In this chapter we survey the context, history and consequences of reforms in a selection of overseas electricity systems. The intention is to provide international context to New Zealand's reforms, as summarised in Chapter 5. Combined with the snapshot of the New Zealand electricity system provided in Chapter 3, this provides solid benchmarks against which to assess New Zealand's progress and experience. As will be seen, New Zealand has managed to avoid some of the pitfalls experienced elsewhere. At the same time, however, it has been relatively timid in implementing its reforms compared to the US, England and Wales, Australia, and even the late-starting European Union.

INTRODUCTION

Broad Reform Trends

Electricity sector reform since the 1980s, in the main involving some degree of tilt towards decentralised market-based and competition-oriented rather than government and centrally planned solutions, has for some time been the developed world's equivalent of fashion's "new black". Wherever electricity systems first developed, local and central governments quickly involved themselves in the process – whether at the policy, regulatory, ownership, or control levels. While competition was in some places also quick to develop (even in areas such as distribution where current thinking holds that it is uneconomic and that monopolistic tendencies need to be tamed), such competition has even been argued to have spawned regulation by those wishing to constrain competition rather than to protect consumers. With time, regulation and/or state ownership and control of the sector became the norm, and for decades appeared to adequately meet the twentieth century's ever-growing demand for electricity. As imperatives changed, however, so too did the received wisdom regarding how electricity systems ought or needed to be organised. Aided by technological innovations that facilitated solutions previously regarded as impossible, transformation was feasible as well as necessary.

Deregulation, Liberalisation or "Reregulation"?

It is possible to discern not just a linear trend towards one approach over another, but "alternating currents" in the way electricity sectors around the world have evolved and been organised. Apart from the earliest days in which pioneering entrepreneurs dictated the agenda for electricity system development, some measure of controlling oversight has been exerted by central and local governments. This oversight persists to varying degrees even today, where the broad thrust of contemporary electricity sector reform has been characterised as "deregulatory". Such a characterisation is not wholly accurate,

however, as deregulation implies a removal of government involvement whereas the reality of contemporary reform is that of ongoing but changed involvement. An alternative description that might be applied is that of "reregulation", by which governments change the rules of the game but do not entirely withdraw themselves from it. Where such reregulation entails a shift away from state control or central planning, it might better be termed liberalisation. And while liberalisation is often regarded as the modern way, where earlier liberalisation occurring under contemporary electricity sector reforms has been regarded as unsuccessful (or simply unpopular or too radical), subsequent reforms have sometimes been directed at "deliberalisation". In this sense reregulation can also be thought of as retrograde, highlighting the fluid nature of the process.

Rise of "the Market"

At the heart of such reforms has been a change in attitude towards the desirability of market forces and competition, and the ability of such forces to be applied in at least some parts of the electricity sector. Widespread dissatisfaction with the public-service model of electricity supply – given the considerable inefficiencies, price-discrepancies and cost that came to be associated with the sizeable investments required by the industry – spurned interest in the use of market forces that had already begun to be effectively applied in other sectors such as railroads, natural gas supply and telecommunications. At the same time improvements in information and communications technologies provided a means to decentralise control of generation, paving the way for monopoly generators to be split into separate units competing among themselves and with new small generators via centralised or decentralised wholesale electricity trading arrangements. While long-distance transmission and local distribution continued to be regarded as monopolies, a greater confidence emerged that regulatory measures could be effectively applied, and more properly targeted, to tame these beasts, paving the way for competitive energy trading at the retail level. In at least some part these changes in attitude reflected a realisation that certain of the monopoly concerns arising in the context of state-owned or -controlled electricity systems were in fact self-created and unnecessary.

CONTEMPORARY ELECTRICITY REFORMS AROUND THE WORLD

Reform of the electricity system in England and Wales is widely regarded as being at the vanguard of contemporary reforms, with competition in generation and retailing under a centralised wholesale electricity market introduced in 1990. Indeed, independent power producers (IPPs, i.e. generators) were encouraged in England and Wales as early as 1983. Norway was not far behind, commencing widespread reforms in 1991 although it had operated a generator-only power pool as long ago as 1971. Argentina commenced the break-up of state-owned generation and transmission and established wholesale power trading arrangements from 1993, the same year that Victoria led the way in restructuring Australia's state-electricity systems. Reform in the

United States also progressed on a state-by-state basis, with California being the early and unfortunate leader. The US also instituted wider policy changes supporting reform as far back as 1978, with legislation paving the way for non-utility generators (i.e. IPPs) to participate in the wholesale electricity market. Western Europe has in fact been a relative late-starter in the reform process, with major reform first being mandated under a 1996 European Union directive having antecedents dating to 1988.

These are but a few significant examples of countries or regions embarking upon a reform process, among which some have been particularly influential in shaping developments in subsequent reforming states (in both positive and negative senses). The reform processes in a selection of these are expanded on below to provide context and counterpoints to the later discussion and assessment of New Zealand's reforms.

ENGLAND AND WALES

Wider Reform Agenda

Unquestionably the reform of the England and Wales electricity system was a reflection of a wider reform agenda of the conservative government under Margaret Thatcher (elected in 1979). Aside from fiscal imperatives, the Conservatives had a clear vision of state-sector reform through market liberalisation and the privatisation of state trading enterprises, with the electricity sector being no exception. In so doing the Thatcher government radically unwound a relatively short-lived era of government domination of the sector.

Reform Background

Central government authority over the electricity sector begun under the Central Electricity Board with 1926 legislation charging the Board with constructing a national transmission grid. It was not until after the Second World War, however, in 1947, that the electricity systems in England, Wales and southern Scotland were nationalised. Government authority over the sector was later extended, with the formation of the Central Electricity Generating Board (CEGB) in 1957 to control the operation of and investment in both generation and transmission. As in the United States, the oil price shocks of the 1970s resulted in a shift towards domestic over imported fuels (a shift assisted by the 1965 discovery of gas in the North Sea). Electricity prices in this period were subject to political pressure, for example in the 1970s to restrain prices to contain price inflation, and to raise prices in the 1980s to reduce public debt. The electricity sector was also used as a means to support the inefficient domestic coal industry, and to assist with the development of nuclear power. The Thatcher government attempted to encourage the entry of IPPs with legislation in 1983 allowing them access to the grid, but it was not until the Electricity Act of 1989 that widespread liberalisation and privatisation of the electricity system commenced.

Generation and Transmission

Initially all generation and transmission in England and Wales was under the control of the CEGB. The 12 semi-autonomous area boards responsible for distribution and retailing had little effective control and thus the system was a vertically integrated state monopoly. Reform involved transmission being separated out into the National Grid Company (required to provide open access to all grid users and to dispatch generators), and initially all generation – split into two fossil fuel generators (PowerGen and National Power) and the nuclear generator (Nuclear Electric) – were to be privatised. Nuclear Electric was removed from the sale process because of concerns about the costs of reactor decommissioning, but its newer plants were privatised as British Energy in 1996, with only its older plants being retained by the government as British Electric. Accordingly only the two fossil fuel generators were sold early in the process, with 60% of their shares auctioned in 1991 and the balance in 1995. Changing political preference towards the domestic coal industry and deregulation of the gas industry eventually resulted in a flight to gas generation, and levies favouring nuclear power were phased out by 1998. To facilitate price competition between these three generators a compulsory centralised "pool" was established to set wholesale electricity prices, although much energy traded was hedged via bilateral contracts.

Distribution/Retailing and Regulation

The 12 area boards responsible for distribution and retailing were corporatised into regional electricity companies (RECs) and auctioned off in 1990. The RECs initially owned transmission, but were required to sell down their holdings in 1995 because of competition concerns, with National Grid Company becoming publicly listed and changing its name to National Energy. A new regulator, The Office of Energy Regulation (OFFER), was created to regulate the industry and it imposed price caps on transmission, distribution and, for customers still subject to franchise areas, energy retailing. Service standards were also imposed and repeatedly revised to ensure quality was not compromised to improve profits under regulated prices. The RECs were required to ring-fence distribution from retailing, with both regulated under a CPI-X regime but with the latter to be successively deregulated. Franchise areas were opened up to retail competition: first for customers having peak demands of more than 1 MW in 1990, allowing such larger customers to purchase electricity at unregulated prices; and then for successively smaller customer classes in 1994 (those with peak demands exceeding 100 kW), with franchise restrictions finally lifted for the smallest customers from September 1998 through to June 1999. RECs were also constrained in their ability to acquire generation, so as to encourage competition among generators.

Re-Reform

These radical transformations of the England and Wales systems were not to last in their initial state for long. Dissatisfaction was quickly expressed with the lack of competition

among the three generators and "gaming" of the wholesale pool, resulting in OFFER implementing a short-lived cap on wholesale prices in 1994, and the replacement of the pool in 2001 with decentralised, self-dispatched generation and a much smaller balancing market designed to encourage generators to avoid imbalances in supply and demand (New Electricity Trading Arrangements, NETA). Initial policy goals of enhancing economic efficiency in the sector were eventually broadened to include equity and environmental aims. While falling fuel prices resulted in increased generator profits over the first five years of the reformed sector's operation, consumers saw little benefit in the form of reduced prices, prompting the regulatory imposition of considerable and repeated price cuts on retailers and on transmission.[1] As early as 1993 OFFER sought to encourage greater competition in generation by agreeing with PowerGen and National Power that they sell down capacity, in exchange for the resulting smaller generators being then permitted to vertically integrate with RECs. The result of this multi-faceted and multi-staged process is a vastly transformed industry, with foreign ownership of generation and RECs the rule, multiple competing generators (including IPPs providing new generation capacity), and lower electricity prices by decree if not market forces. Inefficiencies arising from the influence of the domestic coal and nuclear industries have been ameliorated, if not eliminated, and along the way the British taxpayer has enjoyed considerable proceeds from asset sales.

UNITED STATES

Anti-competitive Regulation Origins

The US electricity industry began, with Thomas Edison's first Manhattan power plant in 1882, as unregulated private enterprise. As Stoft (2002) puts it, "[i]n the beginning there was competition – brutal and inefficient". Early experience in the United States saw instances of intense competition for both electricity generation and distribution, a matter resolved in Chicago by the then president of the National Electric Light Association, Samuel Insull, who acquired a monopoly over central generation in the city in 1898. More as an attempt to secure his position against competition than to protect consumers, Insull made the case for regulated "natural monopolies" arguing that "exclusive franchises should be coupled with the conditions of public control, requiring all charges for services fixed by public bodies to be based on cost plus a reasonable profit". These ideas found early acceptance, with New York

[1] Following privatisation of the 12 England and Wales distribution companies in 1990, X-factors ranged between 0 and 2.5%, subject to review in 1994. Evidence discussed by MacKerron in Glachant and Finon (2003) suggested that these were too lax, resulting in increased prices and profits. Indeed, Wolfram (1998) provides evidence that large salary increases observed for distribution companies post-privatisation were not associated with more usual predictors such as managerial talent or firm size, but were highly correlated with the companies' potential profits, as measured by their X-factors. In 1995 the distribution companies were subject to more stringent price controls, with price cuts of 11–17% in 1995, a further 10–13% in 1996, and 3% annually for three years thereafter. Overall distribution company revenue was cut by 27% from 1990 to 2000. Initially required to cut prices by 3% annually from 1993, the National Grid Company faced a 20% price cut in 1997 and 4% annually thereafter.

and Wisconsin establishing state utility commissions in 1907,[2] and 1935 federal legislation set about to break up interstate pyramid-company holdings of electricity providers into geographically contained units. Thus the twentieth-century US model of rate-of-return regulated, intra-state, franchise-based, vertically integrated electricity providers was born.

Dominance of Investor-Owned Utilities

Eventually the US electricity system came to comprise multiple semi-autonomous but interconnected sub-systems, divided for bulk power trading into three major interconnection networks (combined with portions of Canada and Northern Mexico): eastern, western and Texas. By the end of 1996 there were 3,195 electric utilities throughout the country, around 700 of which were generators and most of which were combined distributors/retailers. Many utilities served franchise areas within single counties, but sometimes a county might be served by more than one utility (or utilities may service more than one county). The high-voltage transmission network, divided into around 150 control areas, was owned and operated by larger utilities to allow them to trade electricity, with around half of all electricity generated being traded through wholesale trading arrangements. Of particular note in the US context is the dominance of investor-owned utilities (companies generating power for public use), with around three quarters owned by private investors, 20% federally or otherwise publicly owned, and 5% owned by cooperatives. Non-utility generators (privately owned generators supplying themselves, utilities or others) have also taken an increasing share of generation (12% by 1996) under various early national reform initiatives, further diluting municipal, state and federal ownership in the sector.

Reform Imperatives

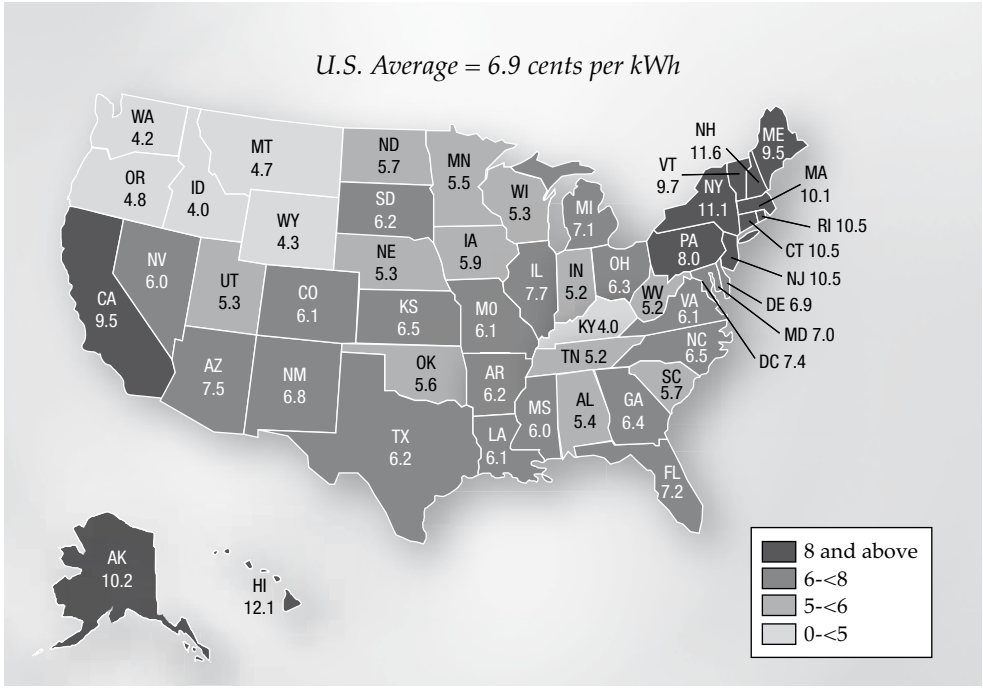
Various federal initiatives and nationwide imperatives have given rise to state-by-state reforms of the US electricity system. Federal legislation in 1978 required utilities to allow often-times cheaper, smaller non-utility generators access to their transmission assets and to buy energy from them at avoided cost. Later legislation, in 1992, extended these requirements to inter-state transmission assets and exempted certain non-utilities from the restrictions of the 1935 legislation, giving rise to 1996 Federal Energy Regulatory Commission (FERC) Orders 888 and 889, creating wholesale competition by mandating non-discriminatory transmission access for non-utilities, requiring utilities to electronically share information about transmission capacity, and ring-fencing transmission from generation and retailing.

At a more basic level, disparities in electricity prices across states, as illustrated in Figure 4.1, were both a source of and political impediment to reform. In part these disparities reflected a fundamental pitfall of the rate-of-return-based system of regulated private monopolies

[2] Michaels (1996) cites research showing that regulation first came to states where utilities' profits were squeezed, rather than those where electricity prices were excessive, reflecting the fact that early calls for regulation came from industry, not consumers.

in the US, namely the shifting of investment risk from investors to consumers, combined with the problem of regulatory capture by interest groups (e.g. trading off higher electricity prices for clean air). The "cost plus" presumption underlying this approach, combined with a tendency to invest in excess capacity to ensure supply security while lacking strong incentives for efficient investment, effectively enabled utilities to recover from consumers returns on poor or inefficient investment decisions that would otherwise be losses borne by shareholders.[3] The situation was made worse by long-term supply contracts at times being struck at historically high prices – and US consumers in various states found themselves paying electricity prices considerably higher than those in neighbouring states or other countries. The persistence of such disparities in a nationally interconnected system must have been some cause for concern (i.e. subject to inter-state transmission charges, broadly speaking electricity charges should have tended to converge).

FIGURE 4.1 **US Average Retail Price by State (1996, US¢/kWh)**



Source: EIA (1996).

[3] To complicate matters, Van Doren and Taylor (2004) note that return-regulated utilities often employed weighted-average pricing, which could in fact result in lower electricity prices than those expected in reformed electricity markets where "market-clearing" or "marginal" electricity prices prevail. They point out, however, that this simply meant that such average electricity prices "were wrong all the time" – too low on-peak and too high off-peak – and encouraged excessive consumption, requiring under-utilised investment in peaking generation funded by excessive off-peak prices.

As a consequence those states with the highest prices were also the first to institute reform, notably California, and Pennsylvania/New Jersey/Maryland (PJM).[4] While the PJM reforms can be regarded as successful as any, the Californian reforms provided a signal example of how not to restructure an electricity system, and simultaneously highlight a challenge for US reformers attempting a transition from rate-of-return regulation of monopolies to liberalised arrangements.

California

Settling on a hybrid of the England and Wales initial (pool) and eventual (NETA, decentralised bilateral) wholesale markets, generation in California was dominated by three utilities which had successfully persuaded regulators to enable them to fully recover all "sunk costs" from past investments irrespective of their merit. To do so the California reforms effectively fixed retail electricity prices, which is not of itself unusual, but they did so at much less than the cap applicable to wholesale prices. To compound matters, long-term contracts were precluded, with all wholesale purchases required at spot prices. As this was combined with an obligation on the utilities to supply at the fixed retail price, it should be no surprise (even without hindsight) that the sector was at risk.

With a hotter-than-usual summer and dryer-than-normal year (reducing hydro inflows), and strong economic growth feeding into increased electricity demand, the state's electricity supply situation in 2000 began to tighten. Combined with sharp increases in gas costs and the price of pollution permits, the wholesale price of electricity in California quickly began to climb. Commentators have argued that these price rises were exacerbated by, among other things, retailers and generators with market power (the latter by withholding capacity) and by the state's system operator not credibly enforcing price caps. The immediate result was that regulated utilities were forced to supply energy at low fixed prices (giving consumers no direct incentive to conserve), which they bought for supply at considerably higher wholesale prices. Their losses amounted to millions of dollars each day, and as a consequence in March 2001 the state's largest utility filed for bankruptcy. The longer-term consequences are even more dire, however, with a government knee-jerk reaction to the crisis resulting in it entering into supply contracts with generators for terms of up to 20 years at prices which reflected the crisis but which now appear high.[5] By generators successfully lumbering consumers with historical sunk costs under the reforms, Californian electricity consumers now face 20 years of new ones.

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[4] PJM now covers Delaware, Maryland, New Jersey, Ohio, Pennsylvania, Virginia, West Virginia, and the District of Columbia.

[5] Borenstein (2002) notes that the state committed to US$40 billion in long-term electricity contracts at prices likely to be more than 50% higher than expected future spot prices.

The 2000 disaster in California's electricity system gave reform a bad name, tending to overshadow the progress of PJM.[6] The state did not implement deregulation in the strict sense of liberalisation, but shifted the burden of one form of regulation – the ability of utilities to recover sunk costs – into a semi-liberalised context with the same effect, resulting in an awkward hybrid of price-fixing and market forces. Whereas nationalised electricity systems provide reformers with a degree of freedom to liberalise despite any adverse consequences to the taxpayers who funded investments in the sector, the dominance of shareholder-owned utilities in the US makes reform more of an arm-wrestle, with inevitable compromises being the result. It is no surprise that in the light of California's experience – and despite successes elsewhere in the US and internationally – electricity sector reform in the US is now proceeding with considerably greater caution.

FIGURE 4.2 **US Restructuring in California's Wake (as of February 2003)**

Source: EIA (2003a).

[6] It should be noted that PJM represents one of the more lauded models of electricity reforms. PJM operates the largest competitive wholesale electricity market in the world, and new membership is scheduled, doubling the size of the territory it serves.

AUSTRALIA

Partially Converging State Reforms

At the national level, electricity reform in Australia is unlike that in England and Wales, and is distinguishable from that in the US. Whereas the England and Wales reforms were applied to a unified and government-owned national system, national reforms in Australia have been directed at bringing together disparate state-government-owned systems having little existing interconnection or trading into a centralised wholesale market facilitated by inter-state transmission. And while national reform in the US has also been directed towards increasing wholesale competition, it does so through a greater existing level of interconnection and between predominantly investor-owned utilities. Once reform is considered at the state level, however, particularly in Victoria, comparisons are more easily drawn between Australia's reforms and those in England and Wales.

Reform Background

Prior to reform, electricity was supplied by state-level public-owned vertically integrated concerns. Given the vast distances between population centres, interconnection via high-voltage grids had been slow to develop, if at all. With most of the Australian population concentrated in the eastern seaboard, greatest progress towards a unified national system has occurred in Queensland, New South Wales and Victoria. Federal-government involvement in the sector was limited to co-ownership of a small amount of hydro generation in the Snowy Mountains, and less directly via competition law and controls on matters such as state borrowing, taxation, and foreign ownership.

Reform Motivation

National reform of the electricity sector has had multiple motivations. In 1990 the Industry Commission, a federal body responsible for improving economic efficiency, was charged by the federal government to consider the merit of a national transmission system. Citing poor investment decisions, excessive staff levels and cross-subsidies in electricity prices, it recommended that generation, transmission and distribution/retailing be unbundled, state transmission systems be combined into a national grid, transmission and distribution/retailing be corporatised, competition be introduced into generation, and that energy prices reflect costs and be free of cross-subsidies. Following these recommendations, a Special Premiers' Conference in 1991 agreed to the formation of a National Grid Management Council to develop a National Electricity Code, in consultation with industry and others, setting out operating rules for a National Electricity Market (NEM). Further impetus for reform came from a 1993 review of national competition policy, the Hilmer Commission Report, identifying benefits to the Australian economy from the reform of various industries, including electricity, and the 1994 agreement of the Council of Australian Governments (COAG) to develop a code of conduct for the operation of a national grid.

National Electricity Market (NEM)

The NEM commenced operation in December 1998 with a key objective of promoting competition throughout its component electricity sectors. Extending early trading between Victoria and New South Wales (including Australian Capital Territory, ACT), it also includes limited trading with Queensland and South Australia, supplying electricity to almost 8 million customers. As in the England and Wales pool, wholesale prices are determined through a centralised market, although participants are free to enter into hedge contracts to manage their price risk. Prices are determined day-ahead for five-minute intervals in half-hour trading periods at six regional reference nodes (one for each participating state plus Snowy Mountains) to ensure that least-cost supply is dispatched to meet instantaneous demand. Generally participation in the NEM is compulsory, although generators selling all of their output directly to a local retailer or customer are permitted to do so outside of the spot market. The National Electricity Code is administered and enforced by the National Electricity Code Administrator (NECA). Transmission connections between states are subject to rate-of-return regulation under Australia's general competition law watchdog, the Australian Competition and Consumer Commission (ACCC). Regulation of distribution prices is implemented at the state level, and even some energy price caps remain.

In 2002 NECA reported on the performance of the NEM, generally expressing satisfaction at progress since its inception. Benefits realised by 2000 were estimated to be A$1.5 billion, and forecasted to grow to A$15.8 billion by 2010. Household electricity prices in Brisbane, Sydney and Melbourne were found to have fallen in real terms by between 1% and 7% between 1990/91 and 2000/01. Reliability and security of the NEM was high, and a majority of new investment in generation and interstate transmission was privately financed, with lead-times shorter than in the past. Also in 2002 COAG released its own, less-upbeat energy market review, citing concerns such as overlapping and conflicting regulation, conflicts of interest where state governments acted as owners, regulators and policy makers, the occasional exercise of market power by generators (particularly in New South Wales), and difficulties in planning for transmission investment in the decentralised environment. It did, however, find the NEM to provide a sound mechanism for signalling new investment requirements.

Reform Progress

In terms of state-level deregulation the early and most significant movers were Victoria, New South Wales and South Australia, all of which commenced proceedings in the early 1990s. Queensland began its process relatively late, in 1997, but has been able to participate in the NEM. Western Australia was a late and less ambitious reformer, and not only does geography currently preclude its participation in the NEM, but its sector remains government-dominated (albeit incompletely) and vertically integrated. The Northern Territory is also unable to participate in the NEM, and currently has no intention of reforming its vertically integrated, government-owned and -operated state electricity sector.

Victoria

The Victorian reform experience bears a number of similarities to that in England and Wales, although without radical re-reforms. When a new government took office in the debt-laden state in 1992, it quickly set about the process of restructuring. The State Electricity Commission of Victoria (SECV) – until then a vertically integrated state monopoly in generation (but for a 51% stake in one generator owned by Mission Energy), transmission and distribution/retailing – was vertically separated into its component parts and corporatised. Generation was separated into five competing and independent companies, and the 29 distribution/retailing companies were amalgamated into just five. Transmission was set up as a stand-alone company, and the Victorian Power Exchange (VPX) was set up to operate a wholesale market and to dispatch generation (a role often left to the transmission operator). All of these assets were subsequently privatised at what transpired to be favourable prices, with mostly US but also UK acquirers. The five distribution/retailing companies were permitted to retain exclusive franchise areas, although these were successively removed (as in England and Wales) starting with larger customers and with all customers contestable by the end of 2000. Transmission and distribution prices, and (prior to the removal of franchise restrictions) energy prices, were subject to CPI-X regulation administered by a new state-level regulator, the Office of the Regulator-General.

With the transition to the NEM, responsibility for managing the wholesale market passed from VPX to the National Electricity Market Management Company (NEMMCO), and both generation and retailing were augmented by their counterparts from other states. While politically an intensely sensitive issue, privatisation (including that of transmission) netted the state A$22.5 billion by 1997 – potentially over-the-money at the expense of US and UK investors – which it used to reduce state debt. At the same time consumers enjoyed reduced electricity prices, with the greatest gains being at the commercial and industrial levels rather than residential.

Rapid Change

The Australian experience with electricity sector reform would appear to be encouraging. Considerable progress has been made in less than 15 years: from a disparate collection of state-level government-owned monopolies, to the establishment of a functioning national electricity market based around increasingly reformed sectors in its constituent states. As such, Australia is enjoying not only the gains from greater competition in generation and retailing but also from rapid interconnection of states giving rise to greater opportunities for competition and customer choice. The Victorian example, in particular, with echoes of the England and Wales experience (but without some of the stumbles), has demonstrated that the gains from reform can extend well beyond lower electricity prices, including the potential for considerable asset sale proceeds. It has also demonstrated that private ownership in the sector, even by foreign concerns, can usefully contribute to the achievement of reform objectives.

EUROPEAN UNION

Background

As elsewhere, in the late nineteenth century private companies dominated electricity provision in Europe. State involvement increased with the development of new generation, and following World War II most European governments inclined towards electricity organised as state-owned national or regional monopolies. With technological advances facilitating a more decentralised operation of interconnected electricity systems, increased inter-state electricity trading, and the European Union's gradual shift towards common European markets, the past two decades have seen a developing interest in implementing reforms of the type spearheaded in England and Wales and other key European states.

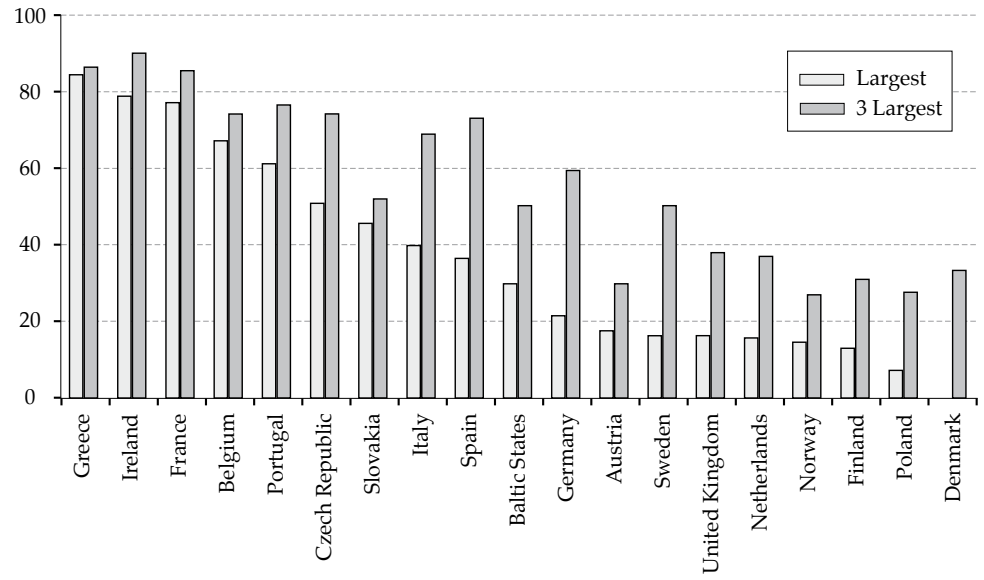
EU Reform Directive

In February 1997 the EU Directive 6/92/EC came into force, setting out general rules – in the form of minimum requirements rather than an imposed model – which member states were to incorporate into domestic legislation by certain dates (2001 by the latest). Most member states transposed the Directive's requirements into domestic law as scheduled, with Italy and France (which in 2004 remains dominated by state monopoly EDF and has opened only 34% of its market to competition) being the notable exceptions. Legal action by the European Commission against the latter has been launched. By contrast, England and Wales, Norway and Sweden were all early-adopters, having begun their reform processes long before the Directive was issued, and having shaped the Directive's form. Germany made later but significant moves towards liberalisation with 1998 legislation enabling competition at all levels of its electricity sector, but this has been seen to favour the expansion strategies of the sector's dominant companies.[7]

New generation in member states was to be subject to objective, transparent and non-discriminatory criteria, with either each state determining and tendering the rights to additional capacity, or simply authorising investments that met pre-determined criteria. Electricity retailing was to be progressively opened up to competitive supply, allowing time for other market reforms. Electricity regulators were to be set up independent of industry and everyday political control. While formal electricity markets were not mandated, three models were offered to facilitate electricity trading across transmission networks. The single-buyer model provided for monopsony purchasing of wholesale electricity from competing generators, the negotiated third-party access model allowed generators and purchasers to negotiate terms of supplies and network access, and the regulated third-party access model provided for the regulator to impose non-discriminatory tariffs for transmission and distribution access. Most large to mid-sized European Union members opted for the regulated third-party access model and authorisations for new generation, with the notable exception being Germany (which opted for negotiated third-party access, with a single-buyer at the local level).

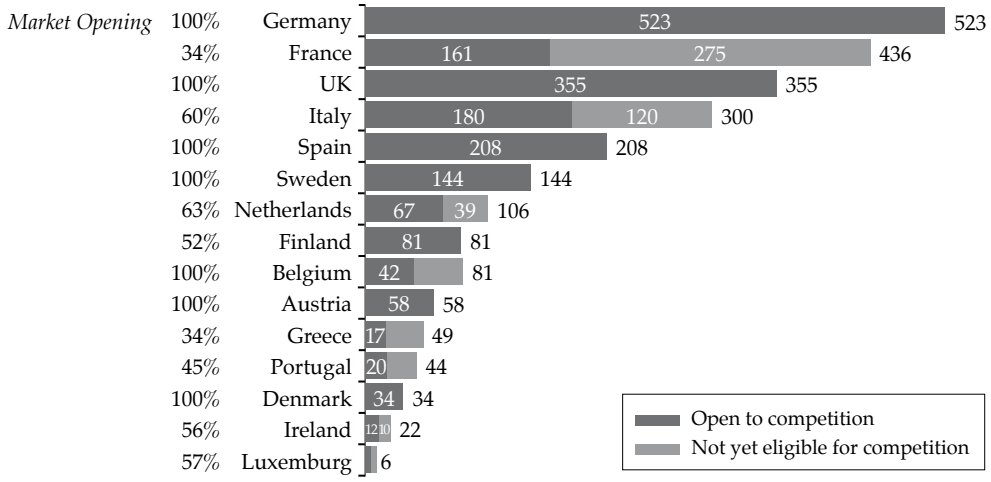
[7] See the chapter by Mez in Glachant and Finon (2003).

FIGURE 4.3 **European Generation Remains Mostly Concentrated (%)**



Source: O'Donnell (2004).

FIGURE 4.4 **European Markets Open to Competition (TWh, 2003)**



Source: O'Donnell (2004).

Further Reform

In June 2003 the European Union passed a new Directive (2003/54/EC) and Regulation (12/28/2003) effective July 2004, revising and expanding the earlier Directive. Transmission and generation was to be unbundled, with all non-residential customers to be available to competing suppliers by July 2004 and all customers by July 2007. Open access to transmission and distribution systems was to be mandatory, and at published rather than negotiated tariffs. While a single internal European electricity market remains the EU's goal, progress has been achieved at widely varying rates, and constraints in inter-state transmission interconnections mean that it is not yet feasible. Instead five autonomous subsystems have emerged, in Ireland, the United Kingdom, the Iberian Peninsula, Greece, and Scandinavia.

Potential regional electricity markets currently exist, or are expected to evolve by around 2008, in Ireland, the United Kingdom, the Iberian Peninsula, Italy, Scandinavia, the Baltic, and West, East and South Europe. The early-moving European reformers led the way in international terms, yet the balance of Europe, notably including France, must be regarded as relatively slow to open their electricity industries to internal and external competitive forces.