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The Law of End-Use Energy Efficiency

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Abstract

This thesis investigates options for reforming New Zealand's law, regulation and policy concerning energy efficiency. The external drivers in law, regulation and policy that affect household energy use for space heating, hot water heating and household appliances will be examined. Comparative studies with Germany and California will be conducted to make a systematic appraisal of existing policy instruments with the intention of seeing which of these instruments could be applicable in a New Zealand context. The role of the state and the implementation of regulation will be addressed as well as the effectiveness of different energy efficiency measures to change consumer behaviour to adopt energy efficiency in their household.

One can conveniently divide the different energy efficiency measures into conventional regulation, decentred regulation, market mechanisms and fiscal measures; unregulated market forces can also be considered. Governments do not develop market mechanisms for domestic end-use energy efficiency. The advantage of conventional regulation (such as energy performance standards) is that it is not as dependent on market and consumer behaviour as decentred regulation (such as energy information measures and voluntary agreements) or situations with no regulation (where market pressure may still be present). The advantage of decentred regulation is that it is more flexible than conventional regulation and can therefore provide a quicker response to the contemporary challenges of evolving markets. Fiscal measures such as subsidies and funding are considered a good approach as a support of conventional regulation.

Forceful direction by the legislature is needed to improve the energy efficiency measures. There should be a mixture of conventional regulation, decentred regulation and fiscal measures. The aim is to make the industry manufacture and distribute energy efficient products and convince the consumer to buy these products.

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CHAPTER ONE - THE FRAMEWORK

Everyone is aware of climate change as it has been a major topic in the last decade. We know about the threats, but different countries have considered different options to protect the environment. Unfortunately they are still not working together more effectively against this common threat. The contribution that energy efficiency can make to overcome this threat is sometimes overshadowed by renewable energy. New Zealand is still dominated by oil and natural gas for its total primary energy,¹ but is doing very well in respect of electricity generation as two-thirds is from renewable energy.² New Zealand's renewable energy resources however also have their impacts on the environment or other issues to overcome.

Hydro power is the largest renewable source for producing electricity in New Zealand,³ but as well as minor safety issues from old dams, the natural flow of rivers and lakes is interrupted. New Zealand's share of geothermal energy is the highest of all the IEA countries,⁴ but due to its limitations of a few sites with specific geological conditions, it makes up only 6 per cent of the country's total primary electricity generation. Apart from the high costs for geothermal power plants for deep drilling, it can also have a negative impact on local geothermal activity such as natural hot pools, geysers and geothermal tourist attractions. New Zealand has high quality wind resources due to the path of the westerly winds that blow in the thirties and forties latitudes of the southern oceans.⁵ Even with growing wind energy supply this renewable energy resource makes up only 1 per cent of the country's total electricity generation.⁶ There is hardly any solar

¹ International Energy Agency (IEA) *Energy Policies of IEA Countries: New Zealand* (IEA, Paris, 2006) at 36.

² Ministry of Economic Development (MED) *New Zealand's Energy Outlook to 2030* (MED, Wellington, 2006) at 27.

³ *Ibid.*, at 16.

⁴ International Energy Agency (IEA) *Energy Policies of IEA Countries: New Zealand* (IEA, Paris, 2006) at 36.

⁵ Barry Barton "New Zealand Regulation of Wind Turbines" in Helle Tegner Anker, Birgitte Egelund Olsen, and Anita Rønne *Legal Systems and Wind Energy: A Comparative Perspective* (DJØF Publishing Copenhagen, Copenhagen, 2008) 284 at 284.

⁶ International Energy Agency (IEA) *Energy Policies of IEA Countries: New Zealand* (IEA, Paris, 2006) at 38.

electricity generation in New Zealand due to the difficult and expensive conversion from solar energy to electricity. Renewable energy is better than the use of fossil fuels but as we could see has its impact on the environment or is available in a high enough amount. What are the other options to satisfy New Zealand's electricity demand?

New Zealanders decided two decades ago against nuclear power and there is no foreseeable shift in their thinking. The reasons were mainly based on safety issues. Nuclear Power is a target for terrorism and there is no safe disposal for the nuclear waste. In addition, New Zealand is affected by earthquakes, which make a nuclear power station even more dangerous. The minimum size for a nuclear power plant to be economic is also too large for the New Zealand system.⁷ Nevertheless it would be legally possible to build a nuclear power station in New Zealand because the Nuclear-Free Zone, Disarmament and Arms Control Act 1987 does not prohibit this.⁸

A better method of reducing the impact to the environment would be through the use of energy efficiency. The *World Energy Outlook 2009* refers to the world energy-related CO₂ emission savings that different policy measures could produce.⁹ It compares the Reference Scenario (which provides a picture of how global energy markets would evolve if governments make no changes to their existing policies and measures) with the 450 Policy Scenario (which refers to a world in which collective policy action is taken to limit the long-term concentration of greenhouse gases in the atmosphere to 450 parts per million of CO₂ -equivalent).¹⁰ The *World Energy Outlook 2009* states that 52 per cent of the savings are possible through end-use energy efficiency policies, 20 per cent through renewables, 10 per cent through nuclear, 10 per cent through carbon capture and storage (CCS), 5 per cent through primary energy efficiency, and 3 per cent through biofuels.¹¹ The role the IEA gives end-use energy efficiency policies is startling. Why focus on renewables when implementing end-use energy

⁷ Christine Hood and Colin James *Making Energy Work: A Sustainable Energy Future for New Zealand* (Victoria University Institute of Policy Studies, Wellington, 2007) at 45.

⁸ See Nuclear-Free Zone, Disarmament and Arms Control Act 1987.

⁹ International Energy Agency (IEA) *World Energy Outlook 2009* (IEA, Paris, 2009) at 211.

¹⁰ *Ibid*, at 41.

¹¹ *Ibid*, at 211.

efficiency policies is possible and can contribute the biggest part to the reduction of energy-related CO₂ emissions? For the amount of money spent on developing new renewable energy sources, the same money could be spent on promoting end-use energy efficiency which would have a greater positive impact. Nevertheless, there is no doubt that a sustainable energy system should be based on renewable energy sources in the future (in the most energy efficient way).¹² But, at the moment, the opportunities for making better use of the energy we already have are far cheaper, faster acting, and better understood.

I. The benefits of energy efficiency

Let us explore the idea of energy efficiency (EE) first, before talking about the benefits. There is no single commonly accepted definition for EE, because a lawyer, an engineer, an economist and an environmentalist have different concepts of EE.¹³ For the purpose of this research it is important to understand that an EE improvement generally means using less energy to produce the same amount of services or useful output.¹⁴ It refers to the energy input required per unit of useful output. On a national level, EE can be measured as total primary energy supply (TPES) per unit of gross domestic product (GDP).¹⁵ It has to be remembered that the terms “energy efficiency” and “energy conservation” are not the same, because “energy efficiency” refers to a reduced level of energy intensity, so that the same or a lesser amount of energy use gives a greater benefit; while “energy conservation” means an overall reduction in energy use.¹⁶

There are two types of EE; primary EE and end-use EE. Primary EE includes generation and transmission efficiency. Generation efficiency is the efficient

¹² Ibid, at 214.

¹³ Researchers have considered different definitions for energy efficiency; such as Patterson (1996), Lovins (2004), Huntington (1994) and Boyd (2005).

¹⁴ Beng W Ang “Monitoring Changes in Economy-Wide Energy Efficiency: From Energy-GDP Ratio to Composite Efficiency Index” (2006) 34 Energy Policy 574 at 575.

¹⁵ Howard Geller and others “Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries” (2006) 34 Energy Policy 556 at 556.

¹⁶ Transport and Environment Committee “Energy Efficiency Bill” [1996-1999] LXVI AJHR 189 at 1008.

extracting of energy from a resource to a power turbine or fuel cell.¹⁷ Transmission efficiency is the reduction of energy transport losses.¹⁸ The supply side is addressed by primary EE and the demand side is addressed by end-use EE which is a better method of reducing the impact on the environment in comparison to concentrating more on alternative energy resources - as we have just noted. End-use EE and is divided into the industrial sector, the commercial sector and the residential sector.¹⁹ The residential sector can be divided into building (construction), transport and appliances in general (including space heating and hot-water heating). Transport-related EE can be easily separated from other types of residential EE, but EE concerning construction and appliances are interdependent. The best results can only be achieved if houses have sufficient insulation (addressed by EE in buildings) in combination with energy efficient space heating, hot-water heating and appliances. For instance, the most energy efficient space heating will not reduce residential energy bills if it attempts to heat the whole street because of bad insulation. Nevertheless, there are issues involved such as insufficient access to money which does not allow a lot of people to install insulation and buy energy efficient products at the same time. In addition, people tend to focus on buying energy efficient products such as space heaters first before looking for insulation, which seems to be the wrong way around. This research focuses on space heating, hot-water heating and appliances and leaves the matter of EE in construction to future research.

The main benefit of end-use EE is improving economic well-being by reducing waste and energy costs. Rising energy costs are caused by improved living standards and increased energy consumption. Rising energy costs force low-income households to turn off their heating even in the cold period during winter because they cannot afford to have them running. As a result, the temperatures in up to one-third of New Zealand homes are up to 5°C colder than the healthy temperature recommended by the World Health Organisation which is

¹⁷ Edan Rotenberg “Energy Efficiency in Regulated and Deregulated Markets” (2006) 24 UCLA J Env Law & Policy 259 at 262.

¹⁸ Ibid.

¹⁹ Hannah Choi Granade and others *Unlocking Energy Efficiency in the U.S. Economy* (McKinsey & Company, Washington D.C., 2009) at 8.

20°C in living areas, 18°C elsewhere.²⁰ The result is occupants being prone to sickness especially the elderly and young children, who are susceptible to the effect of cold and damp houses.²¹ The results of a New Zealand Business Council for Sustainable Development survey were that 180,000 people do not show up at work each year and 50 people visit the hospital each day because of home-related health problems.²² Furthermore, there is also the use of unflued gas heaters, which can emit a high percentage of nitrogen dioxide.

The other two benefits of EE are the protection of the environment and increased energy security, which are addressed by both primary EE and end-use EE. There would be less environmental damage if carbon emissions (CO₂) were reduced. Carbon emissions (CO₂) are the primary greenhouse gas emissions (GHGs) which arise mainly from the burning of fossil fuels. The energy sector accounts for 84 per cent of global CO₂ and 64 per cent of the world's greenhouse-gas emissions.²³ Carbon emissions cause climate change, which has hazardous impacts on the environment, such as melting glaciers, warming of oceans, changing seasons and extinction of vulnerable species. If nothing changes, the emissions will increase the global temperature by the end of the century by 6°C. Facing these facts, almost everyone is in the business of reducing carbon dioxide emissions. This energy-related environmental challenge brings us to a connected important factor to consider: energy security.

Energy security is a condition in which within a nation, most citizens and businesses have access to satisfactory energy resources at reasonable prices for the predictable future.²⁴ Different regions and countries may put different weight on this issue depending upon their specific circumstances. For instance, New Zealand is largely self-sufficient in energy supply except oil. Therefore, the

²⁰ Parliamentary Commissioner for the Environment (PCE) *Healthy, Wealthy and Wise: A Health Impact Assessment of Future Currents: Electricity Scenarios for NZ 2005-2050* (PCE, Wellington, 2006) at 22.

²¹ Ralph Chapman and others "Retrofitting Houses with Insulation: A Cost-Benefit Analysis of a Randomised Community Trial" (2009) 63 *J Epidemiol Community Health* 271 at 271-277.

²² New Zealand Business Council for Sustainable Development "The Benefits of the Five Point Solution" (2008) <www.nzbcSD.org.nz>.

²³ International Energy Agency (IEA) *World Energy Outlook* (IEA, Paris, 2009) at 168.

²⁴ Barry Barton, Catherine Redgwell, Anita Rønne, and Donald N Zillman *Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment* (Oxford University Press, Oxford, 2004) at 5.

dependence on importing oil from other countries, especially the unstable Middle East, reduces New Zealand's energy security. This is because these countries are affected by civil unrest and the threat of terrorism.

End-use EE does not come without effort. The fruits are low-hanging fruits, but not all of them have been picked by New Zealand at present. End-use EE could be the largest contributor to CO₂ emissions savings by 2030 if the 450 Policy Scenario is implemented according to the *World Energy Outlook 2009*.²⁵ To exploit this potential, the implementation of more aggressive law, regulation and policy concerning end-use EE is needed.²⁶ Is New Zealand not aware of the potential of end-use EE or is it putting too much emphasis on renewable energy?

II. The "energy efficiency gap"

New Zealand amongst other countries has a significant cost-effective end-use energy efficiency (EE) potential that is not yet realised. This phenomenon is called the "energy efficiency gap", which is the difference between the actual level of energy efficiency and the higher level that would be cost-effective from the individual's or firm's point of view.²⁷ The "energy efficiency gap" is due to a variety of barriers. These barriers fall into five main categories: lack of information, split incentives, financial barriers, payback barriers and externalities/pricing issues.

Consumers have inadequate information about the running cost of their purchase. As a result their purchasing is based on the initial cost of the product. And even if they are willing to make an EE purchase, they face the following problems. The lack of information will be shown with the example of the purchase of a solar hot water heater because New Zealand has an appropriate climate for solar energy which makes a solar hot water heater a good investment. First of all, there is no such thing as a typical or standard solar water heater. Consumers have the choice between a range of different models which they are

²⁵ International Energy Agency (IEA) *World Energy Outlook 2009* (IEA, Paris, 2009) at 210.

²⁶ *Ibid*, at 211.

²⁷ International Energy Agency (IEA) *Mind the Gap* (IEA, Paris, 2007) at 20.

not familiar with. In most cases no information will be given about how long it will last, how much hot water it will save, or how different electricity tariff structures will affect the savings. It is not surprising that many purchasers give up at that stage.²⁸ If they decide to go on, the next problem they have to face is finding the right plumber for the installation. If they find one, he or she is likely to be expensive to hire and even worse, often not be trained properly to install it.²⁹ Quality assurance in particular needs to be important for all service providers. An example of issues that can occur with poor quality assurance is the “leaky homes” issue currently facing many New Zealanders. Inadequate information will often cause the prospective purchaser of a solar hot water heater to decide that it is too difficult, and instead to purchase a standard hot water heater. Another factor to consider is that EE equipment is often not stocked, and requires special orders and therefore long lead times for delivery of the equipment.

The problem of split incentives arises when two parties engaged in a contract have different goals and different levels of information, which is known as the principal agent (PA) problem.³⁰ The most common example of this problem is the Landlord-Tenant Problem. In this case the landlord (agent) makes the energy efficiency-related investments and the tenant (principal) pays the energy bill. Therefore the landlord has no financial incentive to make the rental property more energy efficient. The tenant, on the other hand, has no real financial incentive either, because most tenants in New Zealand only stay for a few years in the same property and will therefore not be able to reap the rewards of their purchase. This problem has a large impact especially in New Zealand where about 250,000 rental property owners offer about 400,000 rental properties.³¹ With about 1.6 million houses in New Zealand, the rental properties make up to 25 per cent of all properties.³² Other PA problems are seen in the property ownership market and the hotel industry, but both are not relevant for this research.

²⁸ Jeanette Fitzsimons, Green Party Co-Leader “Efficient Police Making in the Real World” (30th International Association of Energy Economics Conference, Wellington, 21 February 2007).

²⁹ Sarah Barnett “Sick as houses” *New Zealand Listener* (New Zealand, 15-21 May 2010) at 17.

³⁰ International Energy Agency (IEA) *Mind the Gap* (IEA, France, 2007) at 3.

³¹ Dene Mackenzie “Rental Property Losing Favour as Investment Option” *The Otago Daily Times* (New Zealand, 19 May 2010) at 1.

³² Sarah Barnett “Sick as houses” *New Zealand Listener* (New Zealand, 15-21 May 2010) at 14.

The financial and payback barriers are also factors to consider. Low-income households do not have the access to capital to buy EE products. If they buy EE products, they expect to have the payback in the first two-three years, which is not currently possible. This is connected to the PA problem, because, as we have just seen, tenants will not stay long enough in the same place to reap the benefits.

The last barrier is the externalities and pricing issue. Current energy prices do not show external costs such as the environmental damage of energy production or construction of facilities. As a result New Zealanders face an inaccurate price for energy. The large-scale hydro stations, built during the mid-20th century, together with the abundance of locally sourced natural gas, allowed New Zealand to price its electricity at the low end of the international spectrum for a significant part of the 20th century. Nevertheless, it is well accepted that its low-cost hydro and Maui gas options cannot provide future electricity security in the face of continuing demand growth.³³ Therefore the price for energy will rise over subsequent years.

If we decide to act, we have choices in addressing the “energy efficiency gap”, we can use individual actions through market forces; or collective actions through the state. Choosing the right action is the main concern of this research.

III. The role of the state

Choosing the right actions requires us to consider the role of the state and the question: “more or less regulation” or in other words “how controlling the government should be”. Should we leave the application of end-use energy efficiency (EE) potential up to consumers (completely “free” in their purchase decisions) who want to invest in EE or should the state take collective actions to address the adoption through law, regulation and policy or fiscal measures?

³³ JP Rutherford, EW Scharpf, and CG Carrington “Linking Consumer Energy Efficiency with Security of Supply” (2006) 35 Energy Policy 3025 at 3025.

A. *Actions under the interventionist welfare state*

Some legal thinkers favour a totally regulated regime especially for markets. These nationalists, conservatists, collectivists or paternalists (or maternalists) argue that individuals are self-interested and not rational and therefore regulations are needed to prevent them from harming themselves or others.³⁴ With respect to markets, they argue that regulations are needed because free markets can only exist within the framework of regulations.³⁵ These legal thinkers would favour conventional regulation, decentred regulation and market mechanism as the state's *imperium* (legislative power) and fiscal measures as the state's *dominium* (control of public funds and ownership),³⁶ to address the “energy efficiency gap”.

Regulation in general has always been an important part of energy law to ensure the protection of public interest such as energy security, competition, investor protection, environment and consumer protection.³⁷ What is the meaning of regulation in general? Julia Black defines regulation as follows:³⁸

Regulation is the sustained and focused attempt to alter the behaviour of others according to defined standards or purposes with the intention of producing a broadly identified outcome or outcomes, which may involve mechanism of standards-setting, information-gathering and behaviour-modification.

This definition highlights the importance of regulation as an instrument to alter behaviour, which is the main objective of law, regulation and policy concerning EE.

³⁴ Cass R Sunstein *After the Rights Revolution: Reconceiving the Regulatory State* (Harvard University Press, Cambridge, 1993) at 49.

³⁵ Cass R Sunstein *Free Markets and Social Justice* (Oxford University Press, Oxford, 1997) at 5.

³⁶ Terence Daintith “The Executive Power Today: Bargaining and Economic Control” in Jeffrey Jowell and Dawn Oliver *The Changing Constitution* (Clarendon Press, Oxford, 1989) 193 at 197.

³⁷ Barry Barton, Lila K Barrera-Hernández, Alastair R Lucas, and Anita Rønne *Regulating Energy and Natural Resources* (Oxford University Press, Oxford, 2006) at 6.

³⁸ Julia Black “Critical Reflections on Regulation” (2002) 27 *Australian Journal of Legal Philosophy* 1 at 26.

1. *Conventional regulation*

Conventional regulation in energy and natural resources was booming until the 1980s. The government had the task of ensuring the supply of energy.³⁹ Energy policy was designed to make sure that demand and supply were balanced. The prevailing view was the state should be the provider of energy through ownership and control, to ensure supply.⁴⁰ Setting prices and outputs were also seen as necessary to ensure affordable access to heating and lighting.⁴¹ The framework of public debates did not even consider the concept of leaving the energy sector to market forces.⁴²

Conventional regulation is the strongest action the state can take to alter behaviour, because it restricts the choices consumers have. To alter behaviour through conventional regulation, EE measures such as product bans, energy performance standards, and the Top Runner Programme can be used. Energy price measures are also classified as conventional regulation, but they need separate consideration.

a. Product bans

The toughest legal measures concerning end-use EE are product bans. They prohibit specific energy inefficient products from the market.⁴³ This means that product bans eliminate the choices for consumers and the industry. The advantage of product bans is that they are in theory the most effective legal measures as they should make the industry manufacture energy efficient products and force the consumer to buy them as there are no other products available. This works only if it can be ensured that the prohibited energy inefficient appliances are replaced by energy efficient appliances.

³⁹ Dieter Helm *Energy, the State, and the Market* (Oxford University Press, Oxford, 2003) at 16.

⁴⁰ *Ibid.*

⁴¹ *Ibid.*, at 15.

⁴² *Ibid.*, at 14.

⁴³ Thomas Schomerus and others “Rechtliche Konzepte für eine bessere Energienutzung” (Legal Measures to Reduce Energy Consumption) (2008) 1 Berichte des Umweltbundesamtes 34 at 34.

b. Minimum energy (efficiency) performance standards

Minimum energy (efficiency) performance standards (MEPS) ensure that products meet minimum energy performance criteria and this in turn limits the maximum amount of energy that may be consumed by a product in performing a specified task.⁴⁴ All products in a particular product class should be tested under standard conditions. The products that do not meet these standards will be removed from the market or will not get access to it.

MEPS are used for products where the consumer cannot evaluate the important energy-related aspects of that product. It therefore assists other legal measures such as labelling. MEPS are most suitable for products where the EE is not a factor in the purchase decision. This measure perfectly addresses the above-mentioned Landlord-Tenant problem. It gives incentives to companies to put more effort into developing or improving their products or face being removed from the market.

c. Top Runner Programme

Another energy efficiency measure used as an alternative to MEPS is the Top Runner Programme, first implemented in Japan in 1998.⁴⁵ Under this programme, the leading appliances on the market with the highest level of energy efficiency (EE) are adopted as a model for binding minimum standards for all products of its type within a specified timeframe.⁴⁶ This also includes imports. The Top Runner Programme sets targets by product category, for instance space heaters or hot-water heaters. In each category, the most efficient models available on the market are used to set the standard to be achieved within four to eight years. Each manufacturer must ensure that the efficiency of all its products meet that of the top runner models.

⁴⁴ Garth Harris and others *Promoting the Market for Energy Efficiency* (Ministry of Commerce Energy & Resources Division, Wellington, 1993) at 57.

⁴⁵ Thomas Schomerus "Der Top-Runner-Ansatz als Instrument zur Steigerung der Endenergieeffizienz" (The Top Runner Programme as a Measure to Improve End-Use Energy Efficiency) (2008) 3 *Zeitschrift für Europäisches Umwelt- und Planungsrecht* 130 at 130.

⁴⁶ Howard Geller and others "Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries" (2006) 34 *Energy Policy* 556 at 561.

The Top Runner Programme can be combined with labelling or awards for the best products. In Japan, the label is “red” for the products that have not met the Top Runner standards and the label is “green” for the products that have met the standards.⁴⁷ Furthermore there have to be sanctions for manufacturers if their existing products do not meet the criteria, and also for new products because the Top Runner Programme is not able to prohibit products from entering the market.

The positive outcome of the Top Runner Programme depends on the criteria set out for minimum energy standards. If all the products have to meet the same level of EE as the best five per cent on the market, the result could be products that are too expensive. If all the products have to meet the same level of EE as the best 25 per cent on the market, the measure would lose its effectiveness.

The advantage of this programme is that, in comparison to MEPS, it represents what is technically possible, socially desirable and best practice. Its disadvantage is that it still depends upon the market having top performing manufacturers to begin with. This approach could bypass the need for implementing product bans to eliminate inefficient products from the market.

d. Energy price measures

Energy price measures such as removal of subsidies on fossil fuel, incentives, use of externality costs and life-cycle costing, taxes, funding and price on carbon,⁴⁸ should not be the focus of energy efficiency (EE) measures. This may not be self evident, but the negative economy-wide impact outweighs the benefits. What are the reasons for this possibly surprising situation?

Increasing the price of electricity would result in bigger profits for the industry, and probably also in improving EE but the increase is primarily a climate change measure to protect the environment such as the Emission Trading Scheme (ETS). The ETS introduces a price on greenhouse gas emissions to create an incentive to

⁴⁷ Howard Geller and others “Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries” (2006) 34 Energy Policy 556 at 561.

⁴⁸ Edan Rotenberg “Energy efficiency in Regulated and Deregulated Markets” (2006) 24 UCLA J Env Law & Policy 259 at [268-283].

reduce emissions.⁴⁹ It is a market-based measure as it creates a market for reducing emissions.⁵⁰ The New Zealand Government released the framework for a New Zealand Emission Trading Scheme (NZ ETS) in September 2007.⁵¹ The NZ ETS was amended in November 2009. The different sectors have different entry-dates; forestry entered on 1 January 2008; stationary energy, industrial processes and liquid fossil fuel emissions have obligations from 1 July 2010, and agriculture will enter the scheme on 1 January 2015.⁵² The short term effect is reducing emissions but the long-term effect will result in improving EE as firms and households would adopt more emission and energy efficient practise as a response to the price signal.

It is not easy to prove that people (end-users) respond to price signals. This is a problem economists refer to as price elasticity of demand.⁵³ People still need to heat their homes or switch on the lights even if the price of electricity is high. In some areas such as buying “petrol” people seem not to respond to the price. One economic analysis has shown that if the price for petrol stayed around US\$4 for one year, gas consumption would only fall five per cent.⁵⁴ Drivers told researchers that they would want to stop driving to places they had to go to such as work and schools, but would not stop driving to places they enjoy going. This statement is in accordance with research done by Elizabeth Shove who states that people make decisions out of comfort.⁵⁵ In regards to energy prices, this would mean that if the price is too high for people to afford, they would rather turn off their heaters than buy a more energy efficient one.

⁴⁹ Farhana Yamin *Climate Change and Carbon Markets: A Handbook of Emissions Reduction Mechanisms* (Earthscan, Canada, 2005) at xxx.

⁵⁰ Barclay Rogers and Chapman Tripp “Carbon Markets” (2007) 9 NZLJ 336 at 336.

⁵¹ *Ibid*, at 338.

⁵² Ministry for the Environment “The New Zealand Emissions Trading Scheme” (2010) <www.climatechange.govt.nz>.

⁵³ Howard Geller and others “Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries” (2006) 34 *Energy Policy* 556 at 557.

⁵⁴ Lisa Margonelli *Oil on the Brain* (Broadway Books, New York, 2007) at 31.

⁵⁵ Elizabeth Shove, Heather Chappells and Loren Lutzenhiser *Comfort in a Lower Carbon Society* (Routledge, London, 2010). Also see Heather Chappells and Elizabeth Shove “Debating the Future of Comfort: Environmental Sustainability, Energy Consumption and the Indoor Environment” (2005) 33 *Building Research & Information* at 32-40. Also see Elizabeth Shove *Comfort, Cleanliness + Convenience: The Social Organization of Normality* (Berg, New York, 2003).

On the other hand there are examples where increasing the price of a product through taxes did have an effect on the behaviour of consumers. For instance, increasing prices for cigarettes have had the effect that the number of smokers has reduced.⁵⁶ This is the reason why New Zealand increased its taxes on cigarettes in 2000, and 2010, and will increase them again by 2011 and 2012.⁵⁷ The New Zealand Government expects to force 40,000 of about 900,000 smokers to quit with this move.⁵⁸ However, in New Zealand, when the government increased the price of a packet by 20 per cent in 2000, about 80,000 people who quit smoking resumed smoking within four months.⁵⁹ It was interesting to see that as a result of this, Treasury opposed the move to increase the price for cigarettes through taxes.⁶⁰ Papers obtained by The New Zealand Herald under the Official Information Act showed Treasury supporting the preparation of a tobacco control strategy using a range of policy tools rather than increasing the price for tobacco.⁶¹ This shows on the one hand that it is hard to predict the impact and outcome of raising the price in order to change consumer behaviour; and on the other hand that there is scepticism to increasing prices to change behaviour when other measures are available.

Apart from environment protection which would be increased through energy price measures, the benefits of energy efficiency (EE) are increased energy security and improvement of economic well-being. How does increasing the price of electricity affect these benefits? Energy security will not improve if the price for electricity increases. Different regions and countries will still need the same amount of energy when increasing the price. Improving economic well-being as the main benefit of end-use EE through reducing economic waste will not be achieved by increasing the price for electricity. It is a bit circular to increase the price for electricity to force households to invest in energy efficient products as, at

⁵⁶ Ministry of Health “Tobacco Tax – The New Zealand Experience” (2000) <www.moh.govt.nz>.

⁵⁷ Audrey Young and Martin Johnston “\$17 a Packet: Parliament Socks Smokers” (2010) NZ Herald <www.nzherald.co.nz>.

⁵⁸ Tracy Watkins “Smokers Whacked in Wallet” (2010) stuff <www.stuff.co.nz>.

⁵⁹ Audrey Young and Martin Johnston “\$17 a Packet: Parliament Socks Smokers” (2010) NZ Herald <www.nzherald.co.nz>.

⁶⁰ Martin Johnston “Treasury Opposed Increase in Tobacco Tax” (2010) NZ Herald <www.nzherald.co.nz>.

⁶¹ Ibid.

the end of the day they will not have won anything. They will need less electricity to run their appliances but pay more for the electricity which off-sets any benefits.

Does this mean that “smart metering” as an energy price measure is useful to improve EE? To answer this question, primary and end-use EE need to be distinguished between. The main aim of smart metering is to introduce real-time pricing to shift away from peak periods.⁶² For primary efficiency, efficiency is improved by peak-shifting if there is less use of an inefficient generating plant in a peak time. For end-use EE, mere load-shifting will not make any difference. What will make a difference is providing consumers with adequate information regarding appliances.

2. *Decentred regulation*

Decentred regulation is regulation that is not entirely dominated by the state anymore. A new task to create more flexible regulations has evolved for policy makers. In contrast to conventional regulation it is not a case of the government dictating and others doing or based on simple cause-effect relations.⁶³ It does not restrict consumer’s choice like conventional regulation, but it tries to influence it. Decentred regulation is multi-faceted (using a number of different strategies), indirect and focuses on combining governmental and non-governmental actors.⁶⁴ The decentred understanding of regulation is based on the changing nature of society, of government, and the relationship between them.⁶⁵ Decentred regulation is a shift in the focus of the activity of “regulation” from the state to other, multiple, locations, and the adoption on the part of the state of particular strategies and regulation.⁶⁶ Energy efficiency measures classified as decentred regulation are voluntary agreements and also energy information measures.

⁶² Parliamentary Commissioner for the Environment (PCE) “Smart Electricity Meters: How Households and the Environment Can Benefit” (2009) PCE <www.pce.parliament.nz>.

⁶³ Julia Black “Critical Reflection on Regulation” (2002) 27 *Australian Journal of Legal Philosophy* 1 at 5.

⁶⁴ *Ibid*, at 9.

⁶⁵ Julia Black “Decentring Regulation: Understanding the Role of Regulation and Self-Regulation in a ‘Post-regulatory’ World” (2001) 54 *Current Legal Problems* 103 at 106.

⁶⁶ *Ibid*, at 112.

Voluntary measures have a unique role, because the state has little input. It is more about industry organizations devising voluntary schemes. It is important to understand that these measures are legally non-binding and therefore not enforceable. The advantage of voluntary measures is that they are flexible and therefore provide a quicker response to the contemporary challenges of evolving markets and society. This is especially relevant in cases where a clash between legal systems and cultures exists - conventional law can be impossible or impracticable to adopt.

Energy information measures help to overcome the biggest problem for consumers; lack of information. They need information about the energy efficiency (EE) of the products they use in their households as well as the global significance of EE. There are two kinds of such measures; getting the information and displaying it.

For getting the information, research and development programs, environmental impact assessments and monitoring programs are required.⁶⁷ The first step to get well analysed information is to have research projects on EE. The projects must analyse and determine good EE measures. Therefore experts in each area have to be involved in working on all the drivers of EE promotion. If they have developed measures, these measures should be trialled as a pilot project to see if they work. That is why monitoring of these projects is very important.

For displaying the information, labelling, disclosure, rates and awards are required.⁶⁸ Disclosure of the positive effects of EE can be combined with demonstration projects. The public should be updated with new research results. It is also important that people have a good understanding of New Zealand's energy situation in general. It is helpful to use various media to bring the information to the consumer. Newspaper articles, television and internet advertisements and billboards could be used for this.

⁶⁷ International Energy Agency (IEA) *Towards a More Energy Efficient Future: Applying Indicators to Enhance Energy Policy* (IEA, Paris, 2009).

⁶⁸ Richard L Ottinger "Energy Efficiency: The Best Immediate Option for a Secure, Clean, Healthy Future" (2006) 30 *Natural Resources Forum* 318 at 325.

Labelling is the most frequently used tool of EE programmes.⁶⁹ It is the displaying of information about a product on its container, packaging, or the product itself. Labelling programmes can be either voluntary or mandatory. Some programmes are associated with energy performance standards. There are also comparison labels, which compare different models on the market; and endorsement labels, which identify and endorse a limited number of products that meet a designated efficiency standard. Labelling affects both the appliance industry and the residential sector.⁷⁰ Current drivers for purchasing products are price, design, and size. The aim is to include EE in this list. Labelling helps the consumer to take EE into account while purchasing a new product. The industry would replace products with more efficient products as the energy efficiency of products will be more visible and can influence consumers' purchasing behaviour. Technological improvements would also likely result due to this increased demand from consumers for more energy efficient products.

Another good strategy to inform the consumer is to give ratings or awards to energy efficient products. This helps to improve the awareness of those products.

3. *Market mechanisms*

Market mechanisms such as market trading systems like the Emission Trading Scheme and the trading of white certificates are out of the focus of this research as Governments do not develop market mechanisms for domestic end-use EE.⁷¹

4. *Social science, behavioural economics in particular*

The advantage of decentred regulation is that it is more flexible than conventional regulation and therefore provides a quicker response to the

⁶⁹ International Energy Agency (IEA) *Implementing EE Policies: Are IEA Member Countries on Track?* (IEA, Paris, 2009) at 23.

⁷⁰ Kwisun Huh "Initial Experiences with Energy Labelling Programmes: Evaluating the Effectiveness of Energy Labelling" in United Nations *Energy Efficiency: Compendium of Energy Conservation Legislation in Countries of the Asia and Pacific Region* (Bangkok, 1999) 140 at 141.

⁷¹ On white certificates see A de Geeter "Towards a European White Certificate Scheme: Review under Current National Experience and International Trade Law" (2007) 25 *Journal of Energy and Natural Resources Law* 1 at 1-57.

contemporary challenges of evolving markets. Decentred regulation as well as market mechanisms or situations with no regulation (where market pressure may still be present) are more dependent on consumer behaviour than conventional regulation. Behavioural economics, starting with the two Israeli psychologists, Amos Tversky and Daniel Kahneman in 1974, have done scientific research on human and social biases to understand consumer decisions.⁷²

Research done by scholars in the field of behavioural economics has been used by scholars in the field of energy efficiency (EE) to improve market mechanisms and information measures in particular.⁷³ It helps to understand why people fail to make energy efficient investments. We have seen while talking about the “energy efficiency gap” that there are several barriers involved. The most pertinent factor is still the reluctance of people to adopt EE in their households.

Behavioural economics makes two main statements important for this research; consumers are not rational, and their behaviour is not only driven by the price of electricity.⁷⁴ Behavioural economics states that most people make choices that are often not in their best interest.⁷⁵ Behavioural economics argues that in some cases people make bad decisions in terms of their own welfare such as making irrational choices to improve their EE, because of incomplete information, limited cognitive abilities, and lack of self-control.⁷⁶ People are often not able to make perfect or unbiased forecasts, because they are influenced by social background,

⁷² Amos Tversky and Daniel Kahneman “Judgment under Uncertainty: Heuristics and Biases” in Daniel Kahneman, Paul Slovic, and Amos Tversky *Judgment under Uncertainty: Heuristics and Biases* (Cambridge University Press, Cambridge, 1982), and Tversky, Amos and Kahneman, Daniel “Prospect Theory: An Analysis of Decision Under Risk” (1979) 47 *Econometrica* 263 at 263-291.

⁷³ See: Nicole Woolsey Biggart and Loren Lutzenhiser “Economic Sociology and the Social Problem of Energy Inefficiency” (2007) 50 *American Behavioral Scientist* 1070 at 1070-1087; Jack Fuller *Heads, You Die* (Per Capita Australia Limited, Australia, 2009); Cass R Sunstein and Richard H Thaler “Libertarian Paternalism Is Not an Oxymoron” (2003) 70 *U Chicago L Rev* 1159 at 1159-1202.

⁷⁴ Nicole Woolsey Biggart and Loren Lutzenhiser “Economic Sociology and the Social Problem of Energy Inefficiency” (2007) 50 *American Behavioral Scientist* 1070 at 1075.

⁷⁵ Cass R Sunstein and Richard H Thaler “Libertarian Paternalism Is Not an Oxymoron” (2003) 70 *University of Chicago Law Review* 1159 at 1164.

⁷⁶ *Ibid*, at 1160. Also: Elizabeth Shove, Heather Chappels and Loren Lutzenhiser *Comfort in a Lower Carbon Society* (Routledge, London, 2010).

communities, time of the year, and personal mood.⁷⁷ This is often the explanation for why people do not buy energy efficient products; because the initial costs of energy efficient products are higher than other products and people are not able to foresee their savings over the following few years on their electricity bill. Therefore they argue that people's choices have to be influenced, but people should be free to decide on their own and need the option to opt out of undesirable arrangements. How can law and policy makers use these findings?

A lot of regulation has been made from a rational point of view. Decision makers and modern societies think that people are rational.⁷⁸ Neither markets nor people are perfect. People may make decisions because of irrational drivers. If regulation is to work, decision makers have to consider all these things. Behavioural economics emphasizes the possibility that in some cases people make inferior decisions in terms of their own welfare. They would not have made these decisions if they had the adequate information or did not lack self-control.⁷⁹

Now, it is important to put that in the context of decision making in residential energy use. Social and environmental psychologists started investigating residential energy efficiency in the 1970s.⁸⁰ In the early days they focused on making information available. Today it is not only about having the right information; it is also about the right information for the different groups of people. Social sciences have found out that the attractiveness of measures depend upon different target groups. The determinants of decision can be divided into psychological and contextual domains.⁸¹ Psychological determinants include values, attitudes and personal norms. Contextual determinants include available choices, incentives, social norms, technologies and infrastructure.

⁷⁷ Loren Lutzenhiser "A Cultural Model of Household Energy Consumption" (1992) 17 *Energy* 47 at 54.

⁷⁸ Jack Fuller *Heads, You Die* (Per Capita Australia Limited, Australia, 2009) at 4.

⁷⁹ Cass R Sunstein and Richard H Thaler "Libertarian Paternalism Is Not an Oxymoron" (2003) 70 *University of Chicago Law Review* 1159 at 1161.

⁸⁰ Willet Kempton, John M Darley, and Paul C Stern "Psychological Research for the New Energy Problems: Strategies and Opportunities" (1992) in 47 *American Psychologist* 1213 at 1213-1223.

⁸¹ Charlie Wilson and Hadi Dowlatabadi "Models of Decision Making and Residential Energy Use" (2007) 32 *Annual Review of Environment and Resources* 169 at 193.

Behavioural economics has also implications for law and policy.⁸² The three main things in this field to consider are intertemporal choice, multidimensional decisions and decision-making behaviour.

Intertemporal choice means that people do not make decisions in a time-consistent way. They are affected by short-term discount rates rather than benefits in the future. They still rely on picking products because of the initial costs rather than the long-term running costs. Sometimes they even realise the advantage of savings, but just do not want to start today. Energy efficiency policies should be designed in a way that makes it easier for individuals to understand the importance of EE.

Multidimensional decisions mean that consumers are affected by different drivers when buying a product. Bounded rationality and decision heuristics shows that the way information is structured can influence a decision.⁸³ It is good to use information people can identify with in the first place and then continue with more complex information. People need an eye-catcher to garner their interest in a product. Personal attachment and emotions should be used to reach the consumer in the first place. Related to this is framing dependence which means that decision making is affected by a choice between losses and gains. Individuals are more afraid of losses than to gain a profit.⁸⁴ People do not want to lose their status quo.

Decision-making behaviour means that people are more reluctant to enter a new project than opting out of one. The so called default option was first introduced in retirement saving programmes.⁸⁵ Everyone knows it is wise to save for retirement but it is difficult to take the first step and join a retirement savings programme. Once joined however, we are unlikely to opt out. This could also be

⁸² Barry Barton “The Law of Energy Efficiency” in Donald N Zillman, Catherine Redgwell, Yinka O Omorogbe, and Lila K Barrera-Hernández *Beyond the Carbon Economy: Energy Law in Transition* (Oxford University Press, Oxford, 2008) 61 at 75.

⁸³ Charlie Wilson and Hadi Dowlatabadi “Models of Decision Making and Residential Energy Use” (2007) 32 *Annual Review of Environment and Resources* 169 at 175.

⁸⁴ Amos Tversky and Daniel Kahneman “Prospect Theory: An Analysis of Decision Under Risk” (1979) 47 *Econometrica* at 263-291.

⁸⁵ Cass R Sunstein and Richard H Thaler “Libertarian Paternalism Is Not an Oxymoron” (2003) 70 *University of Chicago Law Review* 1159 at 1159.

done with EE programmes.⁸⁶ The consideration of intertemporal choice, multidimensional decisions and decision-making behaviour can be used to improve the design of EE programmes.⁸⁷ The default option should be the most energy efficient option when framing these programmes.

The research done by behavioural economics came into the consideration of legal thinkers; those who like free markets, but also the adoption of a default option and a little bit of paternalism.⁸⁸ Sunstein and Thaler introduced, in this respect, the idea of “libertarian paternalism”.⁸⁹ The idea of libertarian paternalism seems to be an oxymoron, but Cass Sunstein and Richard Thaler argue that it is possible to influence behaviour while respecting freedom of choice.⁹⁰ Related to libertarian paternalism is “asymmetric paternalism”. Asymmetric paternalism has the objective of providing benefits for the least sophisticated people, while imposing minimal or no impact to those who are fully rational.⁹¹ We can say that libertarian paternalism with its golden rule of offering “nudges” that are most likely to help and least likely to inflict harm is in the spirit of the foundation of asymmetric paternalism.⁹² But, we have to keep in mind that both ideas are just another form of paternalism. Critics could say that these ideas of government regulation being so subtle and perceptive are another clever way to “force” people to do what the government wants them to do.

B. Actions under the minimal state

Opposing the idea of a regulated state is the “minimal state” which favours individual liberty and free markets. These liberals, neo-liberals, legal democrats or in a twentieth-century variant - proponents of the “New Right” such as Hayek and Nozick - want the government to embrace freedom of choice and therefore keep

⁸⁶ Barry Barton “The Law of Energy Efficiency” in Donald N Zillman, Catherine Redgwell, Yinka O Omorogbe, and Lila K Barrera-Hernández *Beyond the Carbon Economy: Energy Law in Transition* (Oxford University Press, Oxford, 2008) 61 at 75.

⁸⁷ Ibid.

⁸⁸ Ibid.

⁸⁹ Cass R Sunstein and Richard H Thaler “Libertarian Paternalism is not an Oxymoron” (2003) 70 U Ch L Rev 1159 at 1159.

⁹⁰ Ibid.

⁹¹ Colin Camerer and others “Regulation for Conservatives: Behavioural Economics and the Case of ‘Asymmetric Paternalism’” (2003) 151 U Penn L Rev 1211 at 1212.

(conventional) regulation to a minimum; they favour a “minimal state”.⁹³ With respect to markets, they argue that individuals should act in competitive markets on their own without (or at least minimal) state interference; a *laissez-faire* or free-market society.⁹⁴ In addition, there is only one working mechanism for determining “collective” choice on an individual basis: the free market. The state should only act as a “protective agency” against force, theft, fraud and the violation of contract. In respect to law – to paraphrase Hayek – liberalism is doctrine about what the law ought to be or in other words liberalism regards law as what the majority accepts to be law with the aim of influencing the majority to follow certain principles.⁹⁵ Law should provide the conditions under which individuals can choose their use of energies and the resources. Liberals state that if governments become persuasive, they interfere with the public’s ability to determine their own objectives.

Why and how did this movement appear in New Zealand? While this has always been an issue in New Zealand and other countries, we will start by looking at the time the Muldoon Government was elected in 1975. It was not only the time after the first oil embargo of 1973; it was also the time when New Zealand’s economy was threatened. The Muldoon Government tried to stabilize the economy through subsidies and by borrowing.⁹⁶ This approach was highly criticized by the liberal economists. As a result, a revolutionary change started to be foreseeable. This revolutionary change in the organisation of government and government services started in New Zealand under the Fourth Labour Government in 1984.⁹⁷ Deregulation was a subset of this regulatory reform.⁹⁸ Roger Douglas was made the symbol of Labour’s move to the “minimal state”.⁹⁹ As a result this move was called “Rogernomics”.¹⁰⁰ Conventional regulation as a

⁹² Richard H Thaler and Cass R Sunstein *Nudge* (Penguin Books, New York, 2009).

⁹³ David Held *Models of Democracy* (2nd ed, Stanford University Press, Stanford, 1996) at 253.

⁹⁴ *Ibid.*

⁹⁵ *Ibid.*, at 258.

⁹⁶ Jane Kelsey *Rolling Back the State* (Bridget Williams Books Limited, Wellington, 1993) at 15.

⁹⁷ Andrew Sharp *Leap Into the Dark: The Changing Role of the State in New Zealand Since 1984* (Auckland University Press, Auckland, 1994) at 2.

⁹⁸ Bryce Wilkinson *Constraining Government Regulation* (New Zealand Business Roundtable, Wellington, 2001) at 59.

⁹⁹ Andrew Sharp *Leap Into the Dark: The Changing Role of the State in New Zealand Since 1984* (Auckland University Press, Auckland, 1994) at 3.

¹⁰⁰ Jane Kelsey *Rolling Back the State* (Bridget Williams Books Limited, Wellington, 1993) at 18.

result of high state interference, with close regulation and state ownership, was replaced by deregulation with a neoliberal approach with less state interference, favouring market competition over government activity.¹⁰¹ It was interesting to see that the New Zealand Government's political direction could be changed that fast and easily by a handful of ideologues in Cabinet.¹⁰² This is only possible, because in New Zealand the legislature is not completely separated from the executive and makes it easier for politicians to pursue their interests.

“Rolling back the state”¹⁰³ was the way chosen to reduce the influence and size of the state and make the people less dependent on it. The result of this was the move to privatising State Owned Enterprises which affected all kinds of sectors such the electricity, railway, banks, and so on.¹⁰⁴ Petrocorp, a company formed as a State-Owned Enterprise in 1978, was created to undertake the Government's petroleum exploration activities and was involved in the Maui gas field, but was sold in 1988 to Fletcher Challenge as a result of this move to shift away from state activities in the energy sector.¹⁰⁵ In addition, subsidies and incentives were removed as a consequence of the deregulation of the finance sector. This means that the state's *imperium* and the state's *dominium* were affected by the Government's move to deregulation and privatisation.

C. Actions with the existing level of state action

We have seen the New Zealand experience with liberalisation starting in 1984. It did not stay that way, as the shift back to more regulation began in the mid 1990s in many countries and also in New Zealand. Even when the shift back to more regulation appeared, it was still influenced by the neoliberal approach and therefore the rise of reforming regulation.¹⁰⁶ The shift to more regulation is not only seen in the electricity sector in many countries, but also in the

¹⁰¹ Barry Barton, and others “Introduction” in Barry Barton, and others *Regulating Energy and Natural Resources* (Oxford University Press, Oxford, 2006) 3 at 3. See also Dieter Helm *Energy, the State, and the Market* (Oxford University Press, Oxford, 2003) at ch 3.

¹⁰² Jane Kelsey *Rolling Back the State* (Bridget Williams Books Limited, Wellington, 1993) at ch 1.

¹⁰³ *Ibid.*

¹⁰⁴ *Ibid.*

¹⁰⁵ *Ibid.*

telecommunication and finance sectors. The difference between New Zealand compared to other countries is that it can be still categorised as light-handed regulation. According to the Heritage Foundation/*Wall Street Journal 2010 Index Economic Freedom*, New Zealand ranks fourth in international comparisons of the degree of freedom of regulation.¹⁰⁷

New Zealand has stayed light-handed with regards to regulation whereas most of the other countries started to push back to conventional regulation in the 1990s, because the people, the government and organisations like the Business Roundtable favour market forces instead of strict regulation.¹⁰⁸ As we will see in cases where a move to more conventional regulation was pushed, opposing MPs started to abuse those movements as Stalinist approaches. But these people should remember that the advantage of conventional regulation (such as energy performance standards) is that it is not as dependent on market and consumer behaviour as decentred regulation (such as energy information measures and voluntary agreements) or situations with no regulation (where market pressure may still be present). This is an important point to make, because there is a tendency in New Zealand for people to expect the government to find substitutes so they do not have to change their behaviour. The critical debates about the New Zealand Emission Trading Scheme are the perfect example for this statement.¹⁰⁹ In these debates New Zealanders abuse the ETS as being bad state intervention, because it transfers costs from the emitter to the taxpayer.¹¹⁰ Taxpayers are not willing to spend more money or change their behaviour even for a common goal. With this background, the characteristics of law, regulation and policy concerning EE in New Zealand, Germany and California can be investigated.

¹⁰⁶ Barry Barton, and others "Introduction" in Barry Barton, and others *Regulating Energy and Natural Resources* (Oxford University Press, Oxford, 2006) 3 at 3.

¹⁰⁷ The Heritage Foundation "2010 Index of Economic Freedom" (2010) <<http://heritage.org>>.

¹⁰⁸ Bryce Wilkinson *Constraining Government Regulation* (New Zealand Business Roundtable, Wellington, 2001).

¹⁰⁹ Don Nicolson "ETS Crusade Barking up the Wrong Tree" (2010) NZ Herald <www.nzherald.co.nz>.

¹¹⁰ Brian Fallow "Carbon Bill Time Bomb for Taxpayers" (2009) NZ Herald <www.nzherald.co.nz>. See also NZPA "Public Face \$1.6b Pollution Bill Under ETS – Labour" (2009) NZ Herald <www.nzherald.co.nz>.

CHAPTER TWO – THE NEW ZEALAND EXPERIENCE

The first time industrialized nations started promoting energy efficiency (EE) improvements across all sectors (industry, transport, residential and commercial) was in the 1970s.¹¹¹ That was the time after the oil embargo of 1973, which motivated countries to reduce fuel consumption. From there on the motivation for promoting EE varied as an effect dependent on the presence of a crisis. The different nations also used different measures to promote EE, end-use EE in particular. Some of the developed countries began using collective actions through the state almost four decades ago in order to change consumer behaviour to adopt EE in their households whereas New Zealand has established most of its collective actions only in the last 9 years. The reason for this was the move to the “minimal state” (Rogernomics) favouring individual liberty and free markets in 1984 – as we have noted. New Zealand started slowly and was quite reluctant to change its approach in the 1990s, because even under the shift back to more regulation, it was still influenced by the neoliberal approach. The first legislative basis for collective energy efficiency actions was the Energy Efficiency and Conservation Act 2000. Only a few months after the Energy Efficiency and Conservation Act 2000 came into force, the Government established the *Inquiry into the electricity industry* to conduct a review of New Zealand’s electricity industry.¹¹² The reason for this review was that the industry was not delivering sufficient benefits to the environment and to consumers, domestic consumers in particular.¹¹³ The review stated that the market is not able to deliver electricity in an environmentally sustainable manner and therefore collective actions have to be taken.¹¹⁴ This inquiry led to the Energy Policy Framework of October 2000

¹¹¹ International Energy Agency (IEA) *Implementing Energy Efficiency Policies: Are IEA Member Countries on Track?* (IEA, Paris, 2009) at 19.

¹¹² Ministry of Economic Development (MED) “Summary of Government Decisions” (2000) <www.med.govt.nz>.

¹¹³ Ibid.

¹¹⁴ Ministry of Economic Development of New Zealand (MED) *Inquiry Into the Electricity Industry 2000* (MED, Wellington, 2000) at 54.

which had the aim of “ensuring the delivery of energy services to all classes of consumer in an efficient, fair, reliable and sustainable manner”.¹¹⁵

I. New Zealand’s International Energy Efficiency Commitments

The actions taken in 2000 – as we have just noted- and the following two years were also taken to be able to ratify the 1997 Kyoto Protocol on climate change.¹¹⁶ The recognition of the potential impacts from climate change led to the development of the United Nations Framework Convention on Climate Change (UNFCCC) in 1994.¹¹⁷ The UNFCCC contains no qualified emissions commitments.¹¹⁸ The Kyoto Protocol as a legally binding agreement to the UNFCCC was adopted in 1997 and came into force on 16 February 2005.¹¹⁹ Countries committed to quantified emissions reductions in the Kyoto Protocol. New Zealand’s commitment was the limiting of net carbon emissions to 1990 levels, on average, during the period 2008 to 2012.¹²⁰

The Kyoto Protocol not only sets up a reduction target for the countries, it also lists energy efficiency as a measure to fulfil this reduction goal; Article 2 states that each party in Annex I (including New Zealand), shall “implement and/or further elaborate policies and measures in accordance with its national circumstances, such as: enhancement of energy efficiency in relevant sectors of the national economy”.¹²¹ Even if the obligations in Article 2 are continued in the Kyoto Protocol after 2012, these obligations are too broad to help improve energy efficiency in New Zealand. In 2012 the first commitment period of the Kyoto

¹¹⁵ Ministry of Economic Development (MED) “Energy Policy Framework” (2000) <www.med.govt.nz>.

¹¹⁶ Ministry of Economic Development of New Zealand (MED) *Inquiry Into the Electricity Industry 2000* (MED, Wellington, 2000) at 55. See also Barry Barton “Implementation of Kyoto Protocol and the International Energy Industry – New Zealand” in Peter D Cameron and Donald Zillman *Kyoto: From Principles to Practice* (Kluwer Law International, The Hague, 2001) 325 at 328.

¹¹⁷ Chris Wold, David Hunter, and Melissa Powers *Climate Change and the Law* (LexisNexis, United States, 2009) at ch 4.

¹¹⁸ *Ibid.*

¹¹⁹ *Ibid.*, at ch 5.

¹²⁰ Kyoto Protocol to the United Nations Framework Convention on Climate Change (opened for signature 11 December 1997, entered into force 16 February 2005), art 3.

¹²¹ *Ibid.*, art 2.

Protocol expires. The international climate community has proposed various options to continue the Kyoto commitments.¹²²

II. The Energy Efficiency and Conservation Act 2000

The first legislative basis for law, regulation and policy regarding energy efficiency (EE) was, and still is, the Energy Efficiency and Conservation Act 2000 (the Act), which was passed by Parliament on 11 May 2000 and came into force on 1 July 2000 under the Labour-led Government.¹²³ The Parliamentary Commissioner for the Environment and the Green Party, Jeanette Fitzsimons in particular, were the main catalysts for its enactment.

The Energy Efficiency Bill (its name changed to Energy Efficiency and Conservation Bill during the parliamentary debates) was drafted and put in the ballot at the end of 1997 under the National Government.¹²⁴ The introduction and the first reading of the Bill were on the 20 August 1998.¹²⁵ The second reading was less than three weeks after the first reading on the 9 September 1998.¹²⁶ The debates in the second reading were interesting to follow. The National Party, who were in power at that stage, were generally against the Bill, especially because it was aiming to establish the Energy Efficiency and Conservation Authority (EECA) with statutory authority and introduce collective actions to address end-use energy efficiency such as mandatory energy labelling and minimum energy (efficiency) performance standards. Max Bradford speaking on behalf of the Government as the Minister of Energy, called the Bill a step back to the Stalin approach to central planning.¹²⁷ He said that New Zealand did not need another government agency and he also criticised the requirement of a national energy efficiency and conservation strategy aiming to introduce state EE actions.¹²⁸ This reaction was typical for the intention of New Zealand's Government against more regulation –

¹²² Chris Wold, David Hunter, and Melissa Powers *Climate Change and the Law* (LexisNexis, United States, 2009) at ch 9.

¹²³ Energy Efficiency and Conservation Act 2000, s 2.

¹²⁴ (10 May 2000) 583 NZPD 2135.

¹²⁵ Standing Orders of the House of Representatives 1998, SO 273.

¹²⁶ (9 September 1998) 571 NZPD 11881.

¹²⁷ *Ibid*, at 11883.

¹²⁸ *Ibid*, at 11884.

as we have noted. But, the members of the National Party voted for the bill to be passed onto the select committee. Why? The official reason stated by Max Bradford was that he was sure that the bill would not survive in the select committee and he did not want to waste the time of the House with this matter.¹²⁹ It can be also argued that the National Party wanted this Bill to be passed as well, but saw the chance to criticize and humiliate the Labour Party and the Green Party; as happens all the time in political debates.

It was also interesting to see that the supporters of the Bill stated that they were disappointed that the Government had not been responding to International Energy Agency (IEA) reviews earlier.¹³⁰ IEA had been reviewing New Zealand's environmental performance as negative in comparison to the other IEA countries for several years.¹³¹ IEA recommended that the New Zealand Government should improve EE in all sectors by using state actions.¹³² This shows that IEA reviews are not hugely influential politically.

The purpose of the Act as mentioned in s 5 is “to promote, in New Zealand, energy efficiency, energy conservation, and the use of renewable sources of energy.” Section 6 states that the Energy Efficiency and Conservation Authority (EECA) and others exercising powers under the Act must take into account:¹³³

- (a) the health and safety of people and communities, and their social, economic, and cultural well-being; and
- (b) the need to maintain and enhance the quality of the environment;
- (c) the reasonably foreseeable needs of future generations; and
- (d) the principles of the Treaty of Waitangi.

Section 6 reflects Resource Management Act 1991 language.¹³⁴

The Act has three main objectives. The first objective is to make sure that the Minister will develop a National Energy Efficiency and Conservation Strategy

¹²⁹ (9 September 1998) 571 NZPD 11883.

¹³⁰ *Ibid.*, at 11889.

¹³¹ OECD “Conclusions and Recommendations of the 1st Cycle Environmental Performance Review of New Zealand” (1996) <www.oecd.org>.

¹³² *Ibid.*

¹³³ Energy Efficiency and Conservation Act 2000, s 6.

¹³⁴ Resource Management Act 1991, ss 5, 6, 7, 8.

(NEECS).¹³⁵ The most important provisions for the NEECS are contained in ss 8 to 19 of the Act, and they will be explained in more detail when we talk about New Zealand's Energy Efficiency and Conservation Strategies. Section 7 refers to the Minister's duty. In relation to this intention, s 9 is clear in that the Minister ensures that there is a strategy in force at all times. In accordance with s 7, the Minister is also responsible for promoting public awareness of EE in New Zealand and promoting practices and technologies for EE. Furthermore the Minister is in charge of monitoring and reviewing the state of EE as it relates to publishing relevant information.

The second objective is the establishment of the Energy Efficiency and Conservation Authority (EECA) as a stand-alone Crown entity in accordance with s 20(1). Before I start to explain the objectives of EECA, I will give an insight into the history of EECA. Prior to 1992 New Zealand had no government energy efficiency (EE) agency. The Ministry for the Environment was in charge of setting up strategies to reduce carbon dioxide emissions.¹³⁶ However, there were no policy mechanisms to address EE in relation to carbon dioxide emissions or related problems. In October 1992 under the National Government, New Zealand launched official EE "activities" with the establishment of the Energy Efficiency and Conservation Authority (EECA). EECA started as an agency with no statutory basis, charged with determining and implementing practical measures to reach greater EE in New Zealand. It was a division within the Ministry of Commerce (which became the Ministry of Economic Development in 2000) and was established by a Cabinet decision. It was administered by a board which reported directly to the Minister of Energy. EECA was charged with three primary objectives, firstly to develop, implement and promote EE strategies; secondly, to advise the government and the New Zealand energy industry on issues regarding the development, implementation and promotion of those strategies; and, finally, to monitor known energy sources.¹³⁷ It has to be said that the strategies developed during that time had no legislative basis and were therefore not legally binding.

¹³⁵ Energy Efficiency and Conservation Act 2000, s 8.

¹³⁶ Simon Terry *Making a Market for Energy Efficiency* (New Zealand Planning Council, Wellington, 1991).

¹³⁷ Garth Harris and others *Promoting the Market for Energy Efficiency* (Ministry of Commerce Energy & Resources Division, Wellington, 1993) at 84.

From 1994 until 2000, the primary role of EECA was to implement programmes consisting of education, voluntary agreements, technical assistance and market development, including both EE and renewable energy. EECA's aim was to work with market players to overcome the barriers to EE. An Energy Saver Fund was administered at that time by EECA to provide funding for particular projects to improve residential EE.¹³⁸ EECA was resourced with a limited budget and no statutory authority. Furthermore it was constantly under review and in this situation it is hard to keep good staff. In addition its funding was cut in the last two Budgets before 1998.¹³⁹ In combination with a government reluctant to sign off on policy initiatives due to its ideological position, little of EECA's policy work was implemented.¹⁴⁰

This was the reason why EECA became a statutory agency. The Act gave it the power to carry out formal national policy-making.¹⁴¹ The Authority was a Crown entity for the purposes of the Public Finance Act 1989 and became subject to the Crown Entities Act 2004 on 25 January 2005. EECA is still governed by a board which consists of eight members. The board is still required to report to the Ministry of Energy and Resources as it did prior to EECA becoming a Crown entity. The most relevant EECA roles under the Act include advising and assisting the Ministry of Energy to prepare and administer a strategy, promoting public awareness of EE, promoting practices and technologies for EE, conducting and monitoring research concerning EE and publishing relevant information.¹⁴²

The functions of EECA are conferred by s 21 of the Act:¹⁴³

- (1)The function of the Authority is to encourage, promote, and support energy efficiency, energy conservation, and the use of renewable sources of energy by—
- (a) advising the Minister on any matter relating to or affecting—

¹³⁸ Transport and Environment Committee "Energy Efficiency Bill" [1996-1999] LXVI AJHR 189 at 1004, 1005.

¹³⁹ (9 September 1998) 571 NZPD 11881.

¹⁴⁰ Parliamentary Commissioner for the Environment (PCE) *Getting More for Less: A Review of Progress on Energy Efficiency and Renewable Energy Initiatives in New Zealand* (PCE, Wellington, 2000).

¹⁴¹ Energy Efficiency and Conservation Act 2000, s 20(3).

¹⁴² *Ibid*, s 21.

¹⁴³ *Ibid*.

- (i) energy efficiency and conservation, and the use of renewable sources of energy in New Zealand; or (ii) the functions of the Authority:
 - (b) assisting the Minister to prepare and administer a strategy:
 - (c) promoting public awareness in New Zealand of the importance of energy efficiency and conservation, and the use of renewable sources of energy:
 - (d) promoting practices and technologies to further energy efficiency, energy conservation, and the use of renewable sources of energy:
 - (e) arranging for the conduct of research, assessments, demonstrations, and studies:
 - (f) monitoring and reviewing the state of energy efficiency, energy conservation, and the use of renewable sources of energy in New Zealand:
 - (g) publishing relevant information, research, and other material:
 - (h) carrying out such other functions and duties as are conferred or imposed on it by any enactment.
- (2) The Authority must perform its functions to achieve the purpose of this Act, and in accordance with the strategy for the time being in force.

Section 22(2) of the Act states that EECA has the power to make grants, awards or loans of money. Furthermore it can enter into agreements for the administration of grants. EECA does not provide substantial sums of money to support projects.

The Ministry of Economic Development (MED) is responsible for advising the government on EECA's activities, in particular the MED ensures that the activity of EECA is consistent with the government's policy objectives.¹⁴⁴ MED is in charge of monitoring EE strategies and reporting on progress. EECA is also working together with many partners to fulfil its functions.

Lastly, s 36(1) is the basis for authority to make EE regulations. This was the first time in New Zealand that the power was given to implement regulatory EE measures. The Act adopted a discipline similar to s 32 of the Resource Management Act 1991. It requires that the regulations be necessary to achieve the objectives and that they are appropriate, after considering alternatives, costs, and benefits.¹⁴⁵ Therefore the regulations are subject to the scrutiny of the Parliament. The Governor-General by order in Council has the power to make these regulations on the recommendation of the Minister and EECA can make recommendations to the Minister.

¹⁴⁴ Ministry of Economic Development (MED) "About MED" <www.med.govt.nz>.

¹⁴⁵ Resource Management Act 1991, s 32.

Section 36(1)(a) refers to “prescribing minimum energy performance standards for energy-using products and services, including all vehicles.” Minimum energy efficiency performance standards (MEPS) ensure that products meet minimum energy performance criteria and this in turn limits the maximum amount of energy that may be consumed by a product in performing a specified task.¹⁴⁶ All products in a particular product class should be tested under standard conditions. The products that do not meet these standards will be removed from the market or will not get access to it. MEPS for energy-using products were enacted through the Energy Efficiency (Energy Using Products) Regulation 2002; these regulations will need further attention. In accordance with s 36(1)(b) of the Act regulations shall “prescribe requirements in relation to the labelling of products, including all vehicles, in terms of their energy efficiency or proficiency in conserving energy.” Section 36(1)(h) refers to “prescribing the amount of the fines that may be imposed in respect of any offences against any regulation made under this section, which fines must be an amount not exceeding \$10,000.” In addition, s 39 states that no person can be fined more than \$10,000 for an offence.

The Energy Efficiency and Conservation Amendment Bill 2008 is still only in its first stage of the legislative process. There are no comments made by the Government to explain why the Bill is stuck in the legislative process. The proposed key changes are the incorporation of New Zealand and joint Australian/New Zealand standards by reference;¹⁴⁷ enable EECA to have access to New Zealand Customs Service information;¹⁴⁸ and establish an infringement regime to strengthen enforcement provisions.¹⁴⁹ The use of reference material could result in existing standards or guidelines being improved and would avoid repeating technical material in legislation. In addition, EECA intended to get access to New Zealand Customs Service information to find products that may require minimum energy performance standards or labelling.¹⁵⁰ Both amendments would result in more vigorous monitoring in co-ordination with EECA. Enabling better enforcement would assist with ensuring minor offences are dealt with in a

¹⁴⁶ Garth Harris and others *Promoting the Market for Energy Efficiency* (Ministry of Commerce Energy & Resources Division, Wellington, 1993) at 57.

¹⁴⁷ Energy Efficiency and Conservation Amendment Bill 2008 (263-1) cl 7.

¹⁴⁸ *Ibid*, cl 9.

¹⁴⁹ *Ibid*, cl 6.

more cost and time efficient manner. The Bill gives the power to define infringement offences and fines up to a maximum of \$1,000.¹⁵¹ Under the Regulations of 2002, options for enforcing are limited to letters of warning and prosecution by way of summary proceedings in the District Court. This shows that there is a recognition of the need for realistic enforcement possibilities; in other words more vigorous, interventionist regulation. The Government has not commented on the slow progress of the Bill which leaves us in the dark with possible reasons for this. If we look back to the legislative process of the Energy Efficiency and Conservation Bill from 1997-2000 and the Government's initial reluctance for the introduction of state actions, the same issues might be involved in the Bill from 2008 as more vigorous, interventionist regulations were proposed. This would suggest that New Zealand is still reluctant to implement more aggressive law, regulation and policy concerning EE in order to change consumer behaviour to adopt EE in their households.

III. Regulations regarding space heating, water heating, and appliances

As we have already seen, the first regulation which was prepared under s 36 of the Act was the Energy Efficiency (Energy Using Products) Regulation 2002. It covers mandatory MEPS, mandatory energy labelling, information on labelling concerning the energy conservation characteristics of products, the form and manner of energy conservation testing for products, gathering of statistics on energy use, the control of production, importation, distribution, sale, use, or disposal of energy-using products and the design, construction, and use of buildings in relation to energy conservation.¹⁵²

Energy labelling of household appliances was voluntary before 2002.¹⁵³ This was due to the Government's intention of leaving end-use EE to individual actions

¹⁵⁰ Ibid, cl 9.

¹⁵¹ Ibid.

¹⁵² Energy Efficiency (Energy Using Products) Regulation 2002.

¹⁵³ Energy Efficiency and Conservation Authority and the Ministry for the Environment *Proposed Implementation of Mandatory Energy Performance Standards and Labelling* (MfE, Wellington, 2001) at 5.

through market forces. The result was that some retailers displayed energy labels on appliances, others did not. In November 2000, after the Act came into force and the Energy Policy Framework took effect, (therefore in the time when the Government started to move to more collective actions in the EE sector), the government decided to implement mandatory MEPS for domestic electric storage water heaters, fluorescent tubes, ballasts for fluorescent tubes and mandatory energy labelling for refrigerators, freezers, dishwashers, clothes dryers, clothes washers, and residential air conditioners.¹⁵⁴

The Regulations of 2002 also made energy performance labelling mandatory for some product classes. Regulations 6 and 7 of the Regulations of 2002 set out the requirements for energy performance labelling. A system of “stars”¹⁵⁵ is used to provide a quick reference to compare the EE of similar products. New Zealand’s energy performance labelling system is different to the “Energy Star” system which is well recognised internationally. Energy Star is a voluntary, international endorsement programme for energy efficiency.¹⁵⁶ It is awarded to the top 25 per cent most energy efficient appliances, home electronics and office equipment in each category. Energy Star can currently be found on televisions, heat pumps, dishwashers, washing machines and home electronics and office equipment next to the energy performance labelling system in New Zealand.¹⁵⁷ Unfortunately different labelling systems confuse consumers as they do not know which label they should look for. The main difference between the two systems is that Energy Star is voluntary whereas the energy performance labelling is mandatory to certain products set out in the Regulations of 2002. Even though it might seem bizarre to have different labelling systems, it is not; other countries – as we will see - have the same problem.

New products will be added to the list of appliances subject to Mandatory Labelling. As listed in Schedule 2 of the Regulations of 2002, energy performance labelling is mandatory for clothes washing machines, dishwashers, household

¹⁵⁴ Ibid.

¹⁵⁵ The “star” system is a system that deals with EE labelling. This system identifies 6 stars as the best outcome and 0 stars as the worst outcome.

¹⁵⁶ Energy Efficiency and Conservation Authority (EECA) “Efficient Products” <www.eeca.govt.nz>.

¹⁵⁷ Ibid.

refrigerating appliances, rotary clothes dryers and single-phase non-ducted air conditioners and air-to-air heat pumps. The Amendments 2004, 2006, 2007 and 2008 have not changed the list of products for mandatory energy performance labelling.

At the same time that the energy performance labelling became mandatory, MEPS became mandatory for some product classes. Regulations 4 and 5 of the Regulations of 2002 set out the requirements for MEPS. As listed in Schedule 1 of the Regulations of 2002, MEPS are mandatory for ballasts for fluorescent lamps, distribution transformers, dry-type distribution transformers, household refrigerating appliances, low-pressure copper thermal storage water heaters, refrigerated display cabinets, single-phase ducted air conditioners and air-to-air heat pumps, single-phase non-ducted air conditioners and heat pumps, electrically heated storage water heaters, three-phase air conditioners and heat pumps, three-phase cage induction motors and tubular fluorescent lamps. The Amendments 2004, 2006, 2007 and 2008 have not changed the list of products for mandatory MEPS.

The two other regulations regarding end-use EE are the Building (Building Code of Energy Efficiency of Temperature, Humidity, and Ventilation Systems) Amendment Regulations 2008 and the Building (Building Code: Energy Efficiency of Domestic Hot Water Systems) Amendment Regulations 2008. Both Regulations were made in accordance with section 403(3) and (4) of the Building Act 2004. Both Regulations came into force on 1 February 2009 and amend the Building Code set out in Schedule 1 of the Building Regulations 1992. These Regulations introduce new performance standards for the efficient use of energy in systems for heating, storing, and distributing hot water. Clause H1.3.4(c) requires these systems in housing to be built to facilitate the efficient use of hot water. The Building (Building Code of Energy Efficiency of Temperature, Humidity, and Ventilation Systems) Amendment Regulations 2008 sets out new performance standards concerning the use of energy to modify temperature, modify humidity, or provide ventilation. The target is to facilitate efficient use of energy. Clause H1.2(a) requires buildings to meet EE standards for the

aforementioned areas. Clause H1.3.6 requires heating, ventilation and air conditioning systems to limit energy use, consistent with the intended space.

Besides these regulations, there are several policies concerning end-use EE such as the Energy-Wise programmes between EECA and the local government mentioned previously.

IV. New Zealand Energy Efficiency and Conservation Strategies and Plans

The first Energy Plan in New Zealand was introduced in 1980 incorporating all aspects of energy supply and demand.¹⁵⁸ Energy efficiency (EE) was listed in this Plan under conservation measures, but had no priority. The Energy Plan 1982 set out the objective to implement an energy conservation strategy with measures to improve household's energy conservation, but EE still had no priority in these measures. The following Energy Plans including the recent one have not been putting EE on the top of their lists of measures to reduce carbon emissions or increase energy security. It was, and still is, ranked somewhere after renewables, CCS, and nuclear, that shows that New Zealand is not putting enough effort into implementing more aggressive law, regulation and policy concerning EE. This interesting observation (which we have made at an earlier point) is important to keep in mind as this is one of the most important things New Zealand should change.

New Zealand realized that issues concerning EE are a nationwide problem. As a result, the government decided to provide leadership by creating its first long-term energy efficiency strategy in 1994.¹⁵⁹ The development was also due to the significant improvement of EE in other OECD countries.¹⁶⁰ The focus of this strategy was on measures to increase end-use EE, and was pursued through funding rather than law, regulation and policy. The government funded that

¹⁵⁸ Energy Plan 1980.

¹⁵⁹ Ibid, at 87.

¹⁶⁰ Lee Schipper "Energy Conservation Policies in the OECD: Did They Make a Difference?" (1987) 15 Energy Policy 538 at 538-548.

strategy with \$8.5 million. The strategy was also supposed to send a signal to the private sector of the commitment of the government.

From 1997, when the first energy efficiency strategy ended, until 1999, EECA introduced four projects, Energy-Wise Business, Energy-Wise Homes, Energy-Wise Information and Energy-Wise Government. These projects were also focusing on information and funding to encourage people to invest in EE. The Government was still only using fiscal measures to change consumer behaviour.

The first statutory energy efficiency strategy in New Zealand was the National Energy Efficiency and Conservation Strategy (NEECS) which was introduced in September 2001 and was proposed for a five year term. This strategy was written in accordance with s 10(2) of the Act. The development of the NEECS was led by EECA, in conjunction with the Ministry of the Environment. The purpose of the strategy as stated in s 10(1) of the Act “to give effect to the Government’s policy on the promotion in New Zealand of energy efficiency, energy conservation, and the use of renewable sources of energy”. The NEECS was not intended as a primary policy document, it was rather designed so EECA could determine its operational priorities by consulting with interested parties within policy parameters previously set by the Government.¹⁶¹ The Minister was made fully responsible for the strategy.¹⁶²

The strategy was developed to provide a comprehensive overview of the market failures and how the targets of EECA can be set.¹⁶³ It also provides a method for the public to buy in to the concept, which is essential if it is to succeed. The first NEECS Strategy established targets and policies on EE, energy conservation and the use of renewable sources of energy. The main objective was a move to improve by up to 20 per cent in economic-wide EE by 2012 and to improve the level of supply from renewable energy sources.¹⁶⁴ This shows that improving renewable energy was still important to the Government rather than focusing on EE.

¹⁶¹ Transport and Environment Committee “Energy Efficiency Bill” [1996-1999] LXVI AJHR 189 at 1005.

¹⁶² Ibid, at 1007.

¹⁶³ (9 September 1998) 571 NZPD 11882.

¹⁶⁴ National Energy Efficiency and Conservation Strategy 2001, s 3.

In accordance with section 12(3)(a) of the Act, the NEECS 2001 was reviewed and a new strategy was developed with input from a number of government agencies, local government, and businesses. This review has shown that the strategy was necessary, but not sufficient.¹⁶⁵ In October 2007, the strategy was updated to become the New Zealand Energy Efficiency and Conservation Strategy (NZECS) in accordance with section 10(2) of the Act. It sets out the action plan for EE and conservation actions, and assigns responsibility for the delivery of each action to a central or local government agency. The biggest difference between the NEECS 2001 and the NZECS 2007 is the stronger focus of the new strategy on consumer (demand-side) action through state actions.

The NZECS 2007 is divided into five sections, Energy-Wise Homes, Energy-Wise Business, Energy-Wise Transport, New Zealand's efficient and renewable electricity system and "government leading the way". Crucial to this research is the section relating to Energy-Wise Homes which sets out five goals.¹⁶⁶ The first goal is 70,000 interest-free loans for insulation and clean heating installation by 2015. This sounds good, but one should remember that the problem with EECA's Energywise scheme is that a lot of people still do not use this funding.¹⁶⁷ Only 10% of grants have been taken up by landlords. This is hard to understand as they can get up to 60% discount on insulation and a heating system if their tenant has a community services card. The problem with this funding is that they are mostly combined with several criteria. For instance, if you want to gain funding for your heat pump through EECA's Energywise scheme, you need sufficient insulation as well. This means in case the insulation in your house is not sufficient you need to install this as well. This appears to be a great idea because the EE of your heating will reduce if your insulation is bad, but on the other hand people may not have enough money to install new insulation and heating at the same time. It seems to be a good idea to install insulation first, but people would rather buy new heating than insulation as it seems more important to them. People do not understand that a superinsulated house that hardly needs

¹⁶⁵ Trevor Mallard "Energy Efficiency Strategy to be Replaced" (2006) New Zealand Government <www.beehive.govt.nz>.

¹⁶⁶ New Zealand Energy Efficiency and Conservation Strategy 2007, s 1.5.

¹⁶⁷ Sarah Barnett "Sick as houses" *New Zealand Listener* (New Zealand, 15-21 May 2010) at 17.

any heating has a certain value attached to it.¹⁶⁸ It can also be seen by the fact many subsidies are not being taken up for the installation of heat pumps, star-rated gas heaters, and clean-burning wood or pellet heaters.¹⁶⁹ This is where behavioural analysis becomes important.

The second goal is 65,000 insulation retrofits for low income households by 2012. The third goal is 4,000 clean heating upgrades for low income families in areas of poor air quality. The fourth is 15,000 to 20,000 solar heating systems by 2010. The final goal is to increase the number of MEPS product categories from the current 15 product categories to 32 categories. With labelling categories, where currently there are 6, this will be increased by a further 15 categories. These amendments are expected to be effected by 2012. This target includes retiring 450,000 refrigerators with an age over 20 years. The target of implementing an EE training programme for workers by the end of 2009 in Energy-Wise Business and the objective of supporting local government in delivering NZEECS 2007 programmes in the “government leading the way” are also important. Also on the agenda for the strategy are improved efficient technology research through to 2012, and increasing awareness of EE through more information campaigns. Actions in the NZEECS 2007 have a stronger focus on collective actions compared to the previous strategies. The government has already announced that the NZEECS 2007 will be updated in accordance with section 12(3) of the Act.¹⁷⁰ The Ministry of Economic Development is preparing a replacement strategy, and not EECA itself, on behalf of the Minister of Energy and Resources.

The NZEECS 2007 is not the only strategy in New Zealand related to energy matters. The NZEECS 2007 is a subset of the New Zealand Energy Strategy (NZES) with the aim of addressing EE in detail. The difference between the NZEECS and other strategies such as the NZES is that the NZEECS is the only statutory EE strategy in New Zealand. The NZES forms part of a set of measures which include the NZEECS, the New Zealand Transport Strategy (NZTS) and the

¹⁶⁸ Ibid.

¹⁶⁹ Ibid.

¹⁷⁰ Energy Efficiency and Conservation Authority “Replacement of the New Zealand Energy Efficiency & Conservation Strategy” (2009) <www.eeca.govt.nz>.

New Zealand Emissions Trading Scheme (ETS). The purpose of the NZES is to provide government leadership to meet the needs of the future economy, security of supply and reducing GHG emissions by 2050.¹⁷¹ Furthermore it provides a strategic direction and goals to support the greater uptake of EE which is stated in section 10 of the NZES 2007. The strategic direction, goals and actions of the NZES match with ones mentioned regarding the NZEECS.¹⁷² The NZES sets out an overview of EE initiatives whereas the NZEECS focuses on EE initiatives in more detail. In February 2009 the Minister of Energy and Resources announced the government's intentions to update the NZES. To date this has not occurred. The aim of the new strategy will be to represent the Government's greater focus on maximising economic growth and addressing energy security and energy affordability concerns.

V. Other legal frameworks in New Zealand concerning residential end-use energy efficiency

The Energy Efficiency and Conservation Act 2000 is the heart of the legal framework for energy efficiency (EE) in New Zealand. Nevertheless the Resource Management Act 1991 and the Electricity Act 1992 also contribute to it.

A. The Resource Management Act 1991

The Resource Management Act 1991 (RMA) is the main environmental and land use planning law in New Zealand. It also includes essential implications for energy law. Nearly every energy project involves RMA considerations. The RMA only mentions EE in s 7(ba):¹⁷³

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—

(a) Kaitiakitanga:

[(aa) The ethic of stewardship:]

¹⁷¹ New Zealand Energy Strategy 2007, s 1.1.

¹⁷² Ibid, s 10.

¹⁷³ Resource Management Act 1991, s 7(ba).

(b) The efficient use and development of natural and physical resources:
[(ba) the efficiency of the end use of energy:]

The only case where s 7(ba) has been discussed is *Genesis Power Ltd v Franklin District Council*.¹⁷⁴ This case was about a proposed wind farm that was considered to be consistent with s 7(ba). The Court overturned the Franklin District Council decision against the wind farm and upheld the appeal from Genesis Energy that it should be allowed to build the wind farm but it must do so subject to a set of conditions. Agreement on the conditions was reached by both parties. This case relates to primary EE rather than end-use EE.

Councils must take the New Zealand Energy Efficiency and Conservation Strategy (NZECS) 2007 into account. The reason for this is that ss 61, 66 and 74 of the RMA require district councils and regional councils to have to consider “strategies prepared under other Acts.” The NZECS 2007 was established in accordance with the Energy Efficiency and Conservation Act 2000 (refer ss 8 to 19). The RMA must consider the NZECS 2007, because of ss 61, 66 and 74 of the RMA and in addition, section 11 of the Act requires the NZECS 2007 to “be consistent with any national policy statement for the time being in force under the Resource Management Act 1991.” The consent authority must also have regard to the NZECS 2007 when considering an application for a resource consent and any submission received, because the NZECS 2007 is “any other matter” as stated in s 104(1)(c). As a result the NZECS 2007 could influence district and council decisions.

There is no national policy statement on energy efficiency under the Resource Management Act 1991 which is not ideal because many decisions that drive energy consumption are made at local government level under the Resource Management Act 1991.¹⁷⁵ On the other hand, a national policy statement for renewable electricity generation is proposed which is hoped to strengthen the policy framework concerning renewables and the reduction of greenhouse gas emissions.¹⁷⁶ This national policy statement fits perfectly in the picture we have

¹⁷⁴ *Genesis Power Ltd v Franklin District Council* [2005] NZRMA 541 (EnvC).

¹⁷⁵ Ministry for the Environment “National Policy Statements” (2010) <www.mfe.govt.nz>.

¹⁷⁶ *Ibid*.

been drawing so far with New Zealand focusing on implementing more aggressive policies concerning renewable energy rather than for energy efficiency.

B. The Climate Change Response Act 2002

The Climate Change Response Act 2002 refers to the United Nations Framework Convention on Climate Change and the Kyoto Protocol and therefore implicitly to energy efficiency.¹⁷⁷ It referred in s 223 to energy efficiency in its establishment of a household fund to promote household energy efficiency, but s 223 was repealed by the amendments in 2009.¹⁷⁸

Although the Building Act 2004 is important, this research is maintaining a focus on heating and appliances.

C. The Electricity Act 1992 and the differences between the Energy Efficiency and Conservation Authority and the Electricity Commission concerning responsibility and effectiveness

The Electricity Act 1992 makes reference to energy efficiency (EE) in s 172N(2)(d) and s 172O. In accordance with s 172N, the Electricity Commission (EC) must seek to establish incentives for investment in EE. The function of the EC as stated in s 172O (1)(f) is to “promote and facilitate the efficient use and conservation of electricity (including funding programmes that provide incentives for cost-effective energy efficiency and conservation).” The purpose of these sections is to make sure that the EC promotes EE.

The Government Policy Statement on Electricity Governance 2008 (GPS) sets out the way in which the Government expects the EC and EECA to work together. Paragraph 14 of the GPS states that the EC and EECA are both in charge of overseeing the implementation of the NZES and NZEECS.¹⁷⁹ Paragraph 35 of the GPS notes that the EC and EECA should work together in assessing electricity

¹⁷⁷ Climate Change Response Act 2002, schedules 1, 2.

¹⁷⁸ The Climate Change Response (Moderated Emissions Trading) Amendment Act 2009, s 82.

efficiency in New Zealand. In accordance with paragraph 36, EECA is the primary service delivery agency for EE programmes in the electricity sector. Paragraph 37 of the GPS requires the EC and EECA to work together in promoting electricity efficiency and the activities of the EC should complement the work of EECA and avoid duplication in effort. The EC should draw on EECA's expertise when designing, administering and delivering its programmes (paragraph 38 of the GPS).

Following this, the Memorandum of Understanding (MoU) between the EC and EECA in November 2008 was introduced to provide the foundation for the EC and EECA to work together in a more efficient way.¹⁸⁰ The important content of the MoU concerning the areas they will work together on are as follows:¹⁸¹

- a. Work together to advance government strategy and any whole of government directions coordinated by the Senior Energy Officials Group and as agreed by individual organisations;
- b. Keep each other regularly updated on our work plans so that potential duplication can be minimised and opportunities for working together can be identified at an early stage;
- c. Share information, with each other, other stakeholders and the public as much as is practicable (recognising that sometimes information cannot be shared, for example where it has been provided in confidence);
- d. Share our knowledge and skills with each other to increase our overall capability;
- e. Coordinate our activities to avoid potential overlaps or duplication of effort, and to maximise efficiency and effectiveness – particularly in promoting and delivering our programmes to stakeholders and the public;
- f. Combine our efforts on specific potentials, research, modelling, planning or analysis activities and agreeing on programmes that deliver the best results;
- g. Adopt a no surprises approach, by advising each other early of any identified issues that might affect the other party or our common objective.

This shows that the MoU highlights the importance of sharing information and knowledge in order to coordinate their activities concerning EE.

The important contents concerning the distinguishing of roles and responsibilities are:¹⁸²

¹⁷⁹ Government Policy Statement on Electricity Governance 2008, para14.

¹⁸⁰ Electricity Commission (EC) and Energy Efficiency and Conservation Authority (EECA) *Memorandum of Understanding Between the EC and EECA* (2008).

¹⁸¹ Ibid.

¹⁸² Ibid.

The Commission recognises that EECA's roles and responsibilities are primarily concerning with:

- a. encouraging, supporting, and promoting efficiency and conservation of all forms of energy, as well as increasing the use of renewable sources of energy; and
- b. provision of policy advice to the Minister of Energy and other government agencies consistent with government strategy.

EECA recognises that the Commission:

- a. has responsibility for governance and regulation of the electricity industry;
- b. is accountable for the achievement of GPS objectives and outcomes; and
- c. utilises efficiency and demand response initiatives to decrease the need for new generation.

The next step was that the Minister of Energy and Resources appointed the Electricity Technical Advisory Group in April 2009 to work with the MED on reviewing the performance of the electricity market and governance arrangements and to make recommendations on improvements which also covered the problem between EECA and the EC. The outcome of this review was that the EC had too many objectives and functions and was seen to not be independent from the government.¹⁸³ In addition, an overlap with the Commerce Commission in regulatory responsibilities for transmission issues was exposed.¹⁸⁴

The recommendations of the Electricity Technical Advisory Group in conjunction with the MED made were, that the EC should be replaced by an "Electricity Market Authority" (EMA), which would be an Independent Crown Entity in charge of market facilitation and the development and enforcement of market rules.¹⁸⁵ Recommendation 13 of the review states:¹⁸⁶

Consolidate responsibility for the promotion of energy efficiency in EECA, and remove it as a responsibility of the electricity regulator, while:

1. Carrying out a strategic review of EECA to ensure it is well-focused and performing effectively.
2. Transferring best practice approaches developed by the Electricity Commission where possible.
3. Reviewing funding for EECA, with a general principle that funding should be through levies where the beneficiaries can be clearly identified and administrative (collection) costs are low.

¹⁸³ Electricity Technical Advisory Group in conjunction with the Ministry of Economic Development *Improving Electricity Market Performance* (2009) at 6.

¹⁸⁴ *Ibid.*

¹⁸⁵ *Ibid.*, at 32.

¹⁸⁶ *Ibid.*

The Minister of Energy and Resources accepted these recommendations on 9 December 2009. The Electricity Industry Bill 2009 covers these amendments and is already in Parliament.¹⁸⁷

VI. General observations from the New Zealand experience

New Zealand had only modest government action to promote the efficient use of energy until 2000. This was due to a government policy of promoting energy efficiency (EE) through individual actions rather than collective actions. New Zealand's environmental performance in general was rated weak in contrast with most IEA countries by the IEA. It started to use state actions with the implementation of the Energy Efficiency and Conservation Act 2000. Even with the Energy Efficiency and Conservation Act 2000 and the Energy Efficiency (Energy Using Products) Regulations 2002, the government action is still not strong enough. As we have seen, the government has still not been recognizing the positive impact of EE as the silver bullet to reducing greenhouse gas emissions and well-being in general. It still focuses on implementing more aggressive law, regulation and policy concerning renewables rather than for EE.

I now turn to Germany as a comparator to better understand the nature of New Zealand law, regulation and policy concerning EE.

¹⁸⁷ Electricity Industry Bill 2009 (111-2).

CHAPTER THREE – THE GERMAN EXPERIENCE

Energy efficiency (EE) is on its way to becoming one of the most important of Germany's energy and climate change programmes alongside the promotion of renewable energy and the Emission Trading Scheme. Germany focuses on reforming law, regulation and policy concerning EE.

The movement to promote EE started in Germany in the middle of the 1970s as a result of the oil embargo of 1973. The focus was on ensuring energy supply in combination with reducing import dependence. The first law for EE was the Energy Saving Act (*Energieeinsparungsgesetz - EnEG*) 1976 with regards to energy savings in buildings. In the 1970s, 88 per cent of energy use in households was for space heating and hot water heating. The Energy Saving Act 1976 gave the government power to implement regulations regarding the reduction of energy consumption in new buildings.¹⁸⁸ The Energy Saving Act 1976 and the regulations based on it were all focused on insulation, energy efficient space heating and hot water heating. As a result of updating and improving the measures set out in the Energy Saving Act 1976 and the related regulations, Germany now has some of the strictest standards in the world for insulation, energy efficient space heating and hot water heating.¹⁸⁹

After the initial movement to promote EE in the 1970s, a “new drive” to concentrate on the promotion of EE started in the last decade.¹⁹⁰ The focus was still the same as thirty years ago but the motive has changed; the protection of the environment was the centre of attention rather than ensuring energy supply.¹⁹¹

¹⁸⁸ Energy Saving Act 1976, § 1(2).

¹⁸⁹ Howard Geller and others “Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries” (2006) 34 *Energy Policy* 556 at 566. See also: International Energy Agency (IEA) *Implementing Energy Efficiency Policies: Are IEA Member Countries on Track?* (IEA, France, 2009) at 71.

¹⁹⁰ Martha M Roggenkamp and others *Energy Law in Europe* (2nd ed, Oxford University Press, Oxford, 2007) at 306.

¹⁹¹ Hubertus Bardt “Steigerung der Energieeffizienz” (Improving energy efficiency) (2007) 30 *IW-Positionen* 1 at 4.

I. Legal Framework

German law is affected by European Union (EU) law. The EU has several legal measures to harmonize the law and the administration for enforcement by those laws in the Member States.¹⁹² The EU can use regulations which are directly binding in the Member States and directives which must be implemented by the national parliaments of the Member States.¹⁹³ One has to remember that EU law has priority (of application) over national law.¹⁹⁴ Let us now investigate the respective EU energy efficiency directives which were implemented in German law with regards to electrical household energy use for space heating, hot water heating and appliances.¹⁹⁵

Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services repeals the 1993 SAVE Directive.¹⁹⁶ Under the 1993 SAVE Directive, Member States were required to draw up and implement programmes in the following fields:¹⁹⁷

- energy certification of buildings,
- the billing of heating, air-conditioning and hot water costs on the basis of actual consumption,
- third-party financing for energy efficiency investments in the public sector,
- thermal insulation of new buildings,
- regular inspection of boilers,

¹⁹² Eberhard Schmidt-Assmann “Enforcing International Environmental Law: A German and European Perspective on National Implementation” in Tao Zhenghua and Rüdiger Wolfrum *Implementing International Environmental Law in Germany and China* (Kluwer Law International, The Hague, 2001) at 25.

¹⁹³ *Ibid.*, at 26.

¹⁹⁴ *Ibid.*

¹⁹⁵ All EU directives concerning energy efficiency before 1 December 2009 were based on Art 174/175 EC Treaty 1992. The EC Treaty 1992 was renamed in accordance with Art 2 of the Treaty of Lisbon. The new name is Treaty on the Functioning of the European Union (TFEU). From 1 December 2009 onwards Art 194 TFEU is the legislative basis for enacting EU directives concerning energy efficiency. For details about the EU Directives and their history see Franz Reimer “Ansätze zur Erhöhung der Energieeffizienz im Europarecht – Eine kritische Bestandsaufnahme” (Approaches for Improving Energy Efficiency in European Law – A critical review) in Helmuth Schulze-Fielitz and Thorsten Müller *Europäisches Klimaschutzrecht* (Nomos, Germany, 2009) and Martha M Roggenkamp and others *Energy Law in Europe* (2nd ed, Oxford University Press, Oxford, 2007).

¹⁹⁶ Under the 1993 SAVE Directive [1993] OJ 237/28, Member States (including Germany) were required to prepare and implement programmes in six areas which included regular inspection of heating installations with an output of more than 15 kW and energy audits of undertakings with high energy consumption.

¹⁹⁷ Directive 93/76/EEC to Limit Carbon Dioxide Emissions by Improving Energy Efficiency (SAVE) [1993] OJ L237/28.

- energy audits of undertakings with high energy consumption.

The Directive 2006/32/EC sets out energy savings targets which must be achieved by all Member States through improved EE and energy services.¹⁹⁸ It is also designed to stimulate market development for energy services and for EE in general. It applies to distribution and retail sales to final consumers of end-use energy. The new Directive does not have a binding target for the Member States; it requires as stated in Article 4(1) the Member States to adopt and aim to achieve an overall national energy saving target of 9 per cent in the period from 2008 to 2017;¹⁹⁹ this leaves the use of the specific EE measures up to the individual Member States. Germany has to bring into force the laws, regulations and administrative provisions sufficient to comply with Directive 2006/32/EC.²⁰⁰ Germany has implemented the Integrated Energy and Climate Programme (*Integriertes Energie- und Klimaprogramm*) 2007, the Energy Efficiency Action Plan (*Energieeffizienz-Aktionsplan*) 2007, and the Energy Efficiency Plan (*Energieeffizienzplan*) 2008 to meet the aims set out in the Directive 2006/32/EC.

Directive 2005/32/EC on establishing a framework for the setting of ecodesign requirements for energy-related products is in principle applicable to any products using energy (apart from vehicles for transport) to perform the function for which it was designed, manufactured, and put on the market.²⁰¹ The Directive does not introduce directly binding requirements for specific products, but does define conditions and criteria for setting requirements regarding environmentally relevant product characteristics (such as energy consumption) and allows them to be adapted readily.²⁰² The Directive has been implemented in German law

¹⁹⁸ Directive 2006/32/EC on Energy End-use Efficiency and Energy Services and Repealing Council Directive 93/76/EEC [2006] OJ L114/67.

¹⁹⁹ Ibid.

²⁰⁰ Ibid, at 65.

²⁰¹ Directive 2005/32/EC of the European Parliament and of the Council on Establishing a Framework for the Setting of Ecodesign Requirements for Energy-related Products Has Been Substantially Amended by Directive 2009/125/EC of the European Parliament and of the Council on Establishing a Framework for the Setting of Ecodesign Requirements for Energy-related Products [2009] OJ L285/10.

²⁰² Directive 2005/32/EC of the European Parliament and of the Council on Establishing a Framework for the Setting of Ecodesign Requirements for Energy-related Products [2005] OJ L191/29.

through the Energy-using Products Act (*Energiebetriebene-Produkte-Gesetz - EBPG*) 2008.²⁰³

Directive 1996/57/EC on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof and Directive 2000/55/EC on energy efficiency requirements for ballast for fluorescent lighting have been implemented in German law through the Maximum Energy Consumption Ordinance (*Energieverbrauchshöchstwerteverordnung - EnVHV*) 2002.²⁰⁴

The Kyoto Protocol already mentioned in the previous chapter has been seen as a promoter of the EE law in the EU.²⁰⁵ Germany had accepted a reduction of 21 per cent of its overall greenhouse gas emissions compared to the 1990 base year by 2012; Germany assumed the strictest reduction target of all EU Member States.²⁰⁶ The German emissions trading system which was introduced in 2005 is a component of the European Community (EC) efforts in respect of the targets set out by the Kyoto Protocol.²⁰⁷ The German emissions trading system is based on the Greenhouse Gas Emissions Trading Act (*Treibhausgas-Emissionshandelsgesetz*), which has mainly been designed as part of a Community reduction scheme to survive the expiration of the Kyoto Protocol in 2012.²⁰⁸

²⁰³ The EBPG will be amended in 2010 as a result of the amendment of Directive 2005/32/EC.

²⁰⁴ Directive 1996/57/EC of the European Parliament and of the Council on Energy Efficiency Requirements for Household Electric Refrigerators, Freezers and Combinations thereof [1996] OJ L236/36. Directive 2000/55/EC of the European Parliament and of the Council on Energy Efficiency Requirements for Ballast for Fluorescent Lighting [2000] OJ L279/33.

²⁰⁵ Franz Reimer “Ansätze zur Erhöhung der Energieeffizienz im Europarecht – Eine kritische Bestandsaufnahme” (Approaches for Improving Energy Efficiency in European Law – A Critical Review) in Helmuth Schulze-Fielitz and Thorsten Müller *Europäisches Klimaschutzrecht* (Nomos, Germany, 2009) 148 at 154.

²⁰⁶ Johann-Christian Pielow, Hans-Martin Koopmann, and Eckart Ehlers “Energy Law in Germany” in Martha M Roggenkamp and others *Energy Law in Europe* (2nd ed, Oxford University Press, Oxford, 2007) at 704.

²⁰⁷ *Ibid.*, at 703. See also Directive 2003/87/EC Establishing a Scheme for Greenhouse Gas Emission Allowance Trading Within the European Community [2003] OJ L338/18.

²⁰⁸ Johann-Christian Pielow, Hans-Martin Koopmann, and Eckart Ehlers “Energy Law in Germany” in Martha M Roggenkamp and others *Energy Law in Europe* (2nd ed, Oxford University Press, Oxford, 2007) at 704.

A. Energy information measures

Energy information measures in Germany include labelling and information and public advice campaigns. Labelling of energy-using appliances is required by the Energy Consumption Labelling Act 2002,²⁰⁹ the Energy Consumption Labelling Ordinance 2003,²¹⁰ the Maximum Energy Consumption Ordinance 2002,²¹¹ the Energy-using Products Act 2008,²¹² the Energy Star Program or the Blue Angel Program (*Der Blaue Engel*). As a result of the different legislative foundations for energy labelling, four different labelling systems exist in Germany.²¹³

The Energy Consumption Labelling Act 1997 got replaced by the Energy Consumption Labelling Act 2002, and has only one objective: to authorize ordinances concerning energy consumption labelling and maximum energy consumption.²¹⁴ The Energy Consumption Labelling Ordinance 1997 was amended regularly until 2003 and has a focus on reducing energy consumption of household appliances. Germany uses the EU energy labelling system which was changed in 2003 and will supposedly change again in 2011. The labelling system from 1998 until 2003 defined the EE classes on a scale with “A” as the most efficient through to “G” as the least efficient.²¹⁵

The current labelling model started in 2003 and defines energy efficiency classes on a scale with “A++” as the most efficient through to “G” as the least efficient.²¹⁶ The reason for developing the new system was that 50 per cent of

²⁰⁹ *Energieverbrauchskennzeichnungsgesetz 2002 (EnVKG)*.

²¹⁰ *Energieverbrauchskennzeichnungsverordnung 2003(EnVKV)*.

²¹¹ *Energieverbrauchshöchstwertverordnung 2002 (EnVHV)*.

²¹² *Energiebetriebene-Produkte-Gesetz 2008 (EBPG)*.

²¹³ Thomas Schomerus “Rechtliche Instrumente zur Verbesserung der Energienutzung” (Legal Measures to Reduce Energy Consumption) (2009) NVwZ 418 at 420.

²¹⁴ Franz Reimer “Ansätze zur Erhöhung der Energieeffizienz im Europarecht – Eine kritische Bestandsaufnahme” (Approaches for Improving Energy Efficiency in European Law – A Critical Review) in Helmuth Schulze-Fielitz and Thorsten Müller *Europäisches Klimaschutzrecht* (Nomos, Germany, 2009) 148 at 161.

²¹⁵ Directive 94/2/EC with Regard to Energy Labelling of Household Electric Refrigerators, Freezers and Their Combinations [1994] OJ L45/124.

²¹⁶ The Energy Consumption Labelling Ordinance 2003 is referring to Directive 2003/66/EC with Regard to Energy Labelling of Household Electric Refrigerators, Freezers and Their Combinations [2003] OJ L170/12, Annex (2) (a) 4.

refrigerators met the requirements for an “A” label and therefore there was no reason for the manufacturers to increase the EE of their products.²¹⁷

The “new” labelling model which should come into force in 2011 will replace the “A+” and “A++” classes with “A-20%”, “A-40%”, “A-60%” and “A-80%”.²¹⁸

The Maximum Energy Consumption Ordinance 2002 has the same focus as the Energy Consumption Labelling Ordinance 2003, but uses a different labelling system. Appliances that meet the objectives set out in the Maximum Energy Consumption Ordinance 2002 are allowed to use the “CE” label.²¹⁹ The “CE” label is widely used in the European Economic Area and is not limited to energy. It is a mandatory conformity label to certify that a product has met the EU consumer safety, health and environmental requirements.²²⁰

The Energy-using Products Act 2008 also uses the “CE” label. The difference between the Energy-using Products Act 2008 and the Energy Consumption Labelling Act 2002 (including its Ordinances) is that the Energy-using Products Act 2008 sets out requirements for environmentally friendly design (also known as ecodesign) of energy-using products and this also includes energy consumption; whereas the others are only focused on energy consumption.

There is also the EU Energy Star programme in Germany which follows an agreement between the Government of the United States and the EU, but it is limited to the energy labelling of office equipment.²²¹

The Blue Angel Program established by the Ministry for the Environment, Nature Conservation and Nuclear Safety in 1987, is Germany’s oldest labelling

²¹⁷ Franz Reimer “Ansätze zur Erhöhung der Energieeffizienz im Europarecht – Eine kritische Bestandsaufnahme“ (Approaches for Improving Energy Efficiency in European Law – A Critical Review) in Helmuth Schulze-Fielitz and Thorsten Müller *Europäisches Klimaschutzrecht* (Nomos, Germany, 2009) 148 at 173.

²¹⁸ Naturschutzbund Deutschland e V (German Environment Conservation Agency) “EU-Energielabel führt Verbraucher in die Irre“ (The EU-energy Label Is Confusing Consumers) (2010) <www.nabu.de>.

²¹⁹ The Maximum Energy Consumption Ordinance 2002, § 3(1) in accordance with § 5(1).

²²⁰ Europäisches Verbraucherzentrum “CE-Zeichen – Was bedeutet dies?” (CE Label – What Does It Mean?) <www.evz.de>.

²²¹ Council Decision L99/47 of 8 April concerning the conclusion on behalf of the Community of the Agreement between the Government of the United States of America and European Community on the coordination of energy-efficient labelling programmes for office equipment.

system.²²² The Blue Angel label applies to climate protection in general which includes EE. Consumers cannot see if the appliance using the Blue Angel label is very energy efficient or has other positive effects concerning the environment such as being efficient concerning the use of water.

The major problem with energy labelling in Germany is that it is confusing for consumers.²²³ The introduction of the “A+” and “A++” classes had the effect of consumers still thinking that an appliance rated “A” or “A+” is very energy efficient, but the difference between “A”, “A+” and “A++” is significant.²²⁴ The “new” labelling system which should be introduced in 2011 will still confuse the consumers because they do not know if the “A-40%” rated appliance they are considering buying is the most efficient or if there is an “A-80%” for example. The variety of four different labelling systems is also confusing for the consumer.²²⁵ On the other hand, this shows that the labelling system in Germany has been successful because manufacturers improved their products very quickly in order to be in the top categories of the labelling systems. They are the “victims of their own success”.²²⁶

In addition to using labelling to inform consumers about energy efficient products, Germany has the German Energy Agency (*Deutsche Energie-Agentur GmbH – DENA*) which provides information and consultation on matters related to EE. The German Energy Agency, founded in 2000, is a limited liability company with the overall aim of developing markets for energy efficiency through interaction with politics, the economy and the community.²²⁷

²²² Naturschutzbund Deutschland e V (German Environment Conservation Agency) “So schützen Sie sich vor Stromfressern” (Ways to Get Protection From Electricity Guzzlers) (2010) <www.nabu.de>.

²²³ Naturschutzbund Deutschland e V (German Environment Conservation Agency) “EU-Energielabel führt Verbraucher in die Irre” (EU-energy Label Is Confusing Consumers) (2010) <www.nabu.de>.

²²⁴ Ibid.

²²⁵ Thomas Schomerus “Rechtliche Instrumente zur Verbesserung der Energienutzung (Legal Measures to Reduce Energy Consumption)(2009) NVwZ 418 at 420.

²²⁶ As a matter of personal observation, not backed up by social science, I am inclined to state that German consumers compare more products than New Zealanders, to find out which one would be best for their purpose. New Zealanders are more interested in the cheapest products whereas Germans want to have the best on the market. Manufacturers know that and the competition there is more about providing top quality products. This stands out as a matter where social science research would be desirable.

²²⁷ IEA “General Energy Policy” (2004) <www.iea.org>.

B. Minimum energy (efficiency) performance standards

Minimum energy (efficiency) performance standards have the same legislative basis as labelling of energy-using appliances.²²⁸ In contrast to energy labelling, there are no negative effects from having different acts and different labelling systems.

C. Top Runner Programme

The German Government is considering implementing the Top Runner Programme, first implemented in Japan in 1998.²²⁹ As we have already seen, under this programme, the leading appliances on the market with the highest level of EE are adopted as a model for binding minimum standards for all products of its type within a specified timeframe.²³⁰

In Japan, a red label is used for products that have not met the Top Runner standards and a green label for products that have met the standards.²³¹ Another proposed labelling system, for Germany in particular, would be defined in 5 classes.²³² The most energy efficient product would have the label “Best appliance in the Top Runner Programme”. The other highly efficient products would have the label “Appliance in the highest class of the Top Runner Programme”. Class 5 would be for the least energy efficient products. Furthermore there have to be sanctions for manufacturers if their existing products do not meet the criteria and

²²⁸ Directive 2005/32/EC of the European Parliament and of the Council on Establishing a Framework for the Setting of Ecodesign Requirements for Energy-related Products Has Been Substantially Amended by Directive 2009/125/EC of the European Parliament and of the Council on Establishing a Framework for the Setting of Ecodesign Requirements for Energy-related Products.

²²⁹ Federal Ministry for the Environment in cooperation with the Federal Ministry of Economic Development “Integrated Energy and Climate Programme” (2009) <www.bmu.de>. See also Thomas Schomerus “Der Top-Runner-Ansatz als Instrument zur Steigerung der Endenergieeffizienz” (The Top Runner Programme as a Measure to Improve End-use Energy Efficiency) (2008) 3 EurUP 130 at 130.

²³⁰ Howard Geller and others “Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries” (2006) 34 Energy Policy 556 at 561.

²³¹ Ibid.

²³² Thomas Schomerus “Der Top-Runner-Ansatz als Instrument zur Steigerung der Endenergieeffizienz” (The Top Runner Programme as a Measure to Improve End-use Energy Efficiency) (2008) 3 EurUP 130 at 131.

also for new products because the Top Runner Programme is not able to prohibit products from entering the market.

However, there are several restrictions that obstruct the implementation of this programme in German law. One is the influence of world trade law and the European Community law.²³³ Within world trade law, the General Agreement on Tariffs and Trade (GATT) and the Agreement on Technical Barriers to Trade (TBT) have to be examined. The TBT and the GATT both ensure that technical regulations, standards, testing and certification procedures do not result in unnecessary obstacles to trade.²³⁴ The energy efficiency standards and certification requirements set out in the Top Runner Programme would therefore be covered under the TBT and the GATT.²³⁵ The world trade law difficulty can be overcome, because the Top Runner Programme would also apply to domestic manufacturers and had the purpose of consumer and environmental protection which is seen as an exception for obstacles of trade.²³⁶

The European Community law (the Eco-Design Directive 2005/32/EC) prohibits the recognition of other standards at the national level of the EU Member States.²³⁷ The implementation of standards can only be made in accordance with Art. 15 of Directive 2005/32/EC.²³⁸ The strict requirements of Art. 15 of the Eco-Design Directive 2005/32/EC make the implementation of a Top Runner Programme almost impossible.²³⁹ Therefore the only chance to implement the Top Runner Programme in Germany would be with new legislation. Unfortunately, as we will see soon, it seems the Government will not introduce the Top Runner Programme. This is a pity, because this programme represents

²³³ Ibid, at 133.

²³⁴ Art. 2 of the TBT and Art. III of the GATT.

²³⁵ Thomas Schomerus "Der Top-Runner-Ansatz als Instrument zur Steigerung der Endenergieeffizienz" (The Top Runner Programme as a Measure to Improve End-use Energy Efficiency) (2008) 3 EurUP 130 at 133.

²³⁶ Art. 2.2 of the TBT and Art. XX of the GATT.

²³⁷ Thomas Schomerus "Der Top-Runner-Ansatz als Instrument zur Steigerung der Endenergieeffizienz" (The Top Runner Programme as a Measure to Improve End-use Energy Efficiency) (2008) 3 EurUP 130 at 130.

²³⁸ Directive 2005/32/EC of the European Parliament and of the Council on Establishing a Framework for the Setting of Ecodesign Requirements for Energy-related Products [2005] OJ L191/29.

²³⁹ Thomas Schomerus "Der Top-Runner-Ansatz als Instrument zur Steigerung der Endenergieeffizienz" (The Top Runner Programme as a Measure to Improve End-use Energy Efficiency) (2008) 3 EurUP 130 at 130.

what is technically possible, socially desirable and best practice. Even its disadvantage of being dependent upon the market having top performing manufacturers to begin with would not be too problematic, because the German manufacturers are highly focused on quality, including EE.

D. Product bans

The toughest legal measures concerning end-use EE are product bans. They are stricter than energy performance measures as they prohibit specific energy inefficient products from entering the market.²⁴⁰ An important consideration of product bans is ensuring that the prohibited energy inefficient appliances are replaced by energy efficient appliances. Germany used product bans to get rid of energy inefficient light bulbs.²⁴¹ The government forced the manufacturers to stop the production of energy inefficient light bulbs from September 2009 onwards and steps had to be taken to remove existing light bulbs starting in September 2009 with the removal of non-conforming light bulbs using over 100 Watts. The next step will be in 2010 with the removal of light bulbs using more than 40 Watts. From 2012 onwards no incandescent light bulbs will be allowed to be sold at all. Germany decided to take the choice away from the consumer to improve EE.

I will now turn to Germany's energy efficiency elements, to investigate how these state actions were incorporated.

II. The Integrated Energy and Climate Programme of the German Government

The German Government implemented the Integrated Energy and Climate Programme (IECP), in time for the 13th conference of the UN Framework Convention on Climate Change in December 2007 in Bali, to show other countries its intention to be a pioneer in international climate protection. The

²⁴⁰ Thomas Schomerus and others "Rechtliche Konzepte für eine bessere Energienutzung" (Legal Measures to Reduce Energy Consumption) (2008) 1 Berichte des Umweltbundesamtes 34 at 34.

²⁴¹ Bernhard W Wegener "Die Freiheit stirbt mit der Glühbirne - wieder ein Stück (Freedom Dies a Little More with the Light Bulb)" (2009) 4 ZUR 169 at 169.

German Cabinet adopted the IECF at its meeting in Meseberg in August 2007 and implemented most of its contents on 5 December 2007.

The IECF is as an ambitious strategy, consisting of 29 key elements, including 14 Acts and Regulations, to improve energy efficiency (EE) and promote renewable energy.²⁴² The key elements concerning end-use EE in households are the amendment of the Energy Industry Act (*Novelle des Energiewirtschaftsgesetzes, EnWG*) 2005²⁴³ on liberalising metering, actions for an amendment to the Energy Saving Ordinance (*Energieeinsparverordnung, EnEV*) 2002, energy-efficient modernisation of social infrastructure, general administrative rules/guidelines on the procurement of energy efficient products and services, energy research and innovation and federal budget funding.²⁴⁴

The amendments of the Energy Industry Act 2005 were implemented in 2008. These amendments set out the opening of electricity metering to competition with the objective of encouraging the use of energy efficient devices.²⁴⁵ The liberalization of electricity metering helps to create load-related and time-variable tariffs, and should therefore help consumers to reduce their energy costs by shifting away from peak loads where the prices are the highest. But this should not count as an EE measure as it will not reduce the amount of used energy; it only helps with using the same appliances at another time where prices are lower. Furthermore electricity metering would count as an energy price measure which will not be discussed in this research.

The Energy Saving Ordinance 2007 was implemented in accordance with the Energy Saving Act 2005 and focuses mainly on energy requirements for buildings such as heating and insulation.²⁴⁶ Only a small amount of space heating and hot water heating in Germany comes from an electricity source and therefore the

²⁴² Thomas Bosecke “Das Integrierte Energie- und Klimaprogramm der Bundesregierung” (The Integrated Energy and Climate Programme) (2008) EurUP 122 at 122.

²⁴³ The Energy Industry Act 1998 was replaced by the Energy Industry Act 2005 through Art 5(2) of the Energy Industry Act 2005.

²⁴⁴ Federal Ministry for the Environment, Nature Conservation and Nuclear Safety “Integrated Energy and Climate Programme” (2007) <www.bmu.de>.

²⁴⁵ Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in cooperation with the Federal Ministry of Economics and Technology “Integrated Energy and Climate Programme” (2009) <www.bmu.de>.

²⁴⁶ Energy Saving Act 2005, § 1(2).

Energy Saving Ordinance 2007 mainly addresses space heating and hot water heating with gas and liquid fuels. Germany wants to move completely away from electricity in this sector to gas and liquid fuels and will replace electric night storage heaters in accordance with §10 of the 2009 amendments of the Energy Saving Ordinance 2007.²⁴⁷

The IECF sets out general administrative rules and guidelines for the government's procurement of energy efficient products and services to set an example for the purchasing of EE technologies to the public. The government acts as a role model for solving energy and climate issues, including the promotion of EE.

III. Energy Efficiency Action Plan

The first Energy Efficiency Action Plan (EEAP) in Germany was established by the Ministry of Economics and Technology and came into force in September 2007. It was the first step on the way to implementing the Directive 2006/32/EC in German law. The EEAP sets out measures to achieve an overall national energy saving target of nine per cent in the period from 2008 to 2017 in accordance with Directive 2006/32/EC.²⁴⁸ As this Directive leaves the use of the specific EE measures up to the Member States, the EEAP sets out the EE measures.

The measures concerning end-use energy efficiency (EE) are the Top Runner Programme, labelling requirements, minimum energy (efficiency) performance standards, information, and public advice campaigns.²⁴⁹ Apart from these measures, the EEAP includes the Early Actions as a substantial contribution (45 per cent) towards meeting the aim of energy reduction.²⁵⁰ It is worth mentioning that all the measures set out in the EEAP regarding the energy industry are based on voluntary agreements rather than regulatory measures but the Ministry of Economics and Technology has the opportunity to intervene if necessary. The

²⁴⁷ Energy Saving Ordinance 2009, § 10(a).

²⁴⁸ Ibid.

²⁴⁹ Federal Ministry of Economics and Technology "Energy Efficiency Action Plan" (2007) <www.bmwi.de>.

²⁵⁰ Ibid.

EEAP will be updated by the 30 June 2011 and afterwards at least one more time by 30 June 2014.²⁵¹

The first EEAP therefore sets out clear reduction aims and detailed measures that should assist with fulfilling these reduction aims. These clear aims and measures help Germany to improve its current level of EE, but the EEAP leaves it unclear as to how to calculate the exact reduction potential, how to account for Early Actions, and how to handle monitoring and evaluation. The EEAP can be seen as a good framework which will be improved in upcoming programmes.

IV. Energy Efficiency Plan

The first Energy Efficiency Plan (the Plan) not only has a similar name to the Energy Efficiency Action Plan 2007 (EEAP) we just referred to, it also has a similar content, but in fact it is not the same. The Energy Efficiency Plan was created by the Ministry for the Environment, Nature Conservation and Nuclear Safety and came into force on 16 October 2008. It was another step on the way to improving Germany's energy efficiency (EE) potential after the Integrated Energy and Climate Change Program 2007 and the EEAP. The Plan was created to keep the EE momentum going, because Germany still had not implemented the Energy Efficiency Act at that time and still has not done so.²⁵² It combines a report concerning EE accomplishments and a strategic plan for setting EE measures.

The Plan sets out objectives such as supporting low-income households, better consultation with consumers in general, and improving energy performance standards and labelling.²⁵³ Furthermore, it mentions the Top Runner Programme in the manner described previously.²⁵⁴ The objectives concerning low-income households are better advising of consumers regarding energy saving tips and EE appliances and funding. Low-income households will get support from three

²⁵¹ Ibid.

²⁵² At the publication date of this thesis.

²⁵³ Ministry for the Environment, Nature Conservation and Nuclear Safety "Energy Efficiency Plan" (2008) <www.bmu.de>.

²⁵⁴ Thomas Schomerus "Der Top-Runner-Ansatz als Instrument zur Steigerung der Endenergieeffizienz" (The Top Runner Programme as a Measure to Improve End-use Energy Efficiency) (2008) 3 EurUP 130 at 131.

different angles.²⁵⁵ They will get free energy saving light bulbs, switchable terminal strips and smart meters. Furthermore, low-income households will get vouchers to buy energy-efficient household appliances. The vouchers will not be enough to get the appliances for free, but will assist to reduce the costs. Low-income households can also obtain loans to buy energy-efficient appliances, repaid with the money from energy savings. The objectives concerning better advising, improving energy performance standards and labelling are mainly kept broad. Only the Top Runner Programme is described in more detail as a way to improve upon current methods of minimum energy (efficiency) standards.²⁵⁶

The Plan also addresses the “Landlord Tenant Problem”. The Plan sets out the right for tenants to claim a reduction in their rent if landlords do not fulfil their obligations set out in the Energy Saving Regulations.²⁵⁷ This forces the landlord to invest in energy-efficient space heating, hot water heating and appliances. This may look unfair to the landlord, but its premise is that he or she as the owner of the property should be responsible regarding the EE requirements of the house.

If one word could be used to summarize the Plan then it would be “ambitious”. The word is used 12 times in the Plan; certainly, that demonstrates the difficulties in implementing such a complex framework. While it is evident there are difficulties, the sentence “We don’t have an electricity gap, we have an efficiency gap”²⁵⁸ shows a positive attitude and the way Germany is showing leadership in this area.

V. Energy Efficiency Act

However, the story of the Energy Efficiency Act has been a dismaying failure and is the current main barrier to the promotion of energy efficiency (EE) in

²⁵⁵ Peter Schuette and Martin Winkler “Aktuelle Entwicklungen im Bundesumweltrecht” (Latest Developments in Federal Environmental Law) (2009) 2 ZUR 110 at 110.

²⁵⁶ Ibid.

²⁵⁷ For more details see Marlene Schmidt “Energieeffizienz im Mietrecht: Der neue Energiemerkmal” (Energy Efficiency in Tenancy Law: The New Energy Performance Certificate) (2008) 10 ZUR 463 – 468.

²⁵⁸ Ministry for the Environment, Nature Conservation and Nuclear Safety “Energy Efficiency Plan” (2008) <www.bmu.de>.

Germany. Germany should have brought into force the laws, regulations and administrative provisions sufficient to comply with Directive 2006/32/EC on energy end-use efficiency and energy services not later than 17 May 2008.²⁵⁹ This should have happened with the implementation of the Act. The Act was still not enacted by the end of 2008 and therefore the EU Commission started a treaty violation proceeding against Germany in accordance with Art. 226 of the Treaty on the Foundation of the European Community (Vertrag zur Gründung der Europäischen Gemeinschaft).

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in cooperation with the Federal Ministry of Economics and Technology prepared a first draft of the Energy Efficiency Bill on 30 January 2009.²⁶⁰ The aim of the Energy Efficiency Bill is an overall national energy savings target of 9 per cent by 2017. This aim should be realized through focusing on the stimulation of market development for energy services and the reduction of market barriers concerning end-use EE.²⁶¹

Under §3a of the first draft of the Energy Efficiency Bill, energy distributors, distribution system operators and/or retail energy sales companies have to create measures to improve EE in households and inform end users about the effectiveness of these measures.²⁶² The Federal Ministry of Justice wanted to investigate this objective to ensure it is in accordance with the constitution, because companies cannot be forced to sell less energy. Paragraph 3a of the first draft of the Energy Efficiency Bill remained under discussion at the completion of the first draft. The issue of not striking an agreement between these two Ministries is seen throughout this first draft of the Energy Efficiency Bill and is considered

²⁵⁹ Directive 2006/32/EC on Energy End-use Efficiency and Energy Services and Repealing Council Directive 93/76/EEC [2006] OJ L114/11.

²⁶⁰ Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in cooperation with the Federal Ministry of Economics and Technology “Draft of the Act for Promoting Energy Efficiency” (2009) Der Energieeffizienzverband für Wärme, Kälte und KWK e V <www.agfw.de>.

²⁶¹ Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in cooperation with the Federal Ministry of Economics and Technology “Draft of the Act for Promoting Energy Efficiency” (2009) §§ 3(2), 4 Der Energieeffizienzverband für Wärme, Kälte und KWK e V <www.agfw.de>.

²⁶² Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in cooperation with the Federal Ministry of Economics and Technology “Draft of the Act for Promoting Energy Efficiency” (2009) § 3(a) Der Energieeffizienzverband für Wärme, Kälte und KWK e V <www.agfw.de>.

by many commentators as a general problem in the legislative procedure.²⁶³ The general problem between those Ministries is that the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety focuses on regulatory measures such as forcing the companies, through energy services, to reduce the energy consumption of households, whereas the Federal Ministry of Economics and Technology focuses on decentred regulation such as informing end users of options to improve EE in their households.

Paragraph 8 of the first draft of the Energy Efficiency Bill states that the Federal Authority for Energy Efficiency, which was established on 8 January 2009, must pursue its objectives such as gathering information, which includes monitoring and auditing of the energy sold by utilities, controlling the provider of energy services, preparation of energy efficiency action plans and reports and creating lists concerning EE criteria.²⁶⁴ The Federal Authority for Energy Efficiency is integrated with the Federal Office of Economics and Export Control (*Bundesamt für Wirtschaft und Ausfuhrkontrolle, BAFA*) and gets its legal authority from the implementation of the Act. The Federal Authority for Energy Efficiency will not be able to fulfil these objectives, because it does not have enough staff members. The problem is that the Federal Authority for Energy Efficiency is seen as a “Super-efficient authority” which has to handle all matters concerning EE, but without giving it more resources this will not happen.

On 23 April 2010 the Energy Efficiency Bill was finally introduced.²⁶⁵ The first reading was on 20 May 2010.²⁶⁶ The difference between the first draft of the Energy Efficiency Bill and the final version of the Energy Efficiency Bill is that the Federal Ministry of Economics and Technology led the preparation of the Bill. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety was therefore left out. This was one solution to resolve the issue of the two

²⁶³ Markus Kachel “Das Energieeffizienzgesetz – Scheitern als Chance” (The Energy Efficiency Act – Chance of failure) (2009) 6 ZUR 281 at 281.

²⁶⁴ Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in cooperation with the Federal Ministry of Economics and Technology “Draft of the Act for Promoting energy Efficiency” (2009) § 5 Der Energieeffizienzverband für Wärme, Kälte und KWK e V <www.agfw.de>.

²⁶⁵ Bundesregierung (Federal Government) “Gesetze im Gesetzgebungsverfahren” (Bills) (2010) <www.bundesregierung.de>.

²⁶⁶ Ibid.

Ministries striking an agreement. As a result, § 3a of the first draft of the Energy Efficiency Bill was not included in the Energy Efficiency Bill. This means that the focus of the Energy Efficiency Bill is now on decentred regulation such as informing end users of options to improve EE in their households.

The main reason for the failure of preparing an Energy Efficiency Bill in the first instance was insufficient cooperation between the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the Federal Ministry of Economics and Technology, in order to find the best measures to promote EE.²⁶⁷ This issue was solved by leaving the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety out of preparing the final version of the Energy Efficiency Bill. As a result the focus is on market based measures such as informing end users of options to improve EE in their households, which is insufficient and weak. If Germany wants to fulfil its aim set out in the Energy Efficiency Bill it has to focus on stronger government action through energy performance standards or the Top Runner Programme. The aim of creating a legal framework which will be worthy of the name “Energy Efficiency Act” has not been met so far, but might yet be realized in the second or third reading of the Energy Efficiency Bill, which are intended for 8 and 9 July 2010.²⁶⁸

It was also interesting to see that Germany, with the same electoral system as New Zealand, also has the same issues in enacting law, regulation and policy concerning EE. In Germany this was mainly due to the opposing majorities in the two chambers of the German Parliament from 2005 to 2009 which had trouble reaching agreements as could be seen with the preparation of the Energy Efficiency Bill. The coalition of the two big parties, the Christian Democrats/Christian Socialists and the Social Democrats in power until 2009 were represented in the Ministries in the following way; the Social Democrats were running the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the Christian Socialists were running the Federal Ministry of

²⁶⁷ Peter Schuette and Martin Winkler “Aktuelle Entwicklungen im Bundesumweltrecht” (Latest Developments in Federal Environmental Law) (2009) 6 ZUR 339 at 339.

²⁶⁸ Deutsche Energie Agentur (dena) “Gesetz zur Umsetzung der EDL-Richtlinie im Bundesrat” (Act to Implement the EDL Directive In German Law) (2010) <www.energieeffizienz-online.info/>. This will be after the publication date of this thesis.

Economics and Technology. Due to the different approaches concerning EE the two Ministries had trouble finding agreement on EE issues. The new German Government in power since the end of 2009 is led by the Christian Democrats/Christian Socialists and the Free Democrats. The Christian Democrats are running the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the Free Democrats are running the Federal Ministry of Economics and Technology. It is more likely for these parties to find agreement, but as we have noted, they focus more on a market based approach rather than a regulatory one, due to their political orientation.

VI. General observations from the German experience

In Germany, good law, regulation and policy exist for the promotion of energy efficiency (EE). The “new drive” in the last decade in particular shows Germany’s leadership in improving EE. Germany has realized the importance of EE and puts it on the same level as renewables and the ETS, whereas in New Zealand EE is ranked behind the other options. The German government has been using state actions since the 1970s but sometimes struggles to decide between a stronger focus on conventional regulation or decentred regulation. The reason for this is that both regulations were working out quite well in Germany. The disadvantage of information measures such as labelling being more dependent on market and consumer behaviour did not occur as strongly in Germany. The different labelling systems had the positive effect that consumers and manufacturers were responding to them. The result was that the labelling system had to be amended a few times with the unfortunate outcome that it became more confusing for the consumers to follow the different systems.

The German Government is aware of the issues low-income households face and therefore supports them with loans, voucher for energy efficient appliances and better public consultation. The German Government found a solution to solve the “Landlord-Tenant Problem” by giving the tenants the right to claim a reduction in their rent if landlords do not fulfil their obligations as set out in the Energy Saving Regulations. This was a vigorous regulatory step to address this

issue, and resulted in landlords investing in energy-efficient space heating, hot water heating and appliances. Germany has also shown strong government action in setting strict MEPS and using product bans to get rid of energy inefficient light bulbs. Stricter MEPS and product bans could help New Zealand to put more pressure on manufacturers to produce and distribute EE products in New Zealand. The emphasis would be on overseas manufacturers and distributors, because they produce almost 100 per cent of New Zealand residential products.

I now turn to California as another comparator to better understand the nature of New Zealand law, regulation and policy concerning EE.

CHAPTER FOUR – THE CALIFORNIAN EXPERIENCE

Californian homes are loaded with air conditioners, computers, huge TVs, massive refrigerators, PlayStations, hot tubs and swimming pools. However, Californian residents still use roughly the same amount of electricity per capita as they did 30 years ago.²⁶⁹ How is that possible?

Promoting EE has been the goal of many initiatives within the United States over the last 37 years. California in particular, as the largest state, has played and is playing a pioneering role in promoting EE. California, with the eighth largest economy in the world, wants to have reliable and clean supplies of electricity to meet the needs of its growing population. Promoting the development of end-use EE in households has been a central focus of California energy and environmental policy since the 1970s.

The movement to focus on promoting EE to solve California's energy problems started with Arthur H Rosenfeld, in cooperation with Jerry Brown the Governor of California, after the oil embargo of 1973. Rosenfeld developed some of the toughest energy performance standards in the world. Rosenfeld's principle was "Conserving energy is cheaper and smarter than building power plants".²⁷⁰ In 1975 Rosenfeld established the Center of Building Science at Lawrence Berkeley National Laboratory, which developed the first compact fluorescent lamps, low-emissivity windows and computer programs for energy analysis and the design of buildings. The Center of Building Science also developed California's first energy performance standards for refrigerators.

The first energy performance standards for refrigerators, freezers and air conditioners in California became effective on 3 November 1977²⁷¹ and were due to a milestone decision against the building of nuclear power stations. In 1976, a time when EE standards for appliances were relatively controversial, San Diego

²⁶⁹ Marc Lifsher "You Can Thank Arthur Rosenfeld for Energy Savings" *The Los Angeles Times* (Los Angeles, 11 January 2010) at 1.

²⁷⁰ Arthur H Rosenfeld "The Art of Energy Efficiency: Protecting the Environment with Better Technology" (1999) 24 Annual Review of Energy and the Environment 33 at 36.

Gas & Electric Company wanted to build a nuclear-power plant (Sundesert) and therefore asked the California Energy Commission (CEC), which was established one year earlier, for approval.²⁷² The CEC is California's principal energy policy and planning agency. The CEC forecasts future energy needs and pursues the promotion of EE by developing and implementing appliance energy performance standards.²⁷³

It was Rosenfeld who told Jerry Brown, an antinuclear activist, that energy efficiency standards for refrigerators save as much electricity as Sundesert could produce. Brown supported Rosenfeld and declined the Sundesert project. Subsequently the CEC instead improved the energy efficiency standards for refrigerators, freezers and air conditioners in 1977. In the 10 years following, the CEC implemented efficiency standards for furnaces, dryers, swimming-pool heaters, household cooking appliances, heat pumps, showerheads, and fluorescent-lamp ballasts, among other products.²⁷⁴

After the state's breakthrough concerning the promotion of EE in the 1970s, and 1980s, with tightened standards in 1980 and 1987 and 2000 onwards, only the 1990s was a less aggressive decade for strict energy efficiency standards in California.²⁷⁵ One of the reasons for the less aggressive decade was the pressure for deregulation in the electricity sector California. The electricity industry underwent a dramatic reorganization in the 1990s. California restructured the electricity market in the mid 1990s, leaving it to Adam Smith's invisible hand to ensure system reliability.²⁷⁶ Alongside MEPS, utility demand-side management (DSM) was pioneered in California and was introduced in the 1970s.²⁷⁷

²⁷¹ Regulations for Appliance Efficiency Standards 1977, s 1604.

²⁷² San Diego Gas and Electric "San Diego Gas and Electric, Sundesert Nuclear Power Plant Collection" (1981) Online Archive of California <www.oac.cdlib.org>.

²⁷³ Alan H Sanstad, W Michael Hanemann, and Maximillian Auffhammer *Managing Greenhouse Gas Emissions in California* (The California Climate Change Center at UC Berkeley, California, 2006) at ch 6.

²⁷⁴ California Administrative Code, s 1604.

²⁷⁵ Arthur H Rosenfeld "The Art of Energy Efficiency: Protecting the Environment with Better Technology" (1999) 24 Annual Review of Energy and the Environment 33 at 46.

²⁷⁶ Timothy P Duane "Regulation's Rationale: Learning from the California Energy Crisis" (2002) 19 Yale J on Reg 471 at 487.

Companies were required to help consumers with EE matters through incentives, information provision, and other measures.²⁷⁸

The 1990s saw the creation of the Energy Star programme in a joint venture with the United States Environmental Protection Agency (EPA) and the U.S. Department of Energy. EPA is a federal government agency with the objective of protecting human health and the environment. EPA began operating in 1970 and has the power to make regulations concerning its objectives. EPA introduced the Energy Star programme in 1992 as a voluntary labelling program created to identify and promote EE products. The Energy Star programme is a federal initiative which also applies to California. The programme started with the labelling of computers and monitors and progressed office equipment products, residential heating and cooling equipment, home electronics and lighting.²⁷⁹

California faced a significant electricity crisis in 2000 and 2001. The causes of the crisis were multiple, complex and intertwined factors; a shortage of generating capacity, bottlenecks in transmission, wholesale generator power, regulatory missteps, and faulty market design.²⁸⁰

The result of California's strict EE regulations in the last 37 years is that California's per capita electricity use has remained relatively flat since 1973 although the electricity use has risen by nearly 50 per cent in the United States.²⁸¹

Even while concentrating on EE in California, it is worth mentioning the achievements of President Carter, such as the implementation of compulsory federal EE measures. At the beginning of his term, President Carter faced an energy crisis as a result of the aftermath of the oil crisis of 1973. "Energy" was

²⁷⁷ Alan H Sanstad, W Michael Hanemann, and Maximillian Auffhammer *Managing Greenhouse Gas Emissions in California* (The California Climate Change Center at UC Berkeley, California, 2006) at ch 6.

²⁷⁸ Ibid.

²⁷⁹ Energy Star "Mayor Milestones" <www.energystar.gov>. See also Energy Star "History of Energy Star" <www.energystar.gov>.

²⁸⁰ Christopher Weare *The California Electricity Crisis* (Public Policy Institute of California, California, 2003). See also: Woodrow W Clark and Ted K Bradshaw "Agile Energy Systems: Global Lessons from the California Energy Crisis" (Elsevier, Oxford, 2004).

²⁸¹ California Energy Commission "Update of the Energy Action Plan" (2008). See also: Noah Sachs "Greening Demand: Energy Consumption and U.S. Climate Policy" (2009) 19 *Duke Environmental Law & Policy Forum* 295 at 295.

the country's number-one issue and Carter addressed this issue with the proposal of a national energy policy programme including EE to the Congress in 1977.²⁸² He introduced this programme in his famous speech in February 1977.²⁸³ In his speech, he asked each individual to sacrifice a bit as a small part of an aggressive, national campaign. The following two sentences are segments out of that speech:²⁸⁴

There is no way that I, or anyone else in the Government, can solve our energy problems if you are not willing to help. I know that we can meet this energy challenge if the burden is borne fairly among all our people—and if we realize that in order to solve our energy problems we need to sacrifice the quality of our lives.

He realised at this particular stage that each individual had to be aware of the issues and be willing to work towards a common goal, referring to what we now call “changing consumer behaviour”.

Another problem during that time was that 50 different agencies, departments, and bureaus in the Federal Government were responsible for energy policies. Carter saw the problem of “too many cooks spoiling the broth” and therefore in 1977 combined some of the agencies into the U.S. Department of Energy.²⁸⁵

Another name worth mentioning next to Carter is Amory Lovins who has been working for four decades in energy policies. He started working in the 1970s as an analyst of “soft energy path” for the United States. He has been one of the strongest EE supporters.²⁸⁶ He states that saving energy at the end-use is always cheaper than adding more supply and it is also faster than producing energy.²⁸⁷ He also invented the term “negawatt”. A “negawatt” is a watt of electricity that is not

²⁸² Daniel Yergin *The Prize: The Epic Quest for Oil, Money & Power* (Free Press, New York, 2003) at 661, 662.

²⁸³ *Ibid.*, at 663.

²⁸⁴ Post Carbon Institute “Jimmy Carter on the Energy Crisis” (2009) <www.globalpublicmedia.com>.

²⁸⁵ Daniel Yergin *The Prize: The Epic Quest for Oil, Money & Power* (Free Press, New York, 2003) at 662.

²⁸⁶ Paul Roberts *The End of Oil: The Decline of the Petroleum Economy and the Rise of a New Energy Order* (Bloomsbury, Great Britain, 2004) at 215.

²⁸⁷ *Ibid.*, at 226.

used because of a conservation measure, and is therefore available for some other use (saved energy).²⁸⁸

Carter who made energy the centrepiece of his administration was succeeded by Ronald Reagan in 1981 who made energy a footnote in his administration.²⁸⁹ Reagan stated that the energy crisis of 1973 was due to regulation and the misguided policies of the government.²⁹⁰ He favoured free markets and also tried to stop many conservation strategies, while focusing on new power plants.²⁹¹ For instance the Reagan Administration froze the Corporate Average Fuel Economy (CAFE) standards that had been so effective for years.²⁹² From there on the federal government of the United States was lacking leadership in promoting EE and reducing greenhouse gas emissions in general. This could be seen for instance, in refusing to ratify the Kyoto Protocol unlike New Zealand and Germany.²⁹³ A move back to stronger attention to energy policies started after the Deepwater Horizon oil spill (also referred to as the BP oil disaster, the Gulf of Mexico oil spill, or the Macondo blowout) in April 2010. Before the oil spill, President Obama did focus less on energy, climate change or global warming, but his approaches changed.²⁹⁴ He started to push back to energy policies, including EE, to shift away from fossil fuel use.²⁹⁵

With this background information, I will now turn to law, regulation, and policy concerning EE in California.

²⁸⁸ Donald Berwick, Elliot Fisher, and Amory Lovins “Negawatts and Negabeds” The Huffington Post (2008) <www.huffingtonpost.com>.

²⁸⁹ Daniel Yergin *The Prize: The Epic Quest for Oil, Money & Power* (Free Press, New York, 2003) at 755.

²⁹⁰ Ibid.

²⁹¹ Paul Roberts *The End of Oil: The Decline of the Petroleum Economy and the Rise of a New Energy Order* (Bloomsbury, Great Britain, 2004) at 219.

²⁹² Ibid.

²⁹³ The Clinton government executed the Kyoto Protocol but never submitted the Protocol to Congress for ratification.

²⁹⁴ Michael Crowley “Obama Speech Addresses Oil-spill Response, Energy Policy” (2010) <<http://news.yahoo.com>>.

²⁹⁵ Hans Bader “Obama Uses Oil Spill to Push Failed Energy Policies” (2010) <www.globalwarming.org>.

I. California Public Utility Commission

The California Public Utility Commission (CPUC) was established to watch over the state's three large investor-owned utilities (IOUs) in 1911.²⁹⁶ CPUC decoupled the utilities' financial results from their direct energy sales to facilitate utility support for EE programmes in the 1980s.²⁹⁷ CPUC works with customer-owned utilities and IOU's to make them invest in energy efficiency (EE) programmes which is mainly known as utility demand-side management (DSM). This is an important point and we will return to it. The inclusion of IOUs in EE programmes for consumers is one of the reasons why California has achieved such good results in promoting EE. CPUC was also strongly involved in the move to deregulation in California as it formulated the deregulation plan itself in 1996.²⁹⁸

II. The Warren-Alquist Act 1974

The Warren-Alquist State Energy Resources Conservation and Development Act (Warren-Alquist Act) 1974, the state's first legislative basis towards increasing energy efficiency, came into force in 1974.²⁹⁹ The Warren-Alquist Act 1974 grew out of the oil crisis in 1973 when utilities wanted to build new power plants.

The Warren-Alquist Act 1974 has two main objectives concerning EE. The first objective is to establish and give statutory authority to the California Energy Commission (CEC); its formal name is Energy Resources Conservation and Development Commission.³⁰⁰ The second objective is to require CEC to fulfil its objectives concerning the promotion of energy efficiency. To fulfil its objectives

²⁹⁶ Timothy P Duane "Regulation's Rationale: Learning from the California Energy Crisis" (2002) 19 Yale J on Reg 471 at 480.

²⁹⁷ See California Energy Commission and Public Utilities Commission "Energy Action Plan II" (2005) <www.energy.ca.gov>.

²⁹⁸ Woodrow W Clark II and Ted K Bradshaw *Agile Energy Systems: Global Lessons from the California Energy Crisis* (Elsevier, Oxford, 2004) at 10.

²⁹⁹ Alan H Sanstad, W Michael Hanemann, and Maximillian Auffhammer *Managing Greenhouse Gas Emissions in California* (The California Climate Change Center at UC Berkeley, California, 2006) at ch 6.

³⁰⁰ Public Resources Code § 25200.

the Warren-Alquist Act 1974 gives power to the CEC to make rules and regulations regarding EE.³⁰¹

III. The California Energy Commission

The CEC is involved in most of the energy efficiency (EE) related programs of California and is therefore California's principal energy policy and planning organization. The Warren-Alquist Act 1974 in its present version requires the California Energy Commission to fulfil four primary objectives in regards to EE, firstly to develop and implement appliance and building energy efficiency performance standards;³⁰² secondly, to ensure that grants, funds and loans are available to promote energy efficiency measures;³⁰³ thirdly to develop and implement EE strategies, action plans and energy reports;³⁰⁴ and finally to undertake a continuing assessment of electricity energy consumption.³⁰⁵

The Governor is in charge of appointing the five members of the CEC. The CEC and the Governor also select a Public Adviser, an attorney admitted to the practice of law in California, who ensures that the residents of California have the opportunity to contribute in the decision-making process, with particular regard to energy efficiency (EE) in households. California thereby ensures that residents feel included in the state's action.

The CEC has five divisions; the important division for this research is the Energy Efficiency and Renewables Division. The Appliance Efficiency Program is an active segment of the Energy Efficiency and Renewables Division. The Appliance Efficiency Program has its legislative basis in the Appliance Efficiency Regulations 2009 which supplement the Warren-Alquist Act 1974.³⁰⁶ In addition, a database of energy efficient appliances is also maintained under the Appliance Efficiency Program.

³⁰¹ Ibid, § 25218.

³⁰² Ibid, § 25402.

³⁰³ Ibid, §§ 25410.6 a), 25450, 25648.

³⁰⁴ Ibid, §§ 25301, 2530.

³⁰⁵ Ibid, § 25216 (a).

³⁰⁶ California Code of Regulation, ss 1601 – 1608.

The CEC supported a lawsuit against the US Department of Energy (DOE) for missing deadlines to implement stricter minimum energy (efficiency) performance standards (MEPS) for residential air conditioners. DOE is required to revise and strengthen MEPS in accordance with § 325 of the National Energy Policy and Conservation Act 1975.³⁰⁷ The DOE missed deadlines and set weak MEPS especially for air conditioners.³⁰⁸ This resulted in California and other states (petitioners) supporting a lawsuit against DOE to ensure compliance with the Federal Energy Policy and Conservation Act 1975 in 2004.³⁰⁹ In this case the petitioners argued that the DOE was delaying in withdrawing and replacing MEPS for residential air conditioners and therefore violated the Energy Policy and Conservation Act 1975 as amended by the national Appliance Energy Conservation Act 1987, the Administrative Procedure Act 1946 and the National Environmental Policy Act 1969.³¹⁰ The court's decision was that DOE's actions in withdrawing MEPS and replacing them with less stringent MEPS was not a valid exercise of DOE's authority under the National Energy Policy and Conservation Act 1975.³¹¹ As a result of that decision all states, including California, were allowed to implement ten percent higher MEPS for air conditioners.³¹²

In addition, the California Attorney General alongside the CEC and other states sued the DOE for missing deadlines to revise energy performance standards again in 2005.³¹³ The states successfully negotiated a consent judgment that imposed court-enforced deadlines to revise the energy performance standards.³¹⁴ In 2007, Congress enacted the Energy Independence and Security Act 2007 that restates DOE's authority to issue energy performance standards after DOE tried to deny its authority to issue energy performance standards for commercial cooling and heating equipment.³¹⁵ In 2008 the CEC and the Attorney General filed a petition in the Second Circuit, because DOE's failed to adopt adequate energy

³⁰⁷ United States Code Service, § 6295.

³⁰⁸ Office of the Attorney General "Energy Efficiency" (2010) <www.ag.ca.gov>.

³⁰⁹ *Natural Resources Defense Council v Abraham* [2004] 355 F.3d 179.

³¹⁰ *Ibid.*

³¹¹ *Ibid.*

³¹² Office of the Attorney General "Energy Efficiency" (2010) <www.ag.ca.gov>.

³¹³ *The States of California v Bodman* [2005] 05 Civ. 7807.

³¹⁴ *Ibid.*

³¹⁵ Office of the Attorney General "Energy Efficiency" (2010) <www.ag.ca.gov>.

performance standards for residential furnaces and boilers.³¹⁶ In 2009, California and other states submitted comments to DOE regarding proposed energy performance standards for light bulbs.³¹⁷ To address many of the comments, new lighting standards were announced on 29 June 2009.³¹⁸

The CEC gets its funding from the customers. The customers have to pay an electricity consumption surcharge gathered by the electricity utilities.³¹⁹ The CEC has a special budget for EE programs. Furthermore, the CEC handles the Public Goods surcharge for R&D programs and also collects funds from customers of investor-owned utilities. On the other hand in 2001 CEC introduced the 20/20 program which offers consumers a 20 per cent rebate if they reduced consumption by 20 per cent from the previous year's levels, and over 30 per cent of utility customers qualified for the discount.³²⁰ Customers of both Southern California Edison and Pacific Gas and Electric have to use 20 per cent less electricity to be eligible for credits.³²¹ This shows that the Californian government includes utilities and consumers in its EE actions. It is not only the government that has realized the importance of EE, it also managed to convince consumers with the help of utilities to be aware of the importance.

As we could see, CEC as California's principal energy policy and planning organization has been given, in accordance with the Warren-Alquist Act 1974, all the power needed to promote EE in California. Most importantly, it has the power to make EE regulations. In this respect CEC has been using its statutory power to enact energy performance standards and has successfully fought for strict energy performance standards against the US Department of Energy.

³¹⁶ Ibid.

³¹⁷ Ibid.

³¹⁸ Ibid.

³¹⁹ California Energy Commission "Governor Davis Signs Executive Order to Renew 20/20 Energy Conservation Program" (2002) <www.energy.ca.gov>.

³²⁰ Christopher Weare *The California Electricity Crisis: Causes and Policy Options* (Public Policy Institute of California, California, 2003) at 96.

³²¹ Ibid.

IV. Regulations regarding space heating, water heating, and appliances

California has had regulations and policies for end-use energy efficiency regarding household appliances since 1977. All the regulations concerning EE have been made by the California Energy Commission (CEC) in accordance with § 25218 of the Warren-Alquist Act 1974.³²²

On 9 August 2009, the Appliance Efficiency Regulations 2009 came into force state-wide. They cover mandatory energy performance standards and energy labelling. They were adopted by the CEC and supersede all the previous regulations concerning appliance efficiency. They contain standards for both federally-regulated appliances and Californian non-federally regulated appliances.³²³ The standards for federally-regulated appliances do not cover anything different to the standards for Californian regulated appliances and are therefore not important for the big picture.

On 3 November 1977 the first energy labelling for refrigerators, freezers and air conditioners in California became effective.³²⁴ In accordance with § 1605 of the Appliance Efficiency Standards 1977, every refrigerator, freezer and air conditioner had to carry a certificate stating where the model was tested, and what efficiency it showed in terms of kilowatt-hours per month or Btu per watt-hour.³²⁵ The refrigerators and freezers also had to display the volume refrigerated.

This detailed statement of information that had to be provided by the manufactures was unique in the world concerning EE in the 1970s. This shows how important this matter was for California to implement compulsory energy labelling to promote EE at that time and demonstrated strong government action.

³²² Public Resources Code § 25218.

³²³ The Californian standards which are the same as federal standards are listed in the California Code of Regulations, s 1605.1. Exclusively Californian standards which are also applicable in state law are listed in the California Code of Regulations, s 1605.2. California standards which are only for non-federally regulated appliances are listed in the California Code of Regulations, s 1605.3.

³²⁴ California Administrative Code, s 1605.

³²⁵ Ibid.

Paragraphs 1606 and 1607 of the Energy Efficiency Regulations set out requirements for energy labelling.³²⁶ The labelling system has changed only slightly compared to the one used in 1977. New products have been added and will be added to the list of appliances subject to mandatory labelling. As listed in § 1606 of the Energy Efficiency Regulations energy labelling is mandatory for refrigerators, freezers, ice-makers, water dispensers, air conditioners, heat pumps, fans, electrical space heaters, central furnaces, boilers, all water heaters, pool heaters, residential lighting, dishwashers, washing machines, clothes dryers, cooking products, and consumer audio and video equipment.

California also uses also the Energy Star program alongside its compulsory energy labelling system. The Energy Star system is a federal program being well recognized internationally as a voluntary, international endorsement program for energy efficiency - as we have noted.³²⁷ The Energy Star program in particular plays an important role in the promotion of EE in California. The latest achievements are the labelling of Digital Television Adapters which took effect in January 2007 and the labelling of set-top boxes from 1 January 2009.

On 3 November 1977, the first energy performance standards for refrigerators, freezers and air conditioners became effective alongside energy labelling in California.³²⁸ Paragraph 1605 of the Energy Efficiency Regulations 2009 set out requirements for energy performance standards.³²⁹ New products have been added and will be added to the list of appliances subject to mandatory energy performance standards. Paragraph 1605 of the Energy Efficiency Regulations 2009 also covers the products mentioned above under energy labelling. New efficiency standards mandated for big-screen televisions will go into effect on 1 January 2011.³³⁰

In addition to the appliance efficiency regulations and the Energy Star program is the State Energy Efficient Appliance Rebate Program (SEEARP), from 22 April 2010, this program provides rebates to consumers for purchasing

³²⁶ California Code of Regulation, §§ 1606, 1607.

³²⁷ Energy Star “About Energy Star” <www.energystar.gov>.

³²⁸ California Administrative Code, ss 1604, 1605.

³²⁹ California Code of Regulation, § 1605.

³³⁰ California Energy Commission “Funding” <www.energy.ca.gov>.

EE washing machines, refrigerators and room/window air conditioners during the rebate period. CEC will administer the SEEARP. California has been approved to receive \$35.2 million in federal American Recovery and Reinvestment Act funds to participate in the SEEARP.³³¹

As we could see, energy performance standards and energy labelling started in California in 1977, more than twenty years before New Zealand. This shows that California's government has seen the need for strong government action in the early years after the oil embargo in 1973 and the call for EE as a solution to solve future problems concerning energy security and later the reduction of greenhouse gas emissions and reduction of energy costs. In particular the detailed statement of information that had to be provided by the manufacturers was unique in the world concerning EE in the 1970s. Implementing compulsory energy labelling and energy performance to promote EE shows how important this matter was for California at that time. As already seen while talking about the CEC, strengthening of energy performance standards was always the primary objective of California, because this was its strongest measure for promoting EE.

V. Energy Action Plan

The first Energy Action Plan (EAP) was established by the CEC, CPUC and the Consumer Power and Conservation Financing Authority (CPA) in May 2003. The CPA - as an authority we have not talked about yet - was established during the California Energy Crisis in 2001, to assure a reliable energy supply.³³² It was the first time in California that these energy policy agencies worked together for a common goal:³³³

Ensure that adequate, reliable, and reasonably-priced electrical power and natural gas supplies, including prudent reserves, are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers.

³³¹ Ibid.

³³² Legislative Analyst's Office "Consumer Power and Conservation Financing Authority" (2004) <www.lao.ca.gov>.

³³³ Consumer Power and Conservation Financing Authority, California Energy Commission and Public Utilities Commission "Energy Action Plan I" (2003) <www.energy.ca.gov>.

California's energy agencies wanted to achieve this goal through increased energy conservation and efficiency measures and reducing per capita electricity demand.³³⁴ Energy efficiency was the method of first choice to achieve the goal. The focus was on energy efficiency and demand-side resources, followed by renewable resources, and only at the end of that chain, in clean conventional electricity supply. This is a huge contrast to New Zealand where EE is ranked behind renewables and CCS – as we have noted previously.

The first EAP set out nine specific targets to optimise energy conservation and resource efficiency. The most important ones for this research are the following.³³⁵

1. Implement a voluntary dynamic pricing system to reduce peak demand by as much as 1,500 to 2,000 megawatts by 2007.
2. Improve air conditioner efficiency by 10 percent above federally mandated standards.
3. Create customer incentives for aggressive energy demand reduction.
4. Provide utilities with demand response and EE investment rewards comparable to the return on investment in new power and transmission projects.
5. Increase local government conservation and EE programs.

The first EAP did not introduce anything new compared to previous EE measures during that time. It was mainly about setting another stimulus for California to increase its EE measures by focusing on cooperation between different agencies for a common goal. Nevertheless, it is worth mentioning that the aim of improving air conditioner efficiency by 10 per percent shows that California always tries to set higher standards for its products. The first EAP was the start of a continuing energy action plan with the intention of being updated accordingly to meet California's future energy needs.

In accordance with the establishment of the Energy Action Plan in 2003, the need for an energy report was seen. It is one thing to have an Action Plan, but it is also important to have a report which monitors the accomplishments and analysis of such a Plan regarding energy policies. Therefore, the CEC prepared the first Integrated Energy Policy Report in November 2003 to focus on electricity price stability and reliability to improve end-use EE due to the California energy crisis

³³⁴ Ibid.

³³⁵ Ibid.

in 2001.³³⁶ Next to the CEC, the other two principal energy agencies, the CPA, and the CPUC were in charge of creating the first IEPR. As envisioned in the Energy Action Plan, the motto of the IEPR is: “a critical step in identifying future state-wide energy needs”.³³⁷ The CEC wanted to reduce peak demand for electricity use with smart metering and dynamic pricing. Furthermore the IEPR 2003 recommended increasing public funding for EE programs as well as increasing evaluation and monitoring of EE programs.³³⁸ The focus of the IEPR changed in the following years. The following IEPRs including the Integrated Energy Policy Report 2009 were focused on strengthening appliance efficiency standards and closer coordination with federal, state, and local agencies as necessary to adequately identify and address critical energy infrastructure and related environmental challenges.³³⁹

The first EAP progress report in 2005 has shown that most of the aforementioned actions concerning EE have been successfully accomplished.³⁴⁰ The first EAP progress report in 2005 sounds similar to the first EAP we have just examined, but it is different. The progress report reviewed the first EAP which finished in 2005 and stated that more customer incentives for energy demand reduction were created.³⁴¹ In detail, as we have already seen, the CPUC works with customer-owned utilities and IOU’s to make them invest in EE programmes. CPUC works with these utilities to reduce total retail energy bills by supporting programmes for EE and demand response.³⁴² The CPUC established demand response programmes that provide customers with bill credits or discount rates. These programmes are integrated through the consumer’s power bill. The CPUC authorized programmes for IOUs and customer-owned utilities to offer rebates for energy efficient products such as lighting, coolers, HVAC and refrigeration systems. This approach is also worth considering for New Zealand.

³³⁶ California Energy Commission “Integrated Energy Policy Report” (2003)

<www.energy.ca.gov>.

³³⁷ Ibid.

³³⁸ Ibid.

³³⁹ California Energy Commission “Integrated Energy Policy Report” (2009)

<www.energy.ca.gov>.

³⁴⁰ California Energy Commission and Public Utilities Commission “Energy Action Plan II” (2005)

<www.energy.ca.gov>.

³⁴¹ Ibid.

³⁴² Ibid.

In addition, conservation and EE programmes were increased by local government.³⁴³ New upgrades and enhancements in energy performance standards were also approved.³⁴⁴ Most impressive is that the CEC helped to allow all states to implement ten per cent higher standards by supporting a lawsuit against the Federal Department of Energy's rollback of air conditioner standards. This case was highlighted above.

In October 2005, the second EAP was made by the CEC and the CPUC,³⁴⁵ and focused on a new issue: "Climate Change". This EAP was the sequel to the first EAP in 2003. It still required extensions of the visions set out in the first EAP. It also added transportation-related energy issues. The second EAP introduces a coordinated implementation plan for state energy policies to act as a role model for the entire State.³⁴⁶ The most important targets in the second EAP are:³⁴⁷

1. Expand efforts to improve public awareness and adoption of EE measures.
2. Integrate demand response programs with EE programs.
3. Work with customer-owned utilities in the implementation of all cost-effective EE programs.
4. Adopt new appliance standards by 2006.
5. Increase the availability of State-sponsored low-interest loans for EE.
6. Improve EE programs for low income households.
7. Adopt verifiable performance-based incentives for IOU EE investments.
8. Make sure that EE is fully integrated into resource planning.

The second EAP sets out objectives for the electricity market structure to promote EE.³⁴⁸ The actions focus on more transparency in consumer electricity rates and develop rules to promote an effective core/non-core retail market structure to pursue EE goals. The second EAP also sets out objectives for research, development and demonstration (RD&D) to allow California to achieve its policies of improving EE. The most important actions are to transform RD&D

³⁴³ Ibid.

³⁴⁴ Ibid.

³⁴⁵ The Business, Transportation, and Housing Agency, the Resource Agency, the State and Consumer Services Agency, the California Independent System Operator, the California Environmental Protection Agency, and other agencies with energy-related tasks helped to develop the second EAP.

³⁴⁶ California Energy Commission and Public Utilities Commission "Energy Action Plan II" (2005) <www.energy.ca.gov>.

³⁴⁷ Ibid.

³⁴⁸ Ibid.

projects on EE technologies into tools and standards and allocate and prioritise RD&D funding for EE.

There has been no need to create a third Energy Action Plan after 2005 as the State's energy policies had been notably influenced by the California Global Warming Solutions Act of 2006.³⁴⁹ Section 38501 c) of the Act emphasizes the need for EE across California to reduce emissions of greenhouse gases, but does not go deeper into detail regarding EE measures. Even without giving details of a way to improve EE, all the energy policies created after 2006 refer to the Act, with the aim of fulfilling the goal of improving EE.³⁵⁰

Nevertheless an update of the EAP was published by the CEC in conjunction with the CPUC in February 2008 to keep the EAP work alive by providing information on EAP accomplishments and remaining challenges.³⁵¹ The update has shown that California needs to increase EE to meet the goals set out in the Global Warming Solutions Act 2006. To ensure that, the CPUC created the long-term Energy Efficiency Strategic Plan 2008 to set out strategies for sustainable EE savings to make California a role model of EE for the entire country - this will be discussed below.

Before moving to consider the 2008 Plan, we can note that California's Energy Action Plans set out targets for improving EE, especially through stricter energy performance standards and funding for EE products. The common goal is to meet the targets concerning reduction of greenhouse emissions set out in the Global Warming Act 2006. The Energy Action Progress Report, as well as the IEPR have shown that California did well in increasing their EE level, but to fulfil their high aims more action is needed and therefore the objective has been set to strengthen energy performance standards. California always set higher energy performance standards compared to the federal level and was always the state which pushed the hardest to improve its EE level, in particular through strong government action.

³⁴⁹ Health and Safety Code, s 38501 c).

³⁵⁰ David Roland-Holst *Energy Efficiency, Innovation and Job Creation in California* (UC Berkeley, California, 2008).

³⁵¹ California Energy Commission and California Public Utility Commission "2008 Update of the Energy Action Plan" <www.energy.ca.gov>.

VI. *The California Long-Term Energy Efficiency Strategic Plan 2008*

The California Long-Term Energy Efficiency Strategic Plan 2008 was created by the CPUC and focuses on long-term savings from EE by refocusing on ratepayer-funded energy efficiency (EE) programs.³⁵² The Plan embraces four key goals which are:³⁵³

1. All new residential construction in California will be zero net energy by 2020;
2. All new commercial construction in California will be zero net energy by 2030;
3. Heating, Ventilation and Air Conditioning (HVAC) will be transformed to ensure that its energy performance is optimal for California's climate; and
4. All eligible low-income customers will be given the opportunity to participate in the low income energy efficiency program by 2020.

The Plan is divided into working groups for EE in the residential, commercial sector, and agricultural sectors. There are seven cross-cutting elements on HVAC, demand side management, coordination and integration, workforce education and training (WET), marketing education and outreach (ME&O), research and technology, codes and standards and local government.³⁵⁴ The three working groups have the objective of facilitating information exchange and developing an action plan for each sector.

The Plan sets out four goals for the residential sector which are “Zero Net Energy Homes”, “Improve Existing Homes”, “Reduce Plug Loads” and “High-Performance Residential Lighting”. Each goal includes several strategies to fulfil that goal.

Plug loads are a fast-growing driver of electricity consumption.³⁵⁵ Plug loads deal with energy transformers, electronic devices and entertainment centres. Reducing plug loads should be achieved through four strategies. The first strategy is to develop smarter products with lower energy requirements in co-operation

³⁵² California Public Utility Commission “California Long-term Energy Efficiency Plan” (2008) California Energy Efficiency Strategic Planning <www.californiaenergyefficiency.com>.

³⁵³ Ibid.

³⁵⁴ Ibid.

³⁵⁵ Ibid.

with research organisations and to increase EE in products by working with manufacturers. The second strategy is to increase public awareness of EE products by completing consumer behaviour research and implementing information campaigns. The third strategy is to create demand for EE products through market transformation activities such as rebates, incentives and voluntary industry agreements in combination with the promotion of labels and making information available via web sites. The last strategy concerning plug loads is to strengthen appliance standards. This shows that California relies primarily on more aggressive and progressive energy performance standards supported by voluntary energy efficiency standards and information measures to guide the market.

Improving EE in residential lighting was part of the focus for California's EE strategies with major savings in electricity consumption from this in the last few years. A milestone was the implementation of the Lighting Efficiency and Toxics Reduction Act 2007 in combination with the new federal lighting standards.³⁵⁶ The Act requires the CEC to reduce lighting energy usage in residences to less than 50 per cent by 2018.³⁵⁷ The CEC needed to include lighting products in its existing energy performance standards. The first phase of the standards took effect on 1 January 2010. It also needed to expand incentives for energy efficient lighting.

The California Long-Term Energy Efficiency Strategic Plan 2008 sets out five strategies for residential lighting. The first strategy is to drive advances in lighting technology through research programs and design competitions. The following two strategies include creating a demand for EE products and strengthening appliance standards. The fourth strategy, which is important to consider for other appliances as well, is to coordinate the phase-out of utility incentives for the purchase of CFLs from retailers such as Wal-Mart and Home Depot. The fifth strategy is to ensure environmental safety of CFLs by establishing maximum mercury content requirements on the CFL manufacturers and ensuring collection and recycling of end-of-life light bulbs. Furthermore, to introduce education and marketing programs for understanding purchasing behaviour. This shows that

³⁵⁶ Public Resource Code, s 25402.5.5.

³⁵⁷ Ibid.

California relies primarily on more aggressive and progressive energy performance standards especially with the enactment of the Lighting Efficiency and Toxic Reduction Act 2007 supported by voluntary energy efficiency standards and information measures to guide the market.

The low income residential segment sets out two goals which are “Improve Customer Outreach” and “Introduction of Low Income Energy Efficiency (LIEE) as an Energy Resource”.³⁵⁸ To reach the first goal it is necessary to implement and evaluate marketing, education and outreach methods. It is also necessary to engage low income customers in program participation. To fulfil the second goal it is important to identify areas where data sharing would be advantageous and seek legislative changes to ease data sharing between agencies. It also seeks to develop partnerships to leverage resources.

The California long-term Energy Efficiency Strategic Plan sets out two goals to improve EE in HVAC in particular, which are “Improve Code of Compliance” and “New Technologies and System Diagnostic”. Ninety-five percent of California’s new homes have central air conditioning due to its climate. The investigations concerning air conditioners were the result of the s 25310 amendment to the Warren-Alquist Act 1974 and the “Strategic Plan to Reduce Energy Impact of Air Conditioners”. Section 25310 of the Warren-Alquist Act 1974 requires the CEC to develop a plan to improve the EE of air conditioners.³⁵⁹

VII. General observations from the California experience

California’s achievements concerning the promotion of end-use energy efficiency in the residential sector did not arise out of the dust. Its achievements are firstly due to strong government actions. California’s government is aware of the importance of EE and is therefore using more formal law and regulation than others. It discovered that a strong government is needed to improve EE. Therefore it enacted several Acts and regulations alongside strategies and action plans.

³⁵⁸ California Public Utility Commission “California Long-term Energy Efficiency Plan” (2008) California Energy Efficiency Strategic Planning <www.californiaenergyefficiency.com>.

³⁵⁹ Public Resources Code § 25310.

California started its strong government action in the 1970s. Whereas New Zealand started with voluntary measures to promote EE, California had compulsory energy performance standards and labelling from the early days onwards. Energy performance standards in particular have been the cornerstone of California's EE measures. California has been strengthening its energy performance standards all the time and fought against the DOE for more aggressive energy performance standards.

Secondly, California has the CEC and CPUC working together with customer-owned utilities and IOUs to provide incentives for residential customers to invest in EE. California integrates utilities and customers and its EE programmes.

Thirdly, California also keeps the momentum going through new Acts, regulations and strategies all the time. It does not rest on its laurels and it continually seeking to improve its EE.

I will now analyse Germany and California's successes and failures and apply the analysis in a New Zealand context.

CHAPTER FIVE – BRINGING THE PIECES TOGETHER

In this chapter I complete the circle of exposition by returning to the benefits of end-use energy efficiency (EE), followed by the “energy efficiency gap” and the different options to overcome it. I attempt to show that collective actions through the state are the best intermediate option to overcome the “gap”. I then turn to the long-term option to improve EE policies through insights from behavioural economics, before finally finishing my research with the essential ingredients to promote EE being forceful direction by the legislature in order to implement conventional regulation.

Before we start with the analysis of the different EE measures, let us remember the three principal questions concerning EE policies: What are the benefits of end-use EE? Which problems concerning EE do we want to solve? Do we get better results through individual action or collective action?

In the first chapter, I presented the main benefit of end-use EE: economic well-being. As we have noted, end-use EE could help to reduce energy costs to improve New Zealand’s living standards. Better living standards through warmer houses would result in fewer people not showing up at work and visiting the hospital because of home-related health problems.³⁶⁰ The other benefits are the protection of the environment through reducing carbon emissions and increased energy security.

These benefits do not come without increasing the current level of EE. This phenomenon is called the “energy efficiency gap”. I have looked to the main barriers resulting in the “energy efficiency gap” (lack of information, split incentives, financial barriers, and payback barriers) in order to investigate options to overcome the “gap”. The options to overcome the “gap” are individual actions through market forces or collective actions through the state. The best results will occur through collective actions because consumers tend not to include EE in their

³⁶⁰ New Zealand Business Council for Sustainable Development “The Benefits of the Five Point Solution” (2008) <www.nzbcSD.org.nz>.

purchase decisions and even if they wanted to, some of them need financial support to afford these products. Even when offered financial support a lot of people will not use it. This point therefore seems to be an important one, and is one of the most useful insights gained from this research. As we have noted, only 10 per cent of EECA's Energywise scheme, which grants subsidies for insulation and heating upgrades for homeowners, has been taken up.³⁶¹ This means that people would need to change their behaviour freely in order to adopt EE in their households. This leaves the solution to overcome the "gap" to collective actions.

Before starting to analyse the different state actions and their record of success, it is necessary to answer the critics of EE policies. The critics argue that improving EE will lower the price for energy and therefore make it more affordable which leads to greater demand.³⁶² The most famous words used in this context are "rebound effect" which means that the improvements from EE will result in higher energy consumption.³⁶³ Jevons was the first who analysed the "rebound effect" in the nineteenth century.³⁶⁴ A good example is the purchase of a more energy efficient clothes dryer; if it is more energy efficient we are tempted to use it more often due to it being perceived as using less electricity. The existence of the "rebound effect" cannot be denied, but it is usually small and only a minor detraction from energy savings.³⁶⁵

Another argument from the critics is that most energy savings would happen anyway through new technologies. This point is true, but energy efficiency policies can accelerate this process. It is always easy to criticize programmes, but the article by Geller, Harrington, Rosenfeld, Tanishima, and Unander, "Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries", shows that well-designed energy efficiency policies can result in

³⁶¹ Sarah Barnett "Sick as houses" *New Zealand Listener* (New Zealand, 15-21 May 2010) at 17.

³⁶² Horace Herring "Energy Efficiency – a critical view" (2006) 31 *Energy* 10 at 12.

³⁶³ *Ibid.*

³⁶⁴ See: William Stanley Jevons *The Coal Question: An Inquiry Concerning the Progress of the Nation, and the Probable Exhaustion of Our Coal-Mines* (2nd ed, Macmillan and Co, London, 1866).

³⁶⁵ International Energy Agency (IEA) *The Experience with Energy Efficiency Policies and Programmes in IEA Countries* (IEA, Paris, 2005) at 5.

substantial energy savings.³⁶⁶ This leads to the question: What do well-designed EE policies look like? To answer that question insights from the comparative studies with Germany and California will be used.

We must also remember that Government EE actions are divided into law and regulation as the state's *imperium* (legislative power) and fiscal measures as the state's *dominium* (control of public funds and ownership). Law and regulation covers conventional regulation and decentred regulation.

I. Law and legal instruments

As we have noted, conventional regulation is the strongest action the state can take to alter behaviour, because it restricts the choices consumers have. To alter behaviour through conventional regulation, EE measures such as product bans, minimum energy (efficiency) performance standards (MEPS), and the Top Runner Programme can be used.

Product bans prohibit specific energy inefficient products from the market.³⁶⁷ Germany used product bans to get rid of energy inefficient light bulbs whereas New Zealand and California have decided not to use them. Why has New Zealand shifted away from its planned product bans regarding energy inefficient light bulbs? Are product bans not the most effective measures to promote EE? Product bans as used in Germany have not been introduced in New Zealand. New Zealand was planning to ban light bulbs, but this plan did not go ahead. In June 2008, New Zealand, with a Labour-led government, said traditional incandescent bulbs would be phased out by the end of 2008. The Ministers said that this product ban would improve New Zealand's current level of EE. With a change in the government there also came a shift in thinking about that matter. The National Party replaced the Labour Party as the government on 19 November 2008. The National Party abandoned the ban less than a month after taking power.³⁶⁸ The National Party

³⁶⁶ Howard Geller and others "Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries" (2006) 34 Energy Policy 556 at 570.

³⁶⁷ Thomas Schomerus and others "Rechtliche Konzepte für eine bessere Energienutzung" (Legal Measures to Reduce Energy Consumption) (2008) 1 Berichte des Umweltbundesamtes 34 at 34.

³⁶⁸ Gerry Brownlee "Light Bulb Ban Ended" (press release, 16 December 2008).

criticized the banning as an example of Labour's nanny state philosophy. The National Party found that they could gain support with that particular action and so they did. The current government has the philosophical position that it does not want to tell people to move to energy-efficient light bulbs. The government knows that EE in households and therefore efficient lighting is an important part of the plan to reduce the use of energy, but it wants to leave the decision up to the people. It is true that the disadvantage of product bans is that they eliminate choice for consumers and the industry. But as we have seen, people do not always make the best decisions when it comes to the purchase of energy-efficient appliances. The advantage of product bans is that they should make the industry manufacture energy efficient products and force the consumer to buy them as there are no other products available. Unfortunately, this works only if it can be ensured that the prohibited energy inefficient appliances are replaced by energy efficient appliances. One of the prime insights from this research is that from a New Zealand perspective product bans could help to put more pressure on manufacturers to produce and distribute EE products in New Zealand. The emphasis would be on overseas manufacturers and distributors, because they produce almost 100 per cent of New Zealand residential products.

Minimum energy (efficiency) performance standards (MEPS), which ensure that products meet minimum energy performance criteria, are used in Germany, California, and New Zealand. Germany has been strengthening its MEPS all the time and this has been one of its secrets for improving its EE level. Mandatory MEPS started in California in 1977; more than twenty years before New Zealand. This shows that California's government has seen the need for strong government action in the early years after the oil crisis in 1973. Strengthening MEPS was always the primary objective of California as it was its strongest EE measure. Most impressive concerning this matter was that California has successfully fought for strict MEPS against the US Department of Energy. This shows that California has not only been a pioneer in implementing legal measures concerning EE, it is also improving these measures regularly through very forceful direction by the legislature. In turn, regulators have been willing to use their mandates. New Zealand has been using MEPS since 2002, but has been slow to strengthen its MEPS like Germany and California have been doing. They are useful to alter

behaviour without completely restricting the choices consumers have. MEPS are most suitable for products where the EE is not a factor in the purchase decision. This measure perfectly addresses the “Landlord-Tenant problem”. It gives incentives to companies to put more effort into developing or improving their products or face being removed from the market. If they are too strict they would be similar to product bans, with no consumer choice. From a New Zealand perspective, more aggressive MEPS as the primary measure would be desirable to improve its EE. Stricter MEPS could also help New Zealand to put more pressure on manufacturers to produce and distribute EE products in New Zealand. This connects with my statement concerning product bans, because in New Zealand MEPS would operate as product bans, as New Zealand has so little manufacturing of EE products. This is therefore another key finding of this research. The problem is that New Zealand, with its small appliance market, has a difficult position when wanting manufacturers to change their products.

As we have seen with the chapter about Germany, the Top Runner Programme is under consideration in Germany. Under this programme the leading appliances on the market with the highest level of EE are adopted as a model for binding minimum standards for all products of its type within a specified timeframe.³⁶⁹ Unfortunately, it seems the Government will not introduce the Top Runner Programme. This is a pity, because this programme represents what is technically possible, socially desirable and best practice. Even its disadvantage of being dependent upon the market having top performing manufacturers to begin with would not be too problematic, because the German manufacturers are highly focused on quality, including EE. From a New Zealand point of view, the Top Runner Programme would not make sense as New Zealand has only a small appliance market compared to Germany which would make it difficult to rely on the market to improve the EE level of New Zealand as competition is not that high.

³⁶⁹ Howard Geller and others “Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries” (2006) 34 Energy Policy 556 at 561.

II. Decentred regulation

As we have seen in the first chapter, decentred regulation is regulation that is not entirely dominated by the state anymore. In contrast to conventional regulation it is not a case of the government dictating and others doing or based on simple cause-effect relations.³⁷⁰ It does not restrict consumer's choice like conventional regulation, but it tries to influence it.

Energy labelling as an energy information measure is classified as decentred regulation, it helps to overcome the biggest problem for consumers; lack of information. Consumer need information about the energy efficiency (EE) of the products they use in their households as well as the global significance of EE. Energy labelling has been working out really well in Germany, because consumers and manufacturers were responding to them. The result was that the labelling system had to be amended a few times with the unfortunate outcome that it became more confusing for the consumers to follow the different systems. Nevertheless this shows that information measures do work when people are willing to respond to them. Mandatory labelling started in California in 1977 and has been used to support MEPS in promoting EE. It was never in dispute that these measures should be the primary EE measures. Energy labelling has been mandatory in New Zealand since 2002. New Zealand has its own energy performance labelling system as well as the "Energy Star" system which is well recognised internationally. Unfortunately different labelling systems confuse consumers as they do not know which label they should look for, but as we have seen other countries have the same problem. This problem is a result of having both a voluntary and a compulsory labelling system. In general, the disadvantage of information measures such as labelling being more dependent on market and consumer behaviour. This is one of the key assertions that can be made from a passive voice.

³⁷⁰ Julia Black "Critical Reflection on Regulation" (2002) 27 Australian Journal of Legal Philosophy 1 at 5.

III. Fiscal measures

Fiscal measures such as subsidies, funding and grants are used in Germany, California and New Zealand to improve EE. Low-income households do not have the access to capital to buy energy-efficient products. In Germany, they get support from three different angles.³⁷¹ They get free energy saving light bulbs, switchable terminal strips and smart meters. Low-income households get vouchers to buy energy-efficient household appliances. The vouchers are not be enough to get the appliances for free, but will assist to reduce the costs. Low-income households can also obtain loans to buy energy-efficient appliances, repaid with the money from energy savings. In California, the government works together with the utilities and retailers to provide incentives for customers to adopt EE in their households. Retailers such as Wal-Mart and Home Depot for instance helped to coordinate the switch to energy-efficient light bulbs. CPUC on the other hand, works with customer-owned utilities and IOUs to make them invest in EE programmes. CPUC works with these utilities to reduce total retail energy bills by supporting programmes for EE and demand response.³⁷² The CPUC established demand response programmes that provide customers with bill credits or discount rates. These programmes are integrated through the consumer's power bill. The CPUC authorized programmes for IOUs and customer-owned utilities to offer rebates for energy efficient products such as lighting, coolers, HVAC and refrigeration systems. The Californian government is fulfilling its role in implementing regulations to help the industry and the people to adopt EE but the difference between the people in California and New Zealand is that Californians have realised the importance of increasing EE. They are willing to spend more money to adopt EE whereas New Zealanders are still looking for the cheapest options. Another useful insight from this research is that the integration of utilities and retailers in its EE programmes such as California is doing seems to be a good approach for New Zealand as well. In New Zealand EECA provides subsidies for insulation and heating upgrades for homeowners through its Energywise scheme.

³⁷¹ Peter Schuette and Martin Winkler "Aktuelle Entwicklungen im Bundesumweltrecht" (Latest Developments in Federal Environmental Law) (2009) 2 ZUR 110 at 110.

³⁷² See California Energy Commission and Public Utilities Commission "Energy Action Plan II" (2005) <www.energy.ca.gov>.

But as we have seen, only 10 per cent of these subsidies have been taken.³⁷³ Many subsidies for the installation of heat pumps, star-rated gas heaters, and clean-burning wood or pellet heaters have not been taken up either.³⁷⁴ People need to change their behaviour in order to use these grants to adopt EE in their households. I conclude, that this is where social science, behavioural economics in particular becomes important. Nevertheless, another important insight gained from this research is that improving EE policies through research done by behavioural sciences is rather the long-term solution to overcome the “energy efficiency gap”.

Before moving to the long-term solution to overcome the “energy efficiency gap”, I want to highlight a prime assertion of this research that the advantage of conventional regulation (such as energy performance standards and product bans) is that it is not as dependent on market and consumer behaviour as decentred regulation (such as energy information measures and voluntary agreements) or situations with no regulation (where market pressure may still be present). Decentred regulation and fiscal measures are considered a good approach as a support of conventional regulation, because they are more flexible than conventional regulation and can therefore provide a quicker response to the contemporary challenges of evolving markets.

IV. Social science, behaviour economics in particular

There is an important point that energy efficiency (EE) policies cannot work without considering consumer behaviour, because all the state actions just mentioned try to influence consumer behaviour; some of them more than others. This is where behavioural science becomes important, because its research helps to understand why people fail to make energy-efficient investments. Let us sum up the results of behavioural economics research and therefore its contribution to understanding consumer behaviour in the sense of how it can help to improve EE policies, information and fiscal measures in particular, in order to change consumer behaviour to buy more energy efficient products.

³⁷³ Sarah Barnett “Sick as houses” *New Zealand Listener* (New Zealand, 15-21 May 2010) at 17.

³⁷⁴ *Ibid.*

In my first chapter I have presented that behavioural economics states that most people make choices that are often not in their best interest, because of incomplete information, limited cognitive abilities, and lack of self-control.³⁷⁵ They state that people are often not able to make perfect or unbiased forecasts, because they are influenced by social background, communities, time of the year, and personal mood.³⁷⁶ It is not only about having the right information; it is also about the right information for the different group of people. This also explains in some cases why people do not buy energy efficient products; because the initial costs of energy efficient products are higher than other products and people are not able to foresee their savings over the following few years on their electricity bill. Behavioural economics argues that people's choices have to be influenced, but people should be free to decide on their own, which dismisses the use of product bans and overly strict MPES as a restriction of free choice. There is a lot of potential for improvement concerning information measures and fiscal measures – as was noted previously.

How can law and policy makers use these findings? Intertemporal choice, multidimensional decisions and decision-making behaviour have to be considered when making law and policy. Energy efficiency policies should be designed in a way that makes it easier for consumers to see the benefits of EE. EECA has been improving its EE programmes in this respect in the last years. They are aware of the issue that people do not take up subsidies and therefore they are trying to improve the promotion of these subsidies through many kinds of media. Unfortunately people are still affected by different drivers when buying a product (multidimensional decision) and EE is in most cases not one of them. The solution to this issue is improving the framing of EE policies. Eye-catchers are needed as well as the insights from behavioural economics that people are risk averse and would rather remain with the status quo than risk spending money in order to save money in the long term. How can we expect consumers to see the importance of EE when even the New Zealand government does not? I will come back to this point below. Decision-making behaviour is the last factor to consider. People are

³⁷⁵ Cass R Sunstein and Richard H Thaler “Libertarian Paternalism Is Not an Oxymoron” (2003) 70 U Chicago L Rev 1159 at 1160.

more reluctant to enter a new project than opting out of one. The default option should be the most energy-efficient option when framing EE policies.

V. The essential ingredients

As we have seen, the role, the IEA gives end-use energy efficiency policies is startling. New Zealand is still focusing on renewables or CCS rather than end-use EE, even when implementing end-use energy efficiency policies is possible and can contribute the biggest part to the reduction of energy-related CO₂ emissions. This is the biggest contrast to Germany and California where EE is put on the top of their lists of energy and climate change programs. For the amount of money spent on developing new renewable energy sources, the same money could be spent on promoting end-use energy efficiency which would have a greater positive impact. The opportunities for making better use of the energy we already have are far cheaper, faster acting, and better understood. The key insight of this research is that we need more aggressive law, regulation and policy concerning EE. New Zealand needs to put EE on the top of their list rather than ranking it somewhere after renewables, CCS, and nuclear.

We have seen that the discussion about “more or less government regulation” is an increasingly tired and decreasingly helpful one. It more appropriate to determine what kinds of regulations are needed rather than “more” or “less” regulation.³⁷⁷ Without a doubt, regulation is good. We should not try to justify the state’s actions as a violation of the rights of individuals with the use of conventional regulation. The main reason to focus on conventional regulation is that conventional regulation is not dependant on market and consumer behaviour. The past has shown that market failures, circumstances where competitive markets did not produce efficiency, would have needed regulation to obtain this aim. The failure of deregulation has shown that at least some regulations are

³⁷⁶ Loren Lutzenhiser “A Cultural Model of Household Energy Consumption” (1992) 17 *Energy* 47 at 54.

³⁷⁷ Cass R Sunstein *Free Markets and Social Justice* (1st ed, Oxford University Press, Oxford, 1997).

needed to create markets and to maintain them.³⁷⁸ The idea that in a modern society, producers and consumers can meet on an equal basis seems to be unrealistic when massive asymmetries of power and resources exist. Leaving the market to solve fundamental problems of resource generation and allocation entirely misses the deep roots of many economic and political difficulties.

I conclude that a strong government is needed to implement formal law and regulation. Conventional regulation is needed to improve EE. To implement conventional regulation, a very forceful direction by the legislature is needed. We could see this in the way Germany addressed the “Landlord-Tenant Problem”. Germany sets out the right for tenants to claim a reduction in their rent if landlords do not fulfil their obligations set out in the Energy Saving Regulations. This was a strong regulatory step in addressing this issue and resulted in landlords investing in energy-efficient space heating, hot water heating and appliances. California on the other hand has been enacting several Acts and regulations as well as strategies, reports and action plans, which shows that it is focusing on strong government action through formal law and conventional regulation to improve its EE. California did not have the issue of choosing the right EE measures like Germany or New Zealand as its focus was always on conventional regulation with the support of decentred regulation. Therefore its legislative procedure was much quicker and more effective. This is the main lesson New Zealand can learn from California and Germany.

The key insights from this research can be identified in a reasonably concrete way. First, the benefits of end-use EE such as improved economic well-being can only be realised when using collective actions through the state. Secondly, the New Zealand government needs to focus on implementing more aggressive EE policies rather than focusing on renewables and CCS. Thirdly, the focus should be on conventional regulation and only be supported by decentred regulation and fiscal measures, because conventional regulation is not as dependent on market and consumer behaviour as decentred regulation or situations with no regulation. In New Zealand in particular there is a tendency for people to not be willing to

³⁷⁸ Barry Barton “The Theoretical Context of Regulation” in Barry Barton, Lila K Barrera-Hernández, Alastair R Lucas, and Anita Rønne *Regulating Energy and Natural Resources* (Oxford

change their behaviour concerning the purchase of energy-efficient products. Conventional regulation could also help to make the industry manufacture and distribute EE products, because product bans and MEPS would put more pressure on those mainly overseas manufacturers. And finally, to implement formal law and regulation a very forceful direction by the legislature is needed.

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