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Best Practices in Investment for Development

How to utilize FDI to improve infrastructure - electricity
Lessons from Chile and New Zealand

United Nations

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

BEST PRACTICES IN INVESTMENT FOR DEVELOPMENT

CASE STUDIES IN FDI

How to Utilize FDI to Improve Infrastructure – Electricity

Lessons from Chile and New Zealand

UNITED NATIONS
New York and Geneva, 2009

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Use of a dash (–) between dates representing years – for example 2004–2005 signifies the full period involved, including the beginning and end years.

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PREFACE

The UNCTAD series of Best Practices in Investment for Development is a programme of case studies in making foreign direct investment (FDI) work for development. Launched in response to a call at the 2007 Heiligendamm G-8 Summit for UNCTAD and other international organizations to undertake such work, the programme analyses practices adopted in selected countries in which investment has contributed to development, with the aim of disseminating best practice experiences to developing countries and countries with economies in transition. The analysis forms the basis of a new technical assistance work programme aimed at helping countries to adopt and adapt best practices in the area of investment policies. In pursuit of UNCTAD XII's mandate in this area (Accra Accord, para. 148), this series builds on UNCTAD's advisory and research work in the area of FDI and development.

UNCTAD's approach is to undertake case studies of a pair of developed and developing or transitional economies that exhibit elements of best practices in a selected issue. Country selection follows a standard methodology, based primarily on the significant presence of FDI and resulting positive outcomes. Fact-finding missions were undertaken in Chile and New Zealand in March and April 2008, and the report has benefited from views of current and former government officials, the domestic and foreign private sector and academics. The report received financial support from the Asia-Pacific Economic Cooperation (APEC) forum under the APEC–UNCTAD Joint Capacity-Building Project for Addressing Knowledge Gaps in the Use of Foreign Direct Investment, and was presented to the APEC Committee on Trade and Investment's Investment Experts Group (APEC#208-CT-01.13). The programme also receives financial support from the Government of Germany.

The report was prepared by John Kline and Rory Allan, with contributions from Hugh Rudnick and Kieran Murray, under the overall direction of James Zhan. Comments were received from Peer Review Panel members Khalil Hamdani and Stephen Young. The report was finalized by Tom Westcott, Ioanna Liouka, Cam Vidler and Jörg Weber.

Geneva, June 2009

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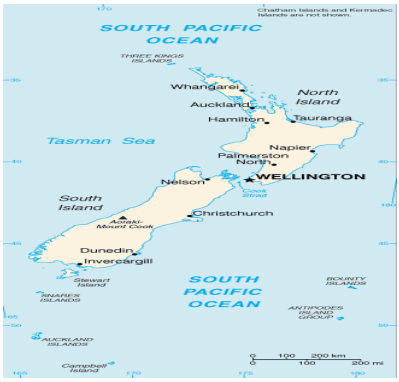
ABBREVIATIONS

AFP	Pension Fund Administration
CKI	Cheung Kong Infrastructure Holdings
CPPIB	Canadian Pension Plan Investment Board
ECNZ	Electricity Corporation of New Zealand
ESA	electricity supply authority
FDI	foreign direct investment
GDP	gross domestic product
GWh	gigawatt hours
IPP	independent power project/producer
LNG	liquefied natural gas
ODA	official development assistance
OFDI	outward foreign direct investment
NZED	New Zealand Electricity Department
REP	National Programme for Rural Electrification
RMA	Resource Management Act
SOE	state-owned enterprise
TNC	transnational corporation

Chile

New Zealand



Key facts table

	Chile				New Zealand			
	1990	**2000**	**2005**	**2007**	**1990**	**2000**	**2005**	**2007**
Population (million)	13.18	14.41	16.30	16.6	3.45	3.86	4.10	4.2
GDP at market prices ($ million)	40 457	75 213	93 216	163 915	39 831	52 674	62 704	129 372
Annual GDP growth (%)[a]	3.9	6.5	5.6	5.1	1.9	2.9	2.0	3.1
GDP per capita ($)	3 070	4 880	5 721	9 879	11 552	13 654	15 298	..
GDP by sector (%)[b]								
Services	51.7	57.1	53.3	48.2	66.6	66.9	69.0	69.0
Industry	41.2	37.0	42.4	47.7	26.8	24.4	24.0	24.0
Manufacturing	18.0	18.7	15.7	13.5	18.0	16.3	15.5	15.4
Agriculture	7.1	5.9	4.4	4.1	6.7	8.6	7.0	7.0
FDI inflows ($ million)[c]	540	3 761	6 984	14 457	1 088	2 326	1 666	2 768

	Chile				New Zealand			
	1990	2000	2005	2007	1990	2000	2005	2007
FDI outflows ($ million) [c]	9.0	1 324	2 209	3 830	587.0	345.0	-1 148.0	2 84.0
FDI stock (% GDP)	30.0	60.8	64.6	64.4	18.2	47.3	50.7	55.6
Gross fixed capital formation (%GDP)	25.18	21.86	22.5	20.55	20.07	21.57	24.77	..
FDI inflows (% gross fixed capital formation)	12.7	19.9	27.9	42.9	1.9	15.3	6.4	9.3
Total exports ($ million)	10 221	23 293	4 8317	77 081	11 886	17 673	30 024	36 117
Exports of goods and services (% GDP)	34.0	31.6	41.3	47.6	26.8	35.5	35.0	..
Imports of goods and services (% GDP)	30.6	29.7	32.7	33.6	26.6	33.8	34.0	..

Source: UNCTAD, FDI/transnational corporation (TNC) database, World Bank World Development Index database.

[a] Annual GDP growth rates for 1990 and 2000 are calculated as annual average growth rates for the previous decades.

[b] Data from 2007 not available, so 2006 used.

[c] FDI inflows and outflows for 1990 and 2000 are calculated as averages of the previous decades.

I. INTRODUCTION

An efficient and effective electricity network provides energy for industrial expansion while also permitting substantive improvements in living standards for the general public. Developing countries face particularly difficult challenges in building and operating national electricity networks that require substantial up-front financing, complex operating conditions and difficult cost-recovery situations. Fast-industrializing developing countries must cope with extremely rapid growth in power demand which can be twice as high as gross domestic product (GDP) growth.

Unsatisfactory experience with state-owned and operated electricity networks has led many countries toward a paradigm shift to private investors, including some foreign direct investment (FDI), but such reforms confront many issues.

In its country-level reviews of investment policy,[1] UNCTAD has frequently encountered programmes to privatize electricity and introduce FDI that have been much less successful than expected. In the recent Investment Policy Review of Viet Nam,[2] the Government specifically requested a review of its long-term strategy to introduce a competitive framework to attract FDI in the sector. *The Least Developed Countries Report 2006* (UNCTAD, 2006), in reviewing efforts to develop productive capacities in those nations, identified an "electricity divide" as being at least as important as the more publicized "digital divide". The *World Investment Report 2008* (UNCTAD, 2008) took up the infrastructure challenge as its principal theme.

These circumstances present an opportunity for case-study analysis of "best practices" adaptable to policy choices that continue to face developing countries and countries with economies in transition. Electricity sector reform experiences in Chile and New Zealand provide instructive insights for selecting FDI-related

policies that can help to promote sustainable development objectives.

Utilizing FDI – the systemic change option

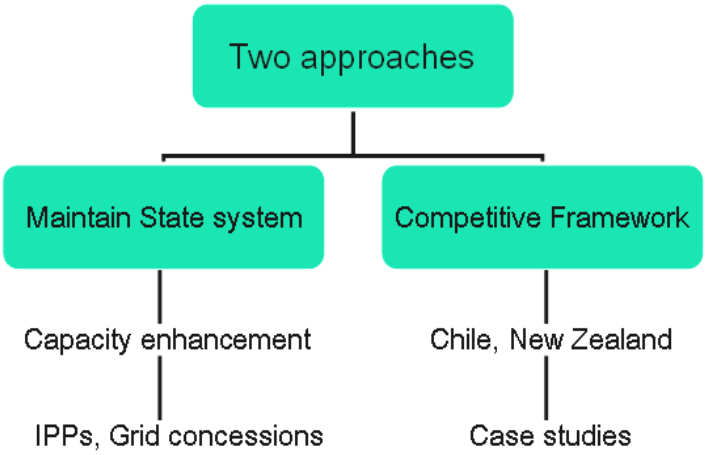
A country seeking to augment its electricity industry through FDI can broadly adopt one of two approaches, as described in figure I.1. The first is to maintain an integrated state system and utilize FDI to increase capacity through concessions such as independent power projects (IPPs). This typically happens in generation but could also apply in the form of concessions for transmission grid expansion. This approach usually requires continuing state guarantees on power purchase agreements and on foreign exchange availability. External resources such as grants or concessional loans through official development assistance (ODA) may be essential to support public investment.

Chile and New Zealand are cases of the other approach, in which the state disengages from ownership and introduces a framework to encourage private investment within a competitive framework designed to protect the public interest. Ultimately, this may remove calls on the public budget or state guarantees, freeing up public funds for other purposes. However, this approach requires successful execution of a complex reform process that must meet the expectations of the community as well as investors. The integrated state utility is broken up before it is privatized, so that a public monopoly is not simply replaced by a private monopoly. The new entities are expected to operate within a competitive market and provide a safe, secure and cost-effective service of a politically sensitive kind.

Chile and New Zealand both began their reforms from a single integrated state utility, which is still the starting point for many developing countries and transitional economies. They are good practice cases of countries that choose the competitive

framework approach to introducing FDI. This is not necessarily a suitable approach for all countries for the reasons set out in box I.1.

Figure I.1. Alternative approaches



Private investment largely characterized the early spread of electricity in the late 1800s, but the world economic depression of the 1930s led many governments to take over electricity systems that had become a strategic component of national economic welfare. In New Zealand, by 1903, sale of electricity to the public was already under state ownership in a vertically integrated model. These state-run systems persisted for several decades until Chile undertook a pioneering reform, first promulgated in a 1982 national electricity law as part of the country's broad privatization and deregulation process. Specific "drivers" of reform differ among countries, but some common goals include:

- Funding electricity network expansion by accessing private capital;

- Relieving the fiscal burden from deficit operations;
- Gaining government revenue from privatization sales;
- Improving capital investment decisions;
- Improving labor productivity and customer service;
- Reducing electricity losses from inefficient transmission and theft; and
- Expanding electricity access for rural and poorer populations.

Electricity is a core component of developing countries' productive capacity and an important element in international competitiveness of many industries. Achieving reliable power supply at competitive economic cost is an essential goal. Examining how policy choices affect relative outcomes in attaining such goals represents a basic objective of case analysis. This particular case study on electricity infrastructure in Chile and New Zealand explores "best practices" to create an institutional environment conducive to maximizing development benefits from increased foreign investment.

Box I.1. Important note

No developing country that embarks on the competitive framework approach to FDI in electricity should underestimate the challenges and complexity of developing a regime that matches investor interests with national social and economic goals. Strong administrative capacity and resilience and long-term commitment is needed. Some smaller or least developed countries may conclude that maintaining and improving the state ownership model, with discrete FDI in generation and management contracting within the state system, is the more practical approach.

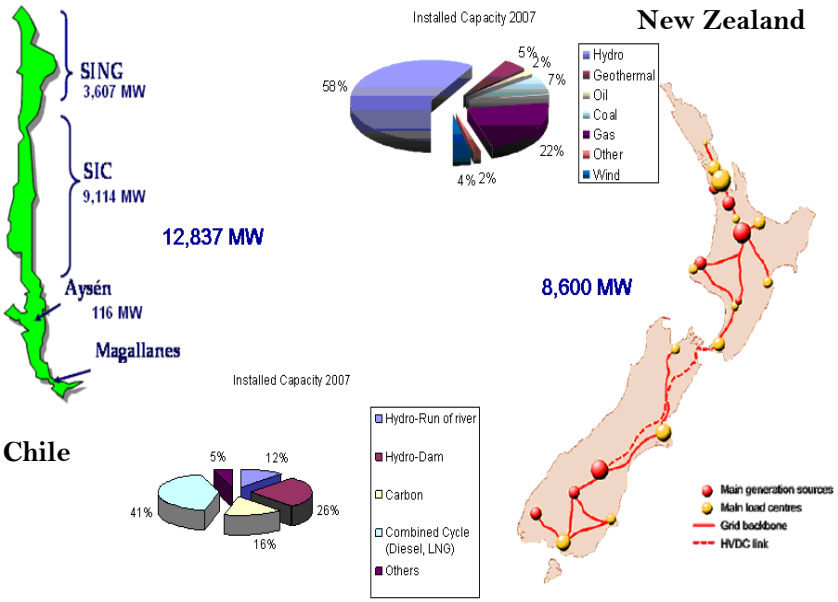
Thus, the policy lessons set out below are addressed to countries that *choose* the competitive market approach, knowing the challenges that are entailed. It is *not* a discussion about which approach is better in all circumstances. Nevertheless, the Chile and New Zealand experiences have been drawn upon in ways designed to be useful to developing and least developed countries given their administrative and other constraints.

Chile and New Zealand were chosen as cases for the study of best practices as they were early exponents of moving from an integrated state-owned system to a competitive market framework. They present a long historical view of the challenges and complexities entailed. Both countries have sought to introduce FDI to the industry. Chile has gone much further in this regard and FDI has come to play the major role in generation, transmission and distribution/retail. Chile is the developing country case for the comparison. Whilst it is now a higher income developing country, at the time it began reforms in the early 1980s it ranked only 76th internationally in GDP per capita. New Zealand's industry has evolved as a mix of state ownership, local private investment and FDI, and offers insights into the challenges of attracting FDI and

securing competitive outcomes for consumers in a system of mixed state and private ownership.

Figure I.2 is an overview of the electricity systems of both countries. Chile has four separate high-voltage transmission grids, dominated by the northern (SING) and central (SIC) systems, whilst New Zealand has a single grid. Chile (45th) and New Zealand (51st) rank just inside the top quartile of countries and territories in total electricity production. Hydro-generation is the largest source of capacity in both countries.

Figure I.2. Chile and New Zealand electricity systems



Notes

[1] www.unctad.org/ipr.
[2] UNCTAD (2008).

II. ELECTRICITY SECTOR REFORMS: THE FDI CONTEXT

FDI can contribute positively to reforms that improve electricity infrastructure. Making the best choices on key policy measures can enhance beneficial impacts while minimizing potential adverse costs, especially related to financing, technology and competition effects. In developing countries with underdeveloped domestic financial markets and limited access to international debt markets, FDI could provide valuable financial options for electricity sector reforms. Electricity, especially in generation, requires large-scale investment. Foreign investors can mobilize capital and draw on international resources to fund needed improvements and the expansion of physical infrastructure.

Adding foreign investors to a base of currently or potentially active domestic companies operating in the electricity industry could increase prospects for greater overall competition within the sector. Conversely, disparate foreign and domestic company strengths could lead to a "crowding-out" of domestic firms and potentially abusive market practices. Such practices can be addressed through policies guarding against anti-competitive behavior that would sacrifice promised price and service gains from market rivalry.

In considering whether to participate in electricity infrastructure reforms, domestic and foreign investors evaluate many of the same elements of a country's environment, but some factors hold different or even unique importance for foreign investors. National laws and regulations may place special restraints on foreign investors in any sector. Indicators such as foreign exchange convertibility and rate fluctuations are more significant for foreign enterprises while bilateral treaties or regional economic arrangements could facilitate or constrain business opportunities. New foreign investors also face complex choices in building relationships with an array of domestic and

international actors, affecting decisions on modes of investment and levels of foreign control. Thus, a range of both broad and applied policy factors influence foreign investment decisions and the impact of those investments on sustainable development.

From a national perspective, private investors assess infrastructure reform plans for the clarity, coherence and commitment needed to minimize inherent risk factors. Most infrastructure projects require large, up-front capital costs with more uncertain, longer-term prospects for cost recovery and profits. To manage this risk, investors want (a) a clear reform plan that operates within a coherent policy framework; (b) consistent and transparent implementation procedures; and (c) fair, dependable mechanisms for collecting payments and resolving disputes. Underlying such "rules of the game" must be a measure of political stability that can both carry out and maintain proposed reforms over the longer term. While exploring the impact of economic and political risk factors on foreign investment supply and pricing, the companies will also look for policy measures that could mitigate various risks and increase foreign investor confidence.

III. CASE ANALYSIS: CHILE

Early start

Chile was a pioneer in market liberalization and the introduction of private investment in electricity infrastructure, commencing as early as 1982. FDI played only a minor, indirect role in early reforms that initially drew on domestic expertise and funding to establish the new policy's credibility and viability. Nearly a decade after reforms began, foreign investors entered Chile's electricity sector in progressively greater numbers and variety. Foreign enterprises sought to participate in a growing market, learn from reform experiences and secure a position for long-term financial returns. Chile benefited from greater competition, different management and operational technologies, and access to larger financial resources, including for affiliated investments in electricity infrastructure projects in other countries. More recently, FDI has also supported the exploration of renewable and alternative energy sources important to the country's strategic and sustainable development goals.

Background to reforms

The history of Chile's electricity sector parallels the experience in most countries. Private utilities developed early capacity, often configured to serve the needs of large industrial customers. The economic crisis of the 1930s led to government intervention to maintain service and, later, to fund and develop large-scale ventures to support economic growth. Core infrastructure elements in Chile consisted of large hydroelectric generation projects and transmission networks linking hydro facilities in the South and, separately, thermal-based generation facilities in the North, largely serving diverse mining operations. Initially managed by the Economic Development Agency

(Corporacion de Fomento de la Produccion – Corfo), the sector's development was turned over to a separate state enterprise for electricity, Endesa, in 1943.

Political developments created the conditions shaping Chile's later reforms, when a military coup in 1973 overthrew a Popular Unity Government and initiated nearly two decades of control by a military junta that restructured the economy by executive decree. Although significant FDI in electricity infrastructure did not occur until after a democratically-elected government returned to power in 1990, many fundamental economic reforms, including steps to privatize electricity infrastructure and establish general FDI policies, took place under the military government's rule.

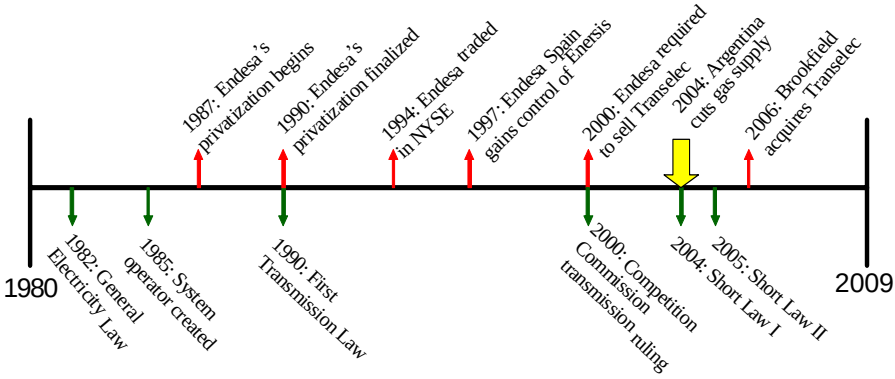
The military government's approach to managing Chile's economy rested on a free market approach to economics associated with Milton Friedman at the University of Chicago. This basic ideology sought to return most previously nationalized firms to their prior owners and remove the state as a direct market participant. The junta's firm control eliminated political debate and curtailed societal protests that otherwise often accompany radical economic changes.

Two reform actions established policy positions important to later electricity sector developments. Certain state enterprises were deemed vital to national interests and maintained under direct government ownership. These included ENAP, the state oil company, and Codelco, the state copper company. Both enterprises are closely related to the electricity sector – ENAP as an energy supplier and Codelco as an electricity generator and user. However, the electricity sector did not receive a similar national security designation, nor was water controlled as a vital national asset, despite the country's heavy reliance on hydroelectric generation facilities.

The adoption of Decree Law 600 in 1974 established a liberal investment regime containing basic provisions important to potential foreign investors. It opened most sectors, including electricity, to FDI on a national treatment basis, assured access to convertible currency for immediate profit remission and capital repatriation after one year, and provided for special long-term taxation guarantees. Foreign investors slowly tested this law's application as Chile progressively overcame a legacy of FDI nationalizations. An economic crisis in the early 1980s set in motion further economic reforms that extended directly into the electricity sector for the first time.

The electricity sector was not a major element of Chile's initial economic reforms, largely because Endesa, the vertically integrated state electricity operator, had been a long-time state enterprise rather than one of the recently nationalized firms that were returned to former owners in the first wave of privatizations. However, certain policy actions did affect this sector, including moves during the 1970s to reduce unnecessary employment in state enterprises and increase electricity prices so that rates covered costs and better reflected economic circumstances. These steps increased productivity and introduced more financial discipline on Endesa and other state enterprises, thereby facilitating the later privatizations. By 1979, state enterprises as a group were breaking even, eliminating the fiscal burden that often serves to motivate privatization reforms.

Figure III.1. Timeline of events: Chile



Privatization begins five years after sector reform, without FDI

The General Law on Electric Utilities, a part of the military government's Statutory Decree No. 1 of 1982, initiated major reforms in this sector as part of a second stage of privatization policies, establishing Chile as a global pioneer in electricity infrastructure reforms. The Endesa privatization process is an example of how a large State electric holding is segmented into different companies, privatized and then later acquired by foreign investors. Analyzing key policy issues, the government's overall free market ideology provided the main initial driver of reforms. Specific price reduction or system expansion goals did not directly motivate reforms because the free market approach assumed that market mechanisms would guide appropriate supply and pricing decisions as long as adequate competition was maintained. Competition was generated by disregarding the

prevailing view that vertical integration and economies of scale were paramount requirements in the electricity sector. Chile's policy reforms "unbundled" (separated) generation and distribution, and sought to create separate, competing companies in each segment. Transmission was unbundled later in the reforms.

Privatization was complete, removing state enterprises as direct players in the sector (although Codelco retained significant generation capabilities). Privatization was not driven by state enterprise deficits due to Chile's self-financing guidelines, but the opportunity to tap private sector funds for system expansion was a companion benefit of the free market ideology. Government regulations were established to assure that a state monopoly was not replaced with monopolistic collusion among the initially small number of private companies, but increased competition was anticipated as more private investors sought to enter the reformed sector.

Although the 1982 electricity law provided for sector privatization, implementation did not begin for several years. The process was shaped by previous reforms and aided by parallel privatization actions in other sectors. A common policy choice for governments is whether to sell state electricity facilities as assets or as coordinated, functioning companies. In Chile's case, the market-based financial and employment guidelines imposed years earlier on state enterprises allowed many initial privatizations to be assessed and sold as established companies. Some unbundled and separated state entities even operated for several years under the reform's new regulatory regime before privatization sales began, with the main privatization period essentially lasting from 1985 until 1989.

The parallel privatization of Chile's pension system in 1985 (also a pioneering global reform) provided an important domestic source of private funds for the electricity sector. Initially restricted

to investing inside the country, newly privatized pension companies (Pension Fund Administrations – AFPs) generated capital for equity purchases on Chile's stock exchange, quickly becoming the most important institutional investors. Several AFPs were controlled by foreign banks, thereby 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.

Despite Chile's open FDI policy, foreign electricity companies did not invest in Chile during the privatization sales. 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. For their part, foreign enterprises were content to monitor Chile's pioneering actions, waiting to assess both the substance and the implementation of the reform policies. Although FDI was increasing in other sectors, many foreign investors, particularly from Europe, also hesitated to invest in Chile while the military junta remained in power. During the late 1980s, Chile established a proven track record for reforms, initiated a period of sustained economic growth, and laid the political groundwork for a return to democracy after the military government lost a plebiscite in 1988.

FDI came in the 1990s...

Throughout the 1990s, FDI in Chile's electricity sector progressively increased and diversified in terms of investor motivations, operations and effects. Foreign investors became major owners of substantial infrastructure components, functioning both independently and in partnerships with local enterprises. By the late 1990s, foreign firms reportedly owned a majority of Chile's electricity system.[1] This experience illustrates an important lesson

for other countries. In Chile, investors were initially unsure of the political climate. Nevertheless, whilst foreign investors may not come straight away, they will come.

Some examples serve to illustrate how FDI responded to opportunities presented by the policy reforms and the impact on Chile's development objectives.

…Spain's Endesa was a pioneer foreign investor

Spain's Endesa became a particularly significant investor through a two-step share purchase on the stock exchange in 1997 and 1999, thereby gaining a controlling 64 per cent stake in the holding company Enersis. Enersis had earlier gained control of Chile's privatized Endesa, Transelec and Chilectra, thereby partially reintegrating electricity segments that spanned (respectively) generation, transmission and distribution. Additionally, Enersis had already begun outward foreign direct investment (OFDI), seeking to capitalize on experience with Chile's early electricity reforms by using that knowledge to invest in other reforming Latin American countries. Endesa's acquisition expanded Enersis' financial capability for OFDI while also linking it into Endesa's own established investments. Ownership again shifted in 2007, when Enel of Italy took over Spain's Endesa, including its Latin American FDI network.

Endesa's control over related generation, transmission and distribution companies in Chile led to protests by some firms, including foreign investors, that Endesa used monopolistic powers to discriminate against other electricity generators. Unfavourable rulings by Chile's Antitrust Commission led Endesa to sell Transelec in 2000. This move effectively established transmission as a largely separate electricity segment, restricting control ties with distribution companies. The size of the purchase, as well as uncertainties about regulated transmission revenue, constrained

buyer interest. Another experienced operating firm, Canada's Hydro Quebec, was successful as the only substantial final bidder. Several years later, as Chile adopted new transmission regulations in its "Short Law I", Hydro Quebec divested from Latin American holdings. This time, vigorous FDI bidding ensued, won by Canada's Brookfield Asset Management, adding Chile's Transelec to its large global portfolio of infrastructure assets valued near $95 billion.

AES of the United States acquired Gener, one of the early firms privatized in the electricity generation segment, eventually attaining over 90 per cent ownership. Using its financing capabilities, AES has further expanded Gener's generating capacity. More recently, AES established a branch operation for wind generation projects in line with Chile's growing interest in this renewable energy field. AES also used its multinational linkages to initiate a beneficial cross-border, fuel-swap arrangement between its plants in Chile and Argentina. When cuts in Argentine natural gas exports constrained gas-powered electricity generation in Chile, the AES plant in Argentina was able to switch to using diesel, thereby freeing its natural gas allocation for use in generating electricity in Chile. France's Suez has also become a significant investor in generation with controlling interests in Edelnor and Electroandina in conjunction with Codelco. Spain's Iberdrola owns two small generation plants.

Endesa has retained ownership of the Enersis distribution interests. Another major foreign owned distributor is Chiquinta, which is owned by Sempra Energy and AEI of the United States.

Natural gas and supply from Argentina is significant for the sector

The importance of natural gas, particularly the reliability of supplies from Argentina, exerted a significant influence on

Chile's recent electricity infrastructure development, including the roles played by foreign investors. Natural gas had promised a cheaper and environmentally cleaner power source for Chile's electricity generation compared to oil and coal-powered plants in the country's northern system. By contrast, the traditionally hydro-dominated central system faced supply uncertainties and occasional power outages from periodic droughts and viewed natural gas as a potentially more reliable energy supply. A 1995 treaty between Chile and Argentina provided the framework for constructing natural gas pipelines to carry exports from Argentina and foreign investors participated in several ventures to link the two countries.

Increased quantities of Argentine natural gas arrived late in the 1990s, sharply altering supply market conditions. Electricity generators built substantial new plants to use natural gas, nearly doubling capacity in the North from 1999 to 2001, while the central system's reliance on hydroelectric generation dropped from 80 per cent in 1993 to 57 per cent in 2005.[2] A workers strike in Argentina shut down one of the pipelines for several hours in February 2002, causing limited disruption, but few observers anticipated the dramatic developments of 2004.

A strong economic recovery in Argentina sparked higher energy demands, leading the Argentine Government in March to unilaterally announce a 15 per cent cutback in natural gas exports to Chile. Despite treaty guarantees that supplies to Chile could be reduced only in proportion to a fuel shortage in Argentina, the cutbacks rose progressively, eventually resulting in a nearly full embargo. As Chilean plants initially shifted back to more expensive fuels and confronted water shortages, electricity costs rose. The impact of fuel substitution alone was estimated at $32 million over six months; prices jumped 7 per cent in May and 10 per cent in November, 2004.[3] Both local and foreign electricity companies

faced disruption and readjustment challenges, with investors in pipeline capacity and natural gas-dependent plants hardest hit.

FDI has played a key role in sector diversification and renewable sources

This unfortunate experience with regional cooperation created continuing uncertainty over the reliability of Argentine natural gas exports. In response, Chile sought other ways to diversify energy supplies, leading to efforts to build liquefied natural gas (LNG) capabilities and to increase an emphasis on developing renewable energy resources. FDI played a central part in both these strategic initiatives, alongside the role of two major state enterprises. In the central system, ENAP forged a collaborative equity alliance with Endesa, gas distributor Metrogas and British Gas to build a port terminal and a regasification plant. British Gas will supply this Quinteros LNG project while the other three partners comprise its major consumers. In the northern system, Codelco and Suez (a French–Belgian enterprise) are joint owners in a similar LNG project, continuing a partnership they established in Electroandina, a Chilean electricity generation company that is two-thirds owned by Codelco but operated by Suez. (Suez also controls a natural gas pipeline from Argentina as well as a gas distribution company.) Financing for the LNG project is aided by multiyear "take or pay" agreements with major mining companies in the North.

The size and novelty of these LNG ventures in South America made it unlikely that the projects would be undertaken without strong government leadership and participation commitments from invested international firms. Chile perceived a strategic necessity for the ventures to provide greater security of supply through energy diversity, both for industrial uses (primarily in the North) and to guarantee a source for residential natural gas users, particularly in Santiago, where Argentine natural gas

exports still provide heating for the nation's capital and largest city. The retention of two state enterprises with financial capabilities and related sector interests proved opportune, and probably essential, as both real and symbolic indicators of the government's commitment. Large foreign investors, also with financial capabilities and related interests, proved equally propitious partners able to provide relevant technical and management expertise along with links to international resources.

Chile's drive for energy security additionally stimulated an increased emphasis on renewable power sources for electricity generation. Here also, the government plays a more active role. For example, Corfo provides subsidies for feasibility studies on small-scale generation projects, including areas such as wind, solar, geothermal, biomass and small hydro projects. Few foreign investors initially applied for this programme, but Corfo sponsors promotional meetings to increase information and interest. Short Law I, adopted in 2004, also contained provisions to facilitate the incorporation of renewables, reducing their transmission payments. A further advance occurred in 2008, when a new law was passed requiring generating companies signing supply contracts with customers to have 10 per cent of generation from non-conventional renewables, either produced by them or contracted with third parties. Application starts with 5 per cent, increasing to 10 per cent in 2024, with fines levied for non-compliance. Compared to subsidies that involve government expenditures, a policy that sets mandated requirements relies on an approach where costs are generally passed on to consumers.

Legislative initiatives on renewable energy programmes receive support from some companies as well as environmental groups, both domestic and foreign. Traditionally, environmental concerns have not been incorporated centrally into Chile's energy sector, but international agreements and FDI linkages may enhance the role and increase the impact of such policies. For

example, Europe's "Clean Development Mechanism" provides a way for European companies to buy carbon credits from qualifying development projects, providing profitable opportunities for coordinated planning among foreign investors participating in Chile's renewable energy initiatives. The TNCs' organizational structures provide complementary mechanisms that can take advantage of such cross-national coordination opportunities.

Enel serves as a good example. Boasting long experience with geothermal projects in Europe, the Italian firm (operating separately from its controlled Endesa affiliate) paired with ENAP to explore this untapped resource in Chile. Enel can provide the experience and management to explore geothermal potential in the areas where the firms have already secured concession agreements. ENAP can supply expensive oil drilling equipment needed for the deep test holes generally required for exploration. The exploration stage can represent nearly one half the cost of a project since operational costs at established sites are comparatively low. The obstacles facing such new undertakings can be formidable, however. Chile has little experience in formulating regulations to govern geothermal projects, such as the length of exploration concessions and the applicability of environmental laws.

Indeed, FDI may come to play a more uniquely beneficial role in supporting Chile's renewable energy goals than it did regarding traditional electricity infrastructure.

FDI supports a variety of other alternative energy projects in Chile. As previously mentioned, AES established a branch to pursue wind projects while SN Power of Norway is developing a wind park in northern Chile. Pacific Hydro, an Australian-owned firm, and HydroChile, a venture including Australian and United States investors, are developing new run-of-river hydro plants in Chile. Nuclear energy is not currently among Chile's renewable energy goals, but support appears to be building for a feasibility

study of its longer-term potential. The unique technology and experience needed for nuclear energy projects would also come from foreign enterprises, should a future government decide to pursue this option.

Chile has been successful in its use of FDI

Performance measurements record the success of Chile's pioneering electricity infrastructure reforms, even as some policies were adjusted over the years in response to learned lessons and unexpected crises. Several indicators suggest that beneficial impacts were maintained or increased as FDI entered the sector from the 1990s. After privatization, power outages declined and there were reduction in power losses due to both technical and non-technical (theft) causes. Initial improvements in labour productivity increased further as more FDI acquired local firms, dropping total electricity sector employment from 8,264 in 1999 to 5,706 in 2002. Although Chile's electricity sector is relatively small, new entrants boosted competition, decreasing the potential for abuses of market power. The share of generating capacity controlled by the top three firms declined from around 80 per cent in 1993 to under 60 per cent in 2003, with the largest firm's share (Enersis) dropping from nearly one half to just over one quarter of total capacity. Over roughly the same period, average electricity prices fell by nearly 30 per cent in real terms.[4]

A special goal of electricity infrastructure reforms can be to provide better access to underserved populations isolated by poverty or geography from traditional service arrangements. Electricity price reductions resulting from Chile's reforms improved financial access for poorer segments living in the country's concentrated urban centres, where basic infrastructure could be easily extended or upgraded. Chile's lengthy North–South extension and difficult physical terrain presented a more demanding challenge to reach rural populations. Nearly two thirds

of rural households, more than 250,000 homes, lacked electricity in 1982 when reforms began. By 2002, this figure had declined to 14 per cent, with most progress occurring over the 1990s while FDI was increasing.

The key policy element, however, was the Government's creation of a National Programme for Rural Electrification (REP). Under this programme, the capital costs of extending necessary electricity infrastructure was shared on a tripartite basis among the Government (70 per cent), companies (20 per cent) and users (10 per cent). Users paid operating costs once the infrastructure was in place.[5] A project by the United Nations Development Programme and the Global Environment Facility contemplates tying Chile's continuing rural electrification objective to renewable energy goals that might use wind, biomass, geothermal or solar projects to reach and serve isolated areas.[6]

The evolved competitive market framework still entails significant regulatory oversight and price regulation to protect the public interest

In the *generation* segment, competition exists between operators. Generation charges are not regulated. A licence is not required to operate a generation facility and the segment is open to new entrants. Hydro facilities need to obtain a concession owing to their need to use public property in the form of water rights; this does not pertain to thermal generation plants.

The *transmission* segment is effectively a monopoly, although it is open to new entrants. Accordingly, transmission tolls are regulated. Any investment by a second party is likely to be a concession to expand or provide a link to the main grid. A licence is not required to invest in transmission, although a concession may be needed if the use of public property (roads, public parks) is required.

In Chile's *distribution* segment, there is no separation of low-voltage lines business and retail sale to customers. Licences are not required but concessions are needed if use of public property is entailed. The Government may award non-exclusive concessions over common areas but this is rare and, in practice, distribution companies are regulated monopolies in their area, even though there are 40 distribution companies throughout Chile. Large customers (over 2,000 kW) are deemed to be "unregulated" and may contract supply directly from generators and pay (regulated) tolls for transmission and distribution. Small customers (below 500 kW) are deemed to be "regulated" and pay regulated tariffs. The tariff regulation of distributors takes the form of setting margins over generation and transmission costs. In principle, intermediate customers who consume between 500 and 2,000 kW have the right every four years to choose a distributor, but there is no such choice in practice. For example, in Santiago regulated customers have only one supplier, Chilectra.

The Antitrust Commission oversees the competition aspects of the sector. For example, it enforced the divestment of transmission by the dominant generation company, Endesa, in order to promote fair competition in generation. This separation was subsequently established in law. The Antitrust Commission also has oversight of horizontal mergers or uncompetitive practices and could, for example, disallow an acquisition or merger among generation companies if it had anti-competitive implications. In transmission and distribution segments, where insufficient competition requires that some charges must be regulated, price regulation is carried out by the sector regulator under the Ministry of Economy.

Investors are not subject to economic licensing, but their conduct of operation is subject to technical, safety, environmental and other public interest standards.

Notes

1 Pollitt, 2005: 7.
2 Arellano, 2007.
3 Pollitt, 2005: 12.
4 Pollitt, 2005: 9–14.
5 Pollitt, 2005: 11.
6 United States Department of Energy, 2002: 8.

IV. CASE ANALYSIS: NEW ZEALAND

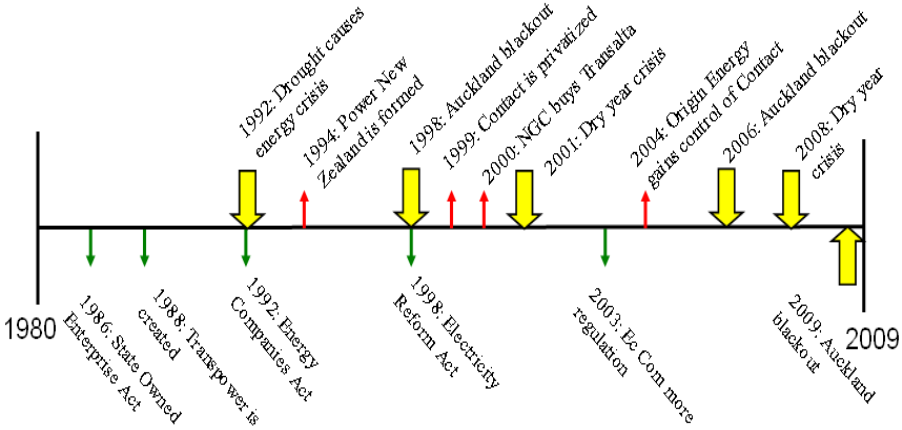
Background and landmark reforms

New Zealand undertook policy reforms affecting electricity infrastructure in the mid-1980s as part of a wide-ranging liberalization to gain greater efficiencies in a heavily protected and state-directed economy. The country's governmental structure and general political consensus on early policies permitted a decade of broad reforms that moved electricity and other sectors toward market-driven decisions, overseen by "light-handed" regulation. As reforms "unbundled" segments of electricity infrastructure and privatization began, FDI joined local investors in competing with remaining state-owned enterprises in generation and distribution activities. Evolving national goals, changing political positions and evaluations of reform results have slowed and, in some instances, reversed policies, particularly affecting industry structure and regulatory controls. Despite some policy uncertainties, FDI continues to play a substantial role in New Zealand's electricity infrastructure, enhancing private sector competition and introducing financial, technological and operational advantages, including in renewable energy and affiliated international projects.

Until the mid-1980s, the electricity industry in New Zealand was primarily a government activity. The Water Power Act of 1903 reserved for government the sole right to develop or grant permits for hydro-generation and restricted private provision of electricity to self-supply. The national Government completed the first large-scale hydroelectric project in 1914, nearly 30 years before the first major private venture. Subsequent government funding and coordination of a national electricity grid established effective monopoly control over generation and transmission segments. Distribution activities were left to local authorities, whose early interests and involvement assured that even most rural areas received service, especially to support the country's agricultural base.[1]

Subsequent expansion of New Zealand's electricity infrastructure was shaped by its hydro-dominated character and frequent linkage to industrial development goals. As part of an arrangement to attract foreign investors for an energy-intensive aluminium smelter, the Government constructed a companion dam on South Island that supplies the smelter and feeds into the national transmission grid. Another electricity project supported a steel plant to utilize the country's iron sand deposits. These examples reflected a so-called "Think Big" or "Big Projects" approach to promoting New Zealand's economic development, with government playing the leading role. Overall, the country's policies fostered an economy marked by central direction, extensive state enterprises, heavy regulation, subsidization, external tariff protection and foreign exchange controls.

Figure IV.1. Timeline of events: New Zealand



By the early 1980s, this approach had generated troublesome outcomes that formed the starting conditions for substantial reforms. New Zealand confronted slow growth, growing unemployment and rising government debt. There was

widespread dissatisfaction with the Government's economic management and interventionist policies, leading to support for greater reliance on market mechanisms. An election victory brought a Labour Government to power in 1984 that initiated a series of aggressive free market reforms. A broad search for greater economic efficiencies provided the driving motivation for policy reform. Competition and market-guided decisions were expected to improve the poor performance of state enterprises, reduce fiscal deficits and permit alternative uses for government funds.

Over the next several years, the administration developed annual legislative "packages" of sector reforms and passed them into law. As a whole, the changes aimed to redefine and reduce government's role in the economy.

Two major pieces of legislation proved especially important in setting a broad legal framework that influenced specific reforms in electricity infrastructure. The Commerce Act of 1986 replaced industry-specific regulations with general competition standards and powers, including authority to impose price controls. In line with the Government's deregulation goals, the act served as a "threat" regarding powers that could be used if the administration's preferred "light-handed" approach to regulation (largely industry self-regulation) was not effective.

The State-Owned Enterprise (SOE) Act of 1986 provided authority to convert state trading enterprises into more independent, profit-motivated entities. "Corporatization" signified that the Government remained responsible for an SOE's commercial functions, but the enterprise would operate competitively in the private sector under a board of directors, paying taxes and dividends. Adopted somewhat later, the Resource Management Act (RMA) of 1991 also proved influential in shaping environmental and water management issues that affected the later evolution of electricity infrastructure reforms.

"Corporatization" and creation of a state-owned electricity enterprise in 1987

With strong political impetus behind broad reforms and the legal framework in place, the Government began to address key policy issues about reform in the electricity sector, such as the speed and sequencing of privatization and unbundling actions. The existing electricity infrastructure derived its design and statutory basis from the Electricity Act of 1968 under which a Ministry department essentially operated the national electricity system, including setting prices that covered operating (but usually not capital improvement) costs.

In 1987, the Government used the SOE Act to corporatize the New Zealand Electricity Department (NZED), creating the Electricity Corporation of New Zealand (ECNZ) as a state-owned enterprise. Government held all the shares and the Ministry of Energy retained policy and regulatory activities, but the ECNZ was to operate in generation and transmission using commercial structures and incentives, negotiating annual Statements of Corporate Intent with the Government to guide enterprise goals.

Regulatory changes also opened the generation segment of electricity infrastructure to private companies that could invest in new generation facilities, thereby creating the potential for competition in that segment of the industry. In 1988, ECNZ organized its electricity transmission activities into a separate subsidiary, Transpower. Distribution/retail activities remained under the control of local electricity supply authorities (ESAs), but these entities were made subject to taxation in 1987 and ECNZ essentially determined the prices for electricity the ESAs purchased.

Corporatization produced efficiency gains that, along with a pricing strategy that anticipated private competition, yielded a 12

per cent reduction in electricity prices over roughly four years. Indeed, the Government's political discourse regarding the benefits of market-oriented SOEs led public consumers to expect price reductions as an important measure of the reform's success, off-setting the cost of disruptions caused by the restructuring. The political precariousness of viewing price reductions as a measure of success became evident several years later in 1991, when ECNZ announced a price increase, partly to improve its ability to invest in expanding capacity. Protests by the local ESAs and opposition within the Government led the ENCZ board to scale back the price increase to 1.5 per cent.

The creation of ECNZ as an SOE did not complete New Zealand's policy reform agenda for electricity infrastructure. Initial anticipation suggested further unbundling, deregulation and privatization steps would likely occur at later stages to promote greater market efficiencies and improve sector performance. However, these expectations were not fully realized. Reforms during the 1990s evolved from review and response cycles rather than as a fully integrated programme that was implemented in pre-planned stages. Additional liberalization was shaped in content and timing by various governmental studies, task force reports and even a drought-driven crisis in the winter of 1992 that forced electricity cutbacks and conservation measures. Uneven performance on service and price exposed policies to political criticism, weakening commitment to broad liberalization. The resulting scaled-back reforms yielded a distinctively public–private mix in New Zealand's electricity infrastructure sector.

From 1992, ESAs were corporatized, transmission was unbundled and a wholesale market was created

The Energy Companies Act of 1992 provided for corporatization of ESAs, with ownership forms that included trusts, private shareholdings and local government control. A

wholesale electricity market was established to determine market prices so independent generators could compete with ECNZ. This wholesale pool arrangement used bids and offers to set spot market prices among generators, purchasers and traders, supplemented by longer-term hedge contracts. Representatives of major parties in the electricity market administered the system through a "club" arrangement, consistent with the Government's "light regulation" approach. Transpower separated from ECNZ, establishing as a stand-alone SOE, thereby further unbundling transmission from generation.

1996: first major FDI three years after creating a new SOE to operate 25 per cent of generation

Competition in generation increased when roughly one quarter of ECNZ's capacity was split into a separate SOE, Contact Energy, which commenced operations in 1996. Three years later, the Government privatized Contact, selling a cornerstone 40 per cent share to United States-based Edison Mission Energy for over $NZ 1.2 billion – the first major FDI in the electricity system. The remaining shares were later sold broadly to over 200,000 investors.

1998 Electricity Reform Act

The privatization of Contact roused some political opposition, and the political dynamic supporting broader liberalizations was altered. Political dynamics changed and the Electricity Reform Act of 1998 set in motion an important but last set of scaled-back policy changes aimed at liberalizing New Zealand's electricity infrastructure.

In a final major reform step to unbundle the sector's infrastructure, the 1998 act required a separation of ownership between generation and distribution (lines), forcing companies that had sought vertical integration to sell one or the other segment in

order to spur competition. A system was also established to facilitate customer switching among electricity retailers. (In practice, this reform was somewhat offset by a consolidation of retailers when major generating companies bought up retailers to create a natural pricing hedge through partial vertical integration.)

Another key policy decision split ECNZ into three different SOEs (Mighty River, Genesis and Meridian) that would compete independently with privatized Contact Energy in generation and retailing.

Although the breakup of ECNZ and other pro-competitive moves carried forward earlier reform thrusts, the momentum slowed and, in some cases, reversed as study panels assessed reform results. A series of developments shifted the country's policy priorities. Cable problems led to a power failure in Auckland in 1998. In the winters of 2001 and 2008 other electricity shortages, related to drought, raised the political profile of secure supply goals, increasing pressure for the creation of dry-year reserve generation capacity. In addition, concern over depletion of New Zealand's main offshore Maui gas field focused attention on alternative energy sources. The country's ratification of the Kyoto Protocol, with a commitment to reducing greenhouse gas emissions, brought new attention to developing renewable energy, moving away from thermal electricity generation. Revisions to the Resource Management Act also responded to environmental concerns, complicating some energy development projects.

When the electricity industry's major representatives failed in 2003 to agree on a new self-governance structure, the commission took control of the electricity market from the industry's self-regulating bodies, essentially abandoning the "light-handed" approach to regulation.

From 1999, more activist government policies began to emerge, as a new Electricity Commission, largely responsible to the Minister of Energy, initiated projects to develop reserve generation capacity to secure electricity supply and restrain price volatility in dry years. The commission contracted with Contact and later with Genesis to build and operate generating plants the Government would own to assure reserve capacity.

Foreign investment policy

New Zealand offered a broadly open and relatively stable policy environment for FDI. It maintains targeted foreign investment restrictions in some areas of critical interest. Overseas investments in New Zealand assets are screened only if they are defined as "sensitive" within the Overseas Investment Act 2005. Three broad classes of assets are currently defined as sensitive: non-land business assets valued at over $100 million, fishing quota, and sensitive land as defined in Schedule 1 of the act. Examples of sensitive land could include rural land over five hectares or land bordering or containing foreshore, seabed, river, or the bed of a lake. Most urban land is not screened unless defined as sensitive for other reasons.

Generally, overseas investors wishing to invest in sensitive New Zealand assets must obtain consent to acquire a 25 per cent share of ownership or controlling interest in sensitive New Zealand assets, but some sector-specific conditions do exist. There are company-specific restrictions on foreign ownership of the airline, Air New Zealand, and the telecommunications company, Telecom New Zealand. In both cases, these restrictions are contained in the firm's constitution and were agreed with shareholders.[2] Investors in sensitive assets are expected to demonstrate that the investment provides significant benefits for New Zealand and must pass an investor test that considers character, business acumen and level of financial commitment. Until the Government moved to block the

sale of Auckland International Airport in 2008, no non-land investment had been declined by the New Zealand Government since 1984.[3]

There are no restrictions on the movement of funds into or out of New Zealand, or on repatriation of profits. No additional performance measures are imposed on foreign-owned enterprises.

Expropriation is not an issue and the country is a party to investment dispute conventions. New Zealand is a member of international property rights conventions and its regulations adhere to most intellectual property rights standards. Property and contractual rights are enforced through a British-style legal system.

The opportunities for FDI

Despite New Zealand's liberal policies, FDI did not play a major role in the country's early electricity infrastructure reforms. Economic and physical starting conditions certainly limited the country's general attractiveness to some extent. The electricity market was small, with slow 2–3 per cent annual growth. Most existing large industrial customers developed with established electricity supply links and prospects appeared small for major new electricity-intensive industrial or natural resource projects. The country's island location precluded exploring regional energy networks with neighboring nations, and even connecting the North and South Island electricity networks remained a challenge. Physical terrain also presented problems, with mountainous regions complicating the transmission of electricity from generation points to major population centres, but not providing significant opportunities to develop substantial lake storage for reserve water capacity. Aside from the fast-depleting Maui gas field, known local thermal generation resources were limited or

poor quality and the country's geographic isolation increased the cost of transporting energy imports.

Political starting conditions, and the subsequent evolution of policy decisions and goals, also undoubtedly influenced the timing, magnitude and nature of FDI involvement in electricity infrastructure reforms. The initial, broad-ranging liberalization of domestic and foreign economic policies and the deregulation of business sectors provided an environment conducive to FDI. In fact, in telecommunications, railways and other sectors that experienced early privatizations, FDI played a more prominent role. However, the complexities of electricity infrastructure and New Zealand's approach to sequential reforms, including uncertainties regarding the eventual content and implementation of changes, presented limited opportunities for FDI participation in the electricity sector. Unbundling occurred in stages providing few acquisition targets. Foreign and domestic private investors could construct new electricity generation facilities, but both pricing strategy and access to potential customers were problematic while ECNZ still dominated both the generation and transmission segments.

Distribution (lines) and retailing offered a few acquisition targets as ESAs shifted to a mixed public–private ownership structure following the 1992 policy reform. The Energies Companies Act 1992 required the corporatization of the Electricity Supply Authorities and removed the distributor's statutory monopolies and the obligation to supply. Rationalization decreased the number of ESAs by nearly 40 per cent, with further consolidation expected, providing potentially attractive scale opportunities for investors.

The following table shows the consolidation of distribution networks in terms of Gigawatt hours (GWh) carried.[4]

Table IV.1. New Zealand consolidation of distribution networks (GWh)

Company	1995	1998	2001	2004
Power New Zealand/ United Networks	2 569	3 384	7 120	[a]
Vector Ltd.	4 053	4 432	4 990	10 257
Powerco	347	1 019	2 083	4 047
Orion Ltd.	2 416	2 582	2 822	3 080
Total (big four)	9 385	11 418	17 015	17 412
Other companies	13 700	14 422	10 711	12 488
Total GWh	23 085	25 840	27 726	29 900
Share of big four (%)	40.7	44.2	61.4	58.2

[a] Taken over in 2003 by Vector and PowerCo, who divided up the network assets.

Power New Zealand had formed in 1994 from the consolidation of local Power Boards (that included both lines and retail operations) after the forced corporatization of ESAs. Utilicorp United Inc., at the time the sixth-largest electric utility in the United States, purchased a 37.5 per cent interest in Power New Zealand (subsequently renamed United Networks) in 1994, and increased its shareholding to 78.9 per cent in 1998. UtiliCorp already held New Zealand generation-related investments in WEL Energy and purchased some additional generation facilities. These moves positioned UtiliCorp for a vertical integration strategy that linked generation, lines and retailing. United Networks, under Utilicorp's ownership, began to play a leading role in the consolidation of distribution networks.

Several foreign investors anticipated that later reforms would offer "early movers" opportunities for vertical expansion, linking distribution to generation and retail operations. The Canadian company TransAlta, for example, began a growth

strategy in New Zealand from 1993, acquiring the Wellington distribution network and subsequently purchasing contiguous networks, and interests in several electricity generator plants.

Their subsequent experiences reflect the complex interactions of evolving government policy reforms and long-term corporate FDI strategies.

Industry structural reform from 1998 forced a separation of distributors and lines, led to "gentailers" and to a shifting landscape for FDI

In 1998, the Electricity Reform Act forced a separation of energy and lines with the objective of increasing competition. UtiliCorp chose to consolidate in the distribution segment, purchasing the lines business of Canadian-controlled TransAlta while, in turn, selling to that company Power New Zealand's retail operations and generation facilities. Power New Zealand also acquired the lines business of Trustpower, a local firm that decided to concentrate on generation and retail segments. Through these moves, Power New Zealand became the country's largest electricity distribution company and was renamed United Networks. Separately, the parent foreign investor firm also changed names from UtiliCorp to Aquila. By 2001, United Networks was New Zealand's largest distribution company. However, its parent company, Aquila, altered its global investment strategy, leaving its segment-restricted distribution business in New Zealand a "non-strategic asset." As a result, in 2002 Aquila sold United Networks in parts to two firms (Vector and Powerco), respectively local and foreign-owned.

Following the 1998 reforms, which forced a separation between distribution and retailing, TransAlta sold its distribution business and purchased Power New Zealand's retail operations. It also purchased the South Island retailer Southpower (operating in

the city of Christchurch). As a result of these acquisitions, TransAlta became the country's largest electricity retailer. However, possessing only limited generation capabilities, the firm lacked the natural pricing hedge possessed by large generation companies. The 1998 reforms freed generators to expand into retail operations, placing TransAlta at a competitive disadvantage. Announcing a "targeted strategy to focus its growth and investments on businesses where it has clear-cut advantage – low-cost generation and transmission assets and independent power developments", TransAlta sold its New Zealand business in 2000 to NGC, which was owned by AGL of Australia, for $420 million.[5]

The dry-year crisis of 2001 caused electricity shortages that quickly proved ruinous to NGC because it was not integrated with generation facilities and was not adequately hedged against price rises. By contrast, the new unbundling policy freed generation companies (dominated by SOEs and Contact, the Edison controlled generator) to integrate vertically with retail operations. This provided a natural supply price hedge. The generation companies moved to exploit this opportunity, becoming so-called "gentailers". NGC's attempt to increase retail prices drove customers to other retailers and spurred its quick exit from retailing, selling a major portion of its electricity retail base to Meridian Energy and Genesis Energy, and its electricity metering and gas transmission networks to Vector.

The emergence of dominant "gentailers" effectively precluded potential new entrants from gaining significant market share in either the generation or retail segments of New Zealand's electricity sector.[6] Slow growth left little room to gain new customers and the "gentailers" already possessed operating generation facilities, established customer relationships and the natural price hedge of vertical integration between the segments. The major "gentailers" became the three SOEs (Meridian, Genesis

and Mighty River Power), a local private firm (Trustpower)[7] and Contact.

When Contact was initially privatized in 1999, United State-owned Edison's initial FDI stake as a "cornerstone" investor was limited to a 40 per cent share. Edison took on significant risks in combining somewhat disparate parts from ECNZ into an integrated firm and expanding in the face of its state-owned competitors. However, the investment proved successful and Contact became a strong "gentailer", serving around one quarter of New Zealand's customers from a disbursed generating base that combines several types of energy sources. Despite its successful local strategy, Edison encountered severe financial difficulties in a California energy crisis, and was forced to sell Contact in 2004. With Contact now established with a strong market position, bidding for the company was more vigorous, even with three SOEs remaining as principal competitors. Origin Energy of Australia won the bidding, purchasing a majority (51.4 per cent) stake in Contact in October 2004. Foreign investor participation again expanded and strengthened the potential buyer pool beyond the financial capacity available locally.

The distribution segment of electricity infrastructure in 2008 contained more than two dozen companies, most operating with a consumer trust ownership arrangement. The three largest firms were Vector, Orion and Powerco, with the latter fully owned by the Australian firm Babcock and Brown, an infrastructure investment firm.[8] In addition, Vector sold its large Wellington network in 2008 to Cheung Kong Infrastructure Holdings (CKI). CKI is a global infrastructure enterprise based in Hong Kong (China) with other operations in Australia, Canada, the United Kingdom and China. As these examples indicate, the FDI role during New Zealand's principal period of electricity infrastructure reform reflects shifts that occurred in government policy and implementation, as well as international corporate organization and

strategy. The broad initial sweep of policy liberalizations suggested FDI opportunities, but compared to other sectors of the economy, the relatively slow pace of electricity infrastructure unbundling and the limited scope of privatizations offered relatively few entry points for private investors. Retained state ownership ruled out acquisitions, and start-up "greenfield" investments were problematic in a sector dominated by state enterprises. The main issue, however, was generally not a distinction between foreign and local investors, but between public and private ownership. Corporatization introduced greater market discipline through SOEs and ESAs, but only one SOE was eventually privatized, the "gentailer" position of remaining SOEs locked up a majority of electricity customers, and local trust arrangements limited private corporate consolidation in electricity distribution. Control of transmission remains with the SOE, Transpower.

Foreign investors that did seek early mover advantages in New Zealand's electricity infrastructure reforms faced growing uncertainties in the changing political and regulatory environment. Electoral reforms weakened the governance of single-party administrations and fueled political sparring over policies with direct impact on voters, such as electricity outages and prices increases. A "light-handed" approach to regulation appeared attractive conceptually, but the operation of self-regulatory "clubs", particularly ones strongly influenced by SOEs, introduced procedural unknowns. As reform momentum stalled and the new Electricity Commission introduced more direct regulation, investors faced new policy uncertainties.

The Chair of United Networks summed up some investor concerns in a 1999 annual report, commenting on proposed policy changes that the Government had "moved the goal posts mid-game… At a time when the rest of the world is moving away from regulation, it is odd that New Zealand, previously at the forefront of deregulation advocacy, should be considering a backward step...

Inappropriate legislation or poor implementation will stifle investment and the development of new initiatives in the industry."[9]

It is difficult to establish the determinative factors that lead foreign firms to invest, or disinvest, in a host country. It appears likely that Aquila's assessment of altered business prospects in New Zealand led to its 2002 decision to sell United Networks, despite its position as the country's leading electricity distributor. Other foreign investors appear more influenced by international developments, such as Edison's problems in California that forced its sale of well-positioned Contact. The withdrawals of TransAlta and NGC's Australian owner, AGL, stemmed from their inability to establish sufficient generation capacity or obtain hedge price positions to remain competitive in short-supply conditions. Corporate decisions shaped business strategy, but these decisions were in turn shaped by the changing policy environment. Trustpower's growth into a successful "gentailer" may suggest advantages for local investors in understanding and anticipating potential adjustments in policies and regulatory applications.

Environmental concerns also gained prominence in ways that affected government policy priorities and reshaped, in important respects, both the composition and implementation of electricity infrastructure reforms. The Resource Management Act (RMA) of 1991 presaged this development, introducing uncertainties relating to its interpretation and implementation regarding hydroelectric projects. The RMA used a decentralized administrative approach under which grants of water rights for power generation required the consent of regional authorities where the electricity projects often competed with local irrigation needs and environmental preservation goals. Controversy over a proposed Meridian hydro-generation facility (Project Aqua) on the Waitaki River sparked moves to centralize some decision-making to assure that broader national interests were properly weighed,

but uncertainties remained, leading to significant delays in the project. Risks surrounding the RMA include the need to renew water right grants, leaving uncertain an investor's effective control for the economic life of a project as well as the tradability of such rights.

Renewable energy and FDI

An increased priority for environmental policy goals also led New Zealand to endorse the Kyoto Treaty, with mandatory reductions in greenhouse gas emissions. This decision reflected the importance of both agriculture and tourism to the country's economy. The commitment to fight global warming reinforces New Zealand's positive, progressive image, particularly in European markets important for the country's agricultural exports and as a source of outdoors-oriented tourists. The most direct impact on the electricity sector arises from opposition to new carbon-emitting, thermal-generation facilities. These restrictions constrain investment in new generation, but they may also open counterpart opportunities for investors in renewable energy where FDI may play a more important role, particularly in terms of new technologies.

Roaring 40s is a joint venture partnership between Hydro Tasmania of Australia (owned by the State of Tasmania) and China Light and Power Group that seeks a leading position in renewable energy projects in Asia. The firm is exploring potential FDI in New Zealand that could contribute technology and commercial expertise in renewable energy to support the country's environmental goals and power generation needs. New Zealand attracted the company's attention after signing the Kyoto Treaty and passing the Electricity Reform Amendment Act 2001 that included provisions promoting renewable energy. The country's small market is not as attractive as India and China, where Roaring 40s has established FDI projects, and the Government does not

offer financial incentives or special assistance with project approvals. The presence of "gentailers" and absence of an effective hedge price market also constitute structural obstacles for new entrants in electricity generation. However, New Zealand is proximate and similar (at least for the Australian partner), it needs new energy supplies, and many locations present good potential for wind farm projects with consistently high wind speeds.

New Zealand's SOEs have also focused increased attention on renewable energy. Mighty River Power is investigating possible wind farm sites and is developing several geothermal power stations, a type of renewable energy where New Zealand's early experience became overshadowed when discovery of the offshore Maui gas field offered cheaper energy reserves. Meridian owns the largest operational wind firm in New Zealand and is exploring other sites. This firm also gained certification in 2007 as being carbon neutral in its generation and retailing of electricity by reducing its own emissions and purchasing carbon offsets from a wind farm operated by Trustpower. Later, Meridian sponsored New Zealand's first public auction of voluntary carbon credits, intending it as a test to encourage participation in global carbon credit markets. The potential to generate tradable carbon offset credits could serve to attract more FDI to renewable energy projects in New Zealand.

Meridian offers a more direct demonstration of FDI advantages through its participation in joint ventures outside New Zealand. In Australia, the company joined AGL in a small hydro-generation project supported by state-level incentives provided to meet renewable energy targets in Victoria. Meridian's investment in an Australian wind farm project also benefited from government subsidies. While gaining valuable experience in wind technology, this venture strengthened negotiations with wind turbine suppliers, a high-demand product where Meridian's recent entry provided insufficient scale to attract the attention of most suppliers.

Meridian also joined two European firms, United Kingdom-based E.ON and Mondragon of Spain, in separate ventures to sell an innovative, gas-fired boiler heating system that supplements a home's grid-supplied electricity. The technology was developed in New Zealand by Orion, an electricity distributor that is still a minor partner in Meridian's local affiliate, Whisper Tech. The product will be manufactured in Spain to serve the continental European market, taking advantage of proximity and government incentives.

The sector now offers opportunities in alternative energy and for outward FDI…

New Zealand's electricity infrastructure policy reforms thus encompass a limited but substantial and increasingly diverse role for both inward and, more recently, outward FDI. Foreign investors augment competition for privatized public enterprises, particularly for larger assets that surpass most local financing capabilities. The FDI often brings new management perspectives and market-oriented operational techniques, varying from the engineering and commercial marketing approach of operational investors to the financial and risk management skills of diversified infrastructure investment firms. The growing importance of renewable energy projects enhances the potential to introduce beneficial new technologies, although local enterprises also possess the capacity to develop innovative products that can be marketed commercially through outward FDI. Joint venture FDI proves particularly useful where local partners contribute knowledge of host country policies and conditions while foreign investors bring advantages of global scope and access to different financing, taxation and supply networks.

…though there are recent changes in FDI policy

The limitations to FDI derive principally from political circumstances and policy decisions that scaled back early expectations of more far-reaching privatizations. Private investors in general remain constrained by the continuing strong operations of SOEs in electricity generation, transmission and retail, with local trusts still retaining a significant presence in distribution. New Zealand's traditional policy follows a nondiscriminatory national treatment standard regarding foreign investment, although a series of recent actions caused foreign investors some concern. Despite early success with Air New Zealand's privatization, the state repurchased that enterprise by recapitalizing it after Air New Zealand invested heavily in an Australian airline (Ansett, Australia), which subsequently collapsed with large losses. FDI in Air New Zealand is now restricted to a 10 per cent shareholding. The privatized railway system was also renationalized in 2008, when the Government and Toll Holdings of Australia failed to agree on upgrading the rail network.

A more substantial concern regarding FDI arose in April 2008, when the Government declined to approve an investment by the Canadian Pension Plan Investment Board (CPPIB) in Auckland International Airport. The airport's shareholders approved CPPIB's proposed acquisition of a 40 per cent shareholding, with voting rights limited to 24.9 per cent. However, the Government examined the FDI proposal under the Overseas Investment Act of 2005, whose statement of purpose considers "that it is a privilege for overseas persons to own or control sensitive New Zealand assets", and therefore requires approval and imposes conditions on those investments. The Government decided the CPPIB proposal fell under the act's provisions because it involved sensitive land and significant business assets, requiring ministers to consider a list of criteria, the most relevant being called "the benefit to New Zealand criterion". Their assessment considered 19 factors, determining

their applicability, weighing their relative importance and evaluating the proposal's impact. The ministers found that only two factors of medium importance offered potential benefits, while all nine factors deemed of high importance offered no potential benefits or lacked sufficient information for a judgment.[10] As noted earlier, this was the first non-land FDI declined by the Government since 1984.

Adjustments to the Overseas Investment Act in 2000 added some non-economic criteria to the review and the 2005 act extended the criteria and appears to shift the presumption from FDI approval to an examination of cases that require demonstrated benefits to gain the privilege of FDI entry. Foreign investor uncertainty stems from the range of discretion ministers can exercise in determining how to "weigh" the factors specified in the law, as well as their evaluations of an FDI's impact. Ministerial decisions are subject to court review only regarding whether the process specified in law was followed, but not regarding determinations of factor importance or impact.

Specifically with regard to the electricity sector, it is important to note that the Government did not object to CKI's contemporaneous $550 million purchase of Vector's important Wellington lines network. However, foreign investors may view these recent developments as introducing greater uncertainties into the FDI policy environment through the potential for more directly political judgments.

The sector provides for open competition under regulatory oversight

In *generation*, New Zealand has five major competing companies. No licence is required to invest in generation. It is open to new entrants, although the emergence of consolidated

"gentailers" is likely to be a hurdle for a major new greenfield investor. Generation charges are not regulated.

In *transmission*, there is only one national transmission entity, and it is subject to regulation of its charges.

New Zealand has mandatory separation of *distribution* into the low voltage distribution lines business and retail supply. Since 1994, there have been no exclusive "franchise" areas. No licence is required to operate a *distribution lines* business and it is open for new entrants. In practice, most distribution lines businesses are regional monopolies and distribution charges are regulated. Regulation takes the form of oversight of charges within a set "price path", and every five years there is a review as to whether to impose price caps. Developers of a new area (e.g. for housing) can contract for lines to be supplied by any party and may use this as a means of negotiating competitive rates from the incumbent distributor. *Retail supply* also requires no licence and is open to new entrants. This segment is dominated by the five national "gentailers" but in all areas of the country consumers can choose between at least two suppliers. Retail tariffs are not regulated except for the imposition of a charging format designed to support the environment.

The Commerce Commission, the competition agency, oversees competition aspects in all segments and can disapprove of a merger or acquisition which could have an undue impact on competition. The commission also implements pricing oversight of the distribution lines business. The industry is not deemed to have "sensitive assets" under foreign investment rules and no foreign investment entry screening is carried out. Whilst licences are not required to invest in any segment of the industry, operators must of course conduct business within regulated technical, safety, environmental and other standards.

The sector has managed to match supply to demand

Electricity markets have been the subject of debate worldwide on whether market mechanisms can be effective in delivering timely investment in new capacity. New Zealand is an "energy only" market – generators are paid only for electricity generated and do not receive a separate capacity payment. New generation is built in response to investors' expectation of future prices.

The New Zealand wholesale electricity market has performed largely as expected in terms of signalling the need for new generation investment and also the need for demand savings in times of scarcity. The margin between electricity production and demand was tight in the early 2000s. However, new capacity has since been commissioned in response to this demand growth. From 1996 through 2011 (based on projections for 2010 and 2011), around 1,250 GWh of new generation production has been added each year on average.[11] This additional production is well ahead of average demand growth over the period of around 600–700 GWh per year.

The additional generation capacity has come from a range of generation technologies and fuelled by various energy sources. Of the 16,000 GWh of new generation capacity added to the system since 1996, 9,400 GWh has been from thermal technologies, 1,600 GWh has been from co-generation technologies, and 5,000 GWh has been from renewable technologies.

The market has also performed reasonably well in terms of managing short-term shortages in fuel supply. About 60 per cent of New Zealand's annual electricity generation is from hydro output; hydro storage capacity is relatively limited and hydro inflows are volatile. The period 2000–2008 was close to the driest period on

record (in 80 years of data). Sustained periods of low hydro inflows occurred in 2001, 2003, 2005 and 2008. During these periods, wholesale prices rose substantially, reflecting the scarcity conditions, and attracted considerable adverse media coverage and comment. Demand responded to these price signals: in 2001, 2003, 2005 and 2008, demand reduced from 4 to 6 per cent. However, there have been no brownouts or blackouts because of a shortage of supply during the 12 years of market operation.[12] This outcome is in contrast with previous periods of low inflows which, under the former centrally planned system, led to rolling brownouts in 1957–1958, 1973–1974, 1976–1978, and calls for voluntary cuts to demand in 1992.

More recently, and largely unrelated to the reform process, attention has been directed to the aging National Grid, currently operated solely by the SOE Transpower. Early in its creation, the Electricity Commission assessed Transpower's plans to upgrade the electricity grid and approved pricing methodology to cover investment costs. This issue has become more pressing recently as a result of Auckland experiencing costly power outages in 2006 and 2009 due, respectively, to failed connection equipment and a malfunctioning transformer.[13] According to Transpower CEO Patrick Strange, the National Grid received low levels of reinvestment due to the false expectation in the late 1990s that new generation investments would be located close to the sources of demand. After a long period of low reinvestment, the company has made efforts to upgrade the National Grid infrastructure. From 1995–1996 to 2005–2006, investments averaged $100 million per year, and an additional $3 billion–$5 billion was to be invested over the decade beginning in 2008.[14]

Notes

1 Evans and Meade, 2005: 136.

2 No single foreigner can own more than 49.9 per cent of Telecom without the Government's approval, and no foreigner can own more than 10 per cent of Air New Zealand without the Government's approval.

3 http://www.treasury.govt.nz/publications/informationreleases/overseasinvestment/pdfs/t2008-297.pdf , paragraph 15.

4 Bertram, 2006: 217.

5 www.transalta.com.

6 A recent study concludes that any competitive impact of the distribution/retail separation was probably negated by the unexpected extent of the consolidation of generation and retail which followed (Nillesen and Pollitt, 2008).

7 Trustpower operates about 5 per cent of the country's generation capacity but serves a greater percentage of customers, drawing strength from its local ties. The firm is owned jointly by Infratil, a New Zealand infrastructure investor with other interests in airports and public transport, and the Tauranga Energy Consumer Trust, which also operates the Port of Tauranga.

8 On 4 August 2008, Babcock and Brown announced it was seeking to sell 50 per cent of PowerCo as part of a capital management review: http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10525295.

9 United Networks, 2000: 6.

10 Parker and Cosgrove, 2008.

11 Source, *Options, choices, decisions, 2009, Update*: 8. Meridian Energy. Available at www.meridianenergy.co.nz/AboutUs/Reports/.

12 As mentioned above, recent brownouts and blackouts – such as the Auckland blackouts in 1998, 2006 and 2009 – were primarily the result of transmission failures by National Grid operator Transpower, and not by market-related underinvestment in production capacity.

13 http://tdworld.com/news/Auckland-power-outage/, 11 July, 2006, accessed 27 April, 2009; http://www.nzherald.co.nz/power-crisis-

/news/article.cfm?c_id=1502177&objectid=10555619, 8 February, 2009, accessed 27 April, 2009.

14 http://www.transpower.co.nz/n2252.html, September 2008, accessed 27 April, 2009

V. LESSONS FOR POLICYMAKERS

Developing countries face particularly difficult challenges in building and operating national electricity networks that require substantial up-front financing, complex operating conditions and difficult cost-recovery situations. Fast-industrializing developing countries must cope with extremely rapid growth in power demand (which can be twice as high as GDP growth).

Unsatisfactory experience with state-owned and operated electricity networks has led many countries toward a paradigm shift to private investment, including foreign investment. Yet reforms which set out to improve private electricity supply and service are complex and the experience of introducing private investment, including FDI, has been quite mixed.

Chile and New Zealand are early practitioners of moving from an integrated state system to a competitive market framework. Thus, they offer an opportunity to provide lessons that can help identify "best practices" adaptable to policy choices that continue to face developing countries and countries with economies in transition. Chile and New Zealand adopted a broadly similar philosophy of reform, but there are contrasts as well as similarities in their approach, especially in the extent to which the state has divested from the industry. These give a diversity of experiences and help to reinforce the point that there is no single universally applicable set of practices.

Experiences in Chile and New Zealand also reveal a diversity of foreign investor motivations, modes, impacts and evolution. This diversity reinforces the conclusion that countries need not follow a single rule or approach to attracting FDI in the electricity sector. Nevertheless, the comparisons and contrasts between their approaches offer a useful set of principles that can be drawn upon.

A. Lessons in the political economy of electricity reform to utilize FDI

The experiences of Chile and New Zealand suggest an overarching set of lessons in the "political economy" of the reform process:

- Don't rush the early reforms or rely immediately on FDI;
- Be careful about addressing community expectations; and
- Develop expertise and quality institutions in government.

1. Don't rush the early reforms or rely immediately on FDI

Neither Chile nor New Zealand was forced into rapid privatization of the state electricity company by a fiscal crisis or by compelling underperformance of the state utility. There was no "big bang" of near simultaneous market reform and the introduction of private investment.

Figures III.1 and IV.1 are timelines of key regulatory and investment events for Chile and New Zealand. Chile took five years after introducing the law reforming the industry to prepare the state utility for privatization. Local private investment was introduced initially (supported by capital market reforms). The first FDI only occurred 15 years after the principal reform law. Foreign investors were not involved early because they viewed Chile as too risky politically and economically. In the event, this extended process of introducing foreign investment was probably useful in

testing the new competitive market and the institutions that regulated it.

New Zealand separated generation and transmission in stages, setting up Transpower as a transmission subsidiary of ECNZ in 1988 before establishing it as a stand-alone SOE several years later. The requirement in 1992 for distribution utilities to corporatize provided opportunities for FDI and consolidation (Utiliticorp and TransAlta invested in the sector). In 1995, the Government announced it would split ECNZ, to form Contact Energy with a market share of about 22 per cent of generation. Special restrictions would apply to ECNZ until its market share fell to 45 per cent. In 1998, the Government announced it would privatize Contact Energy, and separate ECNZ into three SOEs. It would also require ownership separation of energy (generation and retail) from lines (distribution and transmission networks). At the same time as forcing distribution utilities to divest either their generation or retail assets, the Government lifted the restrictions on SOE generators from investing in retailing.

Developing a workable market framework is very complex. Allowing time for the market framework to settle down under operations by SOEs appears to be a useful process in arriving at a workable system. It can introduce early customer benefits in terms of pricing and service, and enables the country to present a more stable and predictable framework to foreign investors.

Countries with chronic power problems may feel that they cannot afford to wait. If the problem is a shortage of generation capacity, it would be preferable to introduce IPPs. If operating standards in the state utility are low, these cases show that unbundling and commercialization of the state utility can itself yield better standards.

2. *Be careful about addressing community expectations*

Societal attitudes toward FDI and expectations regarding electricity sector reforms have profound effects on the environment for FDI and the sustainability of reforms.

Specific societal attitudes toward electricity infrastructure reforms are conditioned heavily by the nature of expectations regarding beneficial results. Reforms typically involve some restructuring costs, such as downsizing employment and disrupting established service patterns. Offsetting public benefits are expected and communications programmes can shape how such benefits will be defined, understood and measured. Chile's free-market ideology generally eschewed specific measures of reform success, confident that the process would stimulate overall economic growth. No organized political opposition existed to challenge this view. In addition, public attitudes appear conditioned by experience with a commodity-based economy to expect cyclical price fluctuations and even electricity service disruptions that are event-driven, such as a severe drought or the Argentine gas reduction.

In New Zealand, policy reforms aimed at increasing economic efficiencies became linked in the public mind to price reductions rather than understanding price as a fluctuating mechanism to guide market-directed efficiencies. In addition, public reaction to electricity supply disruption in residential areas led to a governmental focus on creating additional reserve capacity, requiring additional investments (see below).

Public advocacy campaigns could help create public understanding in democratic systems regarding the rationale for policy reforms and suggest appropriate indicators for their success.

Selecting clear policy goals and measures of success will help determine the sustainability of public understanding and support for reforms.

Although multiple goals inform most public policies, the main "drivers" of reforms determine the direction, explanation and sustainability of fundamental changes. Chile embarked on electricity infrastructure reforms within a broad ideological programme to minimize the state's role in the economy and rely on private free market forces to deliver improved economic efficiencies. New Zealand also sought greater economic efficiencies, spurred by dissatisfaction with the results of state enterprise control over core economic sectors. While both countries viewed greater competition as the key to improved efficiencies, Chile committed ideologically to the process of free market competition, while New Zealand focused on attaining desired results without committing fully to private market forces.

Differences between the two countries' approaches manifested in the role prices play as a measure of reform success. Chile expected price to serve as a correct signal for market functions, indicating resource costs. As a long-time, commodity-based economy, the country understood possible market price fluctuations and prioritized the need to expand reliable supply to meet growing electricity demand, especially to mining and industrial customers. This commitment was reinforced in the Government's recent shift from model-company pricing to auctions as a way to factor long-term risk into expansion of the distribution segment. By contrast, as noted, price served more as a measure of success during New Zealand's reforms, providing a direct, visible benefit to consumers. Initial electricity price decreases after corporatization of SOEs set public and political expectations that were difficult to sustain when increased supply costs and needed capital investments reversed the direction of electricity prices. For the public, counter-factual price comparisons (what the price would

have been without the reforms) are difficult to conceptualize when facing actual price increases (now versus before) in monthly bills.

In retrospect, it is arguable that New Zealand's definitions of successful reform were self-limiting as to further privatization and FDI. Commercialized SOEs appeared to deliver on defined reforms and momentum for further private investment slowed. However, it was not so much dissatisfaction with the electricity reforms as a change in the public attitudes and the political climate occasioned by other privatization experiences (especially telecommunications) that slowed electricity privatization.

Public attitudes to FDI also form part of the country's starting conditions, particularly if historical events engendered negative reactions to FDI. Chile's social and political turmoil during the 1970s included hostility toward international corporations among segments of the population, creating an uncertain climate for foreign investors that lasted into the 1980s. The progressive introduction of FDI, especially in mining and non-traditional export sectors, helped spur economic growth and improve conditions for infrastructure investors who entered the country in the 1990s. New Zealand's historical tradition has not included social protests against FDI, except for concerns in sensitive areas such as land acquisition, particularly by absentee owners.

Proactive programmes can sustain support for the reform.

For example, providing electricity service to geographically or economically marginalized populations may represent an important component of electricity infrastructure reform goals. Chile created a special programme to co-finance with industry investors initial connection costs for isolated areas. This has been very successful in expanding the network and in shaping perceptions of the electricity reforms.

3. Develop expertise and quality institutions in government

Reform is complex and progressive, and new challenges will always appear.

A clear outcome from the experiences of both countries is that circumstances change and experiences highlight issues that lead to stresses in the community or on investors. Regulators need to be expert, impartial as between local, foreign and state investors and resilient to changes. For example, figures III.1 and IV.1 above highlight unexpected crises in Chile and New Zealand and show that reform measures are still being taken after a quarter of a century. Chile suffered from an abrupt cutoff in gas supplies in 2004. Two droughts in New Zealand led the Government to take a more active role in ensuring supply (see box V.1). Thirteen years after privatization began in Chile, the competition regulator ruled that ownership of the transmission grid by one of the generation companies was leading to uncompetitive practices. A sell-off was enforced and the law was amended.

The independence and expertise of the regulators will often be tested by events such as these which require competitive principles to be maintained but adjusted to new conditions. Crises cause the community to look for scapegoats and where there are SOEs competing alongside private investors, as in New Zealand, the impartiality of the regulators is paramount.

Box V.1. Ensuring security of supply in New Zealand

In both countries, the competitive market system has been able to secure adequate investment in new capacity to meet demand. This is an especially noteworthy achievement in Chile, which has experienced a rapid growth in demand. New Zealand has experienced several episodes of "power crisis" that appear to have thrown doubt on the ability of a market-driven system to deliver adequate new investment. Principally, these have arisen from its 60–70 per cent dependence on hydro generation, which provides renewable energy at very low marginal cost, but cannot necessarily generate at full capacity during exceptionally dry periods. A key government response to dry-year power shortages in the 1990s was to commission and own thermal back up generation capacity. The system was put to the test in 2008 when, over the years 2007 and 2008, rainfall was at its lowest since 1931. A combination of full recourse to thermal back-up capacity and public requests for consumers to adopt conservation measures meant that there were no power cuts in 2008. Nevertheless, an atmosphere of "power crisis" developed in the community and lessons continue to be learned about managing the system and handling important stakeholder interests.

The New Zealand Government has introduced a security of supply policy tailored to the market system. This includes forecasts of long-term supply and demand, assessment of whether the market is delivering sufficient new generation capacity and assessment of the need for reserve capacity to cater for most dry years. There is a tradeoff between guaranteeing absolute levels of power supply and the costs to consumers of retaining redundant capacity. The system is expected to provide secure supply in a 1-in-60 dry year. A risk management system is in place to monitor hydro storage levels and to supply backup thermal power to maintain adequate storage

/…

Box V.1. Ensuring security of supply in New Zealand (concluded)

margins and power supply. The events in 2008 enabled the system to be tested, including the issues of the prices charged for backup power and the extent to which the gentailers could make purely commercial decisions as to whether to take backup power or continue to generate low-cost hydro power at the risk of serious erosion in hydro storage levels. Implementation of the security of supply policy is subject to independent review. The current medium-term assessment is that overall generation capacity, including committed and new investments, will be sufficient to meet expected demand.

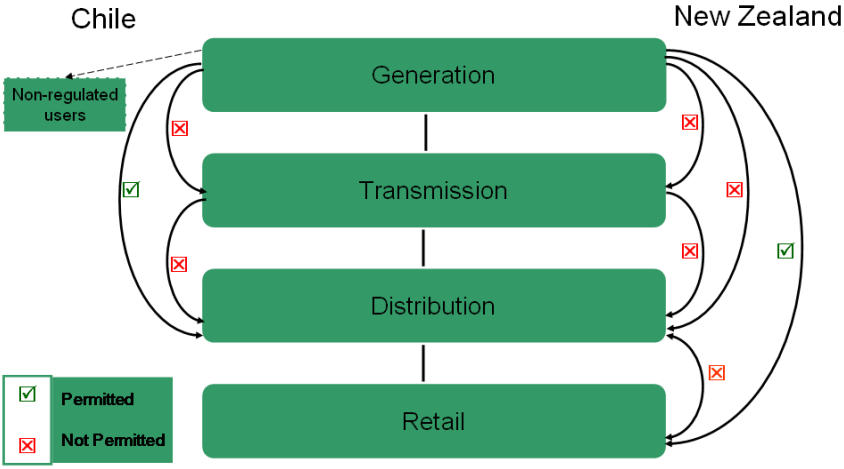
The case studies revealed professionalism and technical competence in regulatory agencies, although both countries faced investor concern regarding political influence or delay in regulatory decisions and apprehension regarding the transparency of regulatory criteria. Chile moved to transfer the controversial resolution of market conflicts from the Ministry of Economy to an Experts Panel to improve transparency and responsiveness. New Zealand's recent move toward re-regulation created some investor unease by providing greater ministerial oversight for the new Electricity Commission compared to the Commerce Commission.

B. Lessons for developing the competitive framework for private investment

Both countries adopted the fundamental approach of requiring vertical disaggregation of the industry in order to facilitate horizontal competition i.e. among investors. However, there is not complete vertical disaggregation in either country. Interestingly, the final step in New Zealand to separate retail and lines was taken long after private investment was first introduced;

this separation has not been attempted in Chile. Moreover, in New Zealand's case, a strong presence of SOEs remains. These seem to have mostly positive impacts on competition and investment. The results suggest some interesting variations to the strict unbundling model that is often recommended to developing countries. Figure V.1 shows the cross-ownership rules in the two countries.

Figure V. 1. The competitive framework – vertical disaggregation



1. *Vertical separation of transmission is important to enable competition in other segments*

The complexity of unbundling electricity monopolies can lead to different reform designs and sequencing, but vertically separating transmission has proved to be important to promote horizontal competition in other segments.

Chile and New Zealand both viewed transmission as a network segment where efficiencies argued for scale economies, whether under regulated public or private ownership. Unbundling separated this central segment from generation on one side and distribution on the other, with New Zealand further distinguishing between distribution and retail segments. This network structure did not emerge immediately, however, and the countries' differed in how regulations affected sector competition through affiliated ownership ties across the network and consolidation within particular segments.

Initially, Chile did not prohibit vertical integration and Endesa was a dominant player in all segments. After protests from other generators about Endesa's potential influence on wholesale price competition, the Electricity Commission issued rulings that led Endesa to sell its transmission assets in 2000. Only in 2004 did Chile adopt a legal prohibition against integrating transmission with either other network segment. Vertical integration between generation and distribution is not prohibited, but consolidation in the generation segment (where three enterprises control over 90 per cent of installed capacity) is not replicated in distribution where there are about 40 companies operating. This structural contrast may result from the importance of negotiated bilateral contracts between generators and major mining and industrial users. These "unregulated users" are a large market in their own right and may lessen generators' needs to secure customers via ownership of distribution companies.

2. The entire electricity system can be privately owned, including transmission

Transmission is likely to be a monopoly and many countries retain transmission as an SOE. This is the case in New Zealand. In Chile, transmission is privately owned by a foreign investor.

The existence of an SOE monopoly on transmission, as in the case of Transpower's operation of the National Grid in New Zealand, can help ensure a competitive environment where customers are able to easily switch suppliers. At the same time, it is important to ensure that these enterprises consistently upgrade aging infrastructure, as was demonstrated in during the 2006 and 2009 Auckland blackouts.

From time to time, Chile has been concerned as to whether private investors would invest sufficiently to improve and upgrade capacity. In the event, there has been adequate investment in capacity, including by a concession granted for specific capacity enhancements by a second foreign investor. However, experience has shown (see above) that there should be vertical separation of ownership.

3. Competition can be achieved whilst retaining some state ownership

Electricity sector reforms can adjust privatization policies to determine whether, or to what extent, state enterprises continue to participate in industry segments.

Electricity infrastructure reforms typically include some degree of privatization as a country moves from a monopoly or state-dominated system to a more liberal and deregulated policy regime. However, privatization is a process as much as a policy, where the extent, speed and nature of privatization steps are influenced by both planning decisions and responses to evolving conditions. Chile's privatizations began with a return of expropriated properties, followed by state enterprise sales (with key exceptions) that aimed to replace the Government with private companies as the main economic actors. This approach opened a broad swath of economic activity to private investors, including in the electricity sector, even though FDI responded relatively late to

the reforms. Determinations that both Codelco and Enap constituted strategic national assets led to their enshrinement in the Constitution as state enterprises, leaving the Government with important capability to directly influence priority goals, such as LNG development.

New Zealand's electricity infrastructure reforms began with a presumption by many (but not all) analysts that the drive for greater economic efficiencies through increased competition would lead to extensive privatization of NZED's departmental operation. However, the decision to corporatize NZED into ECNZ and, later, to corporatize ESAs with dominate public trust arrangements, led to a type of "halfway house" stage before full privatization.

After Contact's privatization, the other SOE generators remained in this "halfway house" as evolving conditions led successive governments to conclude that the mix of public and private enterprises delivered sufficient competitive advantages while retaining useful state capabilities through the SOEs' annual Statements of Corporate Intent. There was also no political incentive to force a restructuring of local government participation in the diverse structure that evolved among the distributors.

The current mix of public and private ownership in New Zealand is depicted in figure V.2. Notwithstanding the strong presence of SOEs, there appears to be genuine competition, enforced by the Commerce Commission. The Commission is an independent body with oversight on competition matters over all business entities including SOEs.

4. There may be merit in permitting cross-ownership in generation and retail

Both Chile and New Zealand permit cross-ownership in generation and retail. This reduces commercial and political risks in

investing in the generation segment, which has the heaviest investment requirements as the system expands. But it may discourage new entrants in retailing.

In New Zealand, the desire to secure a natural pricing hedge from a generation/retail link led to the "gentailers" structure that consolidated market share in both segments and essentially discourages new entrants. This could raise competition issues and is currently the subject of a competition review in New Zealand. A financial hedge price market could provide an alternative to this type of structural price hedge that may discourage market-directed conservation by consumers during shortages by maintaining an overall less volatile but higher price level.

5. Pro-competition oversight, and price regulation in some segments, will be needed despite no formal barriers to entry of new investors

Both countries took fundamental steps to create a competitive environment for private investment in the industry by unbundling their vertically integrated state electricity enterprises. Nevertheless, neither country has been able, or seen fit, to completely unbundle the four segments of generation, transmission, distribution ("lines") and retail. Entry is open to new investors and there is genuine competition in some segments such as generation. But there has been a tendency to consolidate ownership in some segments and there can be formidable economic barriers to entry created by continued cross-ownership between generation and distribution/retail. A significant degree of price regulation remains and the competition authorities maintain oversight of the competitive environment in segments without price regulation. Practices have developed as experience has been gained with implementation of the competitive framework. A clear lesson for policymakers is they must develop the ability to oversee the competitive environment and to directly regulate charges, if

needed. The competition authorities must be vigilant, flexible as experience develops and have adequate enforcement powers.

C. Lessons in attracting FDI

1. FDI can be attracted to a liberalized market under competitive conditions and will invest to grow capacity

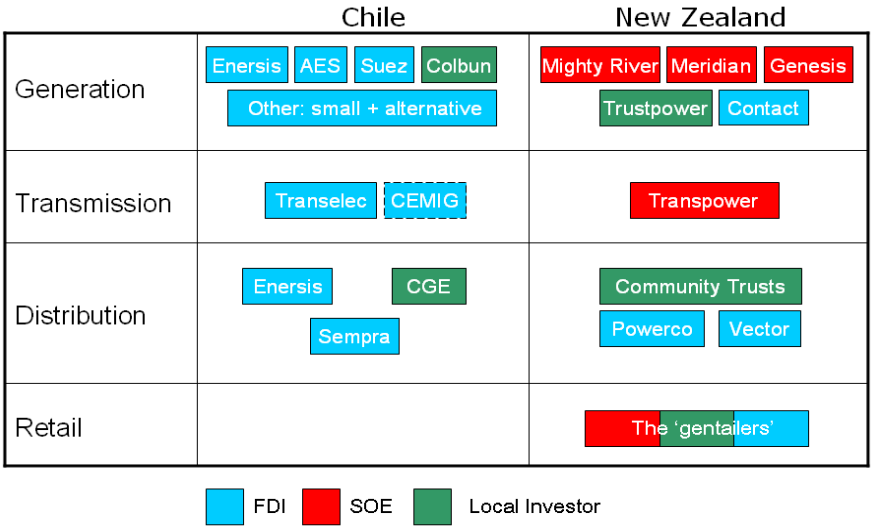
In addition to macroeconomic indicators, a host country's attractiveness for FDI is affected by electricity market size and growth, supply costs, customer characteristics, pricing options and perceptions of commercial opportunities.

Chile and New Zealand offer modest-sized, stable economies with differential growth in the electricity sector. The countries' liberalization reforms addressed many fiscal problems, generating economic expansion with moderate inflation and relatively sound macroeconomic indicators. Both electricity markets are small, but New Zealand offered steady growth for financial investors while Chile's electricity demand rose between 5 and 10 per cent annually toward the end of the 1990s, attracting significant FDI interest. Each country's principal energy source, hydro-generation capacity, provided cheap but variable power supply, increasing the importance of how government policies treated reserve capacity requirements. Thermal-generation costs became an issue when both countries needed to replace cheap natural gas supplies, from New Zealand's Maui gas field and Chile's imports from Argentina, respectively. Combined with growing environmental concerns, these cost factors opened new opportunities for investments in renewable energy.

The consumer configuration of Chile's electricity market offered a large and growing base of major industrial firms, especially mining operations, compared to New Zealand's more

stable market where the needs of residential and commercial customers drove policy more than established industrial consumers. Opportunities for negotiated bilateral contracts between electricity generators and large industrial consumers permitted Chile to maintain a substantial market segment with unregulated pricing, following the Government's free market ideology but requiring a two-tier pricing system for large and smaller consumers. Chile's Short Law II extended the market-based approach in 2005 by establishing a new bidding process for long-term supply agreements between generators and distributors, altering the regulated pricing for ultimate consumers. Whereas previously Chile's National Energy Commission had bi-annually calculated a distribution value added price that end users would pay, that pricing component would now be set as part of the new bidding process.

Figure V. 2. Competitive framework – horizontal competition



In New Zealand, potential investors encountered different pricing issues shaped by structural and regulatory concerns. The generators sought hedge price protection through structural investments in retailing. A more direct regulatory role in pricing decisions evolved when the Electricity Commission replaced the industry's self-regulating bodies in a shift away from "light-handed" regulation.

2. FDI is possible in a system with high levels of state ownership . . . but a strong record of regulatory impartiality is needed

Policy reforms in Chile and New Zealand determined that neither country would treat ownership of electricity infrastructure directly as a protected national asset. However, New Zealand's implementation of reforms stopped short of full privatization, leaving SOEs in complete control of transmission as well as the majority of generation capacity, thereby restricting the scope for both domestic and foreign private investment. While Chile fully privatized the electricity sector and permitted FDI, the Government retained an important role by designating Codelco and Enap as strategic assets. These state enterprises exert significant influence through Codelco's generator/user activities and the essential role played by both enterprises in developing new LNG projects.

These cases clearly indicate a range of options for how governments might continue to participate directly in the electricity sector, shaped by decisions regarding control over strategic national assets. Such policies will retain government influence but limit the potential benefits of private investment, both domestic and foreign. Opinions appear divided over how continued state enterprise operations might affect investors' evaluations regarding possible renationalization risks. An electricity sector with both public and private enterprises might facilitate

renationalization options by retaining state operating capabilities, or it might mitigate against renationalization by diluting suspicion against (particularly foreign) private ownership when sector difficulties arise that similarly confront both state and private enterprises.

Continued state involvement complicates the assessment of risk and opportunity for private investors. Foreign investors in particular place a premium on the country's reputation for establishing and applying regulations to govern competition among public and private firms in a fair, transparent and effective manner. This regulatory impartiality is strongly tested during crises such as disruption to supply.

Developing countries need to consider carefully whether they can assure investors of impartial regulation in a system that retains significant state ownership. Can they offer a track record of impartiality in other sectors? The New Zealand's experience shows that mixed ownership *can* work in attracting FDI and maintaining competitive conditions. Developing countries going down this path must convince foreign investors that it *will* work in their case.

3. Enabling cross-ownership of generation and retail reduces commercial and political risks for foreign investors . . . although it may create some barrier to entry to an entity that only seeks to invest in retail

Foreign investors in generation must be assured of supply to creditworthy buyers. Allowing cross-ownership in retail offers direct access to consumers rather than risky option of sale to state or independently owned buyers.

Both Chile and New Zealand allow generation investors to have direct access to consumers. This may produce a better

outcome than the strictly disaggregated systems that are often recommended to developing countries in the interests of promoting competition at the retail level. In disaggregated systems, if permitted, generators must sell to an arm's-length wholesale market (which may include sales to non-regulated large users). The buyer may be a state entity or a small number of weak private parties. Lenders may be unwilling to finance new generation projects unless the Government guarantees the power purchase obligations of the state entity. If the retail market is not well-established, with a multiplicity of well-capitalized players, lenders will also be reluctant.

This approach has to be balanced against the risk of reducing retail competition (see section B.4 above). However, many developing countries may be inclined to give primacy to increasing generation capacity and supply of power.

4. Hydro assets may be significant, but are not necessarily strategic assets that preclude FDI in hydro generation

Definitions of strategic national assets shape the role for government participation in a liberalized electricity infrastructure sector.

For both Chile and New Zealand, policy decisions regarding the strategic importance of water assets hold special consequence for electricity infrastructure reforms, due to the heavy dependence of both countries on hydro-generation facilities. Despite its significance, Chile did not treat water as a protected strategic national asset and provides ownership rights to water separate from land property rights. New Zealand's Government reserved the sole right to develop or grant permits to exploit water resources for hydro-generation, but unclear criteria and decentralized decision-making by local authorities create some

uncertainty and delay in implementation. The security of water rights weighs most heavily for major hydro-generation facilities that require long cost-recovery times, but even smaller run-of-river projects can risk sizeable capital investments. More generally, policies regarding the control and use of energy resources will influence FDI opportunities in a host country, dependent on the specific nature and magnitude of each country's resource endowments.

5. Adopting and applying open, non-discriminatory standards creates a positive environment for evaluating potential FDI opportunities; FDI in conventional power does not require incentives

General FDI policy and its application have been important in Chile and New Zealand, with Chile taking pioneering steps to assuage foreign investors' concerns

Foreign investors assess a country's broad FDI policy context before examining project-specific regulations. Both Chile and New Zealand maintain liberal policies, with generally open access and national treatment for FDI in most sectors of the economy. Chile's broad liberalization of FDI policy sought to overcome the stigma of expropriations in the early 1970s and has remained remarkably stable over four decades.

New Zealand did not have an expropriation history to overcome, but some uncertainties arose regarding policy applications following the renationalization of Air New Zealand and railways as well as the denial of CPPIB's bid for shares in Auckland International Airport. New Zealand's ministerial interpretation of the new "benefit" criteria for FDI approval introduces some policy uncertainties

The transparency, application and adjudication of FDI policies are important characteristics that shape evaluations of a host country's investment environment. Chile's D.L. 600 law provides for contracts with the state that can be enforced through international arbitration.

Impartial regulatory administration at the sector level is also important.

In Chile's electricity system, the Minister of Economy had long decided on regulated pricing disputes, provoking delays and charges of political influence. In 2004, a new law established an Experts Panel to settle such disputes on technical merit, insulating ministry officials from political pressures during power shortages. In New Zealand, there is some evidence of re-regulation by an Electricity Commission that is responsible to the Minister of Energy, in contrast to the more independent status enjoyed by the country's long-standing Commerce Commission. The Commerce Commission is responsible for enforcing competition policy and implementing economic regulation of the transmission and distribution networks. The Electricity Commission is responsible for regulating the wholesale and retail markets, and evaluates and approves transmission investment proposals.

Incentives are not required to grow capacity but are useful to promote socio-economic outcomes.

Government support via co-financing of user connections has been instrumental in bringing electricity useful to Chile's underserved communities in partnership with foreign investors. In New Zealand, incentives are used to promote alternative energy. Neither country has imposed performance requirements.

6. There can be a high "turnover" in FDI and countries should be prepared for exits as well as entries

Case analyses show how changing internal and external conditions may lead to transitions among foreign investors. Financial investors tend to follow operational FDI into electricity infrastructure projects as successful reforms generate predictable returns.

Cases in both countries illustrate joint venture opportunities between foreign and domestic partners that evolve over time as the venture's importance grows for one or the other partner. The countries' policies also permit an FDI exit when the parent enterprise experiences an unexpected crisis or alters its international strategic plan. Such transitions can generate opportunities for new foreign or domestic investors better suited to contribute to the sector's further development.

Foreign investors continually monitor host country conditions in the context of global circumstances, including international economic and political conditions, as well as the investor's competitive position and strategy relative to other enterprises. Macro considerations of economic growth and political stability are matched with micro-electricity sector indicators of market expansion and policy stability. Each enterprise devises a global investment strategy that seeks to exploit firm-specific competitive advantages by locating assets in comparative advantage locations worldwide. At the same time, the enterprises respond defensively to each others' competitive moves. These competitive adjustments can impact FDI in a host country for reasons unrelated to the host country's own domestic conditions.

For example, in New Zealand, Edison's early "cornerstone" stake in privatized Contact fitted Edison's plans to expand its

international presence. Its New Zealand investment was operationally and financially successful. Nevertheless, financial problems arising from California's energy crisis forced Edison to sell its Contact shares. Endesa's significant FDI in Chile's electricity sector, purchased through control of the Enersis holding company, changed ownership when Italy's Enel took over the Spanish firm's Latin American network.

Also, a corporation's changing global strategy may lead to a disinvestment from the host country, as when Aquila sold its United Networks assets in New Zealand.

The two cases suggest that turnover is particularly high in the electricity industry compared with more traditional FDI-attracting sectors. In the open and competitive environments maintained in Chile and New Zealand, this has not caused an impairment of government goals. However, a withdrawal from the market should lead to some questioning as to the efficacy of government policies. For example, TransAlta withdrew from New Zealand's retail segment because it did not have a natural pricing hedge from a generation/retail link. Development of a financial hedge price market could provide an additional option to the structural price hedge available in the gentailer model.

Neither country vets change of corporate control at the sector policy level. New Zealand may screen a foreign takeover in accordance with its FDI policy.

7. Effective property protection encourages long-term FDI and the transfer of innovative technologies

Clear, stable and effective legal protection for property rights, especially water and land rights, encourages FDI, particularly for

infrastructure projects in electricity or other sectors that involve substantial, long-term capital investments.

Water and land rights are obviously critical to FDI's participation in electricity sector reforms in Chile and New Zealand. The case studies also reveal the importance of policies on related issues, especially the way environmental protection goals and regulations can impact decisions on land and water rights.

Protections for intellectual property are most relevant to attract FDI-related technologies in renewable energy areas. This factor could also affect a host country's counterpart ability to secure effective protection abroad for innovations developed by its domestic enterprises. New Zealand, in particular, shows promising research in areas related to wind and geothermal power generation.

8. Successful inward FDI can lead to beneficial outward FDI, drawing on learning experiences, new technologies and economies of scale

Both domestic and foreign investors in Chile's pioneering electricity sector reforms translated learning experiences from competitive market frameworks into substantial market positions in other Latin American economies that adopted later reform policies. Affiliate networks permitted economies of scale in supply purchases and improved access to financing options. New Zealand's policies permit electricity sector SOEs to invest abroad, benefiting from foreign government subsidies, gaining commercial and technological experience, improving tight-market supply negotiations, and even manufacturing a domestically-developed product overseas.

End note

Experiences in Chile and New Zealand highlight how country conditions can match up with diverse factors that include (a) FDI motivations (why and when companies invest); (b) FDI modes (which companies invest and how); and (c) FDI impacts (the kinds of benefits derived from different types of companies). The complex interaction of many diverse factors underlines the utility of expert technical advice in devising electricity infrastructure reform policies. Global as well as domestic economic, political, social, physical, commercial and strategic considerations can all influence the design and implementation of policies that will attract FDI to electricity infrastructure reforms in ways that maximizes sustainable national development.

These lessons suggest *strategic choices* that individual countries can consider in designing their competitive market frameworks and in seeking to attract FDI. These choices involve tradeoffs and different regulatory demands. Among these choices are the following:

- Larger economies with well-organized capital markets can consider promoting domestic private investment before or alongside FDI. This could have political and competitive benefits as well as providing long-term investment opportunities for domestic pension funds and other institutions;

- Small economies can consider the "gentailer" model to deliver size and lower commercial risk to investors, although it may reduce competition in retailing and require regulatory intervention. Initially permitting cross-ownership in distribution and retail may help with rehabilitation and network expansion;

- Countries that remain committed to a core of state ownership in generation (for reasons of supply security for example) can consider allowing state-owned and privately-owned companies to compete alongside each other. However, this requires impeccable impartiality.

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6. Please indicate the three things you liked best about this publication:

_____

_____

_____

7. Please indicate the three things you liked least about this publication:

_____

_____

_____

8. If you have read other publications of the UNCTAD Division on Investment, Enterprise Development and Technology, what is your overall assessment of them?

Consistently good	☐	Usually good, but with some exceptions	☐
Generally mediocre	☐	Poor	☐

9. On average, how useful are those publications to you in your work?

Very useful	☐	Somewhat useful	☐
Irrelevant	☐		

10. Are you a regular recipient of *Transnational Corporations* (formerly *The CTC Reporter*), UNCTAD-DITE's tri-annual refereed journal?

Yes ☐ No ☐

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