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Sustainability Vs Profitable Dependable Supply:
A Case Study of Institutional Constraints on the Adoption of New Sustainable Technology

A thesis

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Acknowledgments

While I was working on my thesis, Isaac Poole, a high school student I know, posted this picture he had drawn on his Facebook feed. He graciously permitted me to use it in my thesis.

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Abstract

This thesis examines policy tensions arising from the emergence of sustainable technologies and the institutional barriers to their adoption. Its starting point is an analysis of conflict over electricity pricing between Wellington City Council and Wellington Electricity, sparked by Wellington City Council's proposal to replace all existing street lighting with Light Emitting Diode (LED) technology. The thesis analyses key policy documents informing the position of Wellington City Council and Wellington Electricity, to identify the ideational and related institutional drivers of this conflict. The idea of holistic sustainability has been a key driver of policy at the local government level, and the idea of profitable dependable supply informs central government legislation that sets the terms of reference for Wellington Electricity. The idea of profitable dependable supply is expressed in institutions which constrain flexibility and limit policy options for addressing sustainable energy use. The intention to embrace change, shown in the concern for integration and future focus on the part of the Wellington City Council, stands in contrast to the focus and constraint of profitable dependable supply which restrains the capacity to engage with change to more efficient and effective technology. The limitations imposed by existing electricity generation and supply institutions create policy rigidity at a time when more responsive approaches to the challenges of sustainability are needed.

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1 Introduction

In 2014, the Wellington City Council developed a proposal to replace all existing street-lighting with Light Emitting Diode (LED) technology, which provided wide-ranging advantages over existing high pressure sodium lamp lighting, particularly in terms of sustainable energy use and longer term financial savings (Wellington City Council, 2014). The proposal was met with a negative response from the line distribution company, Wellington Electricity, which responded that if LED lighting was adopted on a wide-scale basis, it would alter electricity pricing structures so as to maintain existing income levels (Radio New Zealand National, 2015, 7 April). This effectively reduced Wellington City Council's capacity to adopt energy saving technologies and restrained its pursuit of more sustainable energy use initiatives. This thesis examines this case as an exemplary instance of policy drivers that constrain initiatives for sustainability.

The thesis focuses on the ideational frameworks and related institutional settings, and the impact of these as constraining factors on both the Wellington City Council and Wellington Electricity when addressing opportunities provided by technological change to pursue sustainability initiatives (Goldstein, 1993; John, 2012; Wellington City Council, 2015). This case provides a basis for examining the implications of technological developments that provide for more sustainable forms of energy use, the institutional barriers to the adoption of these technologies, and the implications for change in those institutions (Thelen, 2004). Further, this case presents us with an example of the way policy settings, and the ideas that inform them, can lead to inflexibility in addressing change in such circumstances. Through an examination of key policy documents relating to, and other accounts of, this case, this thesis provides an examination of the way competing ideas and institutional structures influence the capacity of local government to adopt change in response to opportunities for sustainability in electricity use.

1.1 Significance

The attempt to introduce more sustainable technology in the form of LED street lighting, and the barriers to achieving that, can be taken to reflect competing ideational and institutional foundations (Hay, 2010; 2011; John, 2012; Schmidt, 2008). That is, the Wellington City Council sustainability initiatives challenged existing institutions and their ideational foundations. Through examination of this process in the New Zealand context, this thesis explores the consequences for local government of competing ideational foundations for policy, in relation to electricity generation and supply, with a specific focus on enacting sustainability. This has potential to illuminate wider questions around barriers to the adoption of sustainability initiatives in an environment where there are increasing pressures to reduce energy use. The proposed changes would have promoted outcomes that developed capacity to operate in a more sustainable manner, but were thwarted by existing institutional arrangements.

The Wellington case provides an opportunity to examine the manner in which ideas and institutions impact policy outcomes to hinder change (Goldstein, 1993; Stone, 1989). While this case focuses on Wellington, the outcome is applicable to other New Zealand territorial local authorities facing similar opportunities for energy use reduction and wider issues of sustainability. The street lighting issue is also important for Transit New Zealand, which oversees national highways. The constraints imposed on sustainability initiatives in Wellington City can be expected to be evident in other cities and districts where electricity generation and supply institutions discourage the adoption of new technologies. This case also has lessons for wider situations where there are barriers to the uptake of emerging sustainability technologies, both nationally and internationally. It has potential to illustrate how institutional barriers to change can arise from organisations operating within existing institutional arrangements without additional political engagement. That is, it has potential to show how change is instituted when the barrier to change does not arise from a political response to a proposal, but from the institutional setting itself.

This case provides an opportunity to trace how a narrow institutional focus on maintaining profitability and dependable supply, without regard for wider questions of efficiency in energy use and sustainability, can block the adoption of greener technologies. While such a focus may not *prevent* change, in this case it can be seen to impede the process.

1.2 Approach to Research

In examining the case of Wellington City Council's proposal to adopt lighting technology which would reduce energy demands, and the barriers to the successful implementation of this initiative, a comprehensive literature review of primary and secondary documents was carried out. The primary documents used were *Street lighting in Wellington City: Making a case for adopting LED lighting* (Wellington City Council, 2014), *Our 10 year plan: Wellington city council's long-term plan 2015-25* (Vol. 1) (Wellington City Council, 2015), the *10 Year Asset Management Plan* for Wellington Electricity (Wellington Electricity, 2015), the Local Government Act 2002 and the Electricity Industry Act 2010. These documents were reviewed with the goal of, first, establishing the details of the case, and, second, understanding the public policy drivers that led to the reduced capacity to pursue new sustainability initiatives. The analysis identified the importance of the role of ideas that inform institutions and how institutions frame the issues. This process has a traceable effect on the outcomes possible and chosen in addressing a given issue (Goldstein, 1993; John, 2012). The case study approach has been adapted from Robert Yin's book *Case study research: design and methods* (Yin, 2003).

The study is also informed by a critical review of current sustainability literature which has been used to develop a framework against which to compare and contrast the rules of the formal and informal institutions that are represented in the conflict in the case. The determination of those rules and the resulting examination of the primary documents listed and relevant secondary sources (e.g. radio interviews) has been carried out using general inductive analysis, as outlined by David Thomas (2006), in order to determine primary categories of ideational foundations. The inductive method develops categories from repeated readings of the data,

looking for themes and links. These categories are derived from the data, rather than using the data to test an existing hypothesis. The general inductive approach to analysis may not be as strong in theory and model development as some other methods, but it is an effective way of deriving findings for specific questions (Thomas, 2006). Inductive analysis can be located in relation to grounded analysis, discourse analysis and phenomenology, as being closest to grounded analysis.

1.3 Chapter Outline

Figure 1 illustrates the conceptual outline of the thesis, and the way the focus on competing ideas of success and the resulting institutional settings are illustrated in this case. These competing ideas of sustainability and profitable dependable supply were identified as critical frameworks that subsequently informed the institutional conflict that was evident in the case. The impact of ideas as they inform institutions will be developed in regard to the case, with sustainability primarily informing local government, while profitable dependable supply is the dominant idea in the electricity sector. The institutions arising out of these ideas in each sector have framed the potential to adopt new technologies, i.e. how new technologies are seen and what options are available. The contrasting responses are demonstrated in the institutional tension between the electricity sector and local government in the case.

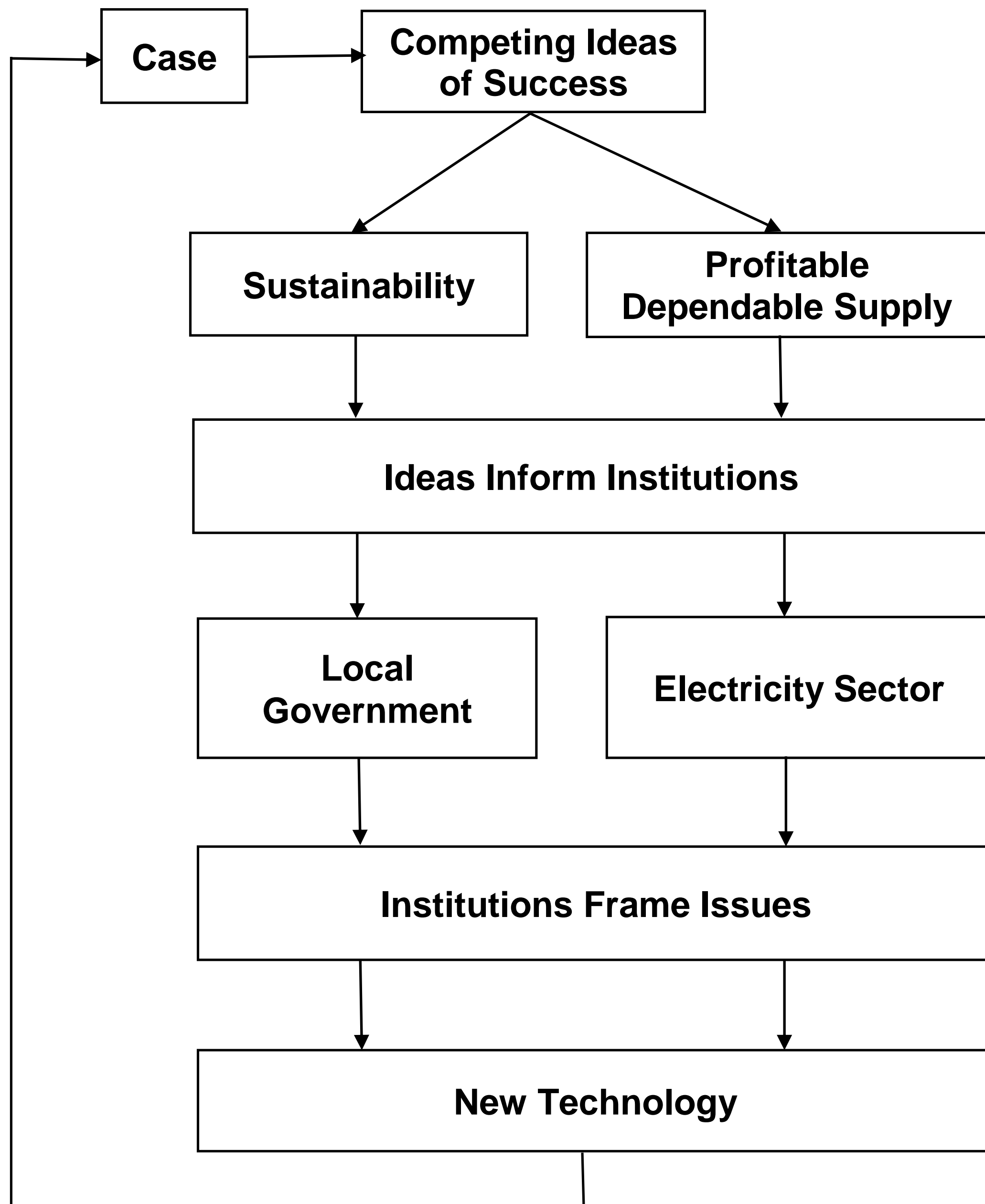

Figure 1: Conceptual Outline

In the following chapter, I will describe in greater detail the case that forms the centre-piece of this research. This exploration is then placed within an overview of the historical context of the operational positions of Wellington City Council and Wellington Electricity at the time of the case. The past shapes the present, and by referencing the past we are better able to understand how the present positions have developed, especially the ideational positions and resulting expectations of Wellington City Council and Wellington Electricity. Both local government and the electricity sector have experienced considerable change in the past 35 years. This reflects

directly upon the circumstances of the present conflict and the ideational foundations of the institutions, which frame the positions of Wellington City Council and Wellington Electricity.

In the third chapter I will examine the competing ideas of success reflected in this case. These contrasting ideational foundations have been categorized as sustainability and profitable dependable supply. While local government today seeks to engage with what might be termed strong sustainability concepts, the electricity sector could be deemed to have pursued a weak or exclusionary sustainability approach (Connelly, Smith, Benson, & Saunders, 2012). The problem with referring to a policy approach as sustainable is that it is a highly contested term (Lafferty, 1998). It is therefore necessary to examine the concept in detail to determine what it means, and explain how it is used in this study, in the context of the ideas and institutions that frame the positions of the conflicting parties in this case. The Wellington City Council can be seen as attempting to move towards more sustainable outcomes where successful growth is seen as encompassing a greater integration of positive economic, environmental and social outcomes (Margolin, 1998). The electricity sector is today driven by the idea of profitable dependable supply. In large part, this reflects the assumption that economic growth is an adequate indicator of success by itself (Dryzek, 2005). This idea is uniformly enacted across the institutions of the electricity sector and has been significantly embraced in changes to local government legislation.

The fourth chapter seeks to explain why the attempt to adopt more sustainable technologies in this case was not successful. It uses a conceptual framework that seeks to account for the place of ideas in the formation of policy institutions, how they impact on change, and how this might affect the approaches to legislation and policies in this case (Goldstein, 1993; Hay, 2010; 2011; Schmidt, 2008).

The final chapter draws these elements together, examining their connections and outcomes, the conclusions that have been developed and the manner in which these conclusions were developed, and their

significance going forward. I address the strengths and weaknesses of this study and areas for future research.

2 The Wellington City Council LED Street Lighting Proposal

As stated in the previous chapter, the starting point for this research was the Wellington City Council proposal to change to the new LED lighting technology for street lighting throughout the region (Wellington City Council, 2014). This would have been both more effective and efficient than the existing high pressure sodium lamps. This move was constrained, however, by a change of price structure by the line company in order to maintain its income levels. The case was of added interest because a number of other councils and Transit New Zealand were waiting on the outcome to determine how introducing similar changes was likely to play out for them (Radio New Zealand National, 2015, 7 April). On the surface, this is a simple market issue, easily resolved in an electricity retail market with multiple competitors. If Wellington City Council did not like the price, market rationality would suggest it move to another supplier. This is the first thread in an unravelling jersey. Wellington Electricity, which is setting the electricity price, is not the retailer, but the distributor. Yet it is dictating the price to both the consumer and the retailer, Contact Energy. Following this thread leads to the poorly woven garment of the electricity sector as it currently operates and the multiple weavers whose efforts have produced it.

Examining the history of both parties is important for a better understanding of the underlying causes of the pricing conflict and how it constrains the adoption of a more sustainable technology, i.e. LED street lighting. This examination seeks to show that the idea of sustainability and the devolvement of greater authority to local government was part of the Local Government Act 2002, and how this informed the perspective of Wellington City Council in developing its long term plan. The retrenchment of these key elements through later amendments to the Act is explored as a contributor to the constraint in adopting this more sustainable technology. Concurrently, the extreme freedoms presented to the electricity sector in the 1990s, the regulations required by sector failures, and the present market power provide an important perspective

on the policy decisions of Wellington Electricity, and how they in turn also exert constraint on adopting the new technology. The ideational foundations of the present institutions on both sides are clarified through the decisions that have been taken prior to this conflict.

2.1 Wellington Case

In 2012, Wellington City Council published its long term plan (Wellington City Council, 2012). This ten year plan is required by legislation, in order to provide opportunity for community comment and consultation during development of the plan, and to demonstrate the council's planning capabilities and intentions (Local Government Act 2002). This plan was developed around the four 'wellbeings' of the Local Government Act 2002: social, economic, environmental and cultural. The plan outlined four 'outcomes' and three 'priorities' for the city (p. 6).

Wellington City Council Long Term Plan 2012-22	
Outcomes	Priorities
• A connected city • An eco-city • A people centred city • A dynamic central city	• An inclusive place where talent wants to live • Resilient city • A well managed city

Table 1: Wellington City outcomes and priorities, 2012.

The issue of street lighting was not mentioned in this document. The high pressure sodium lamps in use at the time were effectively meeting their performance targets of, "facilitating safe movement, discouraging illegal acts and contributing to the amenity of an area through increased aesthetic appeal" (Wellington City Council, 2014, p. 3) and as such, there was no street lighting issue to be addressed. The long term plan, however, had a clear focus on engaging with technological change in a sustainable manner. The plan identified Wellington as the capital of New Zealand, and New Zealand as a country which makes a point of its 'green' status. Further, the innovative use of technology was considered a key element in the plan for developing a well-managed city. The long term

plan thus sets out the Council's intention to review its work programme on an annual basis in order to identify areas where changes are needed. These changes were published in subsequent annual plans and these included references to the rapidly developing LED technology that had new and enhanced capacity to address issues of street lighting that did not exist prior to their development (Wellington City Council, 2014, 2015).

The documents directed attention to a number of advantages the new LED street lighting had over the existing high pressure sodium lighting (Wellington City Council, 2014). The first was the significantly reduced energy consumption. This alone was important enough to create a valid reason for considering change. Manufacturing of semi-conductor based LEDs also used fewer rare elements, and operating them produced fewer toxic side-effects, than high pressure sodium lamps (Schubert & Kim, 2005). Maintenance costs were dramatically reduced due to much longer life times, light spill was reduced due to the ability to focus the output, and the lack of ultra-violet output meant insects were not attracted to the lights (Wellington City Council, 2014). They represented, therefore, new technology that was both cheaper and more effective than existing high pressure sodium lighting.

Particular interest, however, was focused on the management aspect of LED lighting (Wellington City Council, 2014). The lack of delay in producing light, combined with low power demands and longevity, meant that unlike current lighting, there was no issue with repeatedly and rapidly changing lighting states. This meant that electronic lighting management systems could dynamically adjust lighting to meet lighting demands. The electronic management also enabled self-reporting of failed lights or other lighting issues, rather than depending on public reporting or maintenance patrols. These abilities presented opportunities for light management that were not previously available and that have yet to be fully explored.

Recently, concerns have been expressed about the negative impact of excessive blue-light LEDs, including cancerous responses in test cases, that make maximum light temperatures of 3000K recommended (Kraus,

2016). These temperatures are exceeded by some existing LED street lighting installed internationally. There are also significant environmental impacts associated with the brighter LED lighting, such as those on sleep patterns, the behaviour and lifecycles of flora and fauna, and other light-spill effects, which require appropriate shielding and reduction to minimum feasible lighting (Jägerbrand, 2015). These technical issues are important but not significant as they present no unusual challenge in the manufacture and installation of LED street lights, and effective minimisation of lighting is much more easily achieved than with existing lighting. These issues, however, increase the projected cost, although still significantly lower than that of existing lighting solutions, which may lead to a further issue of rebound effects, i.e. that cheaper lighting may result in increasing the amount of lighting, thus also reducing the projected savings (Jägerbrand, 2015).

With no funds allocated towards street lighting in the long term plan, beyond those currently required for maintenance and energy costs, initial replacement costs presented a significant barrier to adoption of the LED street lights. However, the considerable savings on energy usage proposed an immediate annual savings of potentially $1,500,000 on electricity costs, and these savings would have covered the replacement costs (Wellington City Council, 2014). This proposal looked in every way to be of significant benefit to the Wellington region and extremely feasible for Wellington City Council.

The potential to realise these savings was thwarted, however, when Wellington Electricity stated that it would change its pricing structure in such a way as to ensure it would retain existing revenue streams. Distribution line companies in New Zealand are de facto regional monopolies. Although not an exclusive legal franchise, the entry cost is so high as to preclude any other parties entering the market in its existing form. Wellington Electricity, as the distribution lines company for the Wellington region, has effective control of its component of electricity pricing, as long as they do not exceed a maximum charge set by the Commerce Commission (Commerce Commission, 2015, 17 August).

Contact Energy is the retailer for Wellington City Council, with Wellington Electricity distribution charges making up just over 2/3 of the total cost (68.2%) (Wellington City Council, 2014). These costs are passed directly to the consumer by the retailer. Fixed charges composed 17% of the distribution component, with variable line charges making up the remaining 83%. A 75% saving in power consumption (by no means impossible, but considered by the proposal to be the maximum end of the scale) would reduce the variable charges income to the same as the current fixed charges, a loss of 66% of revenue from street lighting for the distribution company (Wellington City Council, 2014).

In order to continue operating, Wellington Electricity needed to remain a profitable company. Regulatory impacts, combined with changing consumer behavior, already had Wellington Electricity forecasting a $43 million loss in expected revenue over the next 5 years in their 10 Year Asset Management Plan (Wellington Electricity, 2015). This forecasted loss was based on the combined effect of a year on year reduction of 1.63% per annum since 2010 in electricity consumption in the Wellington region and the current Commerce Commission's Default Price-quality Path (DPP), which sets the maximum price that can be charged. The DPP is based on the Commerce Commission's forecast growth of electricity consumption in the region and its estimation of the operating and capital expenditure for Wellington Electricity over the period. The resulting DPP published in November 2014 required Wellington Electricity to reduce its prices by an average of 10% from 1 April 2015. Prices may then be increased by the Consumer Price Index (CPI) until the next DPP reset, which is scheduled for 2020. While a reduction was expected, the size of the reduction was not (Wellington Electricity, 2015). Greg Skelton, CEO of Wellington Electricity, in an interview with Radio New Zealand, referred to technological changes which greatly increased efficiency of electricity use as, "…eating [our] lunch off the table" (Radio New Zealand National, 2015, 7 April). Wellington Electricity answers to its Hong Kong based parent company in justifying its operation (Wellington Electricity, 2014). In such a position, and with the capacity to do so, it is not surprising that the response of Wellington Electricity to the LED street lighting proposal was

to declare the intention to alter pricing structures so as to maintain income levels (Radio New Zealand National, 2015, 7 April). This would be done by removing the variable line charge and making fixed charges equivalent to existing income levels. The cost of providing the infrastructure that connected the electricity to the bulb, they argued, was the same regardless of the bulb.

In the updated Wellington City Council long-term plan produced last year, the adoption of LED street lighting is still being pursued, with a total budget of $200,000 over the ten years, 1.3% of the potential funding envisioned in the original proposal (Wellington City Council, 2015).

2.2 The Local Government Policy Context

Wellington City Council's actions developed out of the new environment for local government after changes to local government legislation in 2002. Until 2002, government in New Zealand was centralized to a remarkable degree. While there were many local government authorities established, their activities were prescribed to the point where, in one extreme example, special parliamentary authority was necessary to provide an illuminated town clock (Department of Internal Affairs, 2012, May). This centralized control of local government was fundamentally altered by the Local Government Act 2002, and the scope of local government concern given a greater breadth and flexibility. As stated above, the new legislation was built around four 'wellbeings': social, economic, environmental and cultural (Local Government Act 2002, s. 3(D)). These wellbeings were a clear attempt to engage with issues of sustainability as relating to governance at the local level (Cheyne, 2008). However, since 2010, amendments to the legislation have consistently retrenched towards the greater centralization, narrower focus and limited ability to address local concerns that existed in the past, as will be addressed in Section 2.2.1.

Following on from the 1989 centrally mandated amalgamation of local authorities, which reduced them from over 700, to 86 (New Zealand Parliament, 2014), these new authorities were given new responsibilities

(Local Government Act 2002). The Act was informed by the concept of sustainable development, and the idea that successful growth encompasses more than economic concerns alone. The councils were given scope to address the integrated concerns of cultural, social, environmental and economic issues of the region. Cheyne (2008) notes that given this emphasis on the local authority's role in promoting sustainable development, and its broad power to promote wellbeing, there were considerable concerns about how this was to be achieved. Technically local government was not actually given a power of general competence, although it did have de facto power (Cheyne, 2008). There was also a lack of alignment between central and local government planning processes and priorities which often placed central and local government at odds in engaging with change (Brady, 2002; Shand, Cheyne, & Horsley, 2007). It was not always clear where responsibility lay, and this sometimes led to inaction or intervention on the part of central government that was extremely frustrating for local government (Brady, 2002; Reid, 2010; Salter, Laing, & Hill, 2016, July).

No new funding mechanisms were included beyond the traditional financial arrangement of land tax or 'rates', and this increasingly appeared to be inadequate to fund the necessary expenditure on infrastructure and services required under the four ‘wellbeings’ and in order to remain competitive with other regions (Department of Internal Affairs, 2012, May). The common response to this was a significant and continuous rise in rates and levels of debt amongst the local authorities. This continuous rise had combined with conflict over concepts of equity between residential, commercial, industrial and rural rate payers on the place of fiscal equivalence (equality between an individual’s contributions and the benefits they derive) and redistributional equity (differing ability to pay), to make rates a hotly contested issue in local governance (Cooper, 2012).

Thus while the Act took a considerable step towards a more flexible role for local government in terms of scope, there remained a significant principal-agent issue between central and local government, with central government retaining the final authority for decision making, while local

government was responsible for carrying out the decisions (Cheyne, 2008). The bounded nature of the authority of local government to develop both funding mechanisms and infrastructure changes created considerable challenges in meeting the expectations of their role.

The 2008 general election brought a change of governing majority and a concomitant change of philosophy. While the rhetoric of sustainability continued, it was functionally reduced to an issue of economic efficiency (Salter et al., 2016, July). This perspective was further demonstrated through developments such as the Government's meeting its responsibilities in the Emissions Trading Scheme through buying and on-selling shares rather than decreasing emissions (Simmons & Young, 2016), and the contentious proposal to amend the Resource Management Act 1991 in order to promote economic outcomes (Banas, 2014, 3 October). There is no legislated requirement that government policy within or across sectors be developed on the basis of principles of sustainability (Bührs, 2009). The focus on broader wellbeing was considered to be both unnecessary and beyond the scope of local government (New Zealand Parliament, 2010, 4 May). The traditional responsibilities of "pests, roads and rubbish" were what they should be concentrating on (Department of Internal Affairs, 2012). The devolved authorities were also reduced, moving back towards the responsibility-without-authority, centrally governed position of the past, as councils were informed that certain areas lay outside of their authority, although central government apparently did not consider them of national concern (Jackson, 2011). While the de facto power of general competence remained, it was increasingly constrained, with substantial amendments to the intention of the Act (Local Government Act 2002).

2.2.1 Amendments to Local Government Act 2002 from 2008-2015

The amendments to the Act since 2008 have been largely reactionary in nature, addressing perceived issues with little consultation or integration into a coherent overall plan, particularly in conjunction with other Acts (Salter et al., 2016, July). Over 2008-2009 there were a number of minor amendments, primarily of a housekeeping nature, reflecting changes in

other pieces of legislation, removing legal loopholes, and making minor wording changes that did not affect the intent of the document. In 2010, however, there was the first of the substantial changes that affected both wording and intent. A clause introduced in 2008 that required councils to create plans for affordable housing was repealed, an interesting decision in light of the current politics around affordable housing, and the passing of the Electricity Industry Act 2010 had a minor knock-on effect. These were overshadowed by the Local Government Act 2002 Amendment Act 2010. This legislation began the retrenchment of the flexibility for local government that the 2002 Act had introduced, through an increase in beaurocratic oversight and the promotion of economic efficiency at the expense of local democracy. These changes were achieved by increased prescription of local government activities through the inclusion of defined core services, performance standards, auditing and increased reporting (Local Government Act 2002 Amendment Act 2010). The requirement for public inspection of agreements with private entities was repealed and water contract periods increased. A levy on local government by central government for covering the costs of ruling on performance standards was also introduced, which is deeply ironic considering that reducing local government spending was supposed to be a key driver of the changes (New Zealand Parliament, 2010, 4 May).

Those changes were expanded upon by the Local Government Act 2002 Amendment Act 2012, with particular attention to removing all references to 'wellbeings' and reframing governance as an issue of economic efficiency and 'interests'. Further reporting requirements were added, in addition to those added in 2010. As well as the deliberate removal of all reference to wellbeing, the capacity of the Minister to directly intervene in local government was dramatically increased (Local Government Act 2002 Amendment Act 2012).

Aside from the (Alcohol Reform) Amendment Act 2012, which established authority for local government to create by-laws relating to alcohol sale, consumption and policing, the rest of the amendments have been primarily

aimed at incorporating issues that have arisen with the merger of the Auckland councils, and other issues pertaining to our largest city.

According to then Minister for Local Government, the Hon. Rodney Hide, the rapid growth in local area rates and debt levels made these changes necessary (New Zealand Parliament, 2010, 4 May), a view not supported by Treasury (Department of Internal Affairs, 2012, May). The collective effect of these amendments has been to limit local decision-making and public participation, and to emphasize "efficient" outcomes rather than quality ones with wider or longer term benefits (Salter et al., 2016, July). The focus has been on local government getting the ‘right’ answer, as determined by the Minister (rather than the community). Wellington City Council’s 2015 long term plan, developed through community consultation, and ideologically based on the four ‘wellbeings’, finds itself out of step with current political will at central government level.

2.3 Electricity Sector Reforms

Local governments’ brief foray into greater democracy, integration and flexibility stands in stark contrast to the laissez-faire approach taken by central government towards the electricity sector over the past 35 years. Regulation has only been reluctantly applied to the sector, which remains remarkably self-regulated even today, despite considerable public dissatisfaction with continuously rising prices (Bertram, 2013). A brief history of the electricity sector in New Zealand and an outline of its reorganisation follows, with a view towards introducing the institutional context of the position of Wellington Electricity in 2014.

New Zealand began to electrify in the late 19th century. This came in the form of private enterprise and local bodies constructing services to supply the local market. Following World War 1, central government undertook development of a national infrastructure for power generation and distribution. Generation was primarily hydroelectric plants on major rivers. The local markets were served by Electrical Supply Authorities (ESAs), local government distribution and retail companies with territorial monopolies (Bertram, 2006). The components of electricity supply,

generation, transmission, distribution, and retail supply, were combined in a State owned and operated vertically integrated monopoly (Shen & Yang, 2012). Supply was entirely in public hands, with prices set to recover costs on a non-profit basis, with price discrimination in favour of domestic consumers (Bertram, 2013). This model remained unchanged until the 1980s.

During the late 1970s and early 1980s, the electricity sector had come under increasing criticism for what was deemed an excessive margin of excess capacity (Bertram, 2006). The determinant of what is required in electricity generation and supply infrastructure is the peak load. This is based on an estimation of how much of the total possible consumption might be required at any one time. Allowance for this potential peak load, as opposed to measured peak loads, is what is referred to as excess capacity. Estimates of growth in consumption and potential maximum peak load in turn determined funding and development. It was argued that the electricity sector was unnecessarily over-estimating this load in order to justify increased charges and new development. It is worth noting that the rate of price increase was quite small by the standards that pertain today (Shen & Yang, 2012). In the context of the economic liberalisation and public sector reforms of the mid-1980s, the electricity sector was targeted for restructuring. The wider changes were informed by an ideology that the market was better at allocating resources than the State, and the State should therefore have a reduced role in the economy (McAuley, 2003, March). From this perspective, the key to economic and social development was to enhance individual and corporate freedom. Within this context, the State Owned Enterprises (SOE) Act 1986 changed the primary objective of the electricity sector from providing a social service to making a profit (Bertram, 2013). The Act was justified on the basis of making the public sector more profitable (Laking, 2012). Profit was not a primary motivation of the public sector, and most organisations had minimal or even negative profits. In keeping with the neo-liberal ideology, it was believed that existing state sector organisations would become more efficient and profitable if they were set up as separate legal entities. While profit was not the sole objective, social benefits were

required to be specifically identified and the costs involved were reimbursed (Laking, 2012). Simultaneously, the Commerce Act 1986 established a single body, the Commerce Commission, to oversee all market competition. It did not, however, make provisions for addressing markets where competition was weak or absent, and there was no law prohibiting the taking of excessive profits (Bertram, 2013). If the Commerce Commission judged regulation was warranted in a particular market, it still required a ministerial decision (Commerce Act 1986).

The first round of restructuring in the electricity sector consisted of the corporatisation of the New Zealand Electricity Department, responsible for the national grid and generators, as the Electricity Corporation of New Zealand (ECNZ). The mandate to achieve a profit came with no limitations on how this was to be achieved. The Electricity Task Force was established late 1987 to advise on new industry structure and regulation. The last of these recommendations was to have no price regulation and adopt a light-handed approach to regulation (Energy & Resources Branch MBIE, 2015, August), meaning that if the sector policed itself, central government would not interfere (Bertram, 2006). However, no effective policing agency was established to determine how the sector was managing this issue, and the threat of regulation was accordingly weak (Bertram, 2013). Perhaps unsurprisingly, this led to a period of inadequate investment in maintenance and development, as older facilities were retired without new development to increase capacity, despite increasing consumption. In conjunction with reduced expenditure on infrastructure, the method of asset valuation was changed from historic cost to Optimal Deprival Value (ODV), or replacement cost, doubling the book value of the industry, with no actual change to infrastructure, and electricity charges were substantially increased based on the new valuations. Following an inquiry in 2002, the Commerce Commission validated this practice (Bertram, 2006). These behaviours led to companies achieving profit rates of 30-40%, and in one case 90%. Disclosure of these profit rates brought no reaction from the government (Bertram, 2006).

Changes to the sector regulations to date have been primarily reactive, motivated by sector failures (McAuley, 2003, March). The power cuts of 1992[1] exposed issues of capacity and possible manipulation of the market. The five-week blackout of the Auckland central business district in 1998, the 2006 blackout[2], as well as the failure of the High Voltage Direct Current Pole 1 cable across the Cook Strait that same year, were all maintenance failures in which a failure to maintain and upgrade infrastructure played a significant part (Bertram, 2013; McAuley, 2003, March). Combined with increasingly vocal complaints about the behaviour of the sector, especially towards residential consumers, regulatory changes were made in 1994, 1999, 2001 and 2012 (Bertram, 2013).

From 1994, the national grid was incorporated as a separate SOE under the name Transpower, as it was not deemed possible to create a competitive market for it. ECNZ had some of its assets transferred to Contact Energy to create a supposed competitor (Bertram, 2013). In 1999, lines companies were required to have strict ownership separation from generation and retailing (Shen & Yang, 2012). Contact Energy was privatised and ECNZ was split into three new state owned enterprises and a small group of independent private companies (Bertram, 2013). In 2001, vertical integration between generation and retail was permitted. Retail companies with insufficient generational capacity quickly exited the market (Bertram, 2013). Contact Energy, Trustpower, Meridian Energy, Genesis Energy and Mighty River Power now control 95% of generation and 96%

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[1] Drought in the South Island, combined with already low lake levels, resulted in a call for voluntary savings of 10% in electricity consumption from June – July 1992. However, when it became known that the low lake levels were due to the decision by ECNZ to lower the lakes prior to the beginning of the drought, ECNZ was accused of manufacturing the shortage to increase prices, and subsequently being caught out by the drought (Bertram, G. (2006). Restructuring the New Zealand electricity sector, 1984-2005. In F. P. Sioshansi & W. Pfaffenberger (Eds.), *Electricity market reform: An international perspective* (pp. 203-234). Amsterdam, Netherlands: Elsevier. , Energy & Resources Branch MBIE. (2015, August). *Chronology of New Zealand electricity reform*. Wellington, New Zealand: Ministry of Business Innovation and Employment, McAuley, I. (2003, March). *The restructuring of the electricity sector in New Zealand, 1986-2002: Wither energy sustainability?* University of Auckland, Auckland, New Zealand.).

[2] On 12 June 2006, a component failure at Transpower's Otahuhu substation resulted in loss of power from 8:30am for six to nine hours for various parts of Auckland. Later investigation revealed maintenance shortcomings as contributing to the failure (Energy & Resources Branch MBIE. (2015, August). *Chronology of New Zealand electricity reform*. Wellington, New Zealand: Ministry of Business Innovation and Employment.).

of retail (Shen & Yang, 2012). Partial privatisation of the remaining SOEs began in 2012 and was completed in 2014.

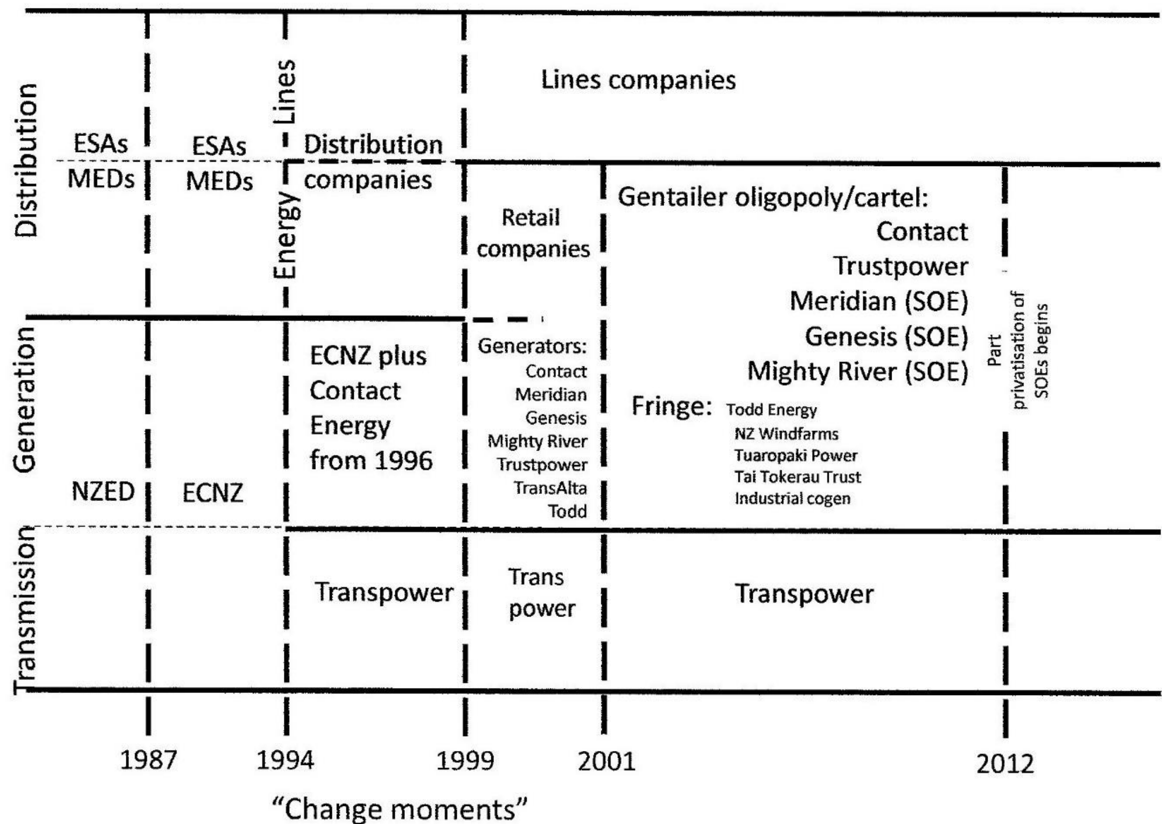

Figure 2: Evolving industry structure (Bertram, 2013, p. 656).[3]

It is clear that these companies exercise market power. High entry costs preclude new entries to the sector. In 2003, following numerous complaints of cartel or monopolistic behaviour and an inability to achieve voluntary coordination of the conflicting interests, the Government established the Electricity Commission to oversee the new statutory based regulatory model. Its principal purpose was to ensure that electricity production and delivery was efficient, fair, reliable, and environmentally sustainable to all customers, and to promote and facilitate the efficient use of electricity (Electricity Act 1992, s. 172(N)). The regulation of pricing was confined to the national transmission grid. The commission had what is termed a 'governance' focused agenda. This term was part of a developing differentiation in the 1990s between government and

[3] "Gentailers": The term 'gentailer' was coined to refer to companies which operate as both electricity generators and retailers.

governance (Jordan, Wurzel, & Zito, 2005). Governance is primarily concerned with what is being done, rather than how it is being done. The focus of the commission was on the direction in which developments were proceeding, rather than managing the details of organising those developments. This focus generated considerable conflict between existing electricity companies and the Electricity Commissioner (Bertram, 2013). The Commission proved to be highly political. The electricity sector appealed to the Minister, and the Commissioner was replaced (NZPA, 2006, 13 September). The effectiveness of the Commission in achieving its responsibilities is uncertain (Office of the Auditor-General, 2009, June), and Geoff Bertram (2013) attributes this to political interference. The Electricity Commission was replaced in 2010 by the Electricity Authority, but without changing those existing elements of political control and favourable bias towards the electricity sector. Rather, it is felt by some to have moved further towards a more generator favourable position, with increased political control, and even less ability to direct the sector than previously (Bertram, 2013).

What is clear from this very brief overview of the changes to the electricity sector in the past 35 years is the early exclusive focus on profitability which led to profit-taking behaviours and supply failures. These failures caused this focus on profitability to be joined by a concern for dependable supply. Review of the sector legislation and policies suggests this theme of profitable dependable supply, a product of the focus on economic growth as the indicator of success which will be examined later, has become the dominant idea throughout sector policy. The failure of some sectors of the industry to adequately manage resources or invest in maintenance and upgrading of services so as to ensure security of supply has led to an increase in regulation. The added costs of both meeting regulatory requirements and increased investment in services impacts directly on profit margins. The large profits available in the short term by changing accounting practices have also already been taken. Consequently, there is corresponding pressure on boards due to the expectations of historic profits, but without the same capacity for profit-taking. A generation of shareholder expectations of astonishing margins

of profit (let's not forget one entity achieving an annual profit of 90% in an established sector without any changes to generation or supply) looks over the shoulder of the sector's managers. It should be expected, then, that any further changes reducing those margins will be viewed in a strongly negative light by beneficiaries of electricity sector dividends, one of whom is the government (Bertram, 2013). Since the use of market power to constrain change is in no way prohibited within the electricity sector, it is therefore of no surprise that such behaviour is undertaken in order to preserve profitable operation.

2.3.1 Electricity Sector Policy Oversight

The focus of Wellington Electricity is to remain a profitable company, effectively achieving the sector's focus on profitable dependable supply. It has a de facto regional monopoly on distribution, allowing it to dictate price to the retailer. For the line companies, pricing policy has a very immediate, specific focus on the ongoing profitability of their company (Wellington Electricity, 2015). Examination of the formal institutions of the electricity sector make it clear that it is operating entirely within its mandate in its present behavior.

The Electricity Commission was set up in 2003 as a watch dog for the sector, but one on a very short chain, and its replacement by the Electricity Authority, as previously mentioned, was felt by some to be a move towards an even more generator-favourable regulator (Bertram, 2013). Wellington Electricity was within its authority to change its pricing in the indicated manner, and the Electricity Authority had no power to intervene in the matter (Radio New Zealand National, 2015, 22 April). The regulatory power lay with the Commerce Commission. Without power to mandate regulation, the Electricity Authority is limited to proposing and recommending changes to the industry (Electricity Authority, 2014). The regulatory power of the Electricity Authority is limited to the transmission grid pricing. It is currently consulting on the issue of distribution pricing that is one element of the conflict between opposing policies, but should that consultation lead to a recommendation for change, the Electricity Authority does not have the authority to make that change itself

("Electricity Industry Act 2010,"). While the policy focus for the Electricity Authority is slightly broader than that of the line companies, again it is a narrow focus on the effective performance of the sector, rather than upon the effects of the performance of the sector. It is a prescribed economic focus dictated by the Commerce Commission that makes little effort to include other concerns (Commerce Commission, 2015, 17 August). Any opinions the Electricity Authority may have on such matters may be put forward as recommendations, but it does not have the power to enact them.

The Commerce Commission's responsibilities towards the electricity sector are directed by the Electricity Act 1992 and the Electricity Industry Act 2010 (Commerce Commission, 2015, 17 August). The Electricity Act 1992 established the dramatic change in the industry environment. In 1997 the sections relating to price restraint were repealed (Electricity Act 1992, ss. 63-67), followed in 1998 by the Electricity Industry Reform Act, which moved industry requirements outside the Electricity Act 1992. In 2008, the Electricity Industry Reform Amendment Act was passed to amend the Electricity Industry Reform Act 1998 and the Electricity (Renewable Preference) Repeal Act was passed to amend the Electricity Act 1992, removing all explicit requirements to promote and pursue renewable energy solutions from the act. Finally, in 2010, a new act was passed to replace the Electricity Industry Reform Act 1998, the Electricity Industry Act 2010. This established, amongst other things, the parameters under which the new Electricity Authority would operate ("Electricity Industry Act 2010,", ss. 12-18). It continued the silence on pricing and preferred methods of generation.

2.4 Case Summary

The changes to local government legislation provided territorial local authorities with the opportunity to approach policy development in a way that was informed by a wider concern with sustainability. For some local governments, this involved an attempt to integrate economic, environmental and social concerns. This wider focus has since been constrained by central government to issues of economic efficiency, with

an increasing emphasis on evaluating performance according to indicators determined by the Minister rather than the community. Despite the emergence of these constraints from central government, in 2014 Wellington City Council developed an annual plan that involved a specific focus on sustainable outcomes, and maintained this perspective in its 2015-25 long term plan.

The electricity sector is experiencing a greater degree of regulation at present than there was upon the initial changes to the sector, after a period of self-governance produced profit-taking behavior and supply failures. The focus on economic efficiency is again a dominant theme, with profitable dependable supply being the sector's expression of this idea. While there is a greater degree of regulation, both the focus and power of the sector remain largely unchanged. There is therefore no challenge to Wellington Electricity's decisions about pricing structures.

These contrasting positions have combined to result in requiring the response by Wellington Electricity to act in a manner that constrains the proposal by Wellington City Council to incorporate new LED technology in pursuit of greater holistic sustainability.

3 Competing Ideas of Successful Outcomes

As explored in the previous chapter, both local government and the electricity sector have undergone considerable change in the past 35 years. However, while local government under the 2002 legislation was prompted to engage with sustainability concepts through the four 'wellbeings', the electricity sector has been actively reformed to subordinate environmental and social concerns to economic interests, as has been demonstrated in the preceding chapter. The problem with referring to Wellington City Council's long term plan as being informed by concepts of sustainability is that, like many ubiquitous terms, there have been many efforts to capture the meaning of the term to suit the application (Lafferty, 1998). It is therefore necessary to review different interpretations of the concept of sustainability and clarify what is meant by the term for this examination of the role of ideas and institutions in the pursuit of improved sustainability energy-use practices by Wellington City Council.

In the Wellington case, the social and environmental impacts of lighting were integrated in the economic benefits and costs of the lighting proposal (Wellington City Council, 2014). The general social benefits of street lighting were outlined, but since this is a case of what kind of lighting rather than whether to light, they were not specifically relevant, except as an acknowledgement that the economic issues involved in lighting were not restricted to the lights themselves. This broad concern for social, environmental and economic issues, distinguishing this as a sustainability policy, stands in contrast to the profitable dependable supply focus of the pricing policy proposal by Wellington Electricity on income streams, a much narrower and prescribed concern.

While concepts of sustainability have long existed in various forms, the rise of sustainable development as a guiding ethic for policy is attributed to the 1987 report of the Brundtland Commission (Dryzek, 2005; Lafferty, 1998). This concept was further expanded under Agenda 21 (United Nations, 1992) of the United Nations Conference on Environment and

Development at Rio de Janeiro, Brazil in June 1992. Its use is not defined in Agenda 21, despite occurring over 600 times, but what can be inferred by the use of 'sustainable' throughout the sections of the document is an integration of the different sections under this single concept. The concept of sustainability has moved from concerns over a national resource, to a broader concern for the regenerative capacity of nature, and finally to encompass nature, human wellbeing and society (Lafferty, 1998). Littig and Griessler (2005) build on this same theme, stating, “Furthermore, to take the notion of equity, regarding the pillars of sustainability, seriously, means to really integrate the ecological, the social and the economic dimensions. In this sense, progress in sustainability can only mean improvement in all the three dimensions” (p. 75). Social, economic, and environmental issues cannot be addressed independently if they are to be engaged in a sustainable manner.

The pursuit of sustainability involves the development of policies that endeavour to maintain environmental, economic and social standards through future generations. The passing of the Local Government Act 2002 was a demonstration of public support and expectation for such policy, political will, and a policy proposal, generating the appropriate conditions for creating a window of opportunity for change to engage with concepts of sustainability (Kingdon, 1995). These same conditions did not pertain to the electricity sector, in terms of concepts of sustainability, and the subsequent amendments to the Local Government Act 2002 demonstrated a change in political will for central government as well, closing that window of opportunity for change. That same window, however, has not been closed by Wellington City Council, as demonstrated in their lighting proposal and recent long-term plan. Local government in New Zealand is constrained by the powers granted by central government, and by established economic and social institutions, yet local government does not have a national-level policy framework within which to develop the required long-term plan (Bührs, 2009; Local Government Act 2002). Central government has given de facto authority of general competency to local government (Cheyne, 2008), but has also shown a willingness to step in and over-rule when it was not satisfied with

the decisions being made (Gorman & Watkins, 2010, 30 March). Additionally, the neo-liberal economic model for business has been hegemonic, and has contributed towards framing sustainability primarily as an economic outcome (Bührs, 2009; Dryzek, 2005). Attempts to introduce principles of sustainability into policy are therefore undermined by the absence of appropriate models of enactment[4], by conflict between acts of legislation and policies, and by conflict with existing social and economic institutions (Bührs, 2009).

Existing sustainability policies prompted growing concern over issues of policy integration in general (Bührs, 2009). Concern arose over issues of problem shifting, i.e. moving an issue to another area rather than resolving the issue, which raised awareness of the inconsistency, overlap, inefficiency and ineffectiveness of the array of environmental policies that had arisen over time. This problem illustrated the importance of environmental concerns being integrated into 'non-environmental' policy sectors, such as agriculture, transport and energy. Environmental issues were merely one strand of a challenge that has environmental, social and economic dimensions. Consequently, fragmented policy has increasingly been perceived as a hindrance to development and economic growth in all areas, not just environmental policy. All policy is fully integrated at operating level, perforce, in the actions taken and the effects of those actions (Yates, 1982). Regardless of whether this is taken into account at any level up to and including the enactment of a given policy, nonetheless the policy has to find a way to work with all existing policy, notwithstanding elements of conflict and contradiction with existing policy enactment. It would therefore seem sensible that some attention be paid to issues of integration during policy formation. This is often not the case, however, because policy is political. Ideologies, institutions and individuals play a

[4] There is some discussion over whether a better term to use for policy in action is 'implementation' or 'enactment'. It is argued that implementation carries with it the idea of top down, positivist policy conceptualisation. Enactment seeks to provide a more nuanced reflection of the interpretation, resistance and subversion of policy that occurs in practice (Ball, S. J., Maguire, M., & Braun, A. (2012). *How schools do policy: Policy enactment in secondary schools*. London, United Kingdom: Routledge, Thrupp, M., & Easter, A. (2013). *Research, analysis and insight into National Standards (RAINS) Project. Second report*. Hamilton, New Zealand: Waikato University).

dominant part in the formation of policy (John, 2012). There are significant challenges in bringing issues of integration into human thinking and action, and developing coherence and consistency in resulting policy, as it requires changes to ideas, the choice of means and the rules that govern the process (Bührs, 2009). The acknowledgement, during formulation of a specific policy, of the complexity of integrating external issues that may influence policy outcomes moves us towards concepts of sustainability, as defined as issues of integration of economic, environmental and social concerns that are not substitutable.

3.1 Defining Sustainability

Wellington City Council's lighting proposal has been defined as engaging with sustainability concepts due to its attempt to integrate issues of economic, environmental and social concern. William Lafferty's (1998) excellent article on the usefulness of 'sustainable development' as a normative concept acknowledges the difficulty of defining sustainability and sustainable development. The myriad of voices seeking to capture the definition to support their own position has resulted in a highly contested concept, having no fixed or agreed definition. The article acknowledges the contested nature of the concept and offers a clear rationale for why this very contest makes it relevant, as I will explain shortly. Stephen McKenzie (2004) likewise addresses the contested nature of any definition, noting that, "…the context in which the definition is applied is more important than its wording" (p. 5), as each context commonly treats other aspects of sustainability as tools to further the agenda of the current context. Lafferty (1998) notes that, at the time, the majority of books and articles on sustainable development ranged from sceptical to outright critical. Denying its attractiveness, however, doesn't affect its popularity or political influence. No political action can afford to ignore the idea. John Dryzek (2005) supports this position, noting that important concepts are always contested politically. Lafferty (1998, p. 266) gives the following justification for retaining the concept:

1. The concept of sustainable development is both more coherent and potentially more radical than both its political adherents and critics seem to be aware of;

2. The concept can be viewed as expressing essential normative standards for a global ethics of environment-and-development. As such it fulfils two important criteria for ethical legitimacy – consensualism and realism;
3. The more general normative standards of the concept have been translated into relatively specific and wide-ranging operational goals;
4. There exist political fora, institutions and procedures for realising these goals;
5. These political mechanisms are imperfect and incremental, but there is, at present, no more effective way to seek progress with respect to global environment-development problems.

He suggests that those who oppose the usefulness of the term on the basis of the multiple, sometimes contradictory, attempts to capture the meaning, are missing the point that it is this wide adoption that merits engaging with it. The continuing influence of ideas of sustainability nearly twenty years later is a significant endorsement of Lafferty's argument.

The report by the World Commission on Environment and Development (Brundtland, 1987) highlights that ecology and economy have become more interwoven at every level, from local to global. The concept of sustainable development implies limits imposed by the present state of technology and social organization and their effect on the biosphere. This is not a fixed state to be defined, but a continual process of change (Dryzek, 2005). The dispute about what sustainability means and how it might be pursued is not resolved. It is rather evolving, as the concept seeks to encompass a more complete integration of issues than was previously pursued. Issues that had been addressed in isolation or as competitors are increasingly being seen as linked. As the conversation develops, so too does the concept. For this reason, Dryzek (2005) argues that sustainable development is a discourse and McKenzie (2004) recommends seeing sustainability as a process. Douglas Farr (2008) and others (Birkeland, 2002; Jensen, Pedersen, & Svalgaard, 2009; Low, Gleeson, Green, & Radovic, 2005; Margolin, 1998; Moe, 2008) bring these concepts of sustainability into the design and development of human

environments, a significant concern of local government, as demonstrated in our case and others, regardless of central government mandates (Plester, 2016, 18 April). In addressing these integrated issues of development, the global environment, population, peace and security, and social justice within and across generations, the structure of political systems is increasingly being questioned. Incremental decision making, with its focus on not deviating too far from the status quo is not well positioned for addressing sustainable development (Ophuls & Boyan, 1998). However, as the real world of interlocked systems will not change, it is the institutions and their ideational foundations that must change (Brundtland, 1987). This viewpoint represents a significant challenge to the policy direction being pursued by central government in this case.

Various conceptualisations of sustainability have been classified into categories of 'strong' (explicitly recognising limits) and 'weak' (denying limits). James Connelly, Graham Smith, David Benson and Clare Saunders (2012) offer a clear differentiation between weak and strong sustainability. Weak sustainability applies a monetary value to differing types of capital and treats them as substitutable. Strong sustainability does not accept the substitutability of different forms of capital. Whether substitution is possible or not has significant implications for engagement with productivity, humanity and the environment. The attempt to itemise the forms of capital that can be encompassed by the concept of sustainability, however, results in an overwhelming variety of categories that complicates the development of a useful overview (Birkeland, 2002). Furthermore, the greater the number of elements identified, the greater the evidence of overlapping conditions in those elements, further demonstrating the integration of systems that is implicit in the concept of sustainability (Hansmann, Mieg, & Frischknecht, 2012). It is more useful, rather, to simplify the discussion as much as possible by congregating all the potential forms of capital into as few non-substitutable areas as possible. These areas have long been categorized as a concern for the integration of social, economic and environmental interactions (Brundtland, 1987; Bührs, 2009; Hansmann et al., 2012; McAuley, 2003, March). Social forms of capital include such elements as cultural, political,

community, religious and related factors. Economic forms of capital include areas such as the market, productivity, welfare and other such factors which relate to the activities of wealth in the interactions within society and between society and the environment. The environment includes natural resources, wilderness ideals, biophilics (the integration of nature and human construction), as well as human construction, development and waste.

Contrary to much of this discussion, however, the primary goal is not to achieve some kind of 'balance' or equality between the pillars. As Beate Littig and Erich Griessler (2005) observe, such equality does not exist in the real world. Much of the value or merit of integration between pillars is determined by politics (Bührs, 2009). Equal ranking of priorities is rarely an issue in the political context. Instead, whichever pillar is the focus is prioritized over the others. This thesis has therefore concentrated upon issues of non-substitutability and integration, an awareness of the inability to act without affecting the other pillar(s) in some way. 'Sustainability policy' is accordingly defined as policy which explicitly or implicitly attempts to engage with these three broad pillars of economy, environment and society, with particular attention to issues of integration and future outcomes. Examination of these three pillars in further detail demonstrates the inability to address one area without touching on the others, and how the awareness of change that is integral to the concept influences policy direction.

3.2 Sustainability and Environment

Sustainability as related to the environment is the oldest and most established of the three pillars. As has already been acknowledged, the sustainability concept as a political discourse was born out of environmental concerns. The concept of sustainability as a political discourse began with concerns over sufficiency of a national resource, such as forestry (Lafferty, 1998). The various conservation and national park movements of the late 19th century were birthed out of the concern for the importance of preserving natural environments that were being overtaken by settlement, consumption and waste. Much of this wilderness

ethic viewed these places as only natural without humans (Cronon, 1996). While this perspective has received criticism, the desire that future generations have the possibility of experiencing an environment that didn't carry the marks of human settlement was an expression of the concept of sustainability, namely a concern for future outcomes. This has rarely been as simple to achieve in practice as conceived by the original policy expectations (Clemons & McBeth, 2009).

However, preserving parks for people to visit and gain some sense of what nature might be like without human settlement does not address issues of how to maintain human settlement within the natural environment. The concern that developed out of the conservation ethic was a broader concern for the regenerative capacity of nature (Bertinelli, Strobl, & Zou, 2008). The question became whether we can interact with the natural environment in a manner which allows us to return what is used, balancing the consumption of natural resources with the capacity to regenerate those resources? This included concerns regarding the permanent loss of species of flora and fauna. This concern regarding consumption did not only apply to the use of resources in production, but further argued that costs of production did not adequately address issues of waste (Connelly et al., 2012; Dryzek, 2005). Masul Khan and Rafiqul Islam (2012) develop the theme of fully integrating production and consumption cycles in order to eliminate waste, in considerable detail, based on the premise that mass cannot be created or destroyed, only altered in its state, and that nature's cycle recycles everything with a net zero waste. While we are a long way from achieving this on any kind of society-wide scale, the development of these concepts is the first step towards enactment because ideas shape institutions (John, 2012).

It was these concerns which began to clash most forcefully with existing economic and social behaviours, challenging existing methods and ideas that formed the institutional framework, with what at the core is a fairly simple and straightforward message: if we give no consideration to our methods of consumption, we have the capacity to destroy the environment which we depend upon to live (Dryzek, 2005). Bührs (2009) notes that,

"… most political, economic and social institutions that have evolved in societies (and internationally) serve primarily non-environmental values and interests, often to the extent that they cause or contribute to environmental problems" (p198). Sustainability of the environment seeks a means to preserve natural environments while integrating human settlement into those environments, develop paths of consumption that allow us to use renewable resources to provide our needs and wants, and integrate the processing of waste products with methods of production and consumption in such a manner as to be within the capacity of the natural environment to recycle into usable resources. New Zealand produces 75% of its electricity through the renewable sources of hydro, wind, geothermal and bioenergy (Ministry of Business Innovation & Employment, 2016), and while specific preference for renewable generation has been removed from the legislation (Electricity Act 1992, ss. 62(A-O)), generators continue to invest in renewable energy generation resources. The absence of national level regulation, however, is a concern. Bührs (2009) observes that while New Zealand had gone further than many countries in providing an integrated legal-institutional framework for environmental decisions at the local government level, the national level non-environmental polies and institutions remained largely untouched. Combined with the removal of elements of the legal-institutional framework at local government level, and despite individual efforts, environmental pressures continue to rise.

3.3 Sustainability and Economics

Policy creation in western liberal democracy is dominated by economic considerations and the capitalist market (Blinder, 1997; Dalziel & Saunders, 2015; Dryzek, 2005; Olier, 2014; Sagoff, 2011). Governments have actively sought to make social institutions and environmental values subservient to economic institutions (Bührs, 2009). In 1989, Francis Fukuyama proposed that there was no longer any viable competitor to capitalism and liberal democracy. Dryzek (2005), sixteen years later, notes that in terms of social systems, sustainable development takes the capitalist economy for granted. Capitalism uses the twin powerful drivers of efficiency and competition to achieve growth in wealth (Fine, 1975).

Initially, developing a new source of demand greatly increases wealth, and a large number of suppliers requiring a large number of workers springs up. However, those who can supply more efficiently will achieve greater reward for their efforts and are able to remove competitors, either buying them out or otherwise rendering them unable to compete, reducing the number of competitors in the market. As a sector becomes more efficient, the number of workers required reduces and jobs are lost. This reduction continues until a relative threshold is reached with a minimum level of human involvement for the level of technology (Collins & Ryan, 2007). Paid work is a necessity in today's society, unless the individual has sufficient resources (financial or social) not to need to work (Spencer, 2006;2005; Standing, 2012). It is only in this case that price is a valid indicator of work and leisure prioritisation. The period between losing a job and finding another job in the same skill set, or retraining for a new sector, may be short in absolute terms, but resources are still required to cover that period. Reserves are quickly consumed if there is no form of income, and especially if increased expenditure on re-skilling is required. If survival is not possible through legitimate means, then illegitimate means will be embraced, with corresponding social, financial and environmental costs (Fine, 1975; Wilkinson & Pickett, 2010). This simplified overview reflects again the integrated nature of the sustainable pillars.

Eduardo Olier (2014) states that, "Economics is… a social science whose final subject of study should not only be how to manage the GDP [Gross Domestic Product], deal with monetary policies, or keep inflation down, but also how to first create and then distribute wealth among people in the best way possible" (p. 162). The mechanisms of capitalism, by that definition, do not produce an efficient market by themselves; cut-throat, certainly, but not efficient. Adam Smith's (1776) 'invisible hand' achieving market equilibrium, which will hold supply and demand at the efficient point, assumes equal capacity to enter and leave the market. It also assumes that multiple competitors remain in the market. The mechanisms of capitalism, as outlined previously, do not promote this outcome, creating market problems that require regulation. The growth of market

power for the successful competitors, combined with the consolidation of producers under those with the greatest market power moves the price fixing power towards the producer and away from the consumer. This suggests that the natural tendency of the capitalist market is thus towards an equilibrium closer to monopoly, a market failure, rather than equilibrium at the greatest point of efficiency, as in the classical model. This position is exacerbated if supposed competitors operate as a cartel, behaviour of which the New Zealand electricity sector has been accused (Bertram, 2013).

There is also a tendency for the Classical model to ignore environmental and social costs, which are primarily future costs of present market choices. In and of itself, the market is both amoral and present focused. The Classical economic supply-driven model, the Neo-Liberal expression which has dominated the last 35 years, and the intervening Keynesian demand-driven economic model have in common that they are all models of consumption. In order for there to be economic growth there must be continually increasing consumption (Smith, 1776). Since chains of production and consumption are now global, with increased interdependence among nations, the impacts of both production and consumption are also global (Brundtland, 1987). This economic globalization compromises the ability of governments to control the economic situation in their own countries and change those economic institutions for environmental and social outcomes (Bührs, 2009). The existing economic models and assumptions, however, cannot afford to ignore social and environmental impacts, present and future, as to do so will result in the collapse of all three[5] (Blinder, 1997; Connelly et al., 2012). Economic models and assumptions which do not acknowledge these factors are not adequate to achieve sustainable outcomes (Paehlke, 1998). The economy is not an independent entity, but a sub-system of our biosphere (Daly, 1998), the sum total of all interactions with the environment, while the market is a socially constructed means of transferring goods and wealth (Low et al., 2005). Contrary to some

[5] Economy, society and the environment.

approaches, people are as much at the centre of the problem in economics as they are in politics. As Olier (2014) notes, economics therefore functions not only on physical and subjective levels, but consequently also on ethical levels (p. 174). For Arthur Pigou (1952), the main motive for studying economics was to help social improvement. Unlike Pareto, he believed that wealth efficiency and distribution fairness were in conflict. Thus simply improving the economy does not automatically result in an increase in the welfare of the population, or as Stiglitz (2012) puts it, an increase in GDP does not automatically increase people's income. The impact of the economy on people, and the danger of treating it as independent, underlines the problem with using economic efficiency as a sole determinant of success. Leaving it to "the market" is therefore unlikely to achieve efficient future outcomes, let alone integration of economic institutions with environmental and social policies. Some form of economic planning will be required (Bührs, 2009).

The concepts of sustainability and integration have become increasingly influential as theoretical economics has sought to model the real world more accurately. *The Spirit Level* (Wilkinson & Pickett, 2010) focused popular attention on these issues. While there is criticism of both methodology and conclusion (Goldthorpe, 2010; Saunders, 2011), *The Spirit Level* prompted a popular awareness of the externalities of social costs of economic policies as an important focus of economic modelling, and not merely political ideology. The influence of inequality on economic performance is now a category in OECD evaluations of economic performance (Carey, 2015). Existing consumption-driven models which exclude negative externalities of social and environmental impacts are being challenged by commercial awareness of sustainable returns (Madew, 2015) and a renewed awareness that the economy exists to serve people. Paul Dalziel and Carolyn Saunders (2015) wrestle with this issue in their proposal for what they term 'wellbeing economics'. The key question in this model is the place of consumption, with agency considered to lie primarily with the citizens of a country, rather than its government. There are social issues that are not easily dealt with in terms of cost and benefit, that require explicit political choices that the invisible

hand of the market cannot be relied upon to achieve, but which also have impacts on productivity (Ophuls & Boyan, 1998). The challenge is that these impacts are difficult to quantify due to their complexity.

Without regulation, capitalism promotes behaviour that leads to market failure. Regulation to prevent this behaviour requires economic planning if it is to account for future costs of social and environmental externalities of current markets (Bührs, 2009). Ignoring social and environmental impacts of present market behaviour will promote future economic collapse, as behaviours in production, consumption and waste have global impacts on societies and the environment, and paid work is a necessity in today's society (Paehlke, 1998). In order to maintain an effective market in the long-term, sustainability in economics requires that externalities of environmental and social impacts must be integrated into market regulation, with attention to future outcomes (Low et al., 2005). Economic planning is necessary in order to integrate economic institutions with social and environmental institutions (Bührs, 2009). Social and environmental institutions are subordinated to economic concerns in the present forms of the Local Government Act 2002, Electricity Act 1992 and Electricity Industry Act 2010.

3.4 Sustainability and Society

It was suggested earlier that Wellington City Council's efforts to incorporate concerns with sustainability, as defined by the four 'wellbeings', in its long-term plan were out of step with central government, after the removal of those 'wellbeings' from the Local Government Act 2002. The former inclusion of social and cultural wellbeing, and the determination to continue to embrace these concepts, are expressions of sustainability in a social context. The application of concepts of sustainability to social settings is perhaps the least developed of the three pillars. Dryzek (2005), talking about sustainability as a concept, states, "Sustainability… is largely about social learning, involving decentralised, exploratory, and variable approaches to its pursuit" (p.158). McKenzie (2004) notes that, "What constitutes environmental sustainability is ultimately a social and political question as much as a scientific one" (p.

10), reinforcing the integrated nature of the areas of sustainability. Success in sustainability tends to be framed in terms of the highest increase in living standards possible for the least environmental impact, putting social development and environmental protection at odds with each other (McKenzie, 2004). The social sciences are seen as a means of promoting messages of economic or environmental stability. The first task in promoting social sustainability is to separate it from these messages in order to develop appropriate definitions and models. McKenzie further notes that while there is a great deal of statistical data that can be used to address social sustainability, there is much less literature on the means of implementation or the causal relationships between the various aspects of sustainability (p. 14). Social sustainability research needs to combine an understanding of both natural and social processes, as it addresses relationships between nature and society, mediated by the working culture, as well as relationships within society (Littig & Griessler, 2005). McKenzie (2004) illustrates this with his proposed definition of social sustainability, for discussion, "Social sustainability is: a life-enhancing condition within communities, and a process within communities that can achieve that condition" (p. 12). Nicola Dempsey, Glen Bramley, Sinéad Power and Caroline Brown (2011) further divide the relationships within society into concepts of social equity and sustainability of community. The first focuses on political and policy concerns, while the second concerns the viability and health of society itself. They consider this separation useful, while at the same time acknowledging their interdependence. "An equitable society is one in which there are no 'exclusionary' or discriminatory practices hindering individuals from participating economically, socially and politically in society" (Dempsey et al., 2011, p. 292). The integration required by this concept of sustainability requires cooperation between government at all levels and groups in society, including business (Bührs, 2009). The focus on integration of all citizens into society that is at the heart of social sustainability challenges adversarial and exclusionary behaviours which are often the meat and drink of politics.

3.4.1 Politics

Politics, power and governments still have a significant part to play in bringing about change, and it is important not to underestimate the obstacles to change produced by political-economic and socio-cultural obstacles (Bührs, 2009). The most developed area of social sustainability is consideration given to political interaction, since that is where, to quote Harold Laswell (1950), it is decided who gets what, when and how. The existing distance between political elites, institutions and ordinary citizens, say William Ophuls and Stephen Boyan Jr. (1998), stands as a significant challenge to concepts of sustainability. Much greater social cooperation and solidarity will be required than the system has shown in the past. There is a growing concern with the development within liberal democracies of a dissociation between government and citizens (Rostboll, 2008). It matters who gives the laws; whether handed down by elites or developed in consultation with citizens. It matters to our function as citizens that we be aware of both our interdependence and our ability to say 'no'. It matters that we can be a free participant in self-legislation.

> "Since democratic participation is necessary both for defining and justifying which freedoms to protect and in order to make the limitations of negative freedom that we inevitably experience products of self-legislative procedures, the political process must itself at least be capable of being seen as an experience and expression of freedom" (Rostboll, 2008, p. 215).

Sustainability in society looks for ways to re-establish and personalise the connections between government and citizen (Kirton & Hajnal, 2006). Social sustainability does not take the structure of political systems as given. The reorientation in problem solving may require shifts in power. The current discourse suggests that this shift may be away from the nation state towards both trans-national and local levels, as well as partnerships with business. "Sustainable development is a discourse of and for global civil society, not just states" (Dryzek, 2005, p. 159).

The concept of consensus conferences has found particular favour amongst critical policy theorists as a potential means for positive change (Hoppe, 1999). These conferences consist of making issues and

pertaining information available to ordinary citizens to debate. Regardless of the complexity of the issue, it has been demonstrated that such ‘tribal councils’ arrive at equally effective recommendations as do such debates by elites (Dryzek & Tucker, 2008). However, the engagement with such a practice requires a supporting political culture. Where there is an expectation of such practices, they are both engaged with and followed through into the legislature. Where there is no such expectation, there is apathy or suspicion on the part of both ordinary citizens and elites (Dryzek & Tucker, 2008). Bringing such changes about therefore requires an engagement with the existing political culture and repeated demonstration of the effectiveness of the process until a new culture is developed. This is unlikely to happen quickly. Caution is suggested, however, as there is some evidence that moving political decisions to local public forums may slow decision making further and expose those forums to greater capture by interest groups (Immergut, 1992).

Dalziel and Saunders (2015) arrive at the argument for agency lying primarily with the citizens of a country, rather than its government, from an economic starting point. The role of public and private institutions, they say, is to add value to the time-use choices the country’s citizens judge will contribute to leading the kinds of lives they value and have reason to value (Sen, 1999), especially by aiming to enhance the capabilities of each person to enhance their own wellbeing. This linking of institutions as having a significant role in enacting concepts of sustainability will be considered further in the next chapter. The continued dominance of self-interest as the *only* means of generating the most effective policy, however, does not adequately engage with the issue of sustainable ‘social goods’ in politics, work and community (Stone, 2008). A healthy, productive society has a sense of togetherness that is known as community. This is not the absence of argument, but the sense of belonging despite disagreement.

3.4.2 Community

The prioritizing of political aspects of social sustainability over analytical and normative aspects in conceptualizing social sustainability is

challenging to avoid (Littig & Griessler, 2005). There is considerable resistance to political changes, especially by those benefiting from existing structures. However, the same concerns for integration that are being applied to the economy and the environment are being applied to society. Social health encompasses both economic sufficiency and a healthy association with the natural environment. These are considered necessary for both mental and physical health, and those in turn feed back into the productiveness of the society (Beatley, 2011; Birkeland, 2002; Low et al., 2005). The physical spaces that communities occupy, both natural and built, also need to be acknowledged if they are to be studied, sustained or altered through policy or institutional change (McKenzie, 2004). What makes a community, however, is difficult to quantify. Analysis of what goes into creating a healthy community proliferates indicators, such as:

- Satisfaction of basic needs and quality of life, equal opportunities, and social coherence (Littig & Griessler, 2005).
- Social interaction and social networks, participation, stability, sense of pride and place, safety (Dempsey et al., 2011).
- Equity, diversity, connectedness, democracy and quality of life (McKenzie, 2004).

The built environment has also received considerable attention (Birkeland, 2002; Dempsey et al., 2011; Farr, 2008; Low et al., 2005; McKenzie, 2004). Dempsey et al. (2011) note that scale also affects definitions of community. The local neighbourhood and the city require different concepts of community because the formal and informal institutions that make up a neighbourhood and a city are not merely a matter of scale. This reflects the connection between social activity and the physical setting in which it takes place. At every level, however, sustaining community is about the ability of society to maintain and reproduce itself at an acceptable level of functioning. Political and policy concerns tend to focus on issues of social justice and equity, which are very important, but the more nebulous ‘belonging’ dimension that focuses on society as a collective entity is just as important for the continued viability, health and function of society (Dempsey et al., 2011). It is clear that healthy community is a ‘wicked’ issue, complex and varied. Perhaps the single

most important element is one of self-awareness, simply that the community see itself as a community (Farr, 2008). Creating this sense of community has frequently proved elusive from a policy perspective. In today's society, however, the place of work is unquestionably a significant element.

3.4.3 Work

Paid work is ranked higher in today's society than any of the many reproductive activities in which people engage (Littig & Griessler, 2005). This necessity of work has been addressed earlier, but the dominance of this paradigm has profound impacts on social sustainability. In order to be socially sustainable, work needs to satisfy our human needs, preserve nature and its reproductive capabilities, and meet the normative claims of social justice, human dignity and participation (Littig & Griessler, 2005). It is questionable whether any nation can claim to provide work that meets this criteria, although some come closer than others. The dominance of the paid work paradigm in society means that not only is it necessary for securing income, but also for structure and identity, integration, status and cohesion. In light of this, the tremendous impacts of exclusionary or discriminatory behaviours around paid work are clearly apparent (Dempsey et al., 2011). Littig and Griessler (2005) claim that, "Considering both the demand for socio-ecological sustainability as well as the feminist demand for a gender-sensible distribution of labour [one that fully accounts for the tasks of child bearing and rearing], a sustainable working society will at least require:

- the ecologisation of existing employment and the creation of new, environmentally sound jobs, so as to ensure the environmentally, socially, and health-friendly provision of goods and services
- the gender-sensible re-distribution of all the work that needs to be carried out in society, so that everyone can have a sufficient income from useful and publicly accepted work (e.g., by means of shorter working hours, childcare facilities, work-life balance for men and women, economising care work, etc.)

- the freedom to choose at any stage in life between different forms of work (work arrangements, field of work) or lifestyles, while being at all times entitled to individual social security" (p. 74).

While not directly applying to the issues that are the focus of this thesis, the importance of employment and business stability to the Wellington region should not be overlooked. The successful continued operation of Wellington Electricity is in region's best interest, yet that operation must also integrate into the overall development of the region that is the concern of Wellington City Council.

3.4.4 Summarising Sustainable Society

Sustainability in society is concerned with more effective interaction between government and citizens, by which means citizens may begin to feel an increasing measure of influence and action upon their concerns. Wellington City Council's long term plan is arguably better positioned from this perspective, than the elite-driven changes to legislation (Salter et al., 2016, July). Social sustainability is also concerned with issues of equity and community, and with the economic relation between citizens and the environment within which they live, work and play. This concern encompasses a broader definition of what constitutes work and raises issues around the dominant position existing paradigms of work hold in defining society. Society is the lynchpin where the three pillars of economy, environment and society connect. Society cannot be sustained without the environment or the economy, but it is society which makes concern for the environment and the economy meaningful.

3.5 Holistic Sustainability

The complexity that quickly develops when examining concepts of strong sustainability reflects the multitude of factors that are integrated in the real world which policy is intended to operate within. Attempting to engage with the totality of this complexity is not reasonable. However, by grouping these elements into the three integrated pillars of the environment, the economy and society, and accepting that they are not substitutable, we create a simplified model around which to develop our approach to an

issue. This simplified model focuses on the necessity of integration and accepts that future focus has an ethical nature, since our determination of what that future should look like is based on the values we hold (Olier, 2014). The development of a common framework for guiding integration efforts is incomplete so long as there are areas of human activity and the environment that have not been incorporated into that framework (Bührs, 2009). This implies a process of changing values, interests and views to make them compatible and mutually supportive. The considerable changes which the government has made over the past 35 years to economic and social structures in promoting a narrow notion of national economic health, in terms of GDP and low inflation, has profound limitations as the best guide towards the collective good for the future (Bührs, 2009; Olier, 2014; Stiglitz, 2012). In order to bring about the transformation required in order to realise more effective forms of integration, there will need to be an increase in the creation of institutional capacity to design and implement those integrated systems (Bührs, 2009).

Wellington Electricity acknowledges that technological changes are challenging its model of operation. Technology, social organisation and the effects on the biosphere are not a fixed state, but rather in a continual process of change (Dryzek, 2005). The ideational foundation of profitable dependable supply does not appear to position Wellington Electricity well to address this. This foundation has created an institutional position that has produced a defensive response that attempts to limit the impacts of that change, rather than encouraging engagement with a different model of operation to embrace change. The promotion of profitable dependable supply as a basis for creating effective policy is called into question by examining the economic pillar alone for issues of sustainability. The resulting policy isolates itself from surrounding factors, and responds defensively to changing technology. Additional perspectives derived from examination of the environmental and social pillars merely reinforce the questionable suitability of this idea for long term effective outcomes (Bührs, 2009). This model of sustainability was reflected in the Local Government Act 2002 and the resulting Long Term Plan of Wellington City Council, positioning Wellington City Council to both acknowledge and

embrace changing technology in a positive manner. While the Local Government Act 2002 evidenced elements of a sustainability ideational foundation, amendments to the act have moved it closer to the ideational foundation of the electricity sector legislation and resulting policy that has been categorised as a focus on profitable dependable supply. Sustainability appears to present a capacity for flexibility in resulting policy that engages more easily with change, which contrasts with the more rigid focus of profitable dependable supply.

4 Institutionally Driven Tensions

The outline of both the current and historical context in which the conflict between Wellington City Council and Wellington Electricity has occurred has drawn attention to policy tensions arising from the emergence of new sustainable technologies and the barriers to their adoption. In large part, the tension emerges from the legislative provisions that define the principles and policies of local government and the electricity sector, as it is these provisions which have placed the parties at odds. Wellington City Council's lighting proposal stood out as having a significantly different ideational foundation to that of Wellington Electricity, one that has been categorised as 'sustainability'. Considerable attention has been given to exploring this definition and its significance. This chapter examines more closely the role ideas like 'sustainability' and 'profitable dependable supply' play in the policy process, the way ideas inform the construction of political institutions, and, within the context of this study, how they collectively impact on opportunities for policy change.

4.1 Disputed Changes

LED streetlights cost less to manufacture, both their components and light delivery are more environmentally friendly, they are more durable, and they use less power than high pressure sodium lamps (Wellington City Council, 2014). Why would we hinder their adoption and why should they cost the same to operate? The outline of the historical context explored why this conflict is not merely an economic question, but rather is a reflection of the legislation and policies under which the two parties operate. The examination in the previous chapter highlighted the multidimensional nature of the concept of sustainability and the implicit risk of focusing on only one of these dimensions. These contrasting positions in addressing an effective lighting policy led to Wellington Electricity and Wellington City Council acting on divergent discourses. Wellington Electricity's profitable dependable supply ideational foundation encompassed a single element of concern, while Wellington City Council's sustainability ideational foundation broadened its perspective to incorporate the attempt to integrate multiple elements. Both parties were

talking about street lighting, but they were not actually addressing the same issue[6].

Sustainability, as a discourse, views change as a necessity (Brundtland, 1987). The potential for change that would reduce environmental impacts, increase efficiency and reduce costs is viewed as a positive outcome. This view of change is in marked contrast to that implied in the profitable dependable supply discourse. In this discourse, change that would increase efficiency and reduce income (due to lower costs) is seen as a challenge to the status quo, and the status quo already represents a shrinking income (Wellington Electricity, 2015). The proposed change is therefore seen as a negative outcome. This discursive conflict is a central theme in the dispute over the proposed change.

William Dunn (2008) defines policy problems as "the unrealised needs, values, or opportunities for improvement" (p. 72). "Policy issues," he says, " not only involve disagreements about actual or potential courses of action, but they also reflect competing views of the nature of problems themselves" (p. 77). While the problem may be agreed upon, e.g. current lighting technology is less effective, efficient and more expensive to operate than the new LED lights, the causes and results of the problem and how they might be addressed are not. This lack of agreement is clearly demonstrated in the response of Wellington Electricity to the potential reduction in electricity consumption. The policy issue was structured by Wellington City Council as a complex, multi-faceted one that encompassed social, economic and environmental factors. The response from Wellington Electricity was to cast it as a simple, economic issue. In Dunn's (2008) terms, the problem has been 'unsolved'. The solution

[6] Perhaps I can illustrate this with a personal anecdote. While my daughter was learning to drive, one day she declared herself a good driver. I sought to inject a more rational awareness of the level of her abilities into this discourse. The conversation rapidly degenerated until I realised that by "good driver" she meant she was competent at the mechanics of operating a vehicle. And I would agree. However, my "good driver" encompassed not only operating the vehicle, but the awareness of the surrounding environment, the potential for problems to arise unexpectedly, and the ability to manage all three. In a similar way, the contrasting ideational foundations of profitable dependable supply and sustainability mean Wellington Electricity and Wellington City Council are not addressing the same issue, despite both parties talking about street lighting.

proposed has been rejected because it is believed to have been based on a wrong formulation of the problem.

4.2 Influence of Ideas on Actors and Institutions

Ideas help us make sense of the world we live in and give us a means to change it (John, 2012). Ideas, together with assumptions, knowledge and world views, shape the cognitive dimension of issue management. That dimension shapes the rules and organisations established through institutions, which in turn guides the course of action and means outlined in policy (Bührs, 2009). Ideas, therefore, are recognised within a variety of policy approaches as influencing policy making and policy enactment. Influential policy ideas are formed through a complex process of reasoning, evidence, and moral outlook, and their role in the formation of policy, and political institutions, has been distilled into a number of clearly articulated theoretical positions (Jones & Baumgartner, 2012; Kingdon, 1995; Sabatier, 1999). Once ideas are embedded, they can produce well-defined positions on a range of related issues, regardless of whether they are proven to be good or bad, by pre-defining the morality or causality of the issue in question (John, 2012). Wellington Electricity's focus on profitable dependable supply is well defined in legislation and policy, and fundamentally informs how it carries out its role of electricity distribution. That is, the Electricity Act 1992, the Electricity Industry Act 2010 and company policy to provide profitable dependable supply determines how Wellington Electricity will approach all proposals for change.

A moderate post-positivist position argues that reality is mediated through our knowledge, beliefs and world view (Cairney, 2012). Real problems marked by real facts exist, but how we perceive them depends on how we look at them, and this shapes the options we conceive to address them. While many of the people involved in framing a policy problem may accept the same ideas, competing ideas represent a dependent variable to be explored. Political agents, and the interests they represent, choose which ideas they will support. John (2012) argues that, "It is this symbiosis between ideas and interests that is at the heart of change and stability in public policy" (p. 152). Thus we get Paul Sabatier and Hank Jenkins-

Smith's (1999) Advocacy Coalition Framework, which focuses on common interest as a primary motivator in coalitions for change or stability. John Kingdon (1995) draws attention to the conditions that permit policy change in his Policy Streams approach. These conditions occur when a focusing event such as a political or public crisis opens a window for policy change, allowing simultaneous streams of a public problem, a policy solution and political will to come together to potentially bring about policy change. Bryan Jones and Frank Baumgartner (2012) focus on the allocation of limited attention in their Punctuated Equilibrium Theory, arguing that change does not occur until sufficient attention is generated around the issue. Each of these approaches seeks to encapsulate this symbiosis between ideas and interests. Without expanding on these theories, it is enough to acknowledge that this symbiosis is complex and as yet unable to be encapsulated in a single theory.

However, while ideas are extremely important, and often become informal institutions in their own right, the key question is what is the mechanism of transfer of idea to action? The idea on its own makes no changes. It is the idea in conjunction with influence that brings about change (Hay, 2010; 2011). The mechanism by which this influence is brought to bear is not the idea itself. The idea gives direction for action, a path for affecting the material world, rather than being action, changing the material world. Ideas shape not what is, but how it is seen. The ideas and actors come together to create institutions which set the rules by which the idea becomes an outcome that is under human influence. Without this institutionalisation, both the idea and the actors lack a strong legal and organisational basis for producing change or stability (Bührs, 2009).

4.3 Institutions as Rules for Disputing Changes

Institutions, "prescribe, circumscribe, encourage, or prohibit human behaviour and action," in economic, social and environmental areas (Bührs, 2009, p. 146). Institutionalism is one of the most widely used frameworks in the study of policy analysis (John, 2012). While institutional theory does not enable us to fully explain the mechanisms by which change does and does not occur, it does give us a means by which to

track the influence of ideas through policy formation and into action. The concept of institutions used in this thesis draws on the work of the new institutionalists, especially ideational or constructivist institutionalism (Hay, 2010; 2011) and discursive institutionalism (Schmidt, 2008). The challenge with institutional theory, as with ideas, is to clearly define the borders, such that everything does not become an institution. This is relatively clear with formal institutions such as those established in government legislation, but much less so when addressing the informal institutions that form around ideas, and in turn influence the formation and continuing development of those formal institutions. The designation "formal" denotes the legislation or policy itself, and "informal" denotes the norms and habits that also establish rules of engagement. Margaret Polski and Elinor Ostrom (1999) argue against including organisations in designations of institutions, as organisations can form around either legislation or norms. While this is true, the organisations which have formed because of legislation are the physical expression of those rules. As such, their position and influence needs to be acknowledged, since it is the individuals in these organisations who are the actors that give life to the ideas and institutions. These ideas and institutions do not have independent life of their own, despite institutions and organisations often being popularly spoken of as the faceless "they", e.g. referring to the government as if it is an individual making unchallenged decisions.

"Institutions are belief systems and habits of decision making" says John (2012, p. 48). Elinor Ostrom (2005) defines institutions as the explicit and implicit rules that we use to organize all forms of repetitive and structured interaction, from families to firms, social clubs to government. Considine (2005) argues they can be seen as the rules of engagement that frame both action and inaction. Taken together, these statements define institutions as formal rules, informal norms and the resultant structures that have arisen around the clearly articulated position and proposal that has distilled through argument from the original idea. They are the mechanism by which this influence is brought to bear. The ideas and institutions have a momentum or inertia due to their establishment of the rules of engagement which frame how issues are seen and how they can be

addressed. By establishing these rules, institutions develop into a concrete expression of the ideas the political system has embraced (John, 2012).

As Ostrom (2005) points out, if rules are used as the tools of self-governance, the diversity of tools needs to be examined, which is a difficult proposition given that the rules are only one factor affecting outcomes in the biophysical world and the communities in which these rules operate (p. 64). This is further complicated by whether choices are made within a set of rules, or between a set of rules, i.e. changing the way things are done. She claims that field evidence challenges the assumptions that a) central management is necessary due to the interconnection of resources, b) that those using the resources are not capable of designing rules to sustain those resources, and c) that designing rules to improve outcomes is a relatively simple and analytical task that is best done by objective analysis (Ostrom, 2005). The enormous breadth of possibilities makes it impossible to undertake a complete analysis necessary to determine which set of rules will be optimal, and since the ecological, economic, and social setting are continually changing, no specific set of rules will produce the same distribution of benefits and costs over time. Even effective policy, when not subject to review and adjustment, will therefore fall out of step with the issue it is intended to address, as a significant gap develops between the intentions built into the institutional framework and the policies being pursued (Bührs, 2009).

A key influence of institutions in policy creation is that they limit the choices of the actors, without determining them (John, 2012). The nature of institutions themselves therefore makes change problematic (Hay, 2010; 2011). By limiting the choices of the actors, "Their perceptions about what is feasible, legitimate, possible, and desirable are shaped both by the institutional environment in which they find themselves and by existing policy paradigms and worldviews" (Hay, 2010; 2011, p. 69). The influence upon the actors is in how the issue is seen, and the institutional setting frames the view. The institution constrains not only the possible

answers as to what change is necessary, but also the nature of the issue itself (Hay, 2010; 2011).

The words we use place constraints on the ideas we engage with, but just as important is the context. What is said matters, but also to whom it is said, where it is said and who said it (Schmidt, 2008). The success of policy, however, is judged not only by elites, political or scientific, but also by the general public. “Discourses succeed when speakers address their remarks to the right audiences at the right times in the right ways” (Schmidt, 2008, p. 313). Looked at from this perspective, institutions act to constrain actors, but the actors also influence the creation and development of the institution. The rules don’t exist apart from the actors, who persuade one another to maintain or change those rules. Actors do not all have the same degree of influence, but all actors influence in some way (Schmidt, 2008). The ideational foundation of institutions, then, is under continual pressure to adjust, somewhat like a fault line in the Earth’s tectonic plates.

While discursive institutionalism accounts for change through changing conversations, it does not account well for external factors driving change in conversations. The relational component of the human actors appears to be given pre-eminence over the influence of material factors. These non-human actors can speak very loudly. For example, the conversation in the council chambers about the necessity of levies along a river bank that has never flooded in living memory will be dramatically altered by the event of a flood. The external influence of material factors is particularly important in periods of sudden change. The neo-liberal economic ideology that informed the changes to the electricity sector over the past 35 years, the subsequent supply failures and resulting reluctant regulation, and the limited oversight that characterises the organisation of the electricity sector today is summarised in the idea of profitable dependable supply[7]. Wellington Electricity is concerned for company survival, development and maintenance. The shareholders of Wellington Electricity

[7] See Chp. 2.3 – Electricity Sector Reforms.

and its parent companies have an expectation of returns on their investment through dividends, which requires profitable operation. The CEO is accountable to the board, which has the power to remove him, and which is likewise under pressure to keep the company profitable, the shareholders happy, and the company an effective subsidiary. Wellington Electricity's Ten Year Asset Management Plan is developed around expectations of profitable trading to fund investment in infrastructure, despite expectation of rapidly tightening economic constraints (Wellington Electricity, 2015). That is, its focus is on maintaining profitable dependable supply. This places constraints on engaging with change, as that change is required to promote these outcomes if it is to be perceived as a positive outcome. However, despite the dominance exerted to maintain the status quo, steadily growing pressure to change the operation of the electricity sector is also being exerted, not because of public displeasure, which has existed in considerable measure for decades (Bertram, 2013), but because changing technology is pushing the existing model towards an untenable position (Radio New Zealand National, 2015, 7 April). This external development is creating pressure to change the current dominant discourse. The partnership between Treasury, the Executive and the electricity industry is far too dominant for Wellington City Council to materially influence, despite public support and reasonable policy. It is not the sustainability discourse of Wellington City Council that is bringing pressure to change, but rather that, in the face of technological changes, a continuing refusal to acknowledge the necessity of modifying existing institutional rules will move companies towards an untenable operating position. The degree to which they engage with this material reality will determine their future profitable operation and even existence. There is therefore external pressure to change the conversation. If the conversation changes, that will lead to changes in the institutions, thus it could still be argued that it was changes in the discourse that led to institutional change, but it was not the discourse that instigated the change.

4.4 Conflicting Institutions

The dominant discourse thus far, however, has not changed. The persistence of bad ideas, ones whose proposed outcome is repeatedly shown to bear a negative relation to the actual outcome, is evidence of the strength of embedded ideas in building and sustaining institutions (Cairney, 2012; John, 2012). The idea, that determines how something is seen, continues to be a controlling factor even after the effects of continuing to embrace that path have been shown to be negative. Wellington Electricity is *already* losing income under the existing institutional arrangements (Wellington Electricity, 2015). The ideas that formed the foundation of the institution exert their own path-dependent effect on the subsequent development of the institution (Hay, 2010; 2011). Formal rules and structures that past decisions have entrenched become difficult to shift because the costs of moving from an inefficient position appear greater than leaving it in place, and because the habits formed around the rules are enshrined as the correct behaviour. Weak political institutions that do not provide accountability, and the ineffectiveness of elections as a blunt tool to correct poor choices by politicians, further encourage the persistence of bad ideas (John, 2012, p. 135). Thus actors are constrained in their decision making by the existing institution, producing inefficient policy. The unwillingness to change the existing rules and structures can produce a dysfunctional relationship between the institution and wider society that requires an external force to break (John, 2012). This can be especially true of policies around technology (Ramello, 2011). Technology exerts an incentive not to change due to the large fixed costs of moving to a new technology, as well as both the sunk costs of the existing technology and the efficiency that has developed over time through increased experience (John, 2012). There is considerable argument, as outlined in the case context in Chapter 2, that these conditions exist within the electricity sector.

The resistance to change in electricity sector institutions which have developed from ideas of profitable dependable supply is in conflict with the sustainability-inspired promotion of change as a desirable outcome of the local government institution. This conflict is between different sets of

rules, rather than a conflict of political actors, and the conflict is not an equal one. The rules under which the parties are engaging favour the profitable dependable supply discourse over that of sustainability. Policy institutions are never neutral (Considine, 2005; Sharp, 1992). They represent values and interests, and as a consequence can be highly exploitive (Sharp, 1992). Their purpose is to require some behaviour and to prevent others. Action and inaction are both institutionally framed. The unity of the profitable dependable supply discourse in the electricity sector institutions, and changes to the Local Government Act 2002 from the same ideational foundation, pressured the Wellington City Council long-term plan, as the lone representative of an institutional attempt to express an ideational foundation of sustainability, to conform its function to that of the other institutions.

The impact of institutions in developing infrastructure, gaining agreement, monitoring activities and evaluating performance are complex and uncertain, and arguably not well considered in neoclassical economic theory (Ostrom, Schroeder, & Wynne, 1993). Institutional cultures can influence economic efficiency (the change in the flow of net benefits), equity through fiscal equivalence (equality between an individual's contributions and the benefits they derive), redistributional equity (differing ability to pay), accountability (ability of citizens to influence activities) and adaptability (able to respond to an ever-changing environment) (Ostrom et al., 1993). Apart from the usual market-versus-state and centralised-versus-decentralised dichotomies, there are few well-accepted terms to describe the variety of institutions that exist and their influence on policy outcomes. Economic efficiency is only one economic attribute within the economic pillar, even before consideration of the other pillars is factored in. The rules being used to organise interaction, based on the idea of profitable dependable supply, have not incorporated the full range of economic questions, so it is not surprising that those rules have not been examined or reviewed regarding social and environmental questions. It is unlikely that such a limited approach to policy, in light of the integrated nature of policy outcomes as they unfold going forward, will have beneficial outcomes (Ostrom et al., 1993).

The predominance of the profitable dependable supply economic ideology, however, is promoted by political-economic interests with the power to shape and maintain the existing discourse through media, education and interest groups (Bührs, 2009). The removal of references to concepts of sustainability as "wellbeing" from the Local Government Act (Local Government Act 2002 Amendment Act 2012, s. 3(D)), sought to enhance efficiency through the exclusion of an integrated approach to issues of environment, economic and social wellbeing as a concern of local government. The statements of the Minister for Local Government, the Hon. Rodney Hide, made it clear that he believed the sustainability concepts in the legislation gave too much power to local government and were too comprehensive. Local government should be restrained in its concerns (New Zealand Parliament, 2010, 4 May). This approach took little account of practical issues of integration and made assumptions about future outcomes of improved efficiency that were not supported by evidence (Department of Internal Affairs, 2012, May). The lack of a national-level policy framework contributed to conflicting rules arising from economic and social institutions that primarily serve non-environmental values and interests (Bührs, 2009).

4.5 Developing Institutions that Provide for an Integrated Approach

In light of the very different ideas identified in the policies and legislation, it is not surprising that the institutions themselves come into conflict. While the informal institution of sustainability expressed through the formal institution of Wellington City Council's street lighting policy proposal is not prohibited, it does not have the legislative support exemplified at every level in the formal expressions of profitable dependable supply, significantly weakening the position (Bührs, 2009). The idea of profitable dependable supply holds a dominant position as the informal institution that has shaped the formal expressions of Government legislation, Commerce Commission policy, Electricity Authority regulations and Wellington Electricity policy. There is an ideational unity to these actors

against which Wellington City Council stands alone and apart, excepting for public support from citizens uninvolved in those institutions. The influence of the residents of the Wellington regional area should not be discounted, despite their limited influence in much of the policy formation. Integration of institutions under this narrow-focused ideational conformity, however, is not promoting sustainable outcomes. There is a developing awareness internationally that governments need to integrate considerations across a broad range of decisions, policies and institutions (Bührs, 2009; Reid, 2011). Given the interdependence of policy areas, in order to develop institutions that provide for a more integrated approach to policy creation it is necessary to incorporate a broader policy framework to provide a common basis for directing, evaluating and developing policy, especially for higher levels of rulemaking (Bührs, 2009). Sustainability concepts hold some promise as a means of coordinating these efforts at policy integration, but this will require the redesign and reformation of overarching institutions (Bührs, 2009; Dryzek, 2005).

It is not efficient to dictate all policy at the level of government legislation, and it is questionable whether centralized, expert-driven policy creation has superior outcomes (Ostrom et al., 1993). In response to bureaucratic inefficiencies, the development of a directive or governance approach was promoted, which focused on what was desired to be achieved, with authority devolved to lower levels as to how it would be achieved (Jordan et al., 2005). This focus on governance, which has been pursued since the 1990s, argues for a broader perspective at each rising level of rules due to the change in focus from management at operational levels to governance at constitutional levels[8]. Where government sought to control activities, governance seeks to provide direction, without getting lost in the details. While this differentiation does not have a large body of empirical work, it does have considerable theorising (Jordan et al., 2005). New Zealand

[8] Polski and Ostrom define three different levels of rules: operating level, collective choice and constitutional. Operating rules direct the day to day decision making in the specific setting. Collective choice rules determine who is eligible to be involved and make changes to rules at operating level. Constitutional rules likewise determine who may do this at collective choice level (Polski, M., & Ostrom, E. (1999). An institutional framework for policy analysis and design. Bloomington, Indiana: Indiana University, Workshop in Political Theory and Policy Analysis.).

demonstrated early leadership in this development, but current policy appears to be reverting to centralized authority (Brady, 2002; Reid, 2011), yet without the broad perspective required for integration between institutions (Bührs, 2009). With a governance approach that embraces a broader perspective, one might expect the Electricity Authority, in its supervisory role over the electricity sector, to engage with the three pillars of sustainability and promote greater integration between policies. However, the Electricity Authority has little stake in the process, few resources, and minimal ability to influence outcomes. Given their intended role of policing the sector, it is quite clear that they have very little effective authority (Bertram, 2013; Electricity Authority, 2014; Radio New Zealand National, 2015, 22 April). The Commerce Commission, on the other hand, has significant power, but a limited role. It sets the maximum default price and minimum service quality, requires performance information to be published for distribution companies and Transpower, and has the power to investigate claims of market power being used to obstruct or remove competitors. Its focus, however, is firmly on the limited perspective of profitable dependable supply. It does not concern itself with environmental or social impacts of the behavior of the electricity sector, nor does it concern itself with policy integration between sectors (Commerce Act 1986; Commerce Commission, 2015, 17 August). The legislation for the electricity sector has this same idea of profitable dependable supply as its core idea (Electricity Act 1992; Electricity Industry Act 2010). At this constitutional level of policy there should be a much broader awareness of the integration of policies and the possible effects on economic, social and environmental factors both in the present and projected for the future if greater coherence between policies, decisions and actions is to be achieved (Bührs, 2009). The absence of this broader awareness as an influence in policy formation at every level of the electricity sector is notable.

The regression towards centralized control and the concomitant reduction in authority at operational level, combined with the promotion of a narrow perspective of successful outcomes is an issue of some concern (LGNZ, 2016; Reid, 2011; Salter et al., 2016, July). Wellington City Council is

unable to resist central government mandated institutional changes, regardless of the merits of the scope of its previous operational authority. Bruce Jesson (1999) suggests that this inability to restrain central government is due to social, political and economic institutions in New Zealand being created by the state, as the representative of the Crown, in a top-down fashion, where these institutions in Europe were largely a bottom-up development out of existing social structures. While there were established social, political and economic institutions within Māori culture, these institutions were subject to historical attempts to systematically subordinate, and then eradicate, them (Durie, 1998; Newman, 2013). The state, therefore, pre-existed, and arguably created, the social structure, as well as the economic structure, of New Zealand (Durie, 1998). The state worked actively and aggressively against the communal property cooperative economic model that Maori were demonstrating to great effectiveness, in favour of private property, self-interest, and the transfer of economic power from Māori to Pakeha (Newman, 2013). This constitutional setting remains largely unchanged, although not unchallenged (Durie, 1998).

If Jesson is correct, then it can be argued that central government plays a more immediate role in operating level institutional conflict than is generally the case in liberal democracies, due to the top-down nature of institutional development in New Zealand. However, this also gives central government a greater capacity to redesign institutional structures to facilitate a greater degree of integration between institutions, a redesign which is crucial in legitimizing attempts to develop integration between institutions (Bührs, 2009). As Bührs (2009) notes, the process of reforming government institutions across the spectrum of government is a daunting challenge, especially given the threat this may represent to vested interests. This situation is exacerbated by the intensification of economic globalisation which compromises the ability of governments to control and fundamentally shape institutions and policies for greater integration (Brundtland, 1987; Bührs, 2009; Stiglitz, 2012). New Zealand had arguably gone farther than many countries in developing a legal and institutional framework that integrated environmental decision making with

social and economic concerns at local and regional levels, but this integration was not carried through into social and economic institutions at national level (Bührs, 2009). The local and regional level integration has since been removed from local government legislation (Local Government Act 2002 Amendment Act 2012). Institutionalising sustainability as a principle does not guarantee integration. In New Zealand, it doesn't even guarantee continuing institutionalisation. Sustainability, however, does provide a conceptual framework for coordinating efforts at integration, which are required to promote more effective long-term outcomes. This approach contrasts favourably with the imposed conformity of profitable dependable supply, which has not permitted the same flexibility to engage with valuable change.

4.6 Conclusion

The focus of this thesis is the disputed change to street lighting proposed by Wellington City Council and the opposition of Wellington Electricity through significantly reducing the capacity of Wellington City Council to act by removing the immediate financial benefits of making the change to LED streetlights. This chapter has examined the dispute as a clash between rules that have been developed from the contrasting ideational foundations of sustainability and profitable dependable supply. These rules are not equal. The institutions developed from the ideational foundation of profitable dependable supply have legislative support, while changes to local government legislation, which local government could not restrain, have removed that legislative support from local government sustainability-based institutions. Consequently, Wellington City Council cannot resist the opposing action of Wellington Electricity.

The successful restraint of Wellington City Council's proposed changes to embrace new sustainable technology highlights the power of institutions to resist change and demonstrates the persistence of ideas that have negative outcomes once they are embedded in institutions. The unwillingness to embrace change to promote improved sustainable outcomes, as demonstrated by Wellington Electricity's response, can create a dysfunctional relationship between the institution and society,

especially in areas of technological change. Integration between policy areas is necessary to counter this effect. Sustainability concepts provide a framework for developing institutions that allow for such an integrated approach, due to a broader perspective providing greater flexibility to engage with change. The limited scope and imposed conformity of profitable dependable supply has not provided this flexibility to engage with change.

5 Discussion

Light Emitting Diode (LED) technology provides wide-ranging advantages over existing high pressure sodium lamp lighting, particularly in terms of sustainable energy use, longer term financial savings and the ability to manage lighting with electronic control systems (Wellington City Council, 2014). In 2014, the Wellington City Council developed a proposal to replace all existing street-lighting with the new LED street lights. The line distribution company, Wellington Electricity, countered this proposal with a statement that it would alter electricity pricing structures so as to maintain existing income levels (Radio New Zealand National, 2015, 7 April). This effectively restrained the capacity for Wellington City Council to pursue more sustainable energy use initiatives through adopting the new energy saving technology by removing the financial savings that would have funded the proposal. This thesis examined this case as an exemplary instance of policy drivers that constrain initiatives for sustainability.

The thesis has focused on the ideational frameworks and related institutional settings, and the impact of these as constraining factors on both the Wellington City Council and Wellington Electricity when addressing opportunities provided by technological change to pursue sustainability initiatives (Goldstein, 1993; John, 2012; Wellington City Council, 2015). This case has provided a basis for examining the implications of technological developments that provide for more sustainable forms of energy use, the institutional barriers to the adoption of these technologies, and the implications for change in those institutions (Thelen, 2004). Further, this case has presented us with an example of the way policy settings, and the ideas that inform them, can lead to inflexibility in addressing change in such circumstances. Through an examination of key policy documents relating to, and other accounts of, this case, this thesis has provided an examination of the way competing ideas and institutional structures have influenced the capacity of local government to adopt change in response to opportunities for sustainability in electricity use.

5.1 Significance

The attempt to introduce more sustainable technology in the form of LED street lighting, and the barriers to achieving that, can be taken to reflect competing ideational and institutional foundations (Hay, 2010; 2011; John, 2012; Schmidt, 2008). That is, the Wellington City Council sustainability initiatives challenged existing institutions and their ideational foundations. Through examination of this process in the New Zealand context, this thesis explored the consequences for local government of competing ideational foundations for policy, in relation to electricity generation and supply, with a specific focus on enacting sustainability. This has illuminated wider questions around barriers to the adoption of sustainability initiatives in an environment where there are increasing pressures to reduce energy use. The proposed changes would have promoted outcomes that developed capacity to operate in a more sustainable manner, but were thwarted by existing institutional arrangements.

The Wellington case has provided an opportunity to examine the manner in which ideas and institutions impact policy outcomes to hinder change (Goldstein, 1993; Stone, 1989). A narrow institutional focus on maintaining profitability and dependable supply, without regard for wider questions of efficiency in energy use and sustainability, has limited the adoption of greener technologies. While such a focus may not *prevent* change, this case has demonstrated how it can impede the process. This case focuses on Wellington, but the outcome is applicable to other New Zealand territorial local authorities facing similar opportunities for energy use reduction and wider issues of sustainability. The street lighting issue is also important for Transit New Zealand, which oversees national highways. The actions which reduced the capacity of Wellington City Council to engage with sustainability initiatives can be expected to be evident in other cities and districts where electricity generation and supply institutions discourage the adoption of new technologies. This case also has lessons for wider situations where there are barriers to the uptake of emerging sustainability technologies, both nationally and internationally. It has illustrated how institutional barriers to change can arise from

organisations operating within existing institutional arrangements, without additional political engagement. That is, it has shown how change is instituted when the barrier to change does not arise from a political response to a proposal, but from the institutional setting itself. This has drawn attention to the importance of institutional capacity to promote integration between policies, and how sustainability concepts can provide a framework for developing such institutions.

5.2 Approach to Research

In examining the case of Wellington City Council's proposal to adopt new lighting technology which would reduce energy demands, and the barriers to the successful implementation of this initiative, this thesis undertook to develop primary categories of ideational foundations, and resulting rules, in the conflicting institutions represented in the resulting pricing conflict between Wellington City Council and Wellington Electricity. These primary categories were developed using an inductive approach. The inductive method develops categories from repeated readings of the data, looking for themes and links (Thomas, 2006). These categories are derived from the data, rather than using the data to test an existing hypothesis. This process was applied with the goal of, first, establishing the details of the case, and, second, understanding the public policy drivers that led to the reduced capacity to pursue new sustainability initiatives. A comprehensive literature review of primary and secondary documents resulted in focusing on *Street lighting in Wellington City: Making a case for adopting LED lighting* (Wellington City Council, 2014), *Our 10 year plan: Wellington city council's long-term plan 2015-25* (Vol. 1) (Wellington City Council, 2015), the *10 Year Asset Management Plan* for Wellington Electricity (Wellington Electricity, 2015), the Local Government Act 2002 and the Electricity Industry Act 2010 as the primary documents relevant to the case. The study was also informed by a critical review of current sustainability literature which was used to develop a framework against which to compare and contrast the rules of the formal and informal institutions that are represented in the conflict in the case. The analysis identified the importance of the role of ideas that inform institutions and how institutions frame the issues. This process has a traceable effect on the outcomes

possible and chosen in addressing a given issue (Goldstein, 1993; John, 2012). The case study approach was adapted from Robert Yin's book *Case study research: design and methods* (Yin, 2003).

5.3 Findings and Discussion

The findings of this thesis are grouped into three main areas. The first area considers the impact of sustainability concepts on the institutions of local government, and the removal of legislative support for this ideational foundation. The second area covers the constraints exerted upon the electricity sector by the focus on profitable dependable supply, and resulting actions. Finally, the third area pertains to how the presence or absence of policy integration between institutions can impact both the adoption of new sustainable technology and the development of dysfunctional relationships between institutions and society.

5.3.1 Local Government

In developing its LED street lighting proposal and incorporating that proposal into its long term plan, Wellington City Council was engaging with an integrated approach to policy based on ideas of sustainability. While this approach was formerly given legislative authority through the Local Government Act 2002, that basis for legitimacy has since been removed through amendments to the Act which have removed all references to the broader "wellbeings" perspective. Consequently, institutional developments by Wellington City Council have no capacity to resist opposition if there is a clash of rules with the institutions of the electricity sector, whose profitable dependable supply perspective has explicit legislative support.

The arguments for the restriction of the scope and authority of local government were justified on the basis of increasing frustration with rising rates. After being given increased autonomy in the Local Government Act 2002, many territorial local authorities experienced financial difficulties, leading to the imposition of greater restrictions on local government from 2010 onwards. Given the new levels of responsibility and financial

constraints outlined in Chp. 2.2 – The Local Government Policy Context, it is not surprising that inexperienced local councils did not initially engage in more developed financial arrangements (Reid, 2011). In order to complete necessary maintenance projects while simultaneously developing their region, they made use of easily accessed credit, and funded the repayments on the borrowing by raising rates, as at this point none of the more developed methods of income generation in use overseas were available (LGNZ, 2013; Wong, 2015, 2 February)[9]. The economic climate of competition still drives the regions, regardless of their preferences (Easton, 2015, 16 March). This competition between regions for resources and population does not permit the option of delaying works until some future date. With a number of failed ventures, due to inexperience amongst other causes (Department of Internal Affairs, 2012, May; LGNZ, 2015), claims of wasting money and creating unnecessary debt levels grew rapidly stronger, providing a handy mandate for central government to step in and change policy to better fit their governing philosophy (New Zealand Parliament, 2010, 4 May).

Local government had little power to reject this. The de facto power of general competence given to local government in the Local Government Act 2002 would be difficult to erase (though not impossible), but the bounded nature of the authority has been restricted significantly since 2008, as illustrated in Chp. 2.2.1 – Amendments to the Local Government Act 2002 from 2008-2015. The centralized constitutional authority means local authorities have little option but to accede to any decision handed down by central government, which in turn is not directly impacted by the outcomes, especially within less populated and financially powerful regions (Reid, 2011).

[9] Options include changes to the rating system, central government transfers to local government, tax mix (taxes other than property), public/private partnerships, council owned companies and investments. There continues to be considerable debate over the development of different methods of income generation and their risks for local government (Charman Tripp. (2015, 9 February). *Local government seeks new funding sources – again.* Retrieved from http://www.chapmantripp.com/publications/Pages/Local-government-seeks-new-funding-sources-again.aspx, Cooper, D. (2012). *Rating equity in New Zealand's local government*. University of Otago, Dunedin, Otago, New Zealand. , LGNZ. (2015). *Local government funding review*. Wellington, New Zealand: LGNZ, Reid, M. (2011). Does the reform of English local government contain lessons for New Zealand? *Policy Quarterly* 7(4), 55-61.).

The amendments to the Local Government Act 2002 have placed more emphasis on market efficiency. The scope of local government concerns was formerly addressed as a complex, multi-faceted, and ill-structured (wicked) problem that encompassed community wellbeing as a product of social, cultural, economic and environmental factors (Reid, 2010). This clearly has no simple solution. The Act did not seek to provide a direct solution, but was rather an attempt to create a policy environment in which issues could begin to be tackled, with an increased accountability to, and input by, the local community and authority to act upon that input. Following the changes in 2010 and onwards, this was remodeled towards a normative, well-structured substantive problem of market-focused efficiency addressing a prescribed set of issues such as pests, roads, rubbish and water (Department of Internal Affairs, 2012, May). Unfortunately, a problem cannot be simplified by ignoring factors that make it more complex, and still be addressed effectively. Those factors will influence the outcome regardless. If the goal is to reduce administrative oversight costs, rate increases and debt levels by constraining the areas in which local government can exercise general competency, there is no indication that these changes have had any such impact (Department of Internal Affairs, 2012). There is furthermore a stark contrast between the reluctant regulation of the electricity industry and the increased control over local government.

In the absence of a ‘nation building’ focus by central government, and in an environment where markets are used to inform national development, competition leads to some regions losing (Easton, 2015, 16 March). Prior to the 1980s, building New Zealand as a nation featured strongly in the national political rhetoric (Easton, 1997). Central government's role in developing the regions was seen as a key element in achieving this, and this also provided justification for retaining central control. That rhetoric vanished, and from the mid-1980s onwards was replaced by economic theories that expected the market to provide the answers to questions of national development (Easton, 1997). Economic considerations were given primacy in subsequent policy making. The problem, say Low,

Gleeson, Green and Radovic (2005), is that "the market" and the economy are not the same thing. The market is a social construct that ignores a great many externalities in its pursuit of profit, while the economy is the sum total of all interactions between humans and the environment. For example, in the area of regional development the use of market driven competition as a driver of economic growth has resulted in the increasing movement towards cities by rural populations. This has led, in some cases, to absolute reductions in regional populations (Jackson, 2011). These changes are currently seen as positive from an economic market viewpoint (Knoll, 2014), but may not be beneficial from a total economy approach, which incorporates externalities such as the loss of infrastructure, population and economic development from the regions combined with the growth of problems related to those issues in the major cities (Low et al., 2005).

The focus on market-driven economic growth as an indicator of success and wellbeing, however, is inadequate. While market factors are being given the greatest attention in national level policy, and in many cases the sole attention, it is the non-market factors that weigh most heavily in future consequences of present actions, as the ‘losers’ do not exit the stage (Ehrenfeld, 1981; Sagoff, 2011). Richard Layard (2006) argues that the economic framework is the correct framework to approach policy, but the error has lain in not paying adequate attention to the involuntary interactions between people and the influence of those interactions on our sense of wellbeing. Frey and Stutzer (2012) claim that this wellbeing cannot be achieved by a "benevolent dictator" approach of central governance, but requires citizens to be actual decision makers. In a nation that places great value on choice of lifestyle (Department of Labour, 2004), it was a significant development for central government to make the wellbeing of New Zealand a concern for policy through the new Local Government Act 2002, rather than a simplistic view that a growing economy will resolve these issues, and further to begin to devolve authority to the local government authorities, closer to those being affected by the decisions. The exclusion of economic, social and environmental

factors by the economic efficiency-driven national level policy[10], however, as seen in subsequent reforms to the Act, does not provide an effective platform for local government to address either operational issues or the issues that concern its constituency, and undermine the profitable dependable supply ideational foundation as an effective basis for developing efficient institutions due to their continuing impacts on outcomes (Bührs, 2009; Dryzek & Tucker, 2008).

5.3.2 Electricity Sector

The institutional developments of Wellington Electricity are conformed to the narrow focus of profitable dependable supply. This focus promotes a short-term economic viewpoint that excludes external factors, especially future social and environmental outcomes. This ideational foundation has legislative authority, producing institutions which have constrained the adoption of new sustainable technology.

Wellington City Council attempted to adopt an integrated policy approach that addressed issues of sustainability. Examination of the Wellington City Council lighting proposal revealed an integration of a wider variety of ideas than those expressed in the Wellington Electricity asset management plan. Examination of the Local Government Act 2002 showed remnants of a similar breadth of approach, and evidence of deliberate efforts to reduce that breadth[11]. The focus of Wellington Electricity, however, was limited by its authorizing policy. The Electricity Industry Act 2010 has a very specific purpose which makes no acknowledgement of wider concerns, while the Electricity Authority has such a narrow purpose as to raise some question about the effort of its creation being worth it (Bertram, 2013). The Commerce Act 1986 and the Commerce Commission statements regarding their place in the operation of the electricity sector show a very specific scope of ensuring market activity meets regulations, as opposed to examining the impacts of the market on the economy, society or the environment (Commerce Commission, 2015, 17 August). Wellington

[10] See Chp. 3.3 – Sustainability and Economics, 3.4.3 – Work, and 4.4 – Conflicting Institutions.
[11] See Chp. 2.3.1 – Amendments to Local Government Act 2002 from 2008-2015.

Electricity, as subordinate to these institutions, was therefore constrained in the possible responses it could make to the proposal to adopt the new sustainable technology.

Despite Wellington Electricity's awareness that technological changes were weakening its financial viability, it was limited in how it could respond to this situation by its institutional setting. The response to the lighting proposal by Wellington Electricity was an attempt to maintain the scope of approach that the existing institutions had mandated for them. Yet even in the very act of doing this, there is acknowledgement that this scope was inadequate to fully address technological change; technological changes were, "…eating [our] lunch off the table" (Radio New Zealand National, 2015, 7 April). In the quiet desperation of that statement, there is an implicit acknowledgement that the narrowness and rigidity in appropriate responses mandated by the institutional setting was inadequate to address the full consequences of the problem evidenced in the conflict. The narrower the policy focus, the more rapidly the policy may become obsolete, as no capacity is built into the existing policy to allow for changing circumstances and environment (Bührs, 2009; Cheyne, 2008). Since policy is more often revised than removed, what Charles Lindblom (2010) referred to as the science of muddling through, a broader perspective during policy formulation can potentially extend the longevity of effective incremental changes. The absence in institutions of that underpinning breadth of concern expressed as sustainability creates a policy rigidity in the face of change that both predisposes institutions to conflict and also is likely to position them poorly to cope (Bührs, 2009).

This case illustrates the problems of creating policy in isolation from related areas. If the Commerce Commission accepts the expertise and recommendations of the Electricity Authority to propose changes, ministerial approval is required to enact the changes (Commerce Commission, 2015, 17 August). However, at this level of constitutional rules, producing policy for ministerial approval, the perspective of the Electricity Authority and the Commerce Commission needs to be greater than simply market competition. If policy is produced with solely these

inputs, then conflict becomes inevitable, as the aims of profitable business, social wellbeing and environmental health are not the same (Dalziel & Saunders, 2015; Dryzek, 2005; Olier, 2014).

5.3.3 Institutions that Promote an Integrated Approach

Policy integration is necessary to counter the conflict that arises when institutions have different basis for their rules. The conformity that develops from the narrow focus of profitable dependable supply does not produce flexibility in adopting sustainable change. This unwillingness to embrace change to promote sustainable outcomes can result in a dysfunctional relationship between institutions and society. Institutions that develop policy on the basis of sustainability concepts, which approach economic, environmental and social issues as both requiring integration and not being substitutable, are more flexible in adopting new sustainable developments.

Centralised governance has the potential to lead to integrated policy. A primary benefit of centralized governance is the ability to create policy at the broadest level of concerns, attempting to balance economic, social, and environmental issues with attention to the particular needs of each region (Easton, 2015, 16 March). It is imperative that this broad approach be appropriate to meeting the specific concerns of the local government, since the local body has to address these issues regardless of the mandates handed down from central government. Thus a policy framework in which to operate is much more effective than the current approach of having a straitjacket of policy directives determined by those distant from the issues (Reid, 2011). The inevitability of the broad concerns of sustainability for local government as opposed to those of purely economic efficiency are demonstrated in the proposal by Wellington City Council (2014).

Institutions limit or frame possible courses of action and can reduce the ability to respond to change. As explored in the previous chapter, by establishing the rules of engagement, institutions frame how issues are seen and what solutions may be applied. This framing makes solutions

outside the existing framework less likely to be embraced, or even acknowledged. By reducing the available options at each change point, the organisation becomes more rigid, and policy developed in this context does not have the flexibility to engage with the true range of possibilities, as many of those possibilities have already been excluded by the existing institutional framework[12]. When two independent institutions meet, the effect of this automatic exclusion is to narrow the available options further. When fewer options are available as solutions, there is a greater likelihood that the available options will be in conflict. It should therefore be clear that institutions developed on a narrow ideational foundation are already more restricted in the solutions available than are institutions founded on a broader perspective. A specific and simplified starting ideational foundation therefore places an institution in a poor position to address change.

There is a need to develop institutions with capacity for adaptation. The influence of a narrow ideational institutional foundation of profitable dependable supply promotes rigidity in the face of change, as contrasted with the broader based governance approach of sustainability, which has a greater capacity for adaptation through intentional integration of environmental, economic and social concerns and a focus on future outcomes. Institutions that have greater capacity for adaptation are more likely to find mutually acceptable alternatives in conflicting agendas and a broader selection of alternatives to address change. The legislation (Local Government Act 2002, Electricity Industry Act 2010) does not prohibit a broader sustainability ideational foundation for electricity sector policy, but since neither legislation nor policy acknowledges or measures factors outside its very specific focus of economic efficiency, any such engagement is going to have to be sold from the bottom up. This is certainly challenging, but not as impossible as might be assumed, since the benefits of broader scope and greater integration across sectors is a topic under considerable discussion throughout business (Madew, 2015) –

[12] See Chp. 4.4 – Conflicting Institutions, and 4.5 – Developing Institutions that Provide for an Integrated Approach.

ironically more than current New Zealand national level electricity sector legislation and policy acknowledges.

The Commerce Commission has the potential to lead an integrated policy approach, but does not have the scope to do so. The Commerce Commission was established in 1986 to oversee all market competition. Its economic scope is already limited by the lack of provisions for addressing markets where competition was weak or absent, and while certain entities, such as Transpower, have limits set on their pricing, there is no law prohibiting the taking of excessive profits (Bertram, 2013). At each policy level, a broadening of scope when considering the impacts and effectiveness of policy approaches allows for greater policy integration (Bührs, 2009; Jordan et al., 2005). This expectation has developed from the differentiation between governance and government that has taken place since the 1990s. Government seeks to control activities, while governance seeks to provide direction, without getting lost in the details. The governance approach argues for a broader perspective at each level of rules due to a difference in focus. The Electricity Authority is like a community constable, encouraging good behaviour by its presence, but not in charge. Like many community constables, the Electricity Authority may well have a much better grasp than those outside the sector of what is needed at the operating level, and a greater awareness of impacts external to the sector than those inside the sector, in developing policy for the sector, but it can only present recommendations to the Commerce Commission, which is responsible for all market competition, and Central Government, for whom it may not presently be a priority (Electricity Authority, 2014). The Commerce Commission does not necessarily need to provide these wider inputs themselves, but creating policy in conjunction with the institutions which have that information can improve economic outcomes as well as social and environmental ones (Bührs, 2009). It is less effective and beneficial in the long run to exclude social and environmental concerns at this level as they will inevitably impact on economic outcomes (Low et al., 2005; Stiglitz, 2012). Creating silo-ed policy leads to the kind of conflict seen in this case, due to conflicting objectives and the lack of attention to issues of integration (Bührs, 2009;

Clemons & McBeth, 2009). Further, issues of future outcomes and the ethical nature of these issues are 'wicked' by definition, in that the breadth of factors affected by any legislation are by nature complex and many. Ignoring such factors only ensures that they will not be taken into account in a way which might reduce conflict and assist integration between policies.

5.4 Strengths and Limitations

Discursive institutionalism acknowledges the influence of actors on institutions, as well as vice versa. In this thesis I have focused on the influence of institutions on actors. Drawing on an analysis of relevant legislation and policies that form these institutions, the thesis has demonstrated how institutions influence actors, and with what consequences. However, interviews with the actors would add another layer to this understanding and would be a useful target of further research. Interviews with the actors involved would be especially helpful in exposing informal institutions that have been inferred from the documents. The evidence for the subjective categorization of informal institutions is therefore not as strong as that developed from the formal institutions. The decision not to engage in interviews was due to scale and time constraints. The benefits gained from the extra research through the broader focus and data collection was not deemed to be of adequate significance to the argument.

I have called the category labels subjective, in that they are my labels that I believe give an appropriate indication of the type of data contained by the category. While these labels are mine, the elements that compose those categories devolve directly from the data. This data is sufficient to effectively indicate the conclusions drawn.

5.5 Future Research

This study has focused on the influence of institutions on actors. As mentioned above, interviews with the actors of the various organisations and ministries would be a useful area to investigate further in order to

more clearly understand the informal institutions and their effects, as well as to explore what impacts the actors themselves may have had on the formation of the institutions.

The ongoing development of evidence of successful outcomes where policy integration between institutions is trialed will greatly support the further creation of institutions that can promote integration between policy areas. The continuing demonstration in practice of the necessary flexibility to engage with positive change in promoting sustainable outcomes will provide the evidential basis for theoretical modelling of superior outcomes to the economic efficiency-driven institutions that predominate at the national level. New Zealand has greater capacity than most liberal democracies to enact such changes, due to its lack of veto points in political decisions, if adequate political support could be generated.

It would also be interesting to develop a number of "what if?" scenarios, exploring what institutional developments the various profitable dependable supply entities might have undertaken if they had been developed using a sustainability approach.

5.6 Conclusion

This case examined contrasting responses to the development of new sustainable technology, in the form of LED street lighting, from the perspective of the institutions involved and the ideas driving those institutions. Wellington City Council developed a proposal, and incorporated that proposal into its long term plan, that demonstrated engagement with an integrated approach to policy based on ideas of sustainability. Sustainability as an ideational foundation for institutions, however, no longer has the same legislative authority, through the Local Government Act 2002, that existed prior to the amendments to the Act which have removed all references to the four "wellbeings"[13]. Consequently, institutional developments by Wellington City Council did not have the capacity to resist the opposing institutional developments of

[13] Economic, environmental, social and cultural.

Wellington Electricity, whose profitable dependable supply ideational foundation had explicit legislative support. The limited perspective, based on a particular view of economic efficiency, conformed profitable dependable supply-driven institutional developments to a narrow focus that constrained the possible responses of Wellington Electricity to the new technology, hindering its adoption.

Policy integration is necessary to counter the conflict that arises when institutions have different basis for their rules. The conformity that developed from Wellington Electricity's narrow focus of profitable dependable supply did not produce flexibility in adopting sustainable change. This unwillingness to embrace change to promote sustainable outcomes can result in a dysfunctional relationship between institutions and society. In contrast, Wellington City Council's embrace of sustainability concepts, approaching economic, environmental and social issues as both requiring integration and not being substitutable, has demonstrated more institutional flexibility in adopting new sustainable technology.

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