with, the politicians always know that if they don't make the decision, that marginal cost will rise and you have like a mathematical model that actually solves the issue. It's going to increase by 10%. These guys know in advance that things will be at this. It's just that they have to sort out the rest of the red tape to pass on new regulations, or to give the signal to the private sector to do whatever.

That's what I was saying that the environment impact assessment is really very important. If you were to put money into this, I would put it there. It's clear that even if the criteria are crazy, but if you know that it's going to take 6 months or 2 years, and the chances of passing it is only 5%, doesn't matter to me. You have a lot better situation than what you have now because what you have now is that no one knows, how long it's going to take. No one knows if the criteria are going to change as the process goes on and for electricity and for natural monopolies in general, this is really, really very complicated because that's become very political, instead of very technical.

This dam they want to build in the south, if you look at – add it as a project, it's going to flood a very small area and the kind of opposition that you have is no dams in Patagonia, which is weird. You can say no destruction of Patagonia fine, no dams; we don't want to have dams there. It may have whatever.

<K>

It's same, no nuclear power plant.

Raimundo Soto

Fine, I understand that. But it's against on type of logic, that's a very strange thing. It's not keep Patagonia clean or whatever, I can understand.

<K>

That's kind of more ideological or a…

Raimundo Soto

Exactly, which means that the kind of opposition to this project that the private sector is facing has nothing to do with the quality of the project, it has to do with the political situation and that has not been solved by the government. The strategic planning in that sense is not there.

President Frei was in power '94 to 2000, something like that was openly supporting this the dams on this site. The next president was kind of, do it, right. This guy was for 6 years. The next president was for 4 years and basically she said, ah, I'm not going to talk about it. For the companies, we started from a strong signal that we'd like you to invest, to a situation where, do what you want, something like that. I don't want to discuss the problem of dams in the South, which is basically what's her approach to the dams. That is very different.

<K>

Yeah, but it's very difficult to keep certain governmental commitment to long-term policy. Always, any conflict, even in Japan, it's very difficult. We also have a problem of construction of dams and the government almost abandoned the construction of hydropower anymore, so it's almost finished.

Raimundo Soto

Sure. Now that you have this Fukushima incident, you may…

<K>

Yeah, the nuclear will be abandoned as well so.

Raimundo Soto

What are you going to do? Use gas for everything?

<K>

Yeah. Another thing is population of Japan is now decreasing.

Raimundo Soto

I know.

<K>

Yeah, so I think the problem would be in this 20 or 30 years, so how to deal with the power sector in this 20 or 30 years and then after that we may have some very different style of power sector. I think we are now in the transition time – transition period.

Raimundo Soto

I don't know about how fast is the demand growing in your country, it may be growing at 2%, so you don't face much of a restriction really, I don't know.

Coming back to your original question, was the reform successful? Yes, in several dimensions, maybe in other things and definitely the political architecture of that. The military government, they had this idea that all the politicians were crooks so they would like to take every single decision out of the politicians' hands. It works for a while, as long as you have consensus between the three different political groups that they would like to keep it like that. When democracy came and all the groups were saying, look, we don't care about the economy, let's have the economy running as is. We are going to care only about human rights violations, so they focus on that thing and they didn't pay much attention to the economy and the economy was doing fine so why – if it ain't broke don't fix it, so that kind of thing.

But later on when the political cohesion started to disappear, then these ministries became sort of prize to win then the political decision started to collide with the technical one. That part of the reform was never actually designed properly. Otherwise you cannot understand why.

I mean, you can say that the demand grows like 10% or 11% in most of the time, 2 digits always. If you know that your demand is going to grow 2 digits for the next 20 years, the private sector will be building like crazy. It's fantastic demand expansion, right, wow, man, whatever I did these guys are going to use it, right? That's the kind of market that you would see a lot of action and you don't say it, so the price is going up.

Even in with a flat price, the demand is going to present this over the business. It's a very nice return on your investment. After this, the prices going up, basically what we're seeing is that there is not enough investment and then you have to go back to why is there insufficient investment. As you said, this is a very low-risk kind of country. It has to be somewhere else and there the political aspect shows up. I don't know if it's of any help, but…

<K>

Actually, she likes to compare the cases of Chile and Philippine.

Raimundo Soto

Not very similar.

<K>

Very different. But I think you should look at the policy of the army era again. But anyway, I think in other countries of South America, I think Chile has at least political independence in managerial level. In other countries, I'm not sure about the political independence at the managerial level nor strategic level. Do you think…?

Raimundo Soto

How do you make a scale for that?

<K>

That's a very difficult question, but just my impression.

Raimundo Soto

I mean, let me put it this way, independence is good if you have accountability also. Independence without accountability is very dangerous, right? If you have 15-year-old children, you can give him or her a lot of independence, but you would like him or her to have accountability of what he or she is doing, because otherwise it becomes.

I think it's the same you would like to have independence on the technical side from the political part, on the managerial, on the medium-term management, and strategic long-term thing, we would like to have it, but we would like to have also accountability of what you're doing. Focusing only on independence maybe…

<K>

A bit dangerous, you mean.

Raimundo Soto

One-sided. In the current situation, the environmental sensitivity is high, you need the political aspect to be controlled in a sense, and so we'd like to have independence, but also we'd like to have political accountability and that I think can only be managed through the government.

You don't want to have a too technical kind of ministry because it will fall short on one side. You don't want to have two political ministers calling shot on the other side, and that's a very difficult kind of environment. Here it may be more independent than say in Argentina, I don't doubt it, okay? Or in Brazil. But maybe, there are better examples to look at somewhere else. Maybe Uruguay could be a country that I would take a look to see how they do. Colombia is also very interesting case, Peru. I mean the Peruvians are doing very, very well, unbelievably well, so.

<K>

Yeah, Peru has got, even in the other sectors like road, it's good.

Raimundo Soto

The Peruvians have this very strong indigenous movement that the cases I know which are not very many but still. They have managed to have a more constructive approach to private sector working in natural monopolies, either in mining or in electricity or in water so that the companies could go there and the opposition will be far more constructive than just basically saying no dams here.

They figured out that they can get a lot out of the companies for the community if they don't just simply oppose and say, well, we oppose under these conditions, so I saw that in mining. I think it worked much better than here, so maybe there is something to learn from these guys on conflict resolution, community, and private sector relationships.

<K>

It's very difficult to find the cause of the difference, how people react to such independent large-scale development of infrastructure.

Raimundo Soto

I have no idea about that. I don't know what makes some equilibrium to be better than others and how to choose one.

<K>

We are still thinking of what to study in the case of Chile.

Raimundo Soto

Sure. But you need to talk to more people. It depends on what kind of research you would like to do.

<K>

I think we are still seeking for the some good aspect to be compared between the Chilean case and the Filipino case probably.

Raimundo Soto

What's the situation in Philippines?

<K>

The Filipino case would be a bit similar to Argentina. It had good policy or, yeah, certainly good policy because – it was not because but it was supported by the World Bank and lessons learned from the other countries, actually, Argentina. The policy itself was not bad, but it didn't work probably because of the political interference and some hidden corruption. It's the strong tie between the politician and the huge private conglomerate and so on. Regulatory bodies don't have capacity to control such situation in the power sector.

Raimundo Soto

One alternative way to put it is you build up the institutions you want to have, so institutions doesn't come before the working of the sector but after. The Filipino side is not very powerful regulator precisely because you don't want to have a very powerful regulator.

<K>

Yeah, that's true.

Raimundo Soto

In the Chilean case, one would like to think that maybe at the beginning; we wanted to have a very strong institution on regulations. After that, your strength is diminishing because you wanted to have that.

I'm working on a similar idea for other countries, which we say, well, this cannot be a good idea because you're looking at it from an optimal point of view and your optimal point, optimality there may be a little too narrow and then you say, look, what happens is that there is no way in which we can solve this conflict. If you give too much power to this unit, it will end up with a huge conflict.

<K>

Huge what?

Raimundo Soto

Conflict – social conflict, right. You give a lot of power to the technical guys they will start building dams all the way down from Santiago to Patagonia, right? You will have a huge political problem because one of the stakeholder is just not being hard, is just not being so you basically say, no, these guys are too technical, lower little their power. Instead of coming up with a regulation where all these aspects can be put together and come up with a better decision. Most of the times the decisions are basically the same, don't do anything, don't step on the pedal, put the brakes on this.

<K>

You mean the strategic planning entities should have the balance of that political decision-making power or the political decision-making viewpoint and technical?

Raimundo Soto

Allowing for different stakeholders to participate and I think the stakeholders have changed. In the military government, your only stakeholder is the military, the army basically. If these guys like to have that thing, fine and all the rest will either you comply or we shoot, that was it, right, that was the only. The military were at the beginning very strong, and then they say, well, seems to us that this private sector is another stakeholder, so you basically have the government and the private sector.

But over time, you have other people showing up from the indigenous communities that were nowhere in the decision before but you having to put it there somehow. One way to put, say, let's change a little the institutions.

The other way is to say, nah, just make the institutions weak and weak and weak and weak right, the factor. You have this to the institutions between the government and the private sector, then you have these groups here and then the president will say, you know what, although the technical aspect, says that we have to build a dam and the political community supports the building of the dam, these indigenous people or whatever, or environmentalist or foreign community, whatever it is they don't want this to happen. I'm going to stop the project for a while, which is the way of saying sorry, but this institution is no longer making the decisions, I am making it myself. You actually weaken and weaken. The institution basically goes; this institution is unable to hear all the stakeholders and should be heard this time.

<K>

I understand that both technical side and the political side would be necessary, but for instance, let's take the example of the tariff determination –the decision-making on tariffs and then decision-making on tariff also has both sides, political side and the technical side. From the viewpoint of technical, tariff decision or tariff making, I think the tariff should be set so that at a certain level, so that the private company can make enough profit. But in certain cases, let's say the politicians try to interfere with the tariff making to reduce the public opposition, let's say, or to get more support from the public. What do you think about that, does the tariff setting should be independent from the political interference or?

Raimundo Soto

I think so. It works in electricity, so you, if you want to have subsidy, target it. You want to give subsidy to the poor, for whatever reason, political reasons or for humanitarian reasons, whatever, just give the subsidies to them. Don't give it to me because I'm a rich guy, so I don't get.

In electricity, you don't have much subsidies built in the price. You don't have much taxes either so the companies are not making huge profits anyway, fine.

In fuels, oil, you have all these stupid mechanisms. I think we learned from the that lesson that we don't want to have that there or in water and the reason is that once you have any kind of this price supporting or price control there, it becomes too political and very difficult to manage.

<K>

But I think Chilean tariff setting would be…

Raimundo Soto

Short-term, yes, fine. Short-term is separated from the politicians as much as you can. There is some leeway also because if you put a lot of incoming units in your investment plan, then your long-term marginal cost will go down and your sport price will also go down little so I can come up with, oh, there is a lot of megas coming into the system and lower the current prices. But it backfires because once you discover that you're not going to have these plants coming in, then you have to hike the long-term marginal cost, and you end up hiking the short-term one. You can buy a little time, but if you have to raise it, you have to raise wholesale, in the case of fuel oils, petroleum and gas.

<K>

I think you have a meeting, yeah.

Raimundo Soto

I have another meeting.

<K>

All right, so, thank you very much.

Raimundo Soto

Let me know what you come up with after this.

<K>

Yeah. We probably need some time to struggle.

Raimundo Soto

I thing that the first round of reforms that most of the country did in the ‘80s were basically to bring prices closer to marginal cost, because everything was so distorted that you need to sort of downsize the companies and reduce the losses and have some corporate governance in there and that kind of thing.

The second round may have been something on which you put a little more weight into saying, okay, the companies are running fine now, or more or less okay, we need to improve productivity significantly. We’re going to bring in more investments, new technologies and the likes so let’s make it really from a good company in the third world, let’s try to make it a good company in the first world, right, in the developed countries. We would like to have the same kind of thing. That’s the second round of reforms.

But the third one is one in which you basically say, look, let’s make this sector be a part of the mechanism of the rest of the economy in which you have stakeholders, and politicians, and political decisions, and the like. We have to bring the sector back into the political life because political life is what we do. For like from the 1930s to the mid-‘80s politicians run everything and make a complete mess of this country.

You take them out okay, you improve the situation, you open the economy make it competitive, or whatever it is you do all that kind of. Now you need to take the sectors back into the political life, and I think that part is still in transit.

In the Philippine's case, which I don't know nothing there, that I don't know much about the country, the political fabric, the landscape of the political sector may be very, very different than the Chilean. I would be very careful of the institutional comparisons between the two countries.

<K>

But you mentioned a gradual improvement – a gradual change, step-by-step would be very important. I think in Philippines, it's something mixed up so try to do the whole thing involving a foreign investment and…

Raimundo Soto

I like evolutions, I don't like revolutions. I think that at one point, you may need revolution or something like that but most of the time it's too costly. Let's make it step-by-step. Don't be shy do it, but step-by-step, this evolution thing makes a lot of sense to me. The revolution thing doesn't make any sense.

<M>

Only transition period just.

Raimundo Soto

Exactly. But make sure that you move because if in evolutionary terms if you don't move, you disappear. You have to keep up working. I don't know much about the except that what you get from the news is basically that the political system in the Philippines is much more complicated, like the Chilean case and the decision-making might have different dimensions like here.

<K>

Yeah, that's true.

Raimundo Soto

I mean the military there is still very important, very powerful. I don't know what the agenda of these guys is; I don't know what they want. That's one thing.

The second thing is that corruption there seems to be more tolerated than here. I don't know if higher or lower. The problem seems to be far more complicated. It's a country where civil war running in the South until 2 years ago. Civil war is a civil war anyway. It might be low-level conflict, but it's a conflict there continuously so it's not exactly what's going on.

<K>

Yeah. No, we just wanted to try to get some insight from the comparison of two different totally different cases.

Raimundo Soto

You have to define on what dimensions are you going to make the comparison?

<M>

What's that?

Raimundo Soto

You have to find out what dimensions you would like to make the comparison, right? If you go only for the short-term management of a thing, then the answer is going to be probably very simple and not very interesting. If you have one too many dimensions, it's going to be unmanageable so it's very difficult to.

<M>

Choose the period, what to…

Raimundo Soto

Choose a period. This reform was trying to answer what kind of problem, right? If the two reforms were addressing different problems, it's going to be very difficult to learn. I don't know.

<K>

Yeah, you're right.

Raimundo Soto

Okay guys, I really have to go.

<M>

Thank you.

<K>

Yeah. Thank you very much for your time.

Raimundo Soto

Thank you.

END

Meeting Note #6

Date: 2015/02/03

Time: 15:00~16:00

Place: IADB Office in Chile

Interviewee: Patricio Mansilla-Caro

Interviewer: Minju Kim(M) , Shunsaku Komatsuzaki(K)

<M>

…research is about power sector reform.

Patricio Mansilla-Caro

Power sector reform.

<M>

Little bit, past things, yeah, relatively to innovation or something. But, I am doing a comparison study on the Philippines power sector reform conducted in 2000, 2001, and I want to compare the Chilean case and the Philippines case.

Patricio Mansilla-Caro

Excellent.

<M>

Now, I am trying to find what to compare, what can be compared in two countries. How was the new policy designed and how was the new act or new law was enacted at the time? How was the new regulatory body organized and created at the time? That's one of the topic about what I want to know in Chile.

<K>

I think we want to start from the question about how has IDB supported the Chilean power sector? What activity has the IDB done in the power sector in Chile?

Patricio Mansilla-Caro

Ah, okay. Because there are two questions, one is from the past the privatization…

<M>

Past and now, current situation.

Patricio Mansilla-Caro

…and the second is basically the…

<K>

Or from the past to now, the history.

Patricio Mansilla-Caro

Okay, the history. Yeah, basically, I'm just working for the IDB since last year, 1 year, so I don't know too much about the past support of IDB to the country. But I can tell you about this bit of the country without considering the IDB support. At the end, I can tell you what is happening now in the sector in the last year.

<K>

Yeah, great.

Patricio Mansilla-Caro

Yeah. In the '80s, because the privatization reform was in the 1990…

<M>

'78?

Patricio Mansilla-Caro

1990s something. Basically Chile was trying to privatize public state-owned companies. Those state-owned companies were basically in the transport sector, it was the airlines, utility sector where

basically the first utility sector was electricity. Water was just; I think in the year 1999, 2000, water was the last one to be privatized by the Chilean government.

I can say that electricity was one of the first – was the first because – yeah it was the first because telecommunications basically, telephones, telecommunications, I think it was 1990s, so electricity was the first one 1990s.

Well, basically, they established – they normally have the sector divided in three in Chile, you know, the power generation, the transmission, and distribution. Then, basically, they say, okay, we're going to privatize distribution, first distribution and then they also privatized power generation. In some cases, the transmission was basically done by the distribution or the power generation areas of the companies.

At the beginning, they privatized one, or two, or three companies and then basically in power generation, the Chilean system allowed to participate any company that can do – that can make electricity today. This is the basic characteristics of the system.

Second, they established Superintendencia, in Spanish, a regulator and the regulator worry about, not the quality, but the area of the service and then the tariff. In order to establish the area of the service, they respect the current incumbent companies in those areas. In order to establish tariff, sustainable tariff, they used a model called, let me remember, energy is not my main sector of focus, but I need to remember.

<K>

Maybe in Spanish?

<M>

Marginal cost.

Patricio Mansilla-Caro

Yeah, I don't remember even in Spanish but I need to remember the models. It's basically the benchmarking over the optimum or the most efficient company.

<M>

Marginal cost return, MOB [ph].

Patricio Mansilla-Caro

It's basically, you know, the best efficient company, you establish the parameters for the most efficient company and then depending on the parameters that you have in cost investment and period that the regulator is going to allocate the private company to maybe the investment return you're going to have a different tariff. Okay, this is very bad because I don't remember. Impress [ph] efficient basically, efficient company is the model, efficient company.

They established the tariff. They have a regulator. They have the company. The company is basically regulated by the regulator and reviews the tariff time to time and in Chile, the situation was not critical in the last 15 years, but in the first 15 years. But now, what is happening is basically that we have problems in order to produce the electricity for the demand that we are predicting in the next couple of years. That is what is happening.

In fact, today there are several projects in hydro and face some problems with the communities and some companies have stopped basically those investment. Why? Because the government has working environmental policy that includes several mitigation measures that company need to follow. Sometimes, what happen is basically that those measures are not clear or are too expensive. That was happening. Basically, we are working with competition in power generation, also in transmission, and distribution. Basically, that is the main model today in Chile.

How the IDB is supporting the system today, I need to explain to you little more about things outside the energy or the power sector. You need to understand why we are doing so little in this area, in Chile. Basically, Chile was starting to grow in economic terms. Then basically in the last 10, 15 years donations coming from several countries around the world are decreasing in this country. Then, Chilean knows that sometime basically the loans that they can get from the capital market, sometimes could be cheaper that getting those credit from the World Bank or us. Therefore, the homework [ph] for the multilateral institutions is very high because we need to bring high value-added for Chile in order that they can take loan. Therefore, in the last 6 years, 7 years, we didn't face too much demand for financial resources from Chile.

This government, Bachelet, is the new president; we have an informal agreement in order to make loans for around $500 million, $600 million in Chile. But this amount is basically in 90% of the resources is going to be allocated to the social sector. It means education, health, state modernization, what else, pension reform, tax reform, and others. Basically, in the transport sector infrastructure, we are doing some technical co-operations, it's [Unclear] co-operations at this point of time.

Specifically in the power sector, we tried to enter to the power sector with the new Ministry of Energy that Chile created in the year 2010, 2009 something like that. At the beginning, the government suggests but in the last 4, 5 months, they said, no, we have the money. We don't need the bank for this activity.

Therefore, today, they are demanding basically some work in energy efficiency, renewable sector and I think that they are trying to modernize the petroleum company, which is located basically in the south Chile, in the city that is called Cantarrana. Yeah, it was famous company because they established the company in 1950, when oil was just discovered in this area of the Magellan Strait. Then they established some branches in Concepción-Talcahuano and then here [Unclear] in the close to Valparaíso region. Those are the branch of this company. Basically, they are trying to modernize this company, be more efficient and in order to recover this company, because normally every year this company is accumulating losses.

Given that basically, oil, I think that the reserve for oil is for 2, 3, 4, 5 more years, that's it. But we produce so little, we import 85%, 90% of the total demand for oil. Basically, in Chile, at this point of time, in the power sector, the IDB is working just in those areas.

You know that we have 2 windows at the bank; we have the public window and the private window. That are activities from the public window, but from the private window, I can introduce my colleague. I don't know if she's available to receive you, but I can talk with her. I don't know if she's – she knows a little more, but the bank is giving loans to the private sector in order to develop new projects in renewable energy, solar and wind. There are two famous projects in the north of Chile that was supported by the IDB. But still, those projects are small in terms of investment, no more than $75 million, $80 million. This is small amount for those investments.

Yeah, basically, this is the system today and what is important to recognize is that Chile has stopped completely the studies that at one time the country wants to pursue in the nuclear area, given that we have a strong headway in 2010. Then the country said, okay, those studies were paralyzed. I don't know what is happening with those kinds of studies today, but we know that Bolivia is starting doing something in nuclear power, but Chile stopped totally this discussion.

<K>

Bolivia?

Patricio Mansilla-Caro

Yeah, Bolivia is starting doing something in the power.

<K>

Really?

Patricio Mansilla-Caro

For that, the reason normally here in Chile, they say, okay, why don't we start talking about nuclear energy because I don't know who is lending the money to Bolivia, maybe China? Maybe China is lending the money to Bolivia. China is starting to be very active in order to donations or lending money in Latin America. Venezuela, Ecuador…

<K>

Nicaragua as well.

Patricio Mansilla-Caro

Yeah.

<K>

New canal.

Patricio Mansilla-Caro

yeah, the new canal, but I don't know if the government is involved in this. I don't know if this is a totally private company, but I don't know if it is.

<K>

No pure private company in China.

Patricio Mansilla-Caro

Okay. Yeah, nuclear energy is not an area that is. But, recently I read the newspapers here in Chile and we have an objective to reach, I don't remember, is it 10%, 20%. I think that it's 20% of the total market production in renewable energy.

<K>

That is the target for 2050, right?

Patricio Mansilla-Caro

For 2025, and then I read that basically we are going to be able to reach this objective in 2020. They are working in a new and try to establish a new parameters, new objectives for the future. Yeah.

<M>

You just said in the private sector, in the new – to develop new renewable energy generation, but there is small investment rather than expected, so what?

Patricio Mansilla-Caro

Oh, the kind of projects. The projects normally are – they have a small investment, $75 million, $50 million, and $45 million.

<M>

Yeah, you mean small projects.

Patricio Mansilla-Caro

Small projects, yeah. Several areas, normally in the north of Chile. Still, we don't have the system that is implemented – it's already implemented in the United States. I don't know what is happening in Japan, but United States, I don't recall the system, but basically is that when you put your solar panels in your house, you are able to save energy. Also, if you have more – you have access of production of energy with solar, you can sell this excess to the network. I don't know what is happening in Japan, but in United States, it is already to do that.

In Chile, we're just starting. We don't have the system yet. People just can have, save energy and they can pay small amount of bills at the end of the month, but we don't have the opportunity to sell, the excess to the network. It's not happening yet.

<K>

That's another very difficult policy question. In Japan, we have only – we employ the single buyer system, so only the distribution company is monopoly in Japan, regional monopoly. Each region has its own distribution company so we can sell. We sell the electricity surplus of produced from the solar panel on our home to that single buyer, so it's very safe.

But, in different countries like probably Germany or in UK, its electricity market there, so we have to sell to the market and then the price will differ from time to time. That is determined at the market. It's more risky project, but I don't know which is better, but those questions are very difficult to ask, to answer in any country. I think Chile will struggle to find a way to…

Patricio Mansilla-Caro

Yeah, it seems to me that we have the same system basically, I don't know. But because I don't know about the Japanese system, but Chile has economic dispatch center, which is basically, these are couple of people that is trying to regulate…

<K>

Yeah, CDEC.

Patricio Mansilla-Caro

Yeah. They are trying to fix, establish, determine the marginal cost, and then the obligation of the producers is basically that they are facing, small bidding or auctions anytime and it's entering the energy which is cheapest – the cheapest energy anytime.

<K>

Yeah, so they always are related to renewable energy. The problem would be that buyers – which buyer system would be preferable. Another thing is the stabilization of the system.

Patricio Mansilla-Caro

Yeah, that's right. Basically, you know better than me that basically that when the electricity – production of electricity of energy in one country is more expensive than others, which in the case of Chile in comparison with other countries in South America, renewable energy is going to be expensive – well, is a little more I can say easier to enter with renewable energy because the tariff is more expensive. When you compare with Colombia, for example, which has lowest marginal cost of production because they have hydro system and they tried to enter with other kind of wind or solar energy, the difference is big because it's too cheap. But, you know, at this point of time we are happy because oil price, oil tariffs are going to go down and then 40%, 45% of our market, we are benefiting by this situation of oil market.

<K>

But I think for Chile our student done a [ph] study, but the interconnection of power between other countries, like Argentina – Argentina would be very difficult. Peru, also difficult, but Peru Argentina and those I think interconnection of transmission line between with surrounding countries would be very crucial to Chile.

Patricio Mansilla-Caro

Yeah, you're totally right, because in Central America, they have a system that is basically…

<K>

Yeah, SIEPAC.

Patricio Mansilla-Caro

SIEPAC. For South America, I don't remember the name, but we are working – not we, we are just supporting the discussion among the countries, the IDB is entering into the table to support.

<K>

Pacific something.

Patricio Mansilla-Caro

SIEPAC and I don't remember the name here in, but I can say that it still in papers [ph], they are just starting to discuss.

<K>

Yeah, and also probably they are very difficult to connect between Chile and Peru, for instance.

Patricio Mansilla-Caro

I don't think it's too difficult. You say it for political reasons? Yeah, because technically, it is easy, this is political reason. I think that the, once country can advance, be more developed in a couple of years, I think that's going to be totally normal, that Peru can sell energy to Chile. It's just a matter of time.

<K>

Yeah. Peru does have cheaper electricity.

Patricio Mansilla-Caro

Yeah, sure.

<K>

I think that they are very happy to sell electricity to Chile. Also then Colombia, Ecuador.

Patricio Mansilla-Caro

Yeah. In fact, there is – I don't know the name, but they are starting to sell to Chile from Colombia, Ecuador, and Peru.

<K>

But actually one of the problems would be that Chile is the only country which would like to buy electricity, maybe. In other countries, they have, Ecuador may not be, but Colombia has hydro, Peru make hydro and thermal plants.

Patricio Mansilla-Caro

Yeah, we have power, thermal and hydro.

<K>

But the tariff is high.

Patricio Mansilla-Caro

Sure.

<K>

I think the Chilean government would like to reduce the tariff by regional cooperation.

Patricio Mansilla-Caro

That's the main objective of the Ministry of Energy, yeah. That's the main objective. Are you going to have some meeting with the Ministry of Energy?

<K>

No. But, it would be good to have an interview with someone in the Ministry. But I'm not sure if they know something about the past. They know about the current situation. Yeah, that's good to hear

about because Daniel [ph] is going to – is still studying the some power interconnection in various countries in the world. Updated information would be very important to him. That's good chance to get the information from the Ministry of Energy. I'm not sure for her, that's about the past, so I think no one who experienced the power sector reform would remain in the Ministry of Energy. They have already left the Ministry of Energy.

Patricio Mansilla-Caro

Yes, you're right. But how many days you're going to be here?

<K>

Actually, unfortunately, we are going to leave here on the evening of Wednesday.

Patricio Mansilla-Caro

Oh, on the evening of Wednesday.

<K>

Yeah, so only tomorrow and Wednesday.

Patricio Mansilla-Caro

Yeah. The point is also, what is happening, we have probably difficulty to find the people here but I can – if I remember someone today and if I can stay in touch with them…

<K>

Yeah, that's really appreciated.

Patricio Mansilla-Caro

…I can pass you the name because it was difficult for me to set up a couple of additional meeting with people here because there was in several activities. Yeah, someone from the university would be…

<K>

Yeah, we have already met some professors. Universidad de Chile and Universidad Católica de Chile.

Patricio Mansilla-Caro

Okay, perfect. Yeah.

<K>

But we haven't seen some…

Patricio Mansilla-Caro

Who in the Católica University or Universidad de Chile?

<K>

Raimundo Soto.

Patricio Mansilla-Caro

Ah, Raimundo, yes.

<M>

We met Jadresic and Adolfo Ibañez University.

Patricio Mansilla-Caro

In the Católica University?

<K>

No. Alejandro Jadresic was at Adolfo Ibañez.

Patricio Mansilla-Caro

Ah, perfect. Yeah, and Raimundo, Católica.

<K>

Católica. Ronald Fischer in Universidad de Chile.

Patricio Mansilla-Caro

Ah, Ronald Fischer, okay. Yeah, perfect, no, excellent.

<K>

The only guy, we haven't met would be the – I forgot his name,

Patricio Mansilla-Caro

Pablo Serra?

<K>

Pablo Serra is another guy, we haven't met. Pablo Serra, where is he?

Patricio Mansilla-Caro

I don't know, but Pablo Serra has an interesting story. Maybe you need to ask him. I'm not sure if it's the same Pablo Serra, but what I remember is Pablo Serra was in the Ministry of Energy, or in the Superintendencia some time and I don't remember if he was part of the team that made a mistake when they published new tariff system for electricity sector.

<M>

Which system, when?

Patricio Mansilla-Caro

I don't know. But talking about electricity, I remember as a funny case. Yeah, because I'm not sure if it's the same person. Pablo Serra. Oh, yes, 2006, Pablo Serra, was laid off.

<M>

From the ministry of energy?

Patricio Mansilla-Caro

In 2 months, the National Commission of Energy made two mistakes in the calculation of the tariff. Yeah, it was in 2006. I remember. But he's a good guy. He's an expert in the sector. He was working here for 12 year. Twelve years he was working in the National Commission of Energy.

<K>

CNE.

Patricio Mansilla-Caro

CNE, when I remember Serra, oh, yes.

<M>

Why do you think those CNE's working condition, working score was decreased since ever since power sector reform? At least just after the power sector reform, the tariff setting and technical issues were well done, I think. But recently after 2000, after all, companies were privatized the CNE's working efficiency was little bit lower, I think. Why those kind of things happened in those institution?

Patricio Mansilla-Caro

Okay. No, I understand. I think that this case is a particular case. It does not reflect the real situation of electricity market or the capacity of the people. People capacity is very good. But sometimes, we're discovering not all in the electric sectors, you know, not only in the electric sector but also in other sector in the public area is that, you know, in the academy, when you are in the academy, you are a professor, Mr. Komatsuzaki [ph].

<M>

Komatsuzaki, yeah.

Patricio Mansilla-Caro

Ms. Umi [ph], yeah, when you are a professor there, basically you have time, which is one variable, you have several opinions from the rest of the people that they are going to need your opinion in objective terms. But when you are in this kind of sector in the public sector, you need to deal with people that is not giving the real opinion, or the real calculation, because they are basically member of some political party or you know, is a political party, at one point.

Second, you are against the time. Sometimes you need to make decisions in short period of time and you can make. But basically your question, is that we in Chile, we have very good professionals. We have very good universities, we have very good professionals, and public sector receive those kinds of professionals as important authorities normally have Ph.D., Master degree, but we have a second level that basically need the improvement, courses or strengthen the capacities time to time in that.

Third one is basically that when we are a country that is believing in some area that the knowledge in the public sector, it's difficult to find, to have benchmarking. In some areas, you can find the system is unique, the system is working, and sometimes you know the authorities have some – are afraid that make some changes can provoke some mistakes in the system. But I think that now Chile is facing three reforms, taxes, education, and the third one is I don't remember. The third one is the electoral system.

<M>

Pension.

Patricio Mansilla-Caro

Yeah, pension is still in…

<K>

Election.

Patricio Mansilla-Caro

The electoral system – the elections. Yeah, Chile is starting to play new paradigms in those areas. I think that in the energy system – the energy sector all the community, all the country is conscious that we need more investment. We need more investment. Because our tariffs are very high that's the main point.

The agenda of this minister is good because they are considering the necessities of investment, in this period of time. The point is basically how to accelerate those investments in the country and second, how to flexibilize or how to convince communities that are against big projects of electricity, hydro basically that, the mitigation issues are going to be valid, are going to be banned in the future. That's the main point.

Maybe in some point of time, Chile needs also to start the discussion at least or continue the discussion for nuclear energy. It doesn't mean that the society is going to accept the investment in nuclear energy, given the risk of the system, but it's important to start the discussion. Because in

some countries, like your country, United States, you have those nuclear energy plants, well, sometimes these are risk. Chernobyl and I don't know, well I remember the city over there.

<K>

Fukushima.

Patricio Mansilla-Caro

Fukushima.

<M>

Compared to the past, the investment environment for private company has been changed a little or still in the past, the environment of investment is attractive.

Patricio Mansilla-Caro

just one second. [Foreign Language]. Yeah, sorry.

<M>

How is the current situation for the new investment like may be the government community confirm or supports the construction of nuclear power plant in Chile, many private company or many private sector wants to join the new invest, but can you tell me the differences between the past and now?

Patricio Mansilla-Caro

Okay, yeah, of course. I think that when Chile started privatization system, was 30, 40 years ago, it was difficult for our country to attract Japanese, European, American investment, but today it's easier than before for our country. However, you will face the competition from other countries in Latin America that are starting to do well also and they are attractive.

But we recognize that basically still Chile is an old country for investors because they felt here is that nobody is going to excoriate or to take over the company, the private sector. It's impossible that this happen in Chile. No political party, no citizen, no community in Chile is going to understand if a Japanese investor is going to be excoriated, is not going to happen in Chile. We know that in other Latin American countries, still investors can face this risk.

<K>

Yeah, that's possible.

Patricio Mansilla-Caro

This is one point. Second is basically that the market is the king in the sector in Chile. The market is basically going down in the outside rest of the world, we're going to be affected, but at the end market is going to determine tariff, quality, and demand, you see and everybody knows about that.

We have some collusions problems in several industries in Chile that the Fiscalía Económica Nacional auditing is working recently, I don't know if you read the newspaper in English, but recently the last week, we know about the collusions between the shippers – the shipping companies, the maritime shipping companies between Korean, Japanese, Chilean companies. They say, hey, we are colluding in order to charge a higher price for the shipping to the car companies, Toyota, Mazda Japanese companies.

But we are working on that, we are working on those kinds of collusion, but at the end it's the market that is facing it. There is no country that will say, okay, we are going to establish the price of the dolls received for Christmas. No, we are not going to establish tariff unless we discover that the market is a monopoly, second.

Third one is basically that our professionalism of the public sector and private sector is, I think, we have a very high level of professionalism and the level of corruption in our country is low – is very low. We still have, but it is low. Therefore, investors can say, okay, if I need to create a company, yeah, we're going to break the company. We don't need to pay extra for your company. If we're going to sell Toyota's here in Chile, we're going to sell Toyota's at the price, concession of Toyota. You don't need to pay extra in our country. This is well-received by the investors around the world, you see.

Another important thing is that Chile has more than 50 or 60 free trade agreements with several countries around the world. I think that is one of the lead around the world in free trade agreements. Therefore, it is important, because if you have a Japanese company, or Korean company, or any other company, they say, okay go to Chile because we can take advantage of the free trade agreement that, we, as a country don't have in our country.

You see, we have free trade agreement and then we attract those companies who are coming from those countries that don't have free trade agreement with several others. They establish companies here in Chile. As a Chilean company, we need to take advantage of those.

I think that our country is powerful in order to establish the soft area of regulation of the market and facilities for the private investment. It is better than in the past because we are improving, every time we are improving.

<K>

I think you said you have a videoconference…

Patricio Mansilla-Caro

Yeah. Teleconference. Hori is going to call me. I can say that I'm going with you, you can have the opportunity to say hello to him, if you want. Is it okay for you?

<K>

Yeah. Let's say, it would be greatly appreciated if we can have – you could introduce us to someone in Ministry of Energy. But I know that it's probably very difficult to find someone but if anybody…

Patricio Mansilla-Caro

Yeah.

<K>

Until in our stay in Santiago.

Patricio Mansilla-Caro

Sure.

<K>

Maybe, again, I will come back, but…

Patricio Mansilla-Caro

Yeah, no, it will be wonderful. As I told you, if we have the opportunity to work with you in Chile for a pilot project, in the transportation area, which is my area here, we could do some beautiful work.

<K>

Transportation.

Patricio Mansilla-Caro

Yeah.

<K>

To have a new transport system, you said some…

Patricio Mansilla-Caro

Yeah, maybe we could establish some videoconference or teleconference, to establish which kind of study we can do, in innovation. Maybe you people, what you normally see is talking with our division there, maybe we can say in Chile, we have a wonderful relationship, and we can start a pilot. Then we can introduce you to the authorities, the Ministry of Transport and we can start working.

<K>

Actually, one of the professors in our laboratory is specialized in transport policy, or on the transport engineering. I am going to talk to him.

Patricio Mansilla-Caro

Yeah, fantastic. We can establish some conference and yeah.

<K>

Just one question. Do you find any difference from – do you have any difference between the energy sector, power sector and other sectors like, for instance, transport sectors in Chile?

Patricio Mansilla-Caro

Yeah, in which characteristics?

<K>

Yeah, like public policy-making or regulation and human resource and so on.

Patricio Mansilla-Caro

Yeah, the energy sector is I think the most intellectual sector in Chile because the people need to be more specialized in order to establish those regulation models. Just one second. [Foreign Language] I need to talk in English with you for just 5 minutes, okay?

Hori Tsuneki

Okay.

Patricio Mansilla-Caro

Can you talk in English? I have you in open conference, because I am finishing right now, an important meeting with two of your – how can I say…

<K>

University of Tokyo.

Patricio Mansilla-Caro

Important professor, University of Tokyo, Mr. Shunsaku Komatsuzaki and Ms. Minju Kim [ph] that they can say hello to you, just for 5 minutes, you can speak in Japanese, if you want to say hello to Hori Tsuneki.

<K>

Okay. Hori-san [Japanese]. Yeah, thank you, Patricio.

Patricio Mansilla-Caro

Okay, Hori. You know Hori that we…

END

Meeting Note #7

Date: 20150203

Time: 12:00~13:30

Place: Santiago,Chile

Interviewee: Esteban Skoknick(S)

Interviewer: Minju Kim(M) , Shunsaku Komatsuzaki(K)

Skoknick(S)

Well, I for most of that time when the CNE was Bruno and Sebastián Bernstein. I was not at that time there. At that time, I worked for Endesa. But I know what happened in those years, so I would try to answer your questions.

<K>

Thank you.

<M>

Thank you very much. Oh, you were working at Endesa?

Skoknick(S) Yeah, at that time, yes.

<M>

I heard many workers in Endesa went to CNE when they established.

Skoknick(S) Yes, Sebastián, we worked together at Endesa and then he went to work with Bruno and to CNE at that time.

<M>

But real proposal of the establishment of CNE is to make transparent and independent regulation.

Skoknick(S) Yes, of course.

<M>

But they are from private sector – private company to regulate those companies.

Skoknick(S) No. Endesa, in '78, there were the generation was almost 100% public. Endesa was a public company belonging to the state and also Chilectra at that time, that was a distribution and generation company, also was state-owned. There were these usual companies that correspond to the existing CGE that was a private one. But all generation and transmission was state-owned and most of the distribution also.

<K>

How was the policy of power sector reform at that time considered in Endesa? I think Endesa was opposing to such concept of reform?

Skoknick(S) Yeah, especially the initial idea was to – CNE was not talking about privatization at the beginning, they were just organizing the sector and the rules to make transaction between generator and to set a price to distribution companies. But when the CNE began to talk about to split the generation of Endesa, first privatize the distribution companies, that was the first step, then to split the big state-owned company in several generation units. That was opposed by Endesa because the idea apart from the fact that you split the company is that the sector, it was at that time the general idea, you should not split several generation unit, would operate better in a centralized way. The idea was that you could not split one thermal unit and one hydro, but rather have a complete mix of all that in one hand and that was the opinion of the Endesa – the majority of Endesa and tried to oppose as far as Endesa could because at that time there was not too much room to oppose.

<K>

Because of the military government?

Skoknick(S) Yes. But there were conceptual discussion about the possibility of building such a regulatory framework with the idea that was not going to work. You see, it was not possible to set such kind of rules and to make such spot market in order to make individual units – generation units. I think that is why also there was – that is why probably because Endesa was not divided more. Endesa was only splitted in one of the units that were Colbún. But the generation apart from two small units were the first one to be privatized [Unclear], is one of 40 megawatt.

The rest of Endesa was maintained as one unit. Even transmission was not split for generation, because one reason was the force of people from Endesa, the ideas, but also, mainly that, but I'm not

sure if the people from CNE was absolutely convinced that they should have – they were convinced that they should have to do that, but they could not compromise to give Endesa it was.

The distribution was splitted but not integrated, but the generation was not and that is why also Endesa kept most of the water rights. Endesa was state-owned, has a lot of water rights because most of the hydropower plant studies were made by Endesa and when it was privatized, all the water rights were belonging to Endesa were kept at Endesa and were not taken out and privatized. That is why Endesa has been all this time around 50% of the market, maybe now it is 40 but really…

<K>

Anyway, somehow Endesa avoided the CNE's interference in terms of splitting…

Skoknick(S) Splitting yes, not in the other regulation but in splitting yes.

<K>

It remained in one company and also maintained the water rights.

Skoknick(S) Yeah.

<M>

What kind of influencing power the Endesa had at that time? I mean, there was a real influencing something to the market or CNE or…?

Skoknick(S) No, the CNE was convinced what they had to do, but in the government, there was also a group of more – maybe not most of the economist but some may be military group that were not so Chicago Boys. They have some power in the government and there were some difference on what to do with that privatizations things like that so that the economists has the clear idea, especially Bruno, of course, was the leader at that time.

But there were another group probably more in the area of military than were also working in the economic area that were not so convinced that that was the right thing to do. There were some differences, and that is why they didn't do all they should have liked to do with the guy of CNE.

<K>

Do you know how or who actually developed or created the initial idea of this power sector reform, before the separate kind of CNE?

Skoknick(S) I think the idea was the guys created this were Bruno Philippi and then with him in the power sector also, Sebastián Bernstein those were the – they had the idea.

<K>

Bruno was at that time the professor at the…?

Skoknick(S) Before going to the CNE, he was professor at the Catholic University. He had made master, I think a Ph.D. in Stanford and came back to the university and then went to the CNE. He was the first executive secretary of the CNE.

<K>

He somehow put the idea to the government?

Skoknick(S) Yep. Also, of course, there were a group of economists that were leading the general economic reform.

<M>

The water plant?

Skoknick(S) Were mainly in the Sergio de Castro, Hernán Büchi after that, but they were in the area of – they were mainly in the Ministry of Finance and they had the general idea that this should be done, but the specific implementation to the power sector was mainly I think Bruno and Sebastián.

<K>

Probably Ministry of Finance of that group had general idea of reform or privatization of the public utility.

Skoknick(S) Yeah, in general, yeah, but not the detailed way to do that, create spot market with marginal cost. All that was based on economic knowledge of the power sector, Bruno and Sebastián. Sebastián had worked couple of year at the Électricité de France, Sebastián Bernstein, so he had clear

knowledge of the economy of the power sector and also had been in the planning department of Endesa so…

<M>

Endesa, Sebastián?

Skoknick(S) Yeah. Sebastián studied engineering in France and then he worked for a couple of years in Électricité de France and then he came to Chile, back to Endesa.

<M>

We can say he is technical expert in the economics?

Skoknick(S) What does it mean?

<M>

I mean, he is the technocrat.

<K>

Is he a civil engineer or economist?

Skoknick(S) He is a civil engineer, but related to economy of the power sector, not too technical details.

<K>

Actually, someone whom we have already interviewed mentioned some factor related to the mining industry in Chile and I think mining is very crucial industry in Chile but mining industry kind of suffer from the high electricity tariff because mining needs lot of electricity. In the '70s, I think there was some pressure or some influence from the mining industry to reduce electricity tariff, is that true?

Skoknick(S) I don't think so. No, there was not really. Because in the '70s, the main production of copper was in the hand of the state. Codelco had been privatized, Chuqui, El Teniente, Andina were privatized and there was only one big private company here, so I think that was not a real issue, pressure to the power sector.

<K>

The government didn't think about the improvement of the competitiveness of such mining industry in Chile by reducing…

Skoknick(S) Probably, yes, but not related with the power sector, no.

<K>

I got it.

<M>

Do you think there was external support?

Skoknick(S) Not at all, no. There was nobody thinking about this kind of reporting, there wasn't at that time. Even people from the – I remember talking with people with the World Bank at that time that came from time to time, I think they were not sure that this was a good idea. They doubt about this, and afterwards they were expanding the idea all over the world, but at the beginning some of them at least were not so sure that was a good idea. There were not at all – not at all – there was no influence.

There was the idea of a market, especially in a market, where you can set margin cost, you can easily calculate that and you can implement that and the general idea. But nobody, even in I think in France, where the idea of economics in the power sector, calculating marginal cost, economics of power plant, I think it was a modest economic application in the power sector. They didn't think at all in single really splitting the market with several competition in the generation market, not at all.

Even in the idea of generation, but even the idea of model of to set tariffs in distribution companies, not with the historical account values, like in the state is that historical rate of return, but in theoretical model system was not something that were applied anywhere. They apart from the generation sector, the distribution setting the tariff were also a complete new idea at that time.

<K>

I have two questions. One is about the influence of democratization of the country, so, in the late '70s, military government had dominated the country, so CNE didn't have any – could avoid some opposition from Endesa. But after the democratization, I think CNE may lost some authority because

there should be some competition is trying to influence the power policy, no, but still had independence from the political influence, even after democratization?

Skoknick(S) I think the CNE, of course, the head of the CNE was also set there by the government, no, first by the military government and then by the democratic government. But, the people that continued the CNE in the '90s, was convinced of the ideas that were applied in the power sector. They didn't, in the last 30 years, nobody has tried to modify the principles, the main concept there has been some reform, of course, but not in the heart, in the core of the regulation.

<K>

Actually, someone also, the other one professor said that the Chilean power sector actually lacks some stability at the political level to have long-term view of power sector and just the Chile left the function to the market, everything left the market.

Skoknick(S) Yeah.

<K>

For instance, in the late '90s or in the middle '90s, I think Chile had some dispute regarding the transmission?

Chilean Male Interviewee

Yeah.

<K>

Also currently Chile has a problem related to environment protection maybe so consensus-building with the opposing residents in certain area, maybe, so opposing to the development of hydroelectric power stations. In order to avoid those problems, he said that there should be some national level or political level, so a long-term strategic plan, but because the Chile left everything to the market, so it's very difficult to solve those problems. That's what he meant. Probably in the beginning the CNE was very independent of political influence because of the existence of military government, but after the democratization, no one tried to have such a political influence on CNE. That's actually what I'm trying to ask.

Skoknick(S) No. I think what happened is that there was not such a political view to change the regulation. There was no such pressure. People that were, that knew about the sector, that there was not a political discussion about changing the regulation, the idea. Of course, now there are some – the current Ministry of Energy and CNE are making some studies long-term generation expansion

studies, but I don't think that they are really changing the fact that most of the – or all the generation will continue to be private, also the distribution companies and so on.

There was no such – I think that the people were opposed to the regulatory framework set in the '80s, was the minority. All the people, even people that were, for their political ideas in general, not specific opposed to this kind of market, were not opposed to this market in Chile, you mean in the power sector, I mean. There was no such political but because we had some CNE secretary that were Socialist, another Christian Democrat and nobody tried to, even one of them that when the California reform was in at the beginning and was thought that's a good idea, proposed here to make something like in California, much more liberalized than we had. He was a Socialist because, of course, that was not done. But I mean that most of the people, except the few bought the idea, they bought the idea that it was – that worked well, the regulatory reform worked well.

<K>

I think you mean that the Chilean people are really strongly convinced that Chile is running on the really right track so it's going to the right direction, the power sector reforms. There is not a big need for long-term vision, because they are on the right track.

Skoknick(S) Yeah. There were two – one important change was in 2004, when there was a change in the transmission regulation because really the transmission regulation never worked. The idea of having a market or private construction, or private expansion of – private planning didn't work, that really didn't work, and that that was changed in 2004.

<K>

Also Ley Corta Uno.

<M>

Ley Corta.

Skoknick(S) Yes, Ley Corta. That was, one important thing that changed all the regulation of transmission that really did not work. Even if you look at the rules, the regulation of power transmission was written in the last months of the military government. It were approved, at the end, why because, even the CNE had no, a good proposal. They didn't make a proposal, revolutionary proposal at the beginning and because this is a very hard area to regulate, the transmission, it's very difficult. In 2004 or 2004 that was a big change and that would get the approval of everyone. But it took 10 years to make the reform, to see the real problem.

The second one was, to move from was – in the same law, the tariff to the distribution company that were regulated, to transform that in an auction, more market, instead of regulated value for the generation projects to distribution companies. That I think were the big change in to the regulation.

You will see that even when the discussion appears about the renewable unconventional – the renewable, the idea of subsidies was not applied. There was a discussion that there should be, as like in Europe, subsidize the renewable, but because that was not applied and the supply, and obligation to have percentage, but more micro-oriented at the subsidies. Even that reform was not applied in the sense of most of the more nonmarket communication like in Spain or in Germany and so on.

<K>

We would also like to ask the process related to the Ley Corta Uno, but before that I want to ask the second question. The second question is about the initial goal of the power sector reform, so what was seeked for in the beginning. Sometimes, some country try to privatize everything and unbundle everything and split the companies into many companies and try to make the best competitiveness. Then, other countries just try to introduce IBPs and try to, deregulate the only generation sector, to improve the efficiency, or to improve the energy price maybe. I think the policy goal differ from country to country. In Chile, what was the initial idea about the policy board of the power sector reform?

Skoknick(S) I think that it was not so explicit at the beginning, but it finally was to privatize the sector, but in a way that it worked not like it is IBPs, but work more like a market, a real market. Stimulate the market in a – the operation and the spot market that could be simulated like the real market and competition among generators, that was the idea. But the framework is not like you say IBPs and things like that. Not oriented by this type, but really open, really market.

<K>

Because I think CNE didn't and CNE actually made some compromise with Endesa. Endesa stayed to remain in one company and also the water rights also left to the Endesa and also transmission regulation was – can just maintain for about 20 years. I think if the CNE tried to realize the real competitive market, then I think they tried to realize, because they had tried to realize it in the military government and Endesa didn't have much room for opposition. I think they could do it, but finally they made a compromise, so I doubt that they or I had some question about the real obviously goal for CNE, but you mentioned that it's a…

Skoknick(S) No, but for instance, I don't know if Bruno told you that there was a power plant Colbún, that was built at that time by Endesa and what is pleaded from Endesa and the Endesa didn't want that. Pressured, convinced some ministries of the government, the military government, maybe Pinochet or some of these people that should Colbún be built and belong to Endesa and not privatized. The same with [Unclear] that was going to be privatized, finally Endesa brought it. The CNE wanted Colbún splitted from Endesa and Endesa didn't want that. They convinced the government – Endesa

convinced the Pinochet to maintain that in Endesa and that is why Bruno resigned from the CNE because he was defeated in that small battle. It was something like that, you know.

There was two really – not all the government, in that aspect, not in the regulation, but there was a group in the government, even the Ministry of Interior, it was called Interior, was convinced that there should be one single tariff in all the country. The CNE thought that there would be one tariff by distribution company and by reason saw some area the final tariff should be at higher price and according to the cost. There was really a fight, I can't even say fight, I don't know exactly, maybe strong but within the government, between CNE ideas and some part of the government that were more – they were liberal politics, but more in the sense that there should be, for instance, single tariff and there was a fight and that fight was won by the CNE.

But they had always the pressure of some of the ministries – the political ministries, not the economists, that wanted to have a single tariff. Within the government, there was the idea of CNE and Ministry of Finance; they were very liberal, very Chicago. Another group is made with some political and some military delegated column that were more centralized people. In general, the idea was imposed by the CNE, but some of this idea had to be fight. They were discussed within the government and Endesa used that people that knew that were not in the idea little to convince and finally Pinochet or some of the assistant or counselors too. There was…

<K>

Finally, you're…

Skoknick(S) As I did not belong to the CNE, I had that vision, but probably Bruno, wouldn't say that. I'm sorry.

<K>

So far I think that kind of interference from that another group in the government may be Endesa remaining in the big company and I think their dominance or the huge share in the electricity market of Endesa still have influence on the, I think, Chilean power sector. I think it sometimes hinders the competitiveness or the entry of new players into the generation market.

Skoknick(S) I think there are two things; one is that the even they are aware that there are still a small amount of big unit, big companies like Endesa, Colbún, and Gener. It has been from the point of view of economic decision in the sector, very competitive. For instance, some competition was crazy, for instance.

<M>

For generation?

Skoknick(S) In generation sector, for instance, they built three gas pipe in the northern grid, one by Endesa, one what it is Gener, that is a transmission line, and another by what it is now the French group, ECL and there was the need only of one of them, but they didn't agree to build one and they built three, and the three are of no use now. Interconnection, electric connection with that thing is not working.

That means that does have an extreme of competition, I mean also they were small amount. They were not in – they were fighting for the market, they didn't agree to and also subsequently have been hearing that in the Santos [ph] grid, they arrived agreed to one gas pipeline but each one built one combined cycle unit simultaneous that could be really was not necessary to build, although, there simultaneous but they were fighting for the market. Also, there was a small amount of unit generation companies. There was not really competition.

The other thing that in a market like this is difficult to get into the market. I think is difficult, newcomers is not easy, especially with big power plants to get the water rides in the case of most of any kind of Endesa and Gener or to get site to build the thermal. There were some of them that tried to get into by buying the companies and EDF was trying to buy Colbún in the '90s. Finally, they didn't formulate an offer and so it is not so easy to get into – a newcomer to get into the market.

<K>

Especially, I think Endesa held the water rights.

Skoknick(S) Yeah, that's an important thing.

<K>

I think Endesa has a very strong competitive price.

Skoknick(S) Yeah.

<K>

I think that, I would say distortion of initial plan by CNE may have caused some problems currently. I think the – yeah, another thing is – another thing about the political independence of the planning body and CNE, I think that political independence made Chilean system much better than many other countries like let's say Argentina. But still, even in Chile there were some, not political, but partly

political interference on the power sector reform by the other group like the Ministry of Interior or some military people.

Skoknick(S) Even earlier, this was this discussion. I think most of them were won by the CNE, but was not always easy.

<K>

Then I think that some area in which CNE lost in the dispute.

Skoknick(S) Yeah.

<K>

Still won't have some impact on Chilean power sector now.

Skoknick(S) I think they only – they didn't lose in the regulatory framework, not at all. They won everything they fought, but maybe in the way that the power companies were privatized maybe, probably the CNE would have liked more – a big number of generation companies, maybe division of some distribution in Santiago, that was made after in Argentina and Peru the main distribution, this was split in two. At that time, I don't know if there were [Unclear] but for generation for sure, they would've liked to have more.

<K>

Yeah. I think [Unclear] that Bruno lost the dispute regarding Colbún's privatization and then actually after about 10 years, I think finally Colbún was privatized.

Skoknick(S) Yeah, in '96 it was privatized. But the idea was belonged to Endesa. That was the first. Finally, it did not belong to Endesa. It was privatized because it did not belong to Endesa, but to the CORFO. That has kept Colbún. But in one of this discussion, he lost, and he resigned. Then Sebastián became the secretary.

<K>

Oh, Sebastián became the secretary. Sebastián, so I think after that Bruno became the President of Gener?

Skoknick(S) In the '90s, he became the President, after the privatization of Gener.

<K>

Okay. Shall we move onto the question about policy process, about Ley Corta Uno?

<M>

Yeah.

Skoknick(S) Yeah.

<K>

I think you said it took about 10 years to realize, to create the law-related, regarding the transmission regulation and the tariff system for distribution and also something about renewables?

Skoknick(S) Yeah.

<K>

It took 10 years.

Skoknick(S) Yeah.

<K>

What do you think is the main reason why it took 10 years?

Skoknick(S) Because at the beginning, they didn't have bigger problems, that there were no problems with the – for instance, with the offer from generator or distribution companies and paid by the – what it was known as in old prices, but the gas crisis create a problem. We had no gas and that created a problem.

<K>

[Unclear].

Skoknick(S) Yeah. Distribution companies and generators were not willing to supply the distribution companies that created the problem and that's the law in 2006. At the beginning also there were no problem with the transmission because there were not too many need to make expansion. It worked without discussion, but when there was the need to make expansion and to and it happened that Colbún created its own transmission line instead of using Endesa because Endesa didn't accept to transmit. That was the first problem and then the expansion were – nobody was interested in expanding the transmission network, it was not sure to be paid. When the problems appeared there was a need to change it. There was the problem, were not in the beginning of the '90s. There was not such discussion.

<M>

The blackout in 1999 was one of the reasons for the establishment of Ley Corta Uno, because Chile had several types of blackout in the city so it may cause the discussion under the new Ley Corta Uno?

Skoknick(S) There was no crisis or blackout.

<K>

I think in 1998 I think Chile had severe drought.

Skoknick(S) The drought, yes, because of the drought, yes.

<K>

I think in 1998, there was severe drought and in 2001, there was the gas crisis or the…

Skoknick(S) No, the gas crisis began in 2004.

<K>

Yes, I think in 2001 Argentina had serious economic crisis, I think in 2001, and finally they stopped the gas export.

Skoknick(S) Yeah, in 2004 they began and in 2007 the export was zero.

<K>

Both crisis triggered the change of law of or the discussion about the change?

Skoknick(S) Yeah.

<K>

Okay. Another thing that you mentioned here.

Skoknick(S) Now it's something similar, I think because we have suffered in the last 10 years the crisis of – to get permits to build power plants and to get permits to build transmission lines, because people oppose, social opposition and nobody want to have a risk of building a plant without a contract. On the other side, you cannot have a contract, if you don't have the plant. There was I think there has been a significant change, not the law, but in the regulation of the auction to supply the distribution companies, that generator could apply with power plant that were not built yet. If they had some problem with the – not due to them they are building but due to the permits or force majeure, they could postpone the beginning of the supply in a couple of years and that made a lot of companies, new companies less risk, get into the – went to the auction and they won.

We have not for the last 5 years to get new power plants to supply the distribution companies with the last December auction and that's a change that has been imposed by the fact that we had problem to build power plant and to have any operation due to the mainly to environmental problems and social opposition. That is not in the law, but there has been a significant change in the – and the result, new entrant, and like EDF and ECL in the…

<M>

It is driven by the slow decision-making process by the Ministry of Energy?

Skoknick(S) The law?

<M>

Yeah, no, no, no. Building a new power plant in new area is caused by the decision-making process of the Ministry of Energy?

Skoknick(S) Yes, in the rules of, to supply the contract, in the auction they make to, all the institution companies that make an important change.

<M>

We can say until 1999, we can say the Chilean power sector reform is relatively successful before the power crisis and before the new act, establishment of new act. How do you think, what was the main reason for, main reason to make the reform process successful historically?

Skoknick(S) I think that the reason is that it is very logic economically and it is very maybe orthodox but very dynamic, has been kept like that. Because some countries, if you look at other countries like Argentina or Peru that began to do this reform, in the case of Peru every time they have a problem, they solve it by modifying the rules. For instance, when the prices are too high because due to the mission constraints, they say, well, we've calculated the price without the mission constraints. Then, when the price began to be very high because of lack of gas – the spot price and they have to use diesel, they decided to use [Unclear] to set the price. They were solving the problem, eliminating the problem but not suffering the result of the…

<K>

No fundamental resolution.

Skoknick(S) Yeah. Here we have been – we have accepted the high price, we have had last 4 years, spot price very, very high and we had increase in price tremendous from three times due to Argentinean crisis. The political sector have accepted that because – they have accepted that this economic rules have sense. They think that that's the main thing that we have kept the fundamental of the rules changing when there has been, of course, crisis or problems. That has been part of the – you call success. There have been agreements to solve that – to solve the problem to make an agreement to continue with the economic idea without distorting the economic sense of the rules. I think that has been important.

<M>

The effort to improve and solve the problem continued, I think so the expert panel…

Skoknick(S) The expert panel was one of the result of that. There was a lot of discussion among the – in that time it was mainly among the generators and that had to be solved by the Ministry of Economy. They were never solved and there were pressure and finally, there was a good solution that reduced the number of discussions and solve a lot of problems with most of the time with trying to maintain the economic rules, the economic ideas that is under the regulations, so that was a good result.

<K>

I have one question about those policy changes, who actually start discussing about the possible policy change? Is it CNE or the Ministry of Energy, or Ministry of Economy? I am asking the – who is actually designing policy?

Skoknick(S) Well, the Ministry of Energy is very new. It began in 2010 so before that all the reform, all the discussion where proposed and discussed with by the CNE. They have kept some of the ideas but now that belong formally to the Ministry of Energy, but where the people has more experience in the power sector are in the CNE, so they are working very, very together. But until 2010, it was only CNE because there was no such Ministry of Energy.

<K>

CNE had the function of the policy maker?

Skoknick(S) Yes.

<K>

Then, I think CNE was very small organization?

Skoknick(S) At the beginning, it was very, very small. Now, it is not so small, but in the beginning they were affecting people during the 10 years and they wanted to keep like that and if you listen to Bruno or Sebastián, they say, they have increased bureaucracy. They should like to be, a group of people of 10 or 15, no more than that, but, of course, when you begin, a lot of roles in the beginning were very simple. The idea was to have two very simple rules, even not so detailed, not so fine, but with logic and very good sense.

But when you begin – at the beginning, when all the companies were state-owned, no problem. When you privatize at the beginning, also not so problem. But then you have people in the company trying to get one more to that anyway because there is more competition, I can get, something more for my company. I will get some benefit. I tried to fight for that and then they try to put details, some more details, some more details, and that made the necessity to increase the studies.

At the beginning, for instance, the studies of distribution companies, setting price was very simple. There was no mathematical model. Even at that time they were not possible, we have such a mathematical model and the rules were very general. But now you have detailed mathematical model

to build a model company and very detailed, something similar for the rules in the CDEC, because their company peers that they want detail, you need more people to do that.

Also, the dispatch center at the beginning was clubbed. There was no physical point. But now you need that. You have 100 people, because you need to be sure of the – where you make to calculate the marginal cost at every point, etcetera. There is something necessary complication. But at the beginning, the idea was to have few rules very simple, very clear with economic sound. That happened at the beginning. It was possible to do that, but with the time that began to require more detailed, more mathematical, more economical regulations.

<M>

In order to build their capacity for the regulation, they started themselves, but in developing countries, actually, I'm doing comparison study with Chilean case and the Philippines case. In the Philippines, in order to build their capacity on regulation and regulatory body, they were supported by the World Bank or USAID. In the Chile case, no?

Skoknick(S) No, not at all. They were not supporting the reform activity.

<K>

Yeah, you said so.

<M>

Yeah, so Chile learned the trial and errors.

Skoknick(S) Yeah. But maybe because they're all conceptual model behind that, the idea of the – not the technical one, but economic model, the way the market should work and the way you can apply that in the power sector that was the, amazing, the generation and distribution. Finally, we arrived at something reasonable in transmission, but that was the last one.

<K>

About the policy-making function of CNE, I think you mentioned that the triggers of obviously change in 2004 was the – first is the '98 drought and another one would be the gas crisis in 2004. But once Chile initiated the policy change in 2004 or other politicians because the drought and gas crisis were pretty paid – so much attention was paid to that, those crisis from the public I think. The politicians also recognize the problems, but basically CNE…

Skoknick(S) Yeah, CNE began the all the analysis and proposals and they were discussing a lot among the government and the opposition at that time, and they arrived at an agreement. There was, I would say political discussion in the sense of political view of the sector, not political in the broad, but from view of the sector. The position was worry about not changing too much the regulations, to keep the general framework, general concept of market of liberalism and then they saw that they arrived to a compromise and the reform that were applied.

<K>

It is amazing that how big authority the CNE has. It has very strong authority.

Skoknick(S) Yes.

<K>

It is not elected by the democratic way and it is just kind of ministry in the government.

Skoknick(S) At that time, when it was created, it had – I think that was the idea of the energy crisis in the world that was something, in the '78 with the crisis of oil and at that time that was. They had a committee of seven ministers, so it means it was the idea that it was no multi-faction – there was involved the Ministry of Defense, Ministry of Economy and the Policy Ministry, of course, and so there were a lot of ministers that sat on the CNE council, how do you say, board, there was a board. The idea was something important, multifunction.

<K>

Was it created from the oil crisis in?

Skoknick(S) I think that was created in '78. In the world, in most of the countries, energy commission was created because of the crisis but here it was additional, the idea of making something…

<K>

Multipurpose or multifunctional.

Skoknick(S)

Yeah, and the idea of making reform, but that coincided with the oil crisis also.

<K>

Just coincided?

Skoknick(S) Yeah.

<K>

Such recognition of crisis always triggers some policy change?

Skoknick(S) Yeah.

<K>

Some joint action, different actors in the government.

Skoknick(S) Yeah.

<K>

That committee of seven ministers became the board of CNE?

Skoknick(S) Yeah. That was created with seven ministry, made the board and then that was not ministry, secretary of that board.

<K>

Finally, turned to be the board, okay. I think one or two questions.

Skoknick(S) Did you meet Hernán Büchi?

<K>

No.

Chilean Male Interviewee

You should.

<K>

Who is he?

Chilean Male Interviewee

He was…

<K>

Yeah, what's his name? Hernán Büchi.

Skoknick(S) You can find him. He is a think tank of the Right. He was the Finance Minister after the crisis of '82 – the economic crisis. He was from '85 to '90 and he participated a lot in the privatization. I'm not saying that he was the leader in that area. He's a political leader also of the Right. He had a lot to do with the energy policy in the second half of the '80s. Because the energy commission had a lot to do with the finance minister at the time also. Did you talk to Rolf Lüders?

<K>

Who?

Skoknick(S) Rolf Lüders?

<K>

No.

Skoknick(S) He was a former…

<K>

Hernán Büchi

Skoknick(S) You call Büchi because…

<K>

Ah, that's kind of German style.

Skoknick(S) Yes, I think it is Croatian, but it is like German, yeah. Then you have Rolf Lüders.

<K>

[Unclear].

Skoknick(S) Yeah. He's a professor at Universidad Católica.

<K>

Rolf.

Skoknick(S) Lüders and he was also former Minister of finance. Before the crisis of '82, or maybe the first Minister in the crisis of '82, the economic crisis. He wrote a paper about the policy of the change in, I think he was the author, I don't know. He wrote a book. He was the editor of a book about the economic change and policy change in Chile in the '70s and '80s. In that book, there is a chapter about the electricity. I think he was the author of that chapter, not sure but I think so. He also is post Minister of Finance of military government and…

<K>

Written in English or in Spanish?

Skoknick(S) I read it in Spanish; I don't know if there is an English version.

<K>

Is it Rolf?

Skoknick(S) Lüders.

<M>

Lüders.

Skoknick(S) Also German. That's German, leaders. But they both are political and economists, but very involved in the political – in the politics in the, much more Hernán Büchi, of course, than the other one. The other one is mainly oriented to the – but they were involved in the '80s as Minister of Finance in all this, so they may have a different vision, a wider vision of this also.

<M>

Now the CNE's chairperson is appointed by or voted by the member of the CNE, how they are appointed?

Skoknick(S) The CNE, the secretary is named by the government and they depend mainly on the Ministry of Finance. They are in theory independent, but in practice they depend on the Ministry of Finance.

<K>

Because I think the Ministry of Finance gives…

Skoknick(S) Ministry of Energy, sorry. But it depends on people. In the last government, the Piñera government, the CNE secretary a very strong guy, good ideas and fighting and the Ministry of Energy was not very, was not fighting, and was not so they had much more initiative the CNE.

In this government, Pacheco, I don't know if you have been with him is a very strong guy with new ideas, a very active, doesn't stay. The secretary of CNE is technical people, but so the strong guy is ministry now. It has to be with people more than with – logical idea is the policy-making is the ministry, so they should take it and that has been in this government. But in the last one was not so because the Ministry was the first time there was a ministry because this did not exist before. They had not too much people and so they were rather weak, but now they are very strong. The guy is very strong and so I think that mean that the ministry is more stronger now than the CNE. That should continue I think because the policy-making is the ministry.

<M>

Very dependent on the characteristics of the person.

Skoknick(S) Yeah. And that they should take into account technical recommendations of the CNE, but for policy-making should be the rather the…

<K>

Is that the reason why the Ministry of Energy was established?

Skoknick(S) No. The idea was that the – I think 2008 or something like that, mainly the guy that was in the CNE, that now this is a very good guy, that now is the President of – General Manager of ENAP, Marcelo Tokman. The government thought that there was the need of something strong, that this something that was secretary, a more political strong view of the minister, so that was created. That was really the beginning, but as everywhere in, in every other countries the energy commission was final Peru and Ecuador, everywhere you have a Ministry of Energy and that was the idea also, more stronger, political involvement.

<K>

Japan, doesn't have it. Japan still has, in Japan; the Ministry of Economy is still managing it.

<M>

CNE has the role of advising for new policy and new design for energy rather than the regulation of tariff or…

Skoknick(S) No, formally they are mainly oriented to regulation of tariff and the technical regulation, that's formal. The orientation to new policy should be based on the Ministry of Energy. But as they have strong group of people in the CNE it's easier, it's not as strong in the power sector, as in the ministry. It's easier for them to advise the ministry. But not formally.

<M>

Is there any corruption or scandal in CNE?

Skoknick(S) No, I have never heard something like that. Yeah, no, there have not been any.

<M>

There is CDEC for the regulation too. Someone says there are two regulatory bodies in Chile, one is CNE and one is CDEC. Their role can be, how to say, can be similar.

Skoknick(S) Not at all.

<M>

No?

Skoknick(S) No, not at all. The CDEC apply the regulations to the market, to the spot market mainly and all the technical rules to operate the system. All the regulation, they want to – they may define regulation for the operation of the system, but any of these regulations have to be approved by the CNE, so they really have not a regulatory role. They have some regulatory in the sense that they apply all the regulation and some details – they create regulation detail, but it should be approved by the CNE.

<K>

I have one question about the, for me it's the last question. I think, to have better result policy power sector reform, I think, step-by-step approach or gradual approach would be sometimes necessary. For instance, in Chile, first the CNE tries to reorganize the state-owned company to improve the efficiency of state-owned companies and then moved on to privatization, unbundling of distribution, transmission and generation. Another thing would be the, I think, more privatization, so like Colbún transmissions in 20 years. After 20 years, now I think third phase, it's I don't know how to say that, kind of politicalization or something, the more democratization, I don't know, the more political involvement or commitment to energy sector. Firstly it started from the very…

Skoknick(S) No, but I think you begin with the high level. The conceptual idea of what you want to do, very, very, you want to – where you want to go and how you will organize the market. That's the highest, you begin from that.

<K>

From the highest level, the fundamental feature of the sector, but first…

Skoknick(S) But there is not so many people involved, companies are not involved. In that sense, this is lower level, but and really is the higher level. You have to convince there – with that idea, you have to convince in a democratic country. You have to convince all the parties, all the people, all the companies and you have a very clear rules to maybe to be discussed with the – that will be discussed

with the existing companies, or existing parties and you have to have very solid fundamental to convince them. That's the main – I think that is, you have to begin right there.

There you can, apply this rule to the existing companies, even the state-owned or one company or two, because this was applied at the beginning with two companies, both state-owned. But give the application of the rules and the fine tuning of that, and so then you bring into reform the other things, the property or the unbundling and things like that.

<K>

Yeah. I thought that – she's trying to get some insight from the comparison with the Filipino case. I think in other countries after Chile, let's say, the other countries tend to implement the many reforms at the same time, so the privatization, unbundling, regulation and so on, in one law, let's say. But in Chile, it started from some improvement of the state-owned companies and then privatization, unbundling, and then privatization, and so on. That gradual change may have led to the better result or…

Skoknick(S)I think so, yeah.

<K>

But anyway, you meant that the fundamental idea of power sector or the whole fundamental picture of the power sector reform was crucial.

Skoknick(S) Yeah, that was the most important. That is the most important. In that process, there will be a lot of fight of the incumbents, I say incumbents, because they don't want to lose their power. There will be a lot of pressure to modify that and to make it, suit on your own. They want to be a rule that convince them, and that is the main problem and what you have to fight and convince them.

<K>

Probably, let's say in Argentina.

Skoknick(S) That happened in Argentina that tried to happen some ways in Panama also and…

<K>

Maybe Argentina also had good vision.

Skoknick(S) They had good vision, but they could not, when they had a crisis, and they had a problem, they were not able to cope. That's political interference that makes that when you have a problem, they want to solve it with no effect on the tariff, with no effect on the companies, and they have bad results. Then you kill the regulation, because all the concept you make, you move, you shelter because of the crisis, you destroy and that happened in Argentina. They destroyed because the price was going to increase and some companies were going to have bad results and so on and etcetera.

It is difficult to maintain the vision, the wide vision you have and to convince the – for instance, one thing that happened here, but it's not related only to the power sector. In the '60s, when there was – even at the beginning of the '70s, '71 there was an increase in the electricity tariff. There was a big issue of increasing the tariff, but the result of the change in the economic policy of the Pinochet was that people began to thinking price something normal price could increase or decrease or change and then was a matter of fact, that the price to change because sometimes when you reduce the import tax, price is reduced, but if there is a crisis of oil, price should increase because oil is higher and then the tariff began to, to be not a big issue, not a big issue. Of course, there are a lot of political comments, but something that everyone thinks that it should reflect the economic reality.

That happened here in the '70s and that had been a big change in the price because of our crisis, but has not gone to destroy the fundamental of the prices. You know that when oil increase in the world, our price increases and now when they decrease, they are decreasing. With the oil, they are always talking about every week. But anyway, people think that if it is high, we have to keep our part and not produce political so big issues that happen in other countries where you have a lot of subsidies and there is a pressure of politician to make question of that.

<K>

That's true. Do you have a question?

<M>

Yes.

<K>

Just, one small question, it's about the current situation. Is there any ongoing discussion about the possible, let's say, smart city project in Chile, smart community?

Skoknick(S) Yeah, not too much. There is – no, the CNE make a study in order to know what was happening in the world, 1 year ago more and Chilectra is maybe starting one area called – there is one area of Chilectra that they tried to something like a pilot, but has not been discussion about that.

<K>

I thought that Chilean government is seeking for the increase of the ratio of renewable energy.

Skoknick(S) Yeah.

<K>

Also, I think Chile doesn't have the manufacturing industry because of the lack of materials, maybe. But I think in the future, the cars would be the electricity car, fuel-cell cars, would be much more simple than the conventional cars, because it's more simple and light. I thought that for Chile such new environment-friendly technology could be good for Chile, so I thought there would be some projects related to such fuel cell cars and smart transportation, smart city.

Skoknick(S) The government has studies about that. They are making projection and things but they are at the beginning I think.

<K>

Yeah, but I also know that the existing smart city projects in, let's say, for instance, in Asia are not so successful so far, maybe successful in terms of the raising fund, but not successful in reality. But I think Chile is a developed country so I think maybe good for the country.

Skoknick(S) No.

<K>

Well, that's a small question. Okay, thank you very much for your time.

Skoknick(S) You're welcome.

<M>

I've learnt a lot from you. Thank you very much.

Skoknick(S) I suggest you to talk to that guy because they have a high level vision because they were Ministry of Finance two cases. Lüders was at the '82 economic crisis and Büchi was at '85, when the crisis was recovered. He was the guy that made change in '85 to recover the crisis. They have a

vision of the power sector, especially Büchi because he was very tight, in connection with Bruno Philippi, when one was the Ministry of Finance and the other was the energy commission, they worked together a lot.

I think that a lot of – because Büchi is a very, I would say, I don't know the word, but very liberal, very Chicago. Sorry, it's not a – that doesn't sound well, but I think he's very liberal and he is in a sense Chilean leader, not. For the market, nothing like that. Maybe some of the ideas they discussed with Bruno were from Hernán Büchi.

<K>

Yeah, unfortunately, actually we are going to leave the country tomorrow evening, so it's very difficult to make an appointment.

Skoknick(S) But maybe you can contact by mail or phone, and…

<K>

By phone, it's possible so you can call from Japan.

Skoknick(S) Yeah, I think it's.

<M>

Do you know the contact of…?

Skoknick(S) Yes.

<M>

Oh, thank you.

END