Why Countries adopt Different Policy Approaches for Common Problems

Air quality management in New Zealand and The Netherlands

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Abstract

Western countries often have similar environmental concerns. It is widely recognised, for example, that air quality improvement also improves the health and well-being of populations. Many countries delegate this task to local governments, yet choose different approaches to reach these goals. By analysing the differences in approaches and identifying factors explaining why these differences occur, steps can be taken by future policy designers to overcome any shortcomings stemming from these factors. This study applies a congruence analysis to four local government case studies in New Zealand and the Netherlands to explain why different approaches are used. Three theories propose that environmental approaches vary because of differences in physical and geographical features, Dutch European Union membership, and New Public Management reforms. These three theories are explored using air quality policies of the four case studies, thus focusing on adopted policies and their policy design rather than any other stage in the policy cycle. Implementation and ultimate air quality improvement are thus beyond the scope of this research, instead policy analysis and interviews from practitioners provide the empirical evidence. It is found that while EU membership influences member states' public policy, non-compliance by members limits the impact. Physical and geographical features are often permanent and unavoidable, and thus have the potential to significantly influence environmental policy approaches. Environmental issues like available resources and climate yielded conclusive results in some case studies, yet less decisive conclusions in others. New Public Management reforms, especially local government autonomy, funding, and structure best explained the observed differences between the two countries' policies, thus leading to the conclusion that New Public Management reforms are the most significant influences on environmental policy approaches.

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Chapter One: Introduction

Many western countries have similar environmental concerns as development and industry deplete natural resources and pollute air, water, and land. As environmental concerns grow, often fuelled by information from international organisations such as the World Health Organisation, western countries are focusing on improving their environment. Common themes include sustainable development, pollution regulation and mitigation, and natural resource allocation, and general policy outcomes are fairly consistent between countries (Jänicke & Jörgens, 1998). The local nature of many environmental issues has led to an emphasis on local government to resolve them (Margulis, 2000), and many countries have delegated at least some environmental responsibility to sub-national governments. The policy solutions adopted by countries and their local governments to achieve these goals do, however, vary.

Even in the western world, where there are a great number of similarities between the countries, the approach chosen by both local government and central government can differ. What influences this decision essentially leads to the pivotal question of this research:

Why do countries adopt different policy approaches at local government level to solve common public policy problems?

Three factors are identified as possible answers to this question: geography, supranational institutions, and public sector reforms, all factors which vary between western countries. The aim of this research is therefore to identify how geography, European Union (EU) membership, and public sector reforms influence environmental policy choices of local governments in countries pursuing similar environmental goals. In order to narrow down the broad field of environmental public policy, the example of air quality is chosen. Not only is there substantial evidence demonstrating the detrimental effects of poor air quality to human health (c.f. Fisher et al., 2012), but poor air quality affects both those in the immediate vicinity of pollution discharges, and those in a wider area. Such goods, called 'public goods' are often used as classic examples of market failure, as they are non-excludable, yet not always non-rival (Connolly & Munro, 1999), and thus the debate as to whether government should intervene in the issue of air quality is less contentious (ibid).

1.1 Objectives

The objectives of this research are to first describe the context of the study, then develop methods to answer the question. Because it is not feasible to analyse the environmental management of each western country, four local government case studies are used. The case studies chosen are in the Netherlands and New Zealand, unitary western countries identifying themselves as environmental leaders with similar environmental goals. Both countries have also delegated large amounts of environmental management responsibilities to local government. Differences, however, include the level of local government autonomy, the physical and geographical differences, EU membership, and recent public reforms. In order to answer the research question, this study focus is predominantly on the plans and policies made by the different levels of government to combat poor air quality, and emphasis is laid on the design of adopted policies, thus eliminating differences in implementation success.

Air quality in itself is a large topic, so this research has been narrowed to focus only on ambient (local) air quality. Efforts to improve global air quality and the subsequent impact of non-government organisations, while playing an important role in air quality management, are largely beyond the scope of this research. Similarly, policies and legislation indirectly influencing air quality, for example climate change or agricultural policies are also largely disregarded. The reason for this is simple: the purpose is to examine air quality management, not air quality improvement.

Air quality is an important issue, with poor air quality resulting in thousands of premature deaths each year, even in developed western countries (OECD, 2008). The main contributors to poor air quality are fine particulate matter (PM), nitrogen dioxide (NO_2), other nitrogen oxides (NO_x) (Fisher et al., 2012). These pollutants are caused primarily by burning wood and fossil fuels such as coal and petrol in private housing, vehicles, and industrial plants, as well as particles of sea salt, dust, pollens, and volcanic discharge (New Zealand Ministry for the Environment, 2011). The effect of these compounds on human health can by severe. PM_{10} (particle matter less than 10μm in diameter), for examples, lodges in the very small airways deep in the lung, causing respiratory problems, while smaller particles may even enter the bloodstream (ibid:6). While air pollution is a catch-all phrase for a myriad of chemicals, other pollutants such as ammonia and carbon dioxide are most often covered in separate policy initiatives, such as agriculture and climate change respectively and so are often not addressed in the relevant air quality policies.

1.2 Relevance

Comparing air quality management holds both theoretical and social relevance, especially as much environmental management literature focuses predominantly on water management (c.f. Salmon et al., 2005). By gaining an understanding as to why air quality management differs, not only can predictions be made as to the choices of other countries (for example other EU member states), but understanding can also act as a framework for those lagging behind in air quality management. By identifying the issues facing air quality management, steps can be taken to overcome hindrances.

The research on air quality also holds wider implications for environmental management as a whole, as most policies studied either address other environmental issues, or have complementary policies dealing with waste management, soil, land, and energy. Air quality findings can be applied to a much wider range of environmental issues thus increasing the external validity of the research as air, unlike water, is rarely granted special policy provision. Issues such as local government autonomy, supranational participation and policy cultures can also be extended to non-environmental issues such as welfare provision, education, and the healthcare sector.

While this research does not offer a “best practice” guide to air quality, it does provide practitioners with an understanding as to why air quality is managed the way it is. From there practitioners can decide on desired changes, and how to achieve them, through reconfiguring local government autonomy, supranational agreements, and public sector reforms.

1.3 Structure of Research

The remaining chapters are laid out as follows. The second Chapter introduces the theoretical framework used to explore the question, and includes previous study on the subject. Chapter Three provides the research design, with explanations for case selection, as well as data collection and methodology. Chapter Four introduces the case studies, and gives background on the two countries, before Chapter Five explores the environmental management approach currently employed by each country. Once the approaches have been compared, Chapter Six compares the observations of each case study with the expectations developed in Chapter two. Chapter Seven then discusses the congruence between both the expectations and observations, and between the case studies, before Chapter Eight offers some conclusions as to why countries adopt different policy approaches at local government level to solve common public policy problems.

Chapter Two: Theoretical Framework

In order to understand why different countries have different approaches to environmental management at the local level, three theories are proposed. These are:

- Geographical and physical differences shape local government environmental management
- European Union membership shapes local government environmental management
- New Public Management shapes local government environmental management

The theories have a broad scope, thus minimising the chance a factor is overlooked. These theories include some of the larger differences between western countries, and include factors which cannot be changed, such as geographical location, factors which are more often changing, like public sector reform, and factors unlikely to change, such as EU membership. It should be noted that while the EU is currently the only institution of its kind, similar institutions may exist in Asia or Australasia in the future, so lessons learnt from this study may also translate. Other factors are kept constant. Government institution also vary between countries but can affect local government structure as well, making comparisons between countries more difficult, as first government structure must be compared, before environmental management can be. As this is a study of environmental management rather than local governments, local government is kept constants, as far as possible, and only unitary states are examined. This means that federal governments, while they are sub-national governments, are not considered, as they have different capacities and responsibilities than local governments found in unitary states. The two countries were also chosen based on the similarities seen in local government structures, with both New Zealand and the Netherlands having three constitutional levels of government, each corresponding level having similar responsibilities.

This rest of this chapter introduces these theories, and describes what would be observed if these theories are valid. These theories are then tailored to match the case studies outlined in Chapter Three

2.1 Theory 1: Geographical and Physical Characteristics

The geographic attributes of a country describe the basic characteristics of the state: is it an island state? Is it densely populated? Does it have many mountains and lakes and native forest? Does it have extreme weather conditions? The answers to these questions have the potential to shape environmental management, as these features cannot easily be altered. Countries instead have to adapt to the conditions, or choose to ignore them, as they see fit. Not only do these physical characteristics influence initial environmental quality, but they must be considered when borrowing policy from other areas. An environmental approach in one country may not be successfully translated to another due to different geographical and physical features. This theory thus seeks to explain the extent to which such factors influence environmental management.

Using air quality as the example, physical differences influencing air quality are described in the following table:

Table 2.1: Physical and Geographical Effects on Air Quality

Factor	Effect on Air Quality
Proximity to other countries	Air does not respect state boundaries, so pollutants may transcend borders, with countries unable to regulate neighbours' affairs.
Climate	Locations with colder or warmer temperatures will use more heating or cooling appliances, some of which release pollutants such as PM_{10}.
Weather	Wind prevents air stagnating, thus flushing toxins out of the area, and dispersing concentrations.
Geographical features	Mountains and valleys may hinder wind flow, thus reducing the potential for dispersion, while gorges may amplify it.
Population Density	With people emitting on average the same amount of pollution, the higher the number of people in an area, the higher the emissions.
Transportation Density	Many commercial trucks and private cars produce emissions, thus the greater the number of vehicles in an area, the greater the total emissions.
Concentration of industry	Many industries produce emissions and the greater the amount of industry in an area, the higher the concentration of emissions.
Availability of other fuel sources	Areas with easy hydro or wind power access are less reliant on sources such as fossil fuels, thus encouraging a reduction in emissions.

There are many studies identifying the effects these factors have on air quality (c.f. Kossmann & Sturman, 2004; Selden & Song, 1994; Vardoulakis et al, 2003), and are often based on basic assumptions derived from the logic: more people and traffic lead to more emissions, which leads to poor air quality; while more wind and the ability for air to disperse leads to better air quality. As Kossmann and Sturman (2004) point out, there is a gap in the literature explaining the physical and geographical effect on air quality. Of the existing studies, however, several highlight the shortcomings of these assumptions, criticizing the factors as too simple. Hales et al. (2000) find wind speed, wind direction, SO_2, NO_x, and CO lead to no significant change in immediate mortality, although PM_{10} shows a positive correlation.

Despite the complex and often highly technical reasoning often found in the literature describing the effects of physical characteristics on air quality, this thesis examines why physical characteristics influence air quality *management*, not air quality, and so great scientific detail is, in this case, superfluous. While the factors may not influence every case, nor every pollutant, the basic factors and the perceived assumptions affect environmental management. A city with strong wind and low population density may choose a different air quality approach than a city with high vehicle emissions. Further detail, such as the type of wind and its characteristics, is unnecessary.

Expectations

When comparing countries with different geographical and physical features, it is expected that differences in environmental management will also be observed:

Expectation 1.1

There is no physical way to stop emissions from a neighbour spreading into a country and thus degrading the air quality. Nor does a country have official power to regulate a neighbour's pollution. Previous work done by a country and clean air could be compromised by such emissions, thus providing an incentive to work together. Not only

does this include cooperation between countries, such as shared ideas or agreements to regulate areas close to borders, but consultation and consideration of international effects when designing and implementation national policy. While the most valid indicator to show international cooperation would be records of meetings and correspondence, this data is likely to be not only unreliable, but also unavailable in many instances. Cooperation and international correspondence may be conducted in an informal way, thus leaving no concrete data, and interviewees may be unaware of correspondence undertaken by colleagues in other areas. Interviewees may also be unwilling to admit to deficits. Even defining cooperation may be problematic, as not all international correspondence may be cooperation. The policies studied are therefore the main source of data. Such policies are thus expected to outline who is to be included in the cooperation process, as well as allocate resources to the task advocating specific international cooperation and means to do so. Such policies are considered to place greater emphasis on international cooperation.

- *It is expected that a country with close neighbours will put greater emphasis on international cooperation than an isolated country.*

Expectation 1.2

There are many reasons, even within countries, as to why air quality is either good or bad. This original air quality is often a result of differing physical features, such as resource availability and climate. It is therefore expected that the origin of the issue is taken into consideration when policy makers choose policy tools such as vehicle regulation, licensing, bans on certain activities. Although it is possible for different policy tools to be used to address the same policy issue, it is expected that different pollution origins will not be addressed with the same policy tools. Heating regulation could be a very effective policy tool in areas with high populations in cold climates, but make minimal difference in areas with few inhabitants in warmer locations. The policy tool of regulating heating is thus only expected in locations with an issue with private heating. By first identifying the source of pollution, the activities specified by the policies are matched to these sources in order to determine how often the pollution source is mentioned in the proposed activities. The activities themselves are also compared between policies, to determine if proposed activities differ between areas with different pollution sources.

- *It is expected that climate and resource availability will affect the source of air pollution in different ways, thus leading to different areas employing different policy tools.*

Expectation 1.3

Worse air quality leads to higher mortality and environmental degradation, and thus the worse the situation; the more importance is expected to be placed on mitigating air quality. This pressure can come not just from policy makers, but also the general public especially health-care providers and those suffering respiratory illnesses. This would be indicated by air quality playing a larger role in general environmental policies, as well as the amount of specific air quality policies. This can be done by comparing the length of air quality chapters in general environmental policies, as well as asking interviewees how much emphasis is placed on air quality and its respective policy department. As policies require both extensive planning and resources, attention to air quality in these policies would suggest that the authoritative institution places importance on air quality.

- *It is expected that areas with worse air quality consider air quality a more salient issue.*

2.2 Theory 2: European Union (EU) Membership

While there are many international efforts to regulate and mitigate air quality, the most significant supranational actor influencing many developed countries is the European Union. Liefferink et al (2009), conclude that EU membership is the most prominent variable determining whether a country was an environmental management leader or laggard. As a powerful supranational organisation, and with EU legislation determining the vast majority of national legislation (VROM, 2006), it is easy to assume that EU legislation is the major authority on national environmental management. The EU has adopted directives on air quality since 1970 and with the implementation of the 1987 Single European Act, environmental policy became a full competency of the EU (Hix & Hoyland, 2011). While the EU is currently the only supranational institution with such great influence over its member states, other areas of the world do have potential to establish such institutions. While there are currently no decisive plans, it has been suggested that a union, or at least a currency union, between Australia and New Zealand is possible (c.f. Grimes et al., 2000).

As Bath (1978) points out, a large obstacle to international arrangements is the different perceptions of the problem, so the EU adopts directives with air quality standards which member states must meet. The Air Quality Directive (2008/50/EC) specifies pollution limits and implementation time frames for the 28 member states. As a Directive, it is binding in terms of the results to be achieved, and must be transposed into law by the national authorities (Hix & Hoyland, 2011:78). Unlike international law, which cannot be legally binding except with a nation state's own consent (Chayes & Chayes, 1993), the EU demands full compliance. Environmental concerns are, however, often not the primary motivation behind a state's decision to join the EU, and once members, states may find themselves adopting laws not necessarily in their best interest. Although the EU is perceived to have little room for deviance (VROM, 2006), as Chayes and Chayes assume, states comply with international law only when it lies in their best interests (1993:176).

Compliance and timely implementation of EU directives are therefore not guaranteed. Although the European Commission may impose financial penalties, as Bursens (2002) demonstrates, this is not always a deterrent. He compares EU environmental policy implementation in Denmark and Belgium and identifies several reasons for different implementation records, including structural and cultural factors. Knill and Lenschow (1998) also observed that EU environmental policy implementation depends on how closely EU strategies align with national principles. This suggests strong negotiators within the EU are more likely to comply, since they are more likely to negotiate until the policy reflects their own beliefs.

The differences between member states and non-member states at first glance appear to be significant. When taking into consideration that member states may not fully comply with EU policies, however, actual variation may be reduced.

Although EU membership *should* dictate environmental policy, thus controlling environmental management, the literature suggests that this may not be the case, with member states actively delaying the transposition of EU law (Bursens, 2002). With

member states not conforming to EU directives, such directives may not be the most decisive factor when pinpointing differences in environmental management. Differences in national incentives and political clout within the EU may also create variation between member states' approach to environmental management. It is therefore clear that not only is EU policy a variable when comparing environmental policy of EU members with non-members, but also when comparing that of EU members.

Expectations

EU implementation records are detailed elsewhere in academic literature (c.f. Liefferink et al., 2009), and so are not detailed here. Such literature highlights several core variables influencing implementation records, yet many of these are not applicable to this study. Member state involvement and bargaining power during the EU policy decision making process (following the conclusions of Knill and Lenschow, 1998) focus on events observed before the adoption of the EU directive. This study, however, focuses on the effect the EU directive has on local government policies, which occurs after adoption. Other studies, however, focus their attention on the other end of the policy process, emphasising the differences in implementation of the EU directive. Again, these variables are not appropriate since this research centres solely on the policies, rather than implementation. The literature on EU directives therefore offers only a point of departure when formulating variables to account for local government policies. When comparing EU members with non-EU members, the following is expected:

Expectation 2

While it is the expectation that EU member states comply with EU laws and legislation, this, however, cannot be an assumption. Even if member states do not implement the policies required of them by the EU, national policies translating EU legislation should exist, and include identical pollution limits and implementation time frames. Because EU legislation supersedes national law, by law national policies must incorporate the EU directives. Since the Air Quality Directive came into force five years ago, it is expected that this is a sufficiently long transition period, and policies made at local level mirror the pollution standards and implementation timeframes outlined by the Directive. Such policies may be established purely to fulfil EU requirements, or they may be designed to be fully implemented, but since implementation is beyond the scope of this study, different intentions are irrelevant. Therefore:

- *It is expected that EU member states will have air quality policies which mirror EU policies.*

2.3 Theory 3: New Public Management (NPM) Reforms

New Public Management (NPM) is the name given to the public sector reforms of the late 1980s and early 1990s. First seen in the United States in the 1960s (Boyle & Lemaire, 1999), economic downturn in the 1970s drew attention to large, seemingly ineffective public sectors (Whitcombe, 2008). NPM was seen as a way to mitigate these problems via decentralisation, managerialism, contracting out, government reductions, and performance measures (Hood, 2007). Public services were essentially restructured to mimic the private sector, which, subjected to market conditions, were seen as embodying efficiency and effectiveness (ibid). Although NPM was by no means universal, the ideas were popular from the 1980s, especially in Anglo-Saxon countries and those with similar administrative systems (Sahlin-Andersson, 2000).

Although NPM's popularity has since waned (Dunleavy et al., 2006), it has shaped many public service characteristics, the echoes of which can still be observed today (Hendriks & Tops, 2003). While Hood (2007) describes the characteristics of NPM in great detail, for the purpose of this research, the somewhat simplified characteristics of van Helden and Jansen (2003:70) will suffice. A full analysis of the differences between NPM and traditional administration styles can be found in appendix one, but four key features of NPM are identified, making up the left column of Table 2.2. The table also includes a brief explanation of the characteristics, as well as outlining expected observations in countries adopting such features.

Table 2.2: Features and Expectations of NPM

Key Feature	Explanation	Expectations
Separation of tasks	By separating policy tasks not only are skills specified, and subsequently practiced and honed, but political suasion is minimised (a concern prior to NPM, and blamed for inefficiencies)	• Separation of policy design and implementation • Less consultation between units • Less range of policy tasks and policy instruments
Greater autonomy for sub-national institutions	Since many issues are beyond central government competencies, decisions are left to appropriate levels, e.g. local government	• Less specificity in plans • Less funding from central government
Efficiency-oriented	Recessions left countries looking for ways to save money and other resources	• Resources strictly accounted for
Effectiveness-oriented	With the focus on outputs and results rather than rules and procedures, contracts and performance can be evaluated	• Performance targets utilised • freedom to devise solutions (discretion)

Source: van Helden & Jansen, 2003; Hood, 1995

Expectations

New Public Management reforms have a significant impact on local government. Since local governments often play a key role in environmental management, their different structures will in turn impact the management approach observed. Local government autonomy therefore forms a point of departure from which three expectations are derived. It should be noted, however, that differences in adoption reflect differences in original policy culture, although further debate as to why NPM was adopted so rigorously in some countries but not others has been discussed by various other academics and will not be discussed here (c.f. Hood, 1995). Instead, the differences in environmental management are described by the expectations.

Expectation 3.1

In order to promote task specialisation, NPM countries are likely to give more autonomy to sub-national organisations, as central government is seen as having no competencies in local government affairs. For countries with a high adoption rate of NPM polices and therefore high autonomy, national plans will be less specific. This means the process is not outlined, and instead focus is put on delivering policy outcomes, thus leaving the process to the discretion of the implementers. Not only does this give local governments freedom to do as they please, but it also incorporates the NPM idea that policy outcomes play a more significant role than policy processes.

- *It is expected that in countries with greater NPM influences, air quality management policies will be less specific.*

Expectation 3.2

Consultation requires time and money, both resources that under NPM must be efficiently used. Not only does consultation require resources such as location hire, transport, and time spent in meetings, but often results in less innovative policies. Policies with large amounts of consultation are likely to have less innovative policies, as this is the most likely decision to be accepted by stakeholders with differing preferences (Hix & Hoyland, 2011). Under NPM, this is seen as less effective. Consultation, therefore, would occur when necessary, rather than out of convention which would see consultation procedures applied routinely, thus reducing how often consultation is observed. As with Expectation 1.1, this in indicated by the amount of consultation and cooperation stipulated in the policies, focusing this time on other government levels and corresponding environmental authorities, instead of international cooperation.

- *It is expected that in countries with greater NPM influence, there will be less interaction between authorities responsible for air quality management.*

Expectation 3.3

Because local governments have a larger role in environmental management, it is expected that they will have the capacity and sufficient resources to carry out the necessary tasks. Capacities include both financial and technical resources, as well as the ability to enforce and implement their policies and those of national government. It is expected that during the NPM reforms the local governments would be given the necessary tools, as without them, environmental management would be both inefficient and ineffective. It is, however, difficult to measure the capacity of an organisation, even when breaking it down into elements such as budget, legal competencies, and resources because it is hard to measure determine whether the resources are being used in the most efficient way possible. This expectation, therefore, uses the policies as a reflection of capacity. Activities proposed in the plans are likely to be based on the (perceived) capacity of the authorities. Ambitious and innovative plans suggest greater capacity, as would more expensive activities. This indicator is not, however, without flaws, as policy designers may be overly optimistic, thus this analysis is coupled with the responses of interviewees when asked about the perception of resources, funding, and capacity.

- *It is expected that in countries with greater NPM influence, air quality management authorities have more capacity to carry out the task of air quality management.*

Summary: Theoretical Framework

The following table provides an overview of the theories and their corresponding expectations.

Table 2.3: Theoretical Framework summary

Theory	**Expectations**
Theory One: Physical and Geographical Features	1.1: Countries with close neighbours will put greater emphasis on international cooperation than isolated countries 1.2: Climate and resource availability affects the source of air pollution, resulting in the utilisation of different policy tools 1.3: Worse air quality results in the issue having more salience
Theory Two: European Union Membership	2: Members' national and sub-national policies will mirror EU directives
Theory Three: New Public Management	3.1: Countries with NPM influence will have less specific plans. 3.2: Countries with NPM will have less interaction between air quality management authorities 3.3: Countries with NPM will have air quality management authorities with the capacity to carry out the task of air quality management

Chapter Three: Research Design

3.1 Case Selection: Countries

Case studies from the Netherlands and New Zealand are chosen, with two cities used from each country. As identified earlier, this research is restricted to western developed countries, because not only does this hold economy as a constant variable, but it also provides stable government institutions which can be studied over time. Another variable kept constant is the structure of government, with unitary states chosen, thus providing less variance between the roles of local government. Countries were chosen that share similar environmental goals, identified by their perception as 'environmental leaders' (Liefferink et al., 2009). There are no two countries exactly the same, nor are there two identical cities, and it is impossible to account for all the differences. When comparing case studies, it is therefore important to keep some factors constant. Not only does this provide an opportunity to compare 'like with like', but also limits the number of possible factors.

The Netherlands and New Zealand have fundamental similarities, but have significantly different physical features, with the Netherlands having a very high population density and surrounded by close neighbours, features not found in New Zealand, as well as EU membership. The two countries also differ in terms of New Public Management adoption, with New Zealand described as the country where NPM had the most visible effects (Sahlin-Andersson, 2000), while NPM had a relatively brief appearance in the Netherlands (Hendriks and Tops, 2003).

3.2 Case Selection: Cities

Having two cases from each country gives the opportunity to also compare policies within each country. When choosing the case studies, none of the major cities were used in either countries, but rather medium sized cities, with a mixture of poor and good ambient air quality. In the Netherlands, the so-called 'G4' of Amsterdam, Rotterdam, Utrecht, and Den Haag all have municipality arrangements that differ from the rest of the country, including sub-municipalities and special funding privileges, as well as exaggerated political influence at the central government level. New Zealand's largest city Auckland also has a unique institutional arrangement, being the only 'super city', while the second largest city Christchurch has sever air quality issues, and is also currently rebuilding following large, on-going earthquakes since 2010. In both cities special laws and legislation are in place. Instead cities were chosen that were not major cities, but large enough to have both sufficient information available, and not be overlooked in national policy. Cities were chosen in different provinces and regions, with diverse locations desirable. Care was taken to choose 'average' cities, in size, political clout at national level, population, and local government structures, but the ultimate deciding factor was the perceived availability of information. The purpose of choosing 'average' case studies was to widen the external validity of the study, with the results of the four cities more likely to be similar most other municipalities and cities. This has the practical advantage that the results can be applied and adapted by practitioners in cities other than the four studied.

The four case studies are therefore:

- Delft in the Zuid-Holland province
- Eindhoven in the Noord-Brabant province
- Invercargill in the Southland region
- Palmerston North in the Manawatu-Wanganui region

3.3 Methodology

Because of the large number of expectations to be compared, it is simply not practical to evaluate expectations against each western country; instead the four case studies are used. The research has also been narrowed down to ambient air quality management of local governments in the Netherlands and New Zealand because of the wide scope of environmental management in western countries. When comparing these case studies, a congruence analysis is used. This involves formulating several theories and predicting what is to be expected if each theory were true. These expectations are then compared with what is observed in reality, with the most congruent theory thus more correct than rival theories (Blatter & Haverland, 2012:125). What differentiates a congruence analysis from other case study research designs is that there are two comparisons: firstly between the expectations and the observations, and the second between each theory (ibid:243).

As an observational study, the research runs the risk of overlooking a variable when trying to explain causality. As Kellstedt and Whitten (2013:83) point out, this is a major difficulty with observational studies. When attempting to explain why geography, EU membership, and New Public Management impact environmental policy, it is possible that other factors are involved. While care has been taken to incorporate the known differences in environmental approaches, other factors not visible to observers may be important in explaining differences.

3.4 Data Collection

In order to answer why environmental policy approaches differ between local governments with similar ultimate outcomes, the policy approaches must first be identified. This is done by analysing a selection of the fundamental environmental policies from each of the four case studies. The policies, consisting of both specific air quality and general environmental policies, represent all legislative levels of government, thus providing a range of policies. A full list of the policies analysed is included in Appendix Two, as is a sample analyse sheet which was filled out for each policy (Appendix Three). It should be noted that not all minor air quality policies were analysed, especially those initiated by non-government organisations, nor were all policies of interest available for comparison.

Of the polices analysed, all major policies outlined by the New Zealand Resource Management Act and the Dutch Environmental Management Act were selected. Current policies were used, with the exception of the Manawatu-Wanganui One Plan, which despite not yet fully functional pending review on other policies issues is considered the operative regional policy for air quality. It is also worth noting that, especially in the Dutch case, not all policies were available, either online or via the appropriate governments.

A selection of other air quality policies were also examined, such as the New Zealand Long Term Plans and the Dutch municipal sustainability plans, as these feature in the aforementioned major policies.

Environmental management practitioners also provided information to supplement the policies. Staff were interviewed from municipal, provincial, and regional council levels, and represent all four case studies. Sample question can be found in Appendix Four. Interviews were done in person where possible, or via Skype video and email, yet are kept anonymous, thus allowing them to speak freely about both the positive and negative aspects of their work. The advantage of interviews means that not only can a wide variety of topics be addressed, but questions can be tailored to previous answers and extra information can be elaborated on. For this reason, interview questions were kept broad, and elaborated on during the interview itself. Interview questions also focused on gaps of knowledge not answered by desk research. Further contact was also made with other government levels, including central governments, primarily in the form of emailed questions and responses. These questions were specific, and due to time lags extra information and elaboration were limited. Email responses from the Dutch central government, for example, took on average one week, especially if the question was forwarded to the Ministry of Infrastructure and Environment, thus limiting the ability to elaborate or expand on initial comments.

Chapter Four: Background to the Case Studies

The Netherlands and New Zealand are both relatively small sovereign states with western style democratic parliaments. Despite being unitary, both states have historical traditions of decentralisation, resulting in three levels of governance in both countries. With central government as a top level, both states have monarchs with little power over government proceedings. The Netherlands then has provincial and municipal governments, while New Zealand has regional and territorial governments. This chapter introduces the four cities, and gives a brief background on the four case studies.

The Netherlands and New Zealand have differences and similarities. Table 4.1 gives an overview of each country.

Table 4.1: Basic Information: The Netherlands and New Zealand

	The Netherlands	**New Zealand**
Land area	41,500 km^2	267,700 km^2
Population	16,800,000	4,367,000
GDP	US $718.6 billion	US $134.2 billion
EU membership	Yes	No

Source: CIA Factbook, 2013

As seen in table 4.1, the Netherlands is a lot smaller than New Zealand, with a far greater population and GDP. Figure 4.1 shows the population density of both countries, with Dutch urban areas with high populations a lot closer to each other than in New Zealand, where the major urban cities are spaced out throughout the country. Working on the assumption that higher population density increases emission levels, the spread of urban centres in New Zealand means air pollution has a higher chance of dispersion.

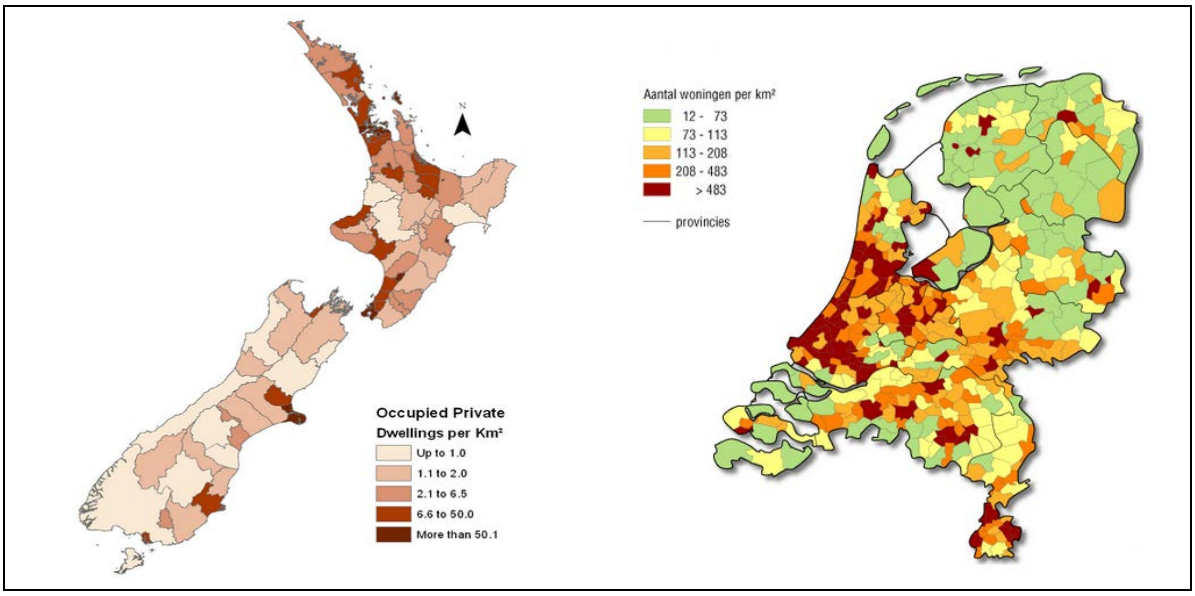

Figure 4.1: New Zealand and Dutch Population Density (Statistics New Zealand, 2008; Centraal Bureau voor de Statistiek, 2010)

Local Government

The term "local government" is rather loose, often including municipal, regional, and provincial government, as well as various other institutions in other western states, all with country specific definitions. This means there is no homogenous units for cross-national comparison (Hooghe et al., 2010). Comparing and labelling local governments becomes more difficult still as local governments also range considerably in the amount of autonomy they have from central government, function, and legislative foundations. What is called a region in one country is often not comparable with a region in another. Following the lead of Henk te Bogt (2006), in the Dutch case, "local government" refers to both municipal (local) and provincial (regional) government. While there is some debate as to whether the provincial government constitutes as a traditional "regional" government (cf. Hulst, 2005), for the purpose of this paper, the provincial level is compared to the New Zealand regional level of government. New Zealand local government consists of territorial and regional governments, however it should be noted that territorial governments play only a small role in environmental management.

For many citizens central government is inaccessible and distant, so strong local governments are able to work with citizens without being constrained by policies from central government (Brady, 2002). This section describes the functions of the institutions, as well as giving some historical context. More detailed maps of each country showing case study locations can be found in Appendix Five.

4.1 New Zealand

New Zealand was first colonised by Polynesian Maori some 800 years ago, but only discovered by Europeans in 1642 by the Dutch explorer Able Tasman. It was colonised by the United Kingdom during the 1800s, with the land divided up into provinces for administration and practical purposes. Prior to this, the indigenous Maori people lived in independent tribes (iwi), not recognising any sense of nationhood but rather engaging often in warfare with other tribes, not dissimilar to European states. A government based on the British parliamentary and local government structures was adopted by the colonists, and although the provinces were abolished in 1874, local authorities remained and multiplied, with such institutions acting purely as local service delivery agencies (Pallot, 2001). Of the approximately 800 fragmented local authorities, many were very small, for example with a jurisdiction of just 1.92km^2, while others provided only one service, for example the road districts (Bush, 1980). Local government reform in 1989 dramatically reduced the local authority number, abolishing most special purpose local authorities and reducing the number of territorial authorities by two thirds. Further reform in 2002 and 2010 led to the current configuration; as of 2010 there are eleven **regional councils**, determined by drainage basins. Twelve city councils, 54 district councils, and one 'Super City Council' make up the **territorial councils.** Territorial councils are based on road access and community, and therefore do not necessarily correspond with regional council boundaries, leading to some territories straddling regional boundaries. Of these, six combine the capacity of city and regional councils to form **unitary councils** (Department of Internal Affairs, 2011). Responsibilities of territorial authorities include services such as waste collection, fresh water provision, and park maintenance while regional councils deal primarily with resources such as rivers, air, coast, and soil. Regional and territorial governments are not subordinate to each other, but rather complementary, (Lapsley & Pallot, 2000), largely due to the separation of responsibilities experienced in 1989. Regional councils, however, have primary responsibility for

environmental management. Figure 4.2 shows the structure of local government in New Zealand, with unitary authorities combining the responsibilities of the other two governments. Note that regional and territorial councils are on the same government level.

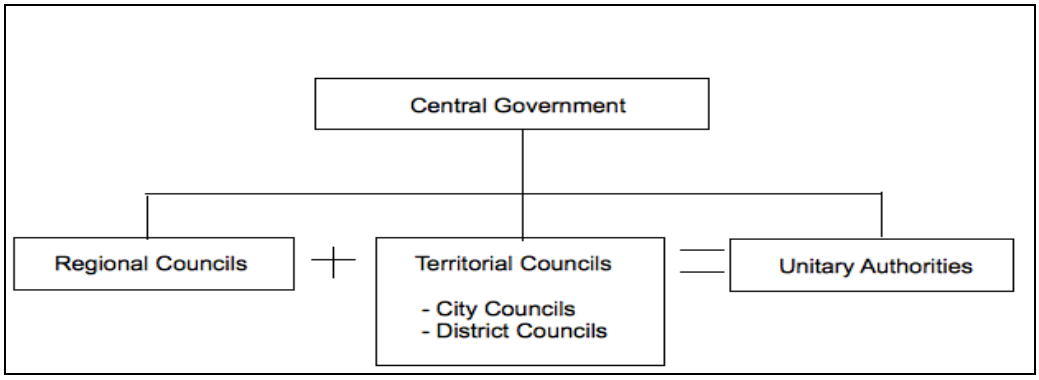

Figure 4.2: Government levels in New Zealand

City councils are chaired by directly elected mayors, while regional councils are chaired by chief executives elected by council members. Elections are held every three years, and any New Zealand citizen over 18 years of age can run for office. Once elected, councillors serve on and chair committees relating to specific policy areas, promoting not just their ward, but the whole community (Local Government New Zealand, n.d), to promote sustainable development of communities (Local Government Act, 2002). Citizens are able to participate by voting or standing for office, making submissions, contributing to a consultation, and attending Council meetings (Department of Internal Affairs, 2011).

Case Studies

Invercargill is New Zealand's southernmost city, and its location secures Invercargill's cold climate, relative to the rest of the country. Invercargill is the capital city of the Southland region, housing the Southland Regional Council, which trades under the name Environment Southland (ES). Aside from Stewart Island National Park, the Southland Region includes over 5,300 farms, which make up over 85% of non-conservation land (ES, 2011), making Southland a thinly populated region.

Palmerston North is a medium sized city in the lower North Island. The major city in the Manawatu-Wanganui region, it is the eighth largest city in New Zealand. Air quality is not one of the 'Big Four' important focus issues for the regional council, which are water quality, water demand, hill country land use, and threatened habitats (Proposed One Plan, Part 1, forthcoming), and air quality is good by national standards. Situated on relatively flat land surrounded by two converging mountain ranges, the city experiences a lot of wind.

4.2 The Netherlands

The Dutch have a long history of local government; with local institutions dating back to the 13th century to maintain the dikes crucial for keeping the country from flooding (Figee et al., 2008). The provinces and many municipalities also emerged long before the establishment of the country as a unified whole. The National Constitution, signed in 1848, guaranteed the autonomy of the provinces and municipalities, and was quickly followed by the Provincial Government Act (1850) and the Local Government Act

(1851). Until the 1980s municipalities in the Netherlands focused on the implementation and planning of policies to improve economic prosperity of their residents (Veldheer, 1997), with the reconstruction after the Second World War responsible for the expansion of the task assigned to local government. Today there are twelve **provinces**, 430 **municipalities** dealing with urban issues, and 26 **water boards** stemming from the original institutions charged with water management. Figure 4.3 provides an overview of the separate institutions. Local governments are hierarchical, with municipalities reporting to provinces, who report to central government. The provincial government, for example, handles tasks derived from central government policy including traffic, public transport, public housing and environmental issues, as well as financially supervising the municipalities and water boards (Figee et al., 2008).

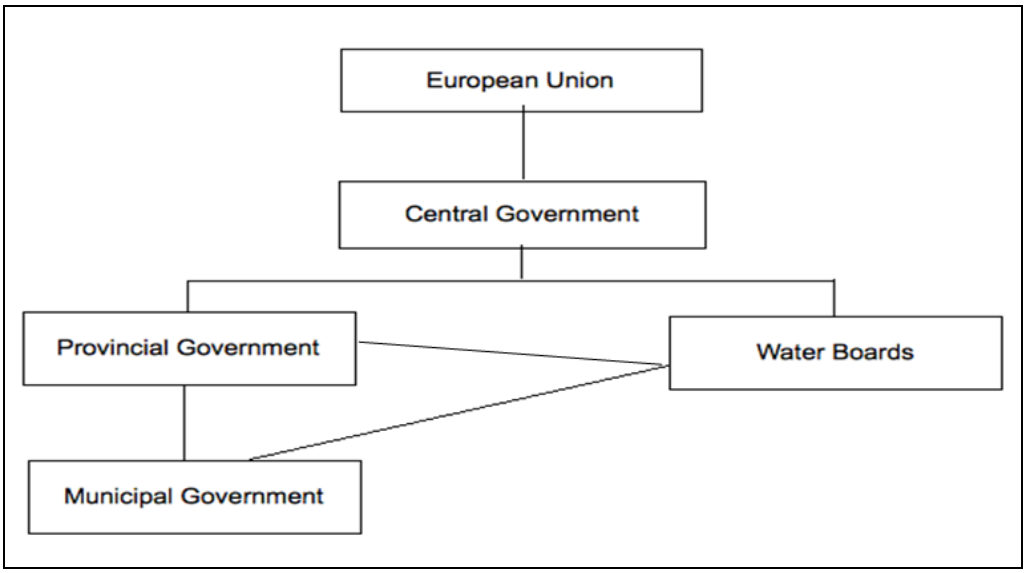

Figure 4.3: Government Levels in the Netherlands

The municipal executive is made up of a mayor and aldermen, and as with the provincial governments, the municipal government is headed by an appointed figure, a mayor appointed by the Crown after consultation with the council. He chairs both the municipal council and the executive, and subsequently holds more power than his New Zealand counterpart (Figee et al., 2008). Aldermen, each with their own portfolios, are also only indirectly elected, appointed by the municipal council.

Working as an independent regional government level, the water boards are the oldest form of local government in the Netherlands, responsible for managing and maintaining flood defences along the coast, waterways, and rivers, as well as managing surface water quantity and quality (Government of the Netherlands, n.d). Despite their obvious significance as part of Dutch environmental management, this paper focuses on air quality, thus rendering an in-depth analysis of water boards superfluous.

Case Studies

Delft is a small city in the province of Zuid-Holland, situated between the major industrial cities of Rotterdam and The Hague. Best known for its historical buildings, tourist attractions, and the Technical University, Delft also has a proud tradition of sustainability, having been a 'sustainable city' for the past two decades (Delft Sustainability Plan, 2008-2012), and one of only 12 municipalities to have initiated a

'milieuzone', an urban/residential area where heavy traffic is forbidden except for certain times (Ministry of Infrastructure and the Environment, n.d).

Eindhoven is in the south of the Netherlands, in the Noord-Brabant province, close to both the Belgian and German border. One of 67 municipalities in the province, Eindhoven is the fifth largest city in the Netherlands. An area famous for both its agriculture and industry (including the major electronic company Philips), Eindhoven has also established a milieuzone restricting inner city traffic, indicating environmental leadership.

Summary

The Dutch and New Zealand local government structures are therefore essentially similar, with a New Zealand regional council ultimately comparable to a Dutch provincial government, and a New Zealand territorial council comparable to a Dutch municipal government. The main difference when addressing air quality is that the New Zealand local governments are not hierarchical, and that environmental management is not undertaken by territorial councils. For this research the focus will instead be on New Zealand regional councils and Dutch municipal governments, as these both represent the lowest statutory level of environmental management.

Chapter Five: Introduction to Analysis: Environmental Management

This chapter describes the current environmental issues and air quality management approaches adopted by the Netherlands and New Zealand in order to give a context so that they can be compared in subsequent chapters.

Environmental issues are often regulated by governments as a way to mitigate market failure caused by the use of public goods (Kerr, Claridge, & Milicich, 1998). Many natural resources such as air are considered “public goods” in that they are non-excludable, so users do not pay for the consumption of the good. Unlike true public goods, however, environmental resources are often rivalrous so that their use by one actor affects how others may use it. Using the example of air, a factory polluting the air will affect not just themselves, but the surrounding people who breathe it. Without any regulation or government intervention, the factory has no incentive to contain pollution, as this will cost more than using the “free” public good, thus resulting in market failure. For this reason, national governments seek to correct this externality through regulation, 'polluter pays' taxes, subsidies, moral suasion, and economic instruments.

Western countries are similar in the fact they are (for the most part) fully developed. According to Selden (1993), an emerging consensus holds that while industrialisation and agricultural modernisation may initially increase pollution, as the economy grows, eventually there starts to be a decline, thus forming a “Kuznets curve” or inverted-U shape as pollution initially increases, then decreases as environmental concerns start to rival economic issues. With more wealth in a state, more people have their basic necessities met, and turn instead to the 'luxury' of a desirable environment. Developing countries are often in the 'increasing' stage, while developed (western) countries are in the second stage. This means comparing environmental management of a developing and a developed country is not comparing like with like, and thus forms the basis of the central assumption of this study, which is that developed countries have similar environmental goals.

In many western countries, local governments are tasked with the main environmental responsibilities (Gibbs & Jonas, 2000). With ‘subsidiarity’ (the idea that action should be taken by the lowest possible level of government) and ‘bottom up governance’ (where decisions are made by those closest to the problem then filtered back up the hierarchy to central government) incorporated by many western governments (including the EU), local government responsibilities were also stressed in the Rio Earth Summit (Jänicke & Jörgens, 1998:29). Local governments have the advantage that they are able to implement location-specific policies, conducive to ambient air quality which may vary within the nation. There is also the advantage that local governments, closer to the source and community, have valuable access to local knowledge and resources (Meadowcroft, 2002).

5.1 New Zealand Environmental Management: A Description

In this section the New Zealand approach to environmental management is described, using the Resource Management Act as a foundation. This legislation forms the overarching framework for New Zealand's environmental management.

The Resource Management Act (RMA) was passed in 1991 to "promote the sustainable management of natural and physical resources" (section 5.1). Its introduction into law saw a myriad of fragmented and often overlapping environmental policies amalgamated into a single document setting out how current and future environmental issues will be managed. According to the Act, sustainable management in this context means using, developing, and protecting resources in a way that enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while:

- sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generation; and
- safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- avoiding, remedying, or mitigating any adverse effects of activities on the environment (RMA 1991, section 5.2)

The Act came in response the Think Big government strategy of the 1980s which, in an effort to boost a failing economy, focused primarily on economic issues regardless of environmental impacts (Jänicke & Jörgens, 1998). New Public Management also played a role, as the newly reformed local governments were now deemed capable, with help of central government, of implementing the policy (Ericksen et al., 2001).

The Ministry for the Environment (MfE) has the position of primary authority, although coastal management is shared with the Department of Conservation that is primarily responsible for indigenous biodiversity protection and national parks management. Most policy planning and implementation is devolved to local government, particularly regional councils. Local institutions and their citizens are considered to have the best access to local information and knowledge, and the RMA seeks to leave decisions about how to manage environmental matters in the hands of local communities (Ministry for the Environment, 2013). The RMA thus allows the regional councils the flexibility needed to plan and implement plans which best suit the region.

Maori

Maori, the indigenous people of New Zealand, are greatly affected by environmental management and thus have special provision under the RMA. For Maori, land and water are traditionally an integral political, economic and spiritual resource (Bargh, 2006). Water is seen as a life force intrinsically bound to well-being and everything else in the universe (Wilson, Syme, & Knight, 2000), and seen as a treasure given by ancestors to be protected for future generations. Land is similarly sacred as that is where ancestors, who are very important in Maori culture, are. The most important legislation addressing Maori environmental (and general) rights is the Treaty of Waitangi. Signed in 1840, it is one of the founding documents of the country and ceded sovereignty of natural resources and land to the Crown. Contention arises, however, as the Maori translation, which was signed by Maori chiefs, used the word "kawanatanga" which means governorship, not sovereignty. The disputes stemming from this are currently still being settled, and the RMA states subsequent environmental policy must be in accordance with the Treaty (section 8).

Resource Use Management

Under the RMA individuals and corporate parties require specific authorisation by way of a resource consent to carry out any activity which may impact the environment. Activities range from subdividing land to discharging pollutants into water. When

applying for resource consent, parties must provide an Assessment of Environmental Effects listing all the potential environmental impacts. This is then submitted to the regional council for processing, and may be disputed by other parties. For most cases this can only be done by other stakeholders affected by the proposed activity, in which case they are contacted directly. Five percent of applications, however, are subjected to public notification (Ministry for the Environment, 2013), in which case any individual can make submissions. The only stakeholders unable to do so are those who are in direct economic competition, and could potentially benefit from the consent application being denied. Once the consent is approved, it is valid indefinitely, unless stipulated in conditions attached to the consent. This also applies to activities already being carried before the policy was introduced (RMA, 1991; section 10.1).

Under the RMA various statutory plans and policy statements are issued by various authorities, with each level required to be consistent with the level above (see figure 5.1). It is worth noting that National Policy Statements issued by the central government are optional, as are regional plans, which usually focus on specific environmental issues (for example air quality). Regional councils must prepare regional policy statements for their regions, although regional plans containing regional rules and regulations are discretionary. District plans are also mandatory, and deal with resource consents. Parties violating these plans can be prosecuted and fined up to $600,000 (€400,000), or given jail sentences or abatement notices (MfE, 2013). While most local governments have adopted regional plans, there are few gazetted National Policy Statements. According to the OECD (2007), the use of such voluntary policy tools, as well as little national coordination were issues that New Zealand needed to address.

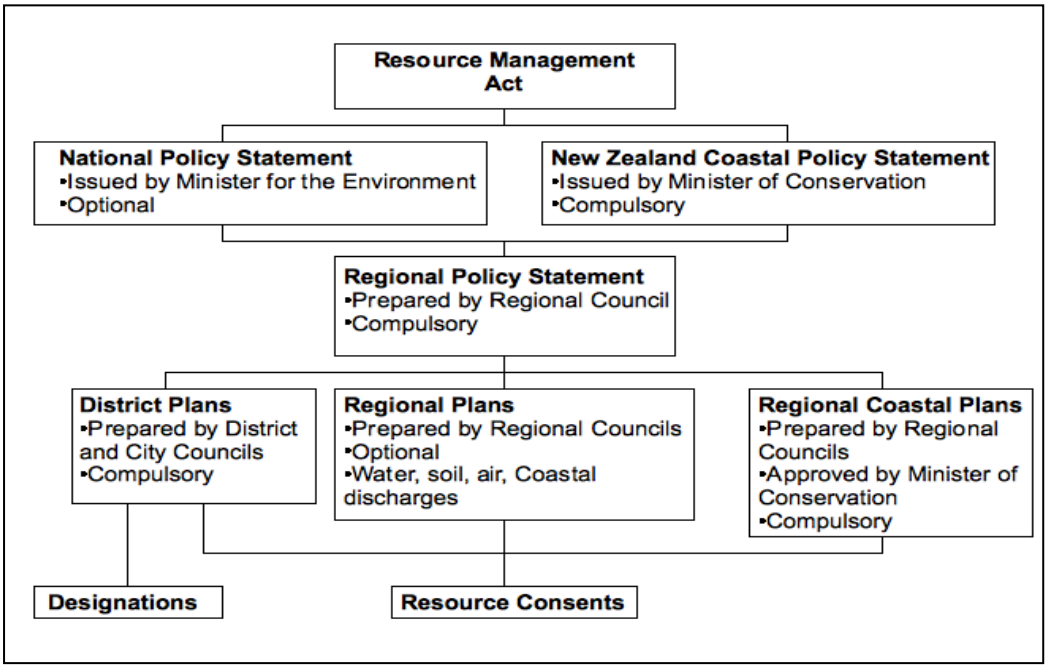

Figure 5.1: Hierarchy of Statutory Policy Statements and Plans under the RMA (Source: Memon, 1997:308 and MfE, 2013)

Citizen participation is encouraged during plan development and citizens have the ability to make submissions, which by law have to be considered. Private citizens can also initiate private plan changes, and if the individuals still feel aggrieved, the Environment Court can be approached to overturn the decision of the regional council. Individual

citizens are assumed to be less able to mobilise against large firms due to a lack of resources and coordination, so the government funded Environmental Legal Assistance Fund provides funding to stakeholders wishing to bring environmental cases to court.

5.2 New Zealand: Air Quality Management

New Zealand has relatively good air quality owing to its low population density and the vast surrounding ocean (MfE, 2009). Air pollution, however, is still an issue, with more than 2,300 New Zealanders estimated to die prematurely due to PM_{10} exposure alone (Fisher et al, 2012). Under the RMA sections 43 and 44, the New Zealand central government adopted the National Environmental Standards for Air Quality in 2004, which set a guaranteed minimum level of health protection for all New Zealanders. Despite air pollution being seen as a localised problem, high mobility of air pollution prompted the establishment of national legislation (NZIER, 2009). The fourteen interlinked standards set limits for the allowable levels of air pollution, as well as introducing policy to ban high-polluting activities and set design standards to be met by all new wood burners (MfE, 2009). The Ministry for the Environment also issued two publications for local government institutions and other stakeholders to guide implementation and compliance: the “Users' Guide to the Revised National Environmental Standards for Air Quality” (MfE 2011), and “Clean Healthy Air for All New Zealanders: The National Air Quality Compliance Strategy to Meet the PM_{10} Standard” (MfE, 2011). These publications not only explain what is required of the regional councils, but also offer suggestions as to how these *should* be achieved. From this stem a variety of “good practice guides” (for more detail see appendix six). The central government does not, however, have a formal enforcement role, and is therefore restricted to issuing such guides, as well as providing information, collating national monitoring information, and providing help and advice to regional councils (MfE, 2011). Various other actors have also introduced initiatives, such as the WarmUp New Zealand project, which provides subsidies to more effectively heat houses, headed by the Energy Efficiency and Conservation Authority, as well as legislation to deal with sector-specific pollution initiated by the Ministry of Transport, Ministry of Economic Development, and the New Zealand Transport Agency.

The Air Quality Standards require all Regional Council plans to adopt plans at least as stringent as the limits it sets, and identify areas (called '**airsheds**') where air quality is likely, or known, to exceed limits. Despite regional plans being voluntary, all regional councils have regional policy statements and regional plans that control air discharges (MfE, 2011). These may be either regional plans specifically for air quality, or plans that incorporate air quality issues into broader based 'natural resource management plans'. Enforcement of such plans rests primarily on abatement notices, environmental infringement notices, and enforcement orders via the Environmental Court.

Territorial authorities do not have specific air quality management functions under the RMA, but can make bylaws under the Local Government Act 2002, which may impact air, and consents issued under the Building Act relating to domestic fires must comply with the national air quality standards (MfE, 2011).

5.3 Dutch Environmental Management: A Description

The Dutch Environmental Management Act (EMA) was passed in 1993, and like the New Zealand RMA sought to tie together the various environmental policies already in place and set out an integrated approach defining the roles of national, provincial, and

municipal governments (Government of the Netherlands, n.d). Based on the already existing National Environmental Policy Plan of 1989, the aim was to decentralise planning through negotiated agreements at local and provincial level, as well as industrial target groups (RRI, 2013). The sudden interest in environmental management was not specifically in response to a change in government, as it was in New Zealand, but the 1998 scientific report “Concern for Tomorrow”, which emphasised the fact the Netherlands was nearing carrying capacity, and called for an overall reduction of emission pollutants by 70-90% by 2010 (RRI, 2013). This was coupled with the then queen, Beatrix, the 'Green Queen' stating in her Christmas message the same year that the Earth is slowly dying (ibid).

Since then, the EMA has been changed several times, including the inclusion of air quality in 2007. Just as the RMA must correspond with the Treaty of Waitangi, Dutch environmental legislation must comply with European Union legislation. Despite claiming to be a catch-all environmental Act, policy issues like water, soil management, and until recently air quality are administrated by separate legislation.

Originally developed and implemented by a Directorate-General Environmental at the Ministry of Housing, Spatial Planning, and the Environment (VROM),with the merger and subsequent renaming of the ministry in 2010, environmental policy is now headed by the Ministry of Infrastructure and Environment. The EMA emphasises coordination with other ministries, namely the Ministries of Transport, Public Works and Water Management; Agriculture and Nature Management, and Fisheries; and Economic Affairs. It is worth noting, however, that the first two ministries no longer exist as separate ministries, but rather mostly fall under the Ministry of Economic Affairs. Implementing national policy and strategy is largely decentralised to municipal government, by means of preparing regulations for implementing and enforcing those stipulated in the EMA (Government of the Netherlands, n.d), and despite national policy restricting the powers of such institutions, endeavours are made to keep decision-making powers as close as possible to the local level in order to promote participative democracy (RRI, 2013).

The EMA also requires provinces and municipalities to deal with environmental issues originating within their respective territories. In keeping with the hierarchical government system, the provinces determine which issues should be tackled by them or by the municipalities, although unlike New Zealand Regional Plans, Provincial Plans can be established as to affect only part of the territory (EMA section 1.2). Provincial councils are therefore responsible for the execution of national policies on waste, groundwater management, and providing environmental permits for large companies, while municipal councils are tasked with the management of public safety, noise, odour, and local air quality, thus making them important players in environmental management. A ministry inspectorate supervises the municipalities, and can additionally enforce legislation under the direct competences of the minister.

Resource Consent

As in New Zealand, individuals are required to seek consent in order to set up, modify, or operate an establishment which will have an effect on the environment (EMA section 8.1). Issued by either provincial or municipal government, depending on the size of the firm/applicant, these permits are valid for a maximum of five years. Dutch local governments do have more authority when granting licences than their New Zealand

counterparts as authoritative bodies may not only impose binding conditions to the licences, but state the implementation means (section 8.11).

Plans and Programmes under the EMA

The Dutch central government plays a strong role in environmental management, with its National Environmental Policy Plans. Under the EMA these are to be drawn up every four years to guide decisions taken by the government, and include specific targets and measures to be achieved. According to the EMA they must include a report of the intended results for environmental quality and protection, implementation, the level of priority attached to achieving those results, as well as financial, economic, and spatial consequences (EMA section 4.3). Every year central government is to draw up a National Environment Programme to report on the implementation progress of the current national plan, as well as outlining the activities to be carried out over the next four years. Provincial councils are also required to draw up similar plans, with the difference that they must not only consult with unspecified stakeholders, but also with the provincial executive of adjacent provinces and the inspector, as well as with all those living in the province and those with a natural and legal interest (EMA, section 4.10). Provincial plans are also similar to the plans of central government. These plans and programmes form the majority of the Dutch policies chosen for analysis.

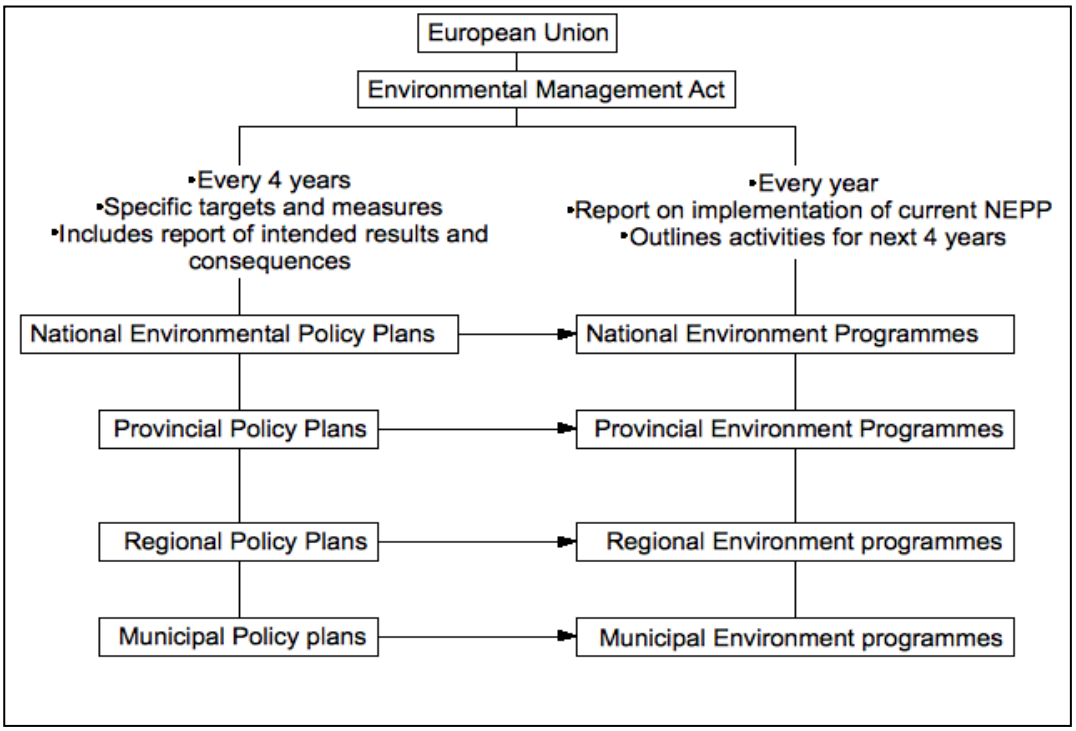

Figure 5.2: Plans and Programmes of various levels of Dutch Government (Source: EMA, 1993)

5.4 Dutch Air Quality Management

The National Environmental Policy Plan (NEPP) was first introduced in 1989, and although the current one was introduced in 2001, under the EMA it is to be updated every four years. In addressing long term goals in a strategic manner, it identifies the causal links of eight environmental issues and gives quantitative objectives and supporting performance indicators. Despite changes in parliament, shifting priorities of the electorate, and an increase in the environmental regulations required by the EU, the goals

of the NEPP have remained intact (Stanhope, 2000). The NEPP has had success, and has been described as one of the best of any country (Stanhope, 2000). It is also credited with improved management of air pollution such as sulphur dioxide, carbon monoxide, hydrocarbons, and lead compounds (RRI, 2013).

Dutch air quality standards are largely set by European Union and United Nations in the Gothenburg Protocol (UN) and the NEC Directive (EU), and cover pollutants such as sulphur dioxide, particulate matter, nitrogen dioxide, lead, benzene, and carbon monoxide. There are several institutes measuring compliance, including the EU Commission, as well as the Environmental Assessment Agency (Planbureau voor de Leefomgeving in Dutch – PBL), and the National Air Quality Monitoring Network (LML) which measures hourly air quality. While the Netherlands meets almost all European air quality limits, there are several areas with excessive particulate matter and nitrogen dioxide (Government of the Netherlands, n.d). These areas are called 'Knelpunten' and are similar to New Zealand airsheds. The purpose of such nationalised monitoring system is not only to provide a standard measurement (a feature conspicuously absent in New Zealand's environmental management), but also to draw public attention to the need for action.

Following the realisation that the Netherlands could not achieve the EU Directive measures, the National Air Quality Cooperation Programme (NSL: Nationaal Samenwekingsprogramma) was established as a condition for an extension from the EU. It offers a package of policies to improve Dutch air quality and ensures EU limits are met on time. Focusing on particulate matter (PM) and NO_2, it also incorporates subsidies for environmentally clean trucks, buses, taxis, and vans. As with all national environmental programmes, central government annually reviews air pollution, and if targets are not met, additional measures may be taken (RRI 2013).

5.5 Summary

The Netherlands and New Zealand are two different countries, yet their approaches to environmental management show similarities. Both proclaim themselves leaders in the policy issue (OECD, 2011), and have adopted similar overall national environmental policies. In both countries national governments have established broad legislation to encompass the various policy tools and environmental issues relevant to both central government, and local government institutions are tasked with the implementing of such initiatives. The Resources Management Act 1991 (New Zealand) and the Environmental Management Act 1993 (the Netherlands) both use local government institutions as vehicles to protect and improve the quality of the environment. Both countries also provide special policy for areas lagging behind the rest of the country in terms of original air quality management, with such areas called airsheds in New Zealand, and knelpunten in the Netherlands.

Chapter Six: Analysis

6.1 Theory 1: Physical and Geographical Characteristics

Physical and geographical characteristics are those that include the topography of the land, the climate, and the physical location. These are characteristics that cannot be altered, and therefore must be adapted to, potentially influencing environmental management choices. New Zealand and the Netherlands are small countries, with vastly different physical and geographical features. New Zealand is located in the South Pacific, with no close neighbours, and has a temperate climate, while the Netherlands is located in the middle of Europe. Population density and energy sources also differ greatly.

When comparing the two countries to other western countries, the Netherlands has the second highest population density of the OECD countries, and the highest in Europe (see figure 6.1). New Zealand, on the other hand, has one of the lowest.

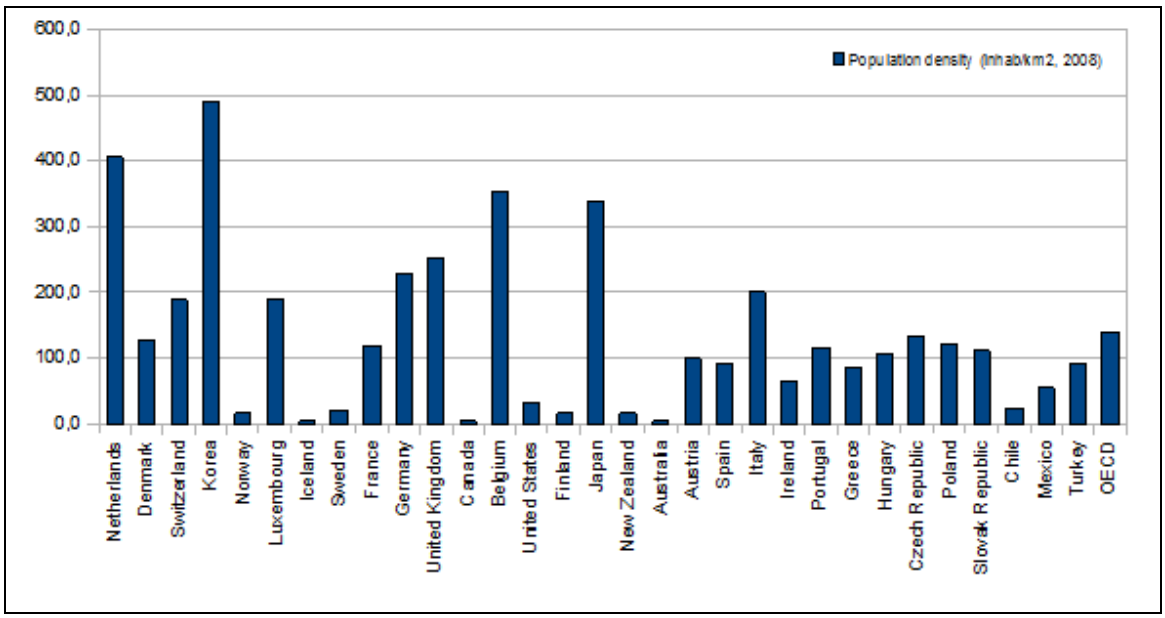

Figure 6.1: Population Density in OECD Countries (Source: OECD, 2010)

Expectation 1.1

A country with close neighbours will put greater emphasis on international cooperation than an isolated country.

Geographically the Netherlands and New Zealand are very different. New Zealand is geographically isolated, with its nearest neighbours some 2,000 kilometres away. Of those neighbours, only Australia is large enough to be noteworthy in terms of being a major polluter. The Netherlands, on the other hand, is in the centre of Europe, sharing borders with two different countries. Due to the high industry of its neighbours and wind patterns caused by the Netherlands' position below sea level, the Netherlands has been named 'Europe's Drain' (VROM, 2006). This becomes significant when analysing environmental management, as many issues, such as air pollution, easily transcend borders, thus causing an accumulation of air pollution and worsening Dutch air quality.

Observations

When analysing New Zealand air quality policies, there are no policies addressing international cooperation, or outlining programmes for consultation. The Netherlands, on the other hand, takes a much wider approach to air quality management. Not only does the province of Noord-Brabant share an air quality testing station on the border of the Dutch and Belgium border, but according to an interviewee (2103) from the Noord-Brabant provincial government, considerable interaction between Antwerp and the province takes place. It is also worth noting that the same interviewee pointed out that air quality near the Belgium border was not significantly different to air quality in the rest of the province, suggesting that the cooperation did not rise out of a desire to alleviate a cross-border pollution problem. Attention must be given, however, to the fact that neither the interviewee nor the supporting policies mentioned Germany, whose border is only marginally further away from Eindhoven than the Belgium one.

At a national level, the Dutch policies also show characteristics influenced by its geographical position. It has been suggested, especially by on-line bloggers, that the reason for Dutch inaction following the initiation of the EU Directive was due to the belief that poor Dutch air quality was primarily because of pollution from abroad (van Oosten, 2013). This approach would suggest that the Netherlands is waiting for other countries to reduce pollution before taking their own measures. This would see a difference in air quality management when compared with New Zealand – the New Zealand government has nowhere to place ambient air quality blame except for on themselves. It is worth noting, however, that there are no formal international air quality cooperation agreements beyond the EU.

The observations therefore correspond with the expectation. New Zealand, with no close neighbours, has no bilateral cooperation, and the Netherlands, with two neighbouring countries, has adopted international measures, both formally and informally.

Expectation 1.2

Climate and resource availability will affect the source of air pollution in different ways, thus leading to the employment of different policy tools.

The four cities have quite different locations, and thus have not only different climates, but also available resources, both of which can influence air quality. It is expected that colder climates require more heating during winter, which in turn leads to more emissions. It is also expected that coal mining areas will also have a higher usage of the material, which emits high amounts of PM_{10} when burnt. Policy decision makers are therefore expected to address the air pollution issue at the source: with policy tools targeting the origins of the emissions. When different sources are observed, it is expected that different policies will be used to mitigate their effects. New Zealand policies, for example, especially those in Southland, are expected to utilise coal-burning regulations, while the Netherlands is unlikely to adopt such policies.

The first locational difference influencing emissions is climate. The Netherlands has a colder climate, with snow in winter usual. Invercargill also periodically has snow during the winter, while Palmerston North sees snow only once every few years. Colder climates not only lead to greater use of domestic heating to warm homes, but also a decrease in the number of commuters walking or cycling, both for safety reasons and

comfort. Looking at Figure 6.2, the airsheds with the highest amount of exceedances are in the South Island. Exceedances are defined by an incidence when the legal limit of a pollutant is breached for longer than the specified time. While the North Island has more airsheds, this is expected because of the higher population on the island. The fact that the South Island has more exceedances, however, tentatively suggests that the South Island has worse air quality in its urban centres. This supports the assumption that the South Island, being further south with a colder climate and few daylight hours than the North Island has worse air quality.

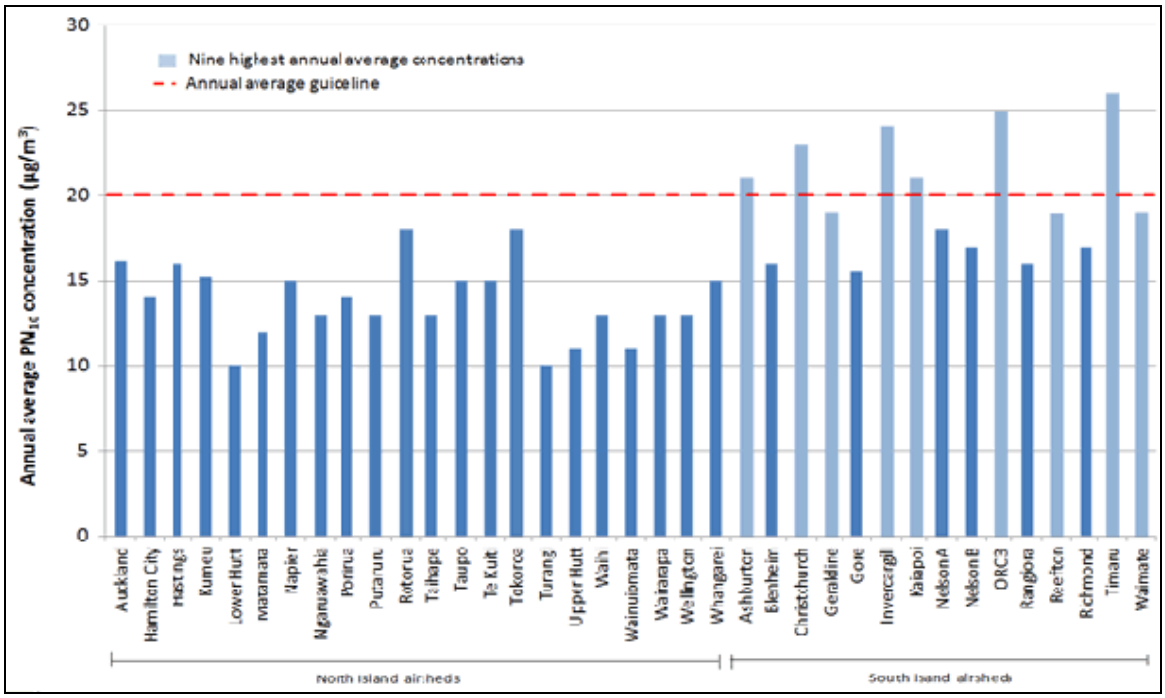

Figure 6.2: New Zealand Airshed Exceedances (Ministry for the Environment, 2012)

Not only does climate affect air quality, but it is also expected that different resources in an area will lead to different policy tools being used. Looking at figure 6.3 it becomes clear that there is a difference between the energy supply resources throughout New Zealand. While the Manawatu is close to both wind farms and off-shore gas and oil rigs, Southland is a coal mining region. This has an impact, as Southland's PM_{10} emissions are mostly caused by burning wood and coal for home heating in winter, and, as the Environment Southland Annual Monitoring Summary 2011-2012 points out, Southland has higher coal consumption than the national average (Environment Southland, 2011). The Netherlands, on the other hand, shut down its coal mines in the 1960s, and instead relies on gas as the main energy provider (Hoppe, Bellekom, & Lulofs, 2013:10). The natural resources of the case studies are therefore coal (Southland), gas (the Netherlands), and wind in Palmerston North.

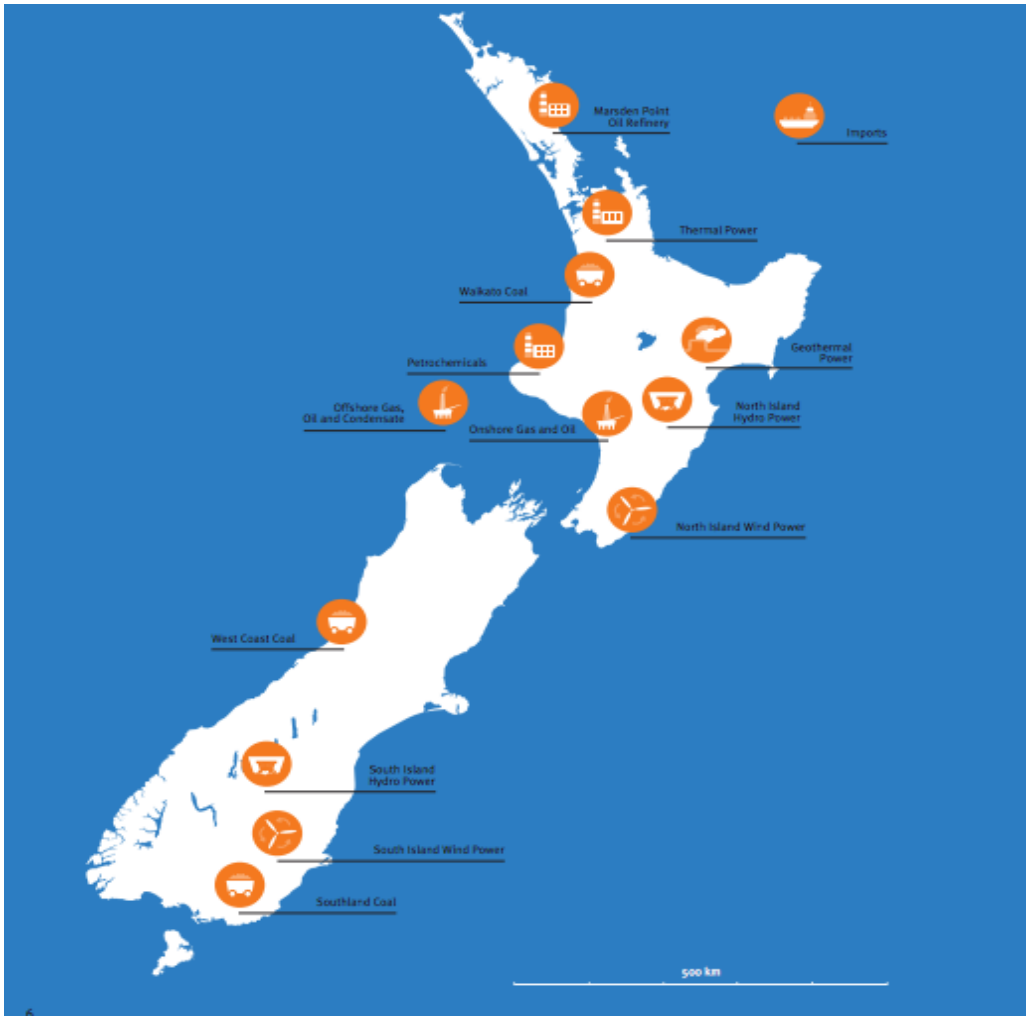

Figure 6.3: Natural Resources in New Zealand (Ministry of Economic Development, 2012)

Observations

When analysing the policies of each case study, there is a difference in approaches to mitigating air quality. Table 6.1 summarises these effects.

Table 6.1: Pollution Causes and Solutions

Case	(Perceived) Main Cause of Pollution	Main Activities to Address Air Quality
Invercargill	Home heating	Regulate Industry Regulate transport via transport policy sector
Palmerston North	Home heating	Phase out existing woodburners and other home heating appliances Regulate chimney height Improve Resource Consent issuing
Eindhoven	Agriculture and Industry	Improve Resource Consenting
Delft	Abroad Industry and Vehicles	Regulate Vehicles

(Source: interviews, policies)

Eindhoven and Delft have an emphasis on vehicle regulation, with both Eindhoven and Delft having milieuzones. There is little mention of policies about home heating, as was expected, since housing is not the primary concern. As an interviewee from the Delft Municipality pointed out (2013), while vehicles are a major source of air pollution, the most significant offender is cross-boundary pollutants. In the case of Delft, this is not only general air pollution from Germany and Belgium, but also Rotterdam and The Hague, both cities which lie outside the jurisdiction of the Delft municipality, but in close proximity to Delft. She pointed out the policy tools for dealing with such pollution are limited, and instead the Delft Municipality must do what it can, in the hopes of making a small change.

Where the expectation does not hold is in Southland. To quote the Regional Policy Statement,

> "Southland air quality is higher than many parts of New Zealand. However, extensive motor vehicle usage, factories and increases of urban population mean that local air quality problems occur from time to time" (ES, 1997 p. 162).

This statement is surprising, primarily because it does not address domestic heating, given over 90% of PM_{10} emissions in Southland airsheds come from solid fuel home heating appliances. (ES, 2011). It is also worth noting that Southland air sheds not only have rather poor air quality compared to those throughout the rest of the country (see figure 6.2), but also have significantly fewer vehicles and urban population compared to many other areas of the country. The Regional Policy Statement lacks the expected tailor-made policies to combat the issue of home heating; although this could be attributed to the fact the policy is so old (adopted in 1997). The Manawatu-Wanganui policies do, surprisingly, include restrictions on chimney heights and wood burners, but since these are not salient issues, it is unclear to what extent exactly the policies are implemented. The expectation therefore holds in the Dutch cases, but is less conclusive in the New Zealand cases, especially Southland.

Expectation 1.3

Areas with worse air quality consider air quality a more salient issue.

Referring again to figure 6.2, both Invercargill and Gore airsheds (in Southland) have a higher PM_{10} concentration than the Manawatu-Wanganui airshed of Taihape. Table 6.2 uses data from the Horizon's State of the Environment Report and Environment Southland's Air Quality Annual Monitoring Summary 2011-2012 to show how often the limits were exceeded in the given timespan, suggesting that the Manawatu-Wanganui region has better air quality than the Southland region.

Table 6.2: Case Study Airshed Exceedances

	Exceedances	**Timespan**
Taihape	1	2006-2012
Taumarunui	4	2009-2012
Gore	6	2012
Invercargill	23	2012

(Horizons Regional Council, 2013, and Environment Southland 2013)

It is thus expected that air quality is a more salient policy issue in Southland than in the Manawatu-Wanganui Region.

Observations

To demonstrate this, the general environmental policies were examined in order to see how much emphasis is given to air quality. Table 6.3 and 6.4 summarises the findings. Page-count may not provide a precise indicator of the salience of air quality, as, for example, different diagrams may take up different amounts of space, and it does not take into account air mentioned in other chapters, but it does provide a rough estimate.

Table 6.3: Air Quality Chapters in Manawatu-Wanganui Policies

Plan	Separate Air Chapter	Length of section	Length of Document	% of policy devoted to Air Quality
Proposed One Plan (RPS)	Yes	10 pages	174 pages	5.75
Proposed One Plan (Regional Plan)	Yes	22 pages	196 pages	11.2
Long Term Plan	"Land, Water, and Air Management"	15	318	4.7
Annual Plan	No	N/A	196	0
Average				5.4

Table 6.4: Air Quality Chapters in Southland Policies

Plan	Separate Air Chapter	Length of section	Length of Document	% of policy devoted to Air Quality
Regional Policy Statement	Yes	42 pages	254	16.5
Iwi Management Plan	Yes	8 pages	238	3.4
Long Term Plan	No	N/A	1	0
Annual Plan	Yes	9 pages	138	6.5
Average				6.6

This supports the expectation that air quality is not a major issue in the Manawatu Wanganui Region. In the Regional Policy Statement section of the Manawatu-Wanganui Proposed One Plan, it is worth noting that while Air Quality was given 10 pages, the Chapter on water extended to 34, while the chapter addressing Maori was 40 pages in length. The Manawatu Long Term Plan, while including 15 pages on Land, water, and air management, barely covers the topic, with the word "air" only mentioned three times, excluding titles and page headers, although almost half of the policies listed in the plan mention Air Quality as an outcome. This suggests that while the plan recognises that air quality should have some salience, in reality, it is only a happy coincidence of other environmental policies. The Manawatu Annual Plan, however, skips over air quality entirely, focusing predominantly on water issues. Another indication that air quality is not a salient issue in the Manawatu-Wanganui region is that both the Long Term Plan and the Regional Air Quality Plan both measure air quality by aesthetic qualities. The obviously over-simplified measure for this is whether one can see Mt Ruapehu, Mt.

Taranaki, and Kapiti Island all from the same vantage point, a distance of roughly 200 kilometres.

The Southland Annual Plan section on Water management is also just over double that of air quality. The Iwi Management Plan takes a slightly different approach, addressing issues by areas rather than by policy issue. Despite this, a chapter on air quality is included. Given there is no separate water chapter, as water is addressed by location, this suggests iwi do hold air quality as important.

When comparing these two case studies, air quality is more salient in Southland, although it is not a major issue in either city. This supports the expectation because Southland has worse air quality than Palmerston North. Air quality in Palmerston North is perceived as being good enough to not warrant extra attention, and is therefore often ignored. In Southland, however, despite the page count varying only slightly from the policies of Palmerston North, the policies have air quality as an underlying in many other, non-specifically air quality chapters.

When comparing the attention Dutch policies give to air quality in general environmental management, the first observation is that the provinces and the municipalities both have their own air quality policies. This is not the case in New Zealand, where only the regional councils adopt specific air quality policies. The Netherlands therefore has a greater number of specific air quality policies than New Zealand, as New Zealand city councils do not issue air quality plans at all. When attempting to do a page count analysis similar to the one above, however, problems arose, not only because specific air quality policies are not considered in this analysis, but also several Dutch policies were unavailable. Neither municipality had the general environmental plans available on line, which suggests these plans hold little significance in the day-to-day air quality management. The two provinces, however, had general environmental policies available, the summary for which is given in Table 6.5.

Table 6.5: Dutch Air Quality chapters in provincial policies

Plan	Separate Air Chapter	Length of section	Length of Document	% of policy devoted to Air Quality
Noord-Brabant Plan	Subchapter	4 pages	64 pages	6.2%
Zuid-Holland Plan	Subchapter	9 pages	91 pages	9.9%

While this is not much of a comparison, due to missing policies, it does show that the Zuid-Holland provincial plan proportionately has a longer section on air quality. This also supports the expectation, as Zuid-Holland has worse air quality than Noord-Brabant due to the high industry and population in Rotterdam and The Hague. When comparing the Dutch cities with those in New Zealand, so comparing all three tables, Zuid-Holland remains the outlier, with significantly more pages of general environmental plans dedicated specifically to air quality. It is worth noting that the Noord-Brabant Plan and the Southland average are very similar. What perhaps provides a more conclusive indicator is the fact that both Dutch case studies had more specific air quality policies, not all of which, such as the Noord-Brabant Smog Regulations, were analysed. The expectation therefore holds, as the greater number of specific air quality policies suggests greater salience in an area with poorer air quality.

6.2 Theory 2: European Union Membership

The Netherlands is a member of the EU, and as one of the founding members, has had EU legislation direct its environmental management for decades. New Zealand, on the other hand, is not a member, nor will it ever become one. While EU influence is felt in New Zealand (for example, the Common Agriculture Policy has implications for New Zealand's meat and dairy exports), New Zealand ambient air quality management sees little EU influence.

Expectation 2

EU Member States will have air quality policies which mirror EU policies

Because EU Directives are legally binding, it is expected that all EU member states will have similar policies reflecting the Directive. While this does not mean that national governments can add to their own policies, the original, EU framework should be visible. At any rate, EU limits are expected to be the minimum standards. Once the two Dutch case studies are compared to the EU policies, New Zealand policies are compared to EU policies, in order to assess whether being a non-EU member has changed any aspects.

Observations

By analysing the Dutch policies specifying air pollution limits (not the EMA or other national polices), it becomes clear that the Netherlands, as an EU member, has the same pollution limits as the 2008 EU Directive. Differences only arise when the implementation time frames of these limits are analysed. Pollution limits are not the only requirements of air quality policies, and implementation timeframes also play a role. In 2009 the Netherlands successfully applied for an extension for their implementation deadlines. Instead of the Netherlands being subject to the EU deadlines, the PM_{10} deadline was extended until 2011 (instead of 2005) while NO_2 was also extended from 2010 until 2015. The grounds for which are based on the argument that the Netherlands cannot achieve the deadlines in all areas without causing economic harm (European Union Commission, 2009). The Netherlands is by no means the only country to ask for extensions, rather it is one of the 13 countries granted an extension for PM_{10} and 12 for NO_2. The Netherlands is, however, one of the few countries to be granted extensions for both pollutants, and has been granted extensions for a high number of areas compared to many other European countries (see figure 6.4 and 6.5).

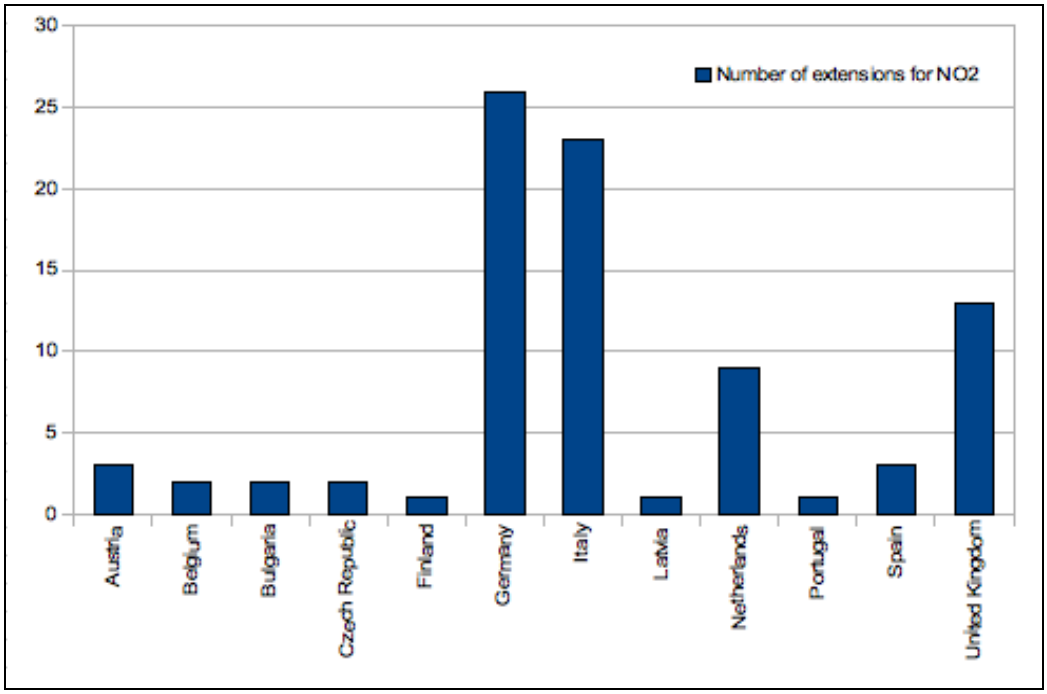

Figure 6.4: NO_2 Extensions of EU Member States (European Commission, 2011)

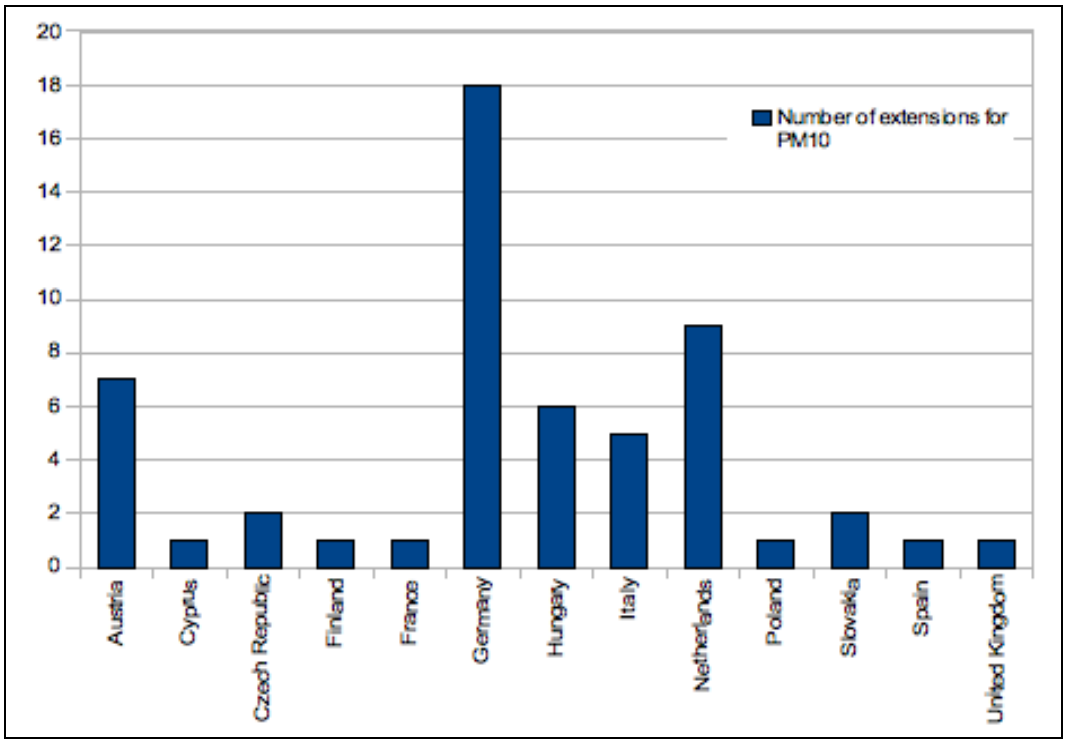

Figure 6.5: PM10 Extensions of EU Member States (European Commission, 2011)

These exemptions thus suggest the expectation is incorrect. It is also interesting to note that monitoring as part of the NSL, a condition for the extension, also experiences delays, both in annual report delivery, and data collection. This means that not only has the Netherlands experienced delays in the adoption of the EU Directive, but also in the adoption of the country-specific conditions.

While the final goal mirrors the EU directive, in practice (in terms of implementation) the Dutch policies do not mirror those of the EU. Whether the limits will be reached, even with the extensions, is uncertain, with optimism varying between areas. Policies such as the Zuid-Holland Action Plan 2012 claim limits for PM_{10} have already been achieved, yet the 2011 NSL report claims Zuid-Holland was one of five areas in the Netherlands to exceed PM_{10} limits in 2011 (RIVM, 2012:23). This difference is somewhat surprising, given most of the monitoring is done nationally under the NSL, with few air quality stations being owned by the local governments (according to an interviewee in Delft). Whether this is due to exceptional circumstances or a measurement anomaly is unclear, but it does suggest that even in the policy design process, EU conditions (the NSL) do not correspond with local government policies. The most decisive way to conclusively argue for this expectation is therefore to examine implementation over time, investigating whether Dutch policies mirror EU policies "in the end", whenever that may be. Such a study into the implementation of the policies is however beyond the scope of this research, as the focus here is on policy design alone. All that can be inferred from this study is that the Dutch ultimate goals mirror the EU; however, the policies themselves do not exactly mirror those of the EU, meaning this expectation holds only for final goals.

When comparing New Zealand's policies with those of the EU, Table 6.6 begins by comparing the pollution limits in New Zealand with those internationally. Apart from the fact New Zealand policies do not address $PM_{2.5}$ despite the international organisations providing limits, the initial analysis shows that not only do the two air quality plans from Southland and Manawatu-Wanganui not correspond with the New Zealand National Environmental Standards, but they are far more lenient that the EU and World Health Organisation Standards. The fact they vary so significantly from the EU standards, while the Dutch standards do not vary suggests the expectation holds. However, both the Southland and Manawatu-Wanganui Air Quality Plans are outdated, and so this could simply be a case of outdated limits. As more air quality testing is conducted and monitoring procedures are advanced, standards have become stricter, especially when comparing New Zealand's air quality policies over time.

Table 6.6: Comparison of Pollution Limits

	WHO standards (source: NSL)	**EU Directive**	**NZ MfE Guidelines 2002**	**NZ National Environmental Standards**	**Southland Air Quality Plan**	**Manawatu-Wanganui Regional Air Quality Plan**
PM_{10}	50 $\mu g/m^3$ per day	50 $\mu g/m^3$ per day	50 $\mu g/m^3$ per day	50 $\mu g/m^3$ per day	120 $\mu g/m^3$ per day	120 $\mu g/m^3$ per day
	20 $\mu g/m^3$ per year	40 $\mu g/m^3$ per year	20 $\mu g/m^3$ per year		40 $\mu g/m^3$ per 3 months	40 $\mu g/m^3$ per year
$PM_{2.5}$	10 $\mu g/m^3$ per year	25 $\mu g/m^3$ per year				
NO_2	200 $\mu g/m^3$ per hour	200 $\mu g/m^3$ in one hour	200 $\mu g/m^3$ in one hour	200 $\mu g/m^3$ per hour	300 $\mu g/m^3$ per hour	300 $\mu g/m^3$ per hour
	40 $\mu g/m^3$ per year	40 $\mu g/m^3$ in one year	100 $\mu g/m^3$ in 24 hours		100 $\mu g/m^3$ per 24 hours	100 $\mu g/m^3$ per 24 hours

It is also worth noting that incremental change is more effective than immediately setting strict standards that are perceived to be impossible (Edvardsson, 2007). This would suggest that environmental standards are becoming stricter over time, which may explain the regional councils' plans have outdated, low standards. The current proposals for the

replacement of each merely state the limits as the same of the National Environmental Standards (Proposed One Plan; Environment Southland, 2013). Taking the New Zealand policies then as those stipulated by the National Environmental Standards, it becomes clear that New Zealand has almost the same limits as the EU.

Aside from the pollution limits, when comparing New Zealand and EU policies, the biggest difference is the amount of permitted exceedances of the limits before penalties are imposed. Table 6.7 offers a summary between EU and New Zealand standards, and it is clear that New Zealand has much less tolerance for limit exceedances. By law, exceedances in the Netherlands need to be publicly reported, but as an interviewee from Dutch the local governments admits (2013), there can be some exceedances which are overlooked, especially due to a lack of resources. The enforcement of environmental policy in New Zealand has also been criticised (see the 2011 film "River Dog" by James Muir), yet in both instances, this enforcement flaw is mainly a product of policy implementation. Whether or not penalties are actually imposed is irrelevant, as analysis is focused only on policy design. What this table does shows, however, is that by being part of the EU the Netherlands is able to have more relaxed standards than the non-EU counterpart New Zealand. There is no way of knowing if the Netherlands would have had stricter standards if it were not part of the EU.

Table 6.7: Permitted Exceedances in the EU and New Zealand

	EU Air Quality Directive	**NZ National Environmental Standards**
PM_{10}	Daily limit permitted to be exceeded 35 times a year	Daily limit permitted to be exceeded 1 time per year
NO_2	Hourly limit permitted to be exceeded 18 times a year	Hourly limit to permitted to be exceeded 9 times a year
SO_2	Hourly limit permitted to be exceeded 24 times a year	Lower hourly limit permitted to be exceeded 9 times per year Higher hourly limit permitted to be exceeded never

6.3 Theory 3: New Public Management Reforms

New Zealand is an oft-used example when studying NPM, as its extensive reforms offer maximum insights (Lodge & Gill, 2011). During the 1970s and 1980s New Zealand experienced an economic crisis, with both high fiscal deficit and levels of overseas borrowing. Not only is a poor economy likely to influence NPM reforms (Hood 1995), but in the case of New Zealand, the poor economy and high public spending were partly blamed on poor government practices, leading to public service inefficiencies (Whitcombe, 2008). With the establishment of the Fourth Labour Government in 1984, extensive government reforms were initiated. Not only were government tasks decentralised, but the number of public service employees also decreased during the 1980s and 1990s when NPM was most popular. As per NPM doctrines, a large public service was seen as inefficient, so was reduced by over 50% (State Services Commission, 2010). The reforms also reduced the number of local authorities from around 700 to 87 with the hope of achieving clear linear accountability, transparency, and greater operational efficiency (Pallot 2001). NPM is, however, not without its critics who claim it is an outdated concept (c.f. Dunleavy et. al., 2006), and recently there have been reforms slowly reversing some of the effects. The amalgamation of two existing ministries and two departments to form the Ministry of Business, Innovation, and Employment in 2012, as well as former Local Government minister Nick Smith's call for less local government autonomy (Better Local Government, 2012) both seek to reverse

policies from the NPM period. The end of NPM was, however, not as abrupt as it was in other countries (Henricks, 1999), and reforms saw only gradual change. The 1996 Local Government Amendment Act still advocated economic theory consistent with NPM, such as long term planning (Lapsley & Pallot, 2000), but included the opportunity for more community involvement thus showing a mixture of NPM and post-NPM features.

The Netherlands also embraced NPM but did so later than most Anglo-Saxon countries (Hendriks, 1999), and reform was less dramatic. The Netherlands also experienced severe fiscal crisis and economic downturn in the 1980s (OECD, 2011*b*), which, when coupled with the blurring of policy preparation and implementation seen in the 1970s, made the promise of more effective and efficient government an attractive option (Hendriks & Topps, 2003:304). The 1980s saw an emphasis on decentralisation, deregulation, privatisation, personnel reduction, and re-organisation of central government (OECD, 2011*b*). Municipalities were encouraged to use business-like tools including output budgeting, responsibility accounting, variance analysis, and cost allocation (Van Helden & Jansen, 2003). In many larger municipalities change was more apparent, with an observable shift in focus from inputs to outputs, as well as the replacement of centralised organisational structures within the municipality itself (van Helden & Janse, 2003).

The Dutch, however, did not take such extreme measures, with the number of local authorities remaining quite large. While the number of local authorities has continued to shrink, for example the impending amalgamation of Utrecht and Noord-Holland into a so-called "super province", in recent years there has been a noticeable shift away from NPM (OECD, 2011*b*). This has seen focus shift from efficiency back to more a more traditional, citizen-based approach (Hendricks & Tops, 2003).

Expectation 3.1

In countries with greater NPM influences, air quality policies will be less specific.

Central themes of New Public Management include decentralisation of power, both to increase task specialisation, and reduce corruption, so it is expected that environmental management authorities in New Zealand, a country with high adoption rates of New Public Management, have more autonomy than their Dutch counterpart. While local government autonomy is an often-discussed debate, with various measures and indicators used (Wolman et al., 2008), here local government autonomy is measured using political and fiscal autonomy. Fiscal autonomy is most easily measured by examining the source of local government funding, while political autonomy is indicated by institutional arrangements, such as how the council is appointed.

Autonomy of such institutions could affect the environmental management, because if local governments receive money from central government, central government has sway over the local government. If local governments do not comply with central government objectives, central government has the opportunity to withhold funding. As an interviewee in Noord-Brabant pointed out (2013), central government and local government objectives are often different, with central government focusing on reaching EU standards, while the local authorities want clean air for their inhabitants. While New Zealand is regarded as having one of the most autonomous local governments in the world (OECD, 2011*a*), the autonomy of Dutch local government institutions is debated. Scholars such as Hoetjes (2009) claim municipal and provincial autonomy was and is

very limited, especially in some policy areas, while the municipalities themselves proudly proclaim their autonomy (VROM, 2006). The OECD, in its Value for Money report (2011*b*) admits that while the Netherlands is not a centralised country, there remains room for decentralisation along the road of a more logical and coherent division of tasks.

Autonomy

New Zealand local governments are largely self-funded, with local governments receiving just over 10% of their income from central government (LGNZ, 2012). Of this, most is earmarked for specific policy areas like road construction and maintenance at the territorial authority level (Pallot, 2001). The remaining 90% of local government income is levied by the council themselves through property taxes (rates), user charges and regulatory fees, and the sales of goods and services (see figure 6.6). This gives local governments a large degree of autonomy from central government, which was challenged in 2012 when the then Minister of Local Government Nick Smith released *Better Local Government* (2012). Citing large council debt (accumulated during the recession), Smith called for local government revenue to be limited, thus restricting functions with the ultimate end of reducing local government spending.

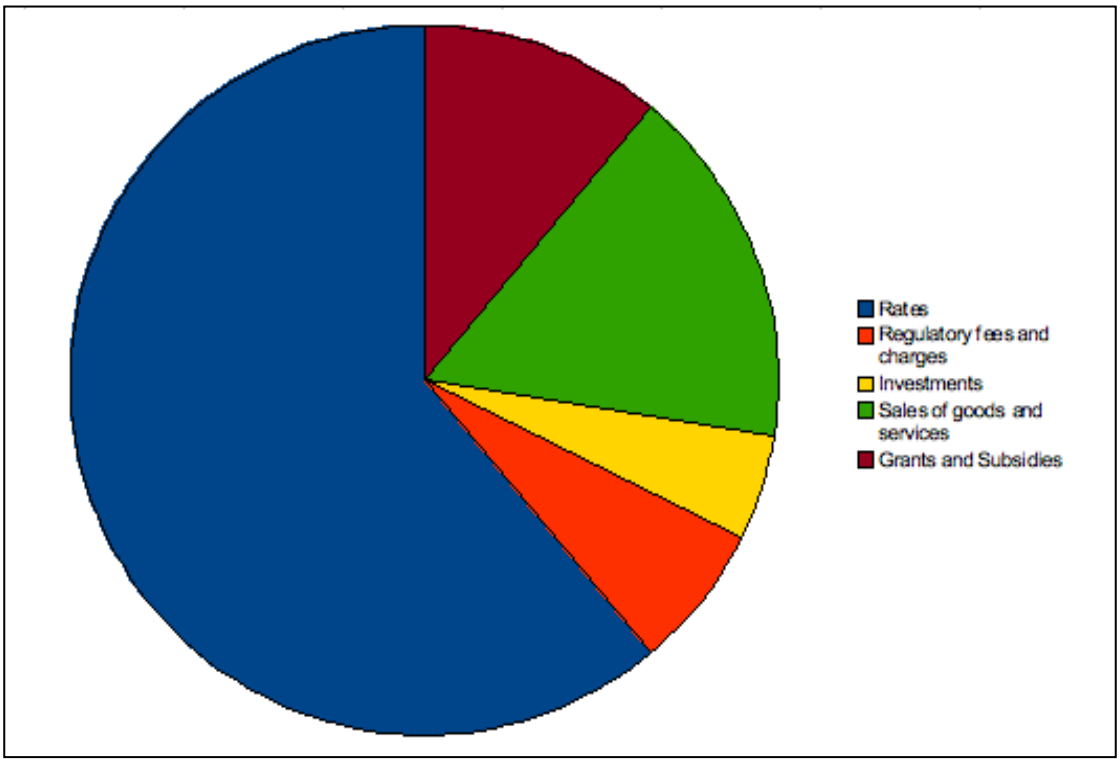

Figure 6.6: Local Government Revenues: New Zealand (Local Government New Zealand, 2012)

Dutch municipalities, on the other hand receive 60% of their income from central government grants and subsidies (Figee et. al., 2008), which is proportionately less than the grants from central government to the provincial government (see figure 6.7). Government grants are either through 'Earmarked Funds' for specific purposes, and 'General Grants' which local government institutions can allocate themselves. These grants not only cover general local government costs, but also cover the costs of national policy tasks. Zuid-Holland, for example, receives 127 million Euros for the implementation of the NSL (Provincie Zuid-Holland, 2012). Under the Municipal Law

and Provincial Law, sub-national taxation powers were dismantled, and it was not until the late 20th century that limited taxation power was returned to municipalities (Hoetjes, 2009). The national government has also been given the responsibility of allocating European Union funds, instead of local authorities dealing directly with the European Commission (de Rooij, 2002). Dutch local government therefore enjoy less autonomy than New Zealand local government institutions, and there are arguments that current municipality policy choices are influenced by fears of future budget deficits (van Becket, 2006). Consequently, there have been several attempts to reduce government grants, for example the Brikman Commission in 2005, but with little lasting success (OECD*b*, 2011).

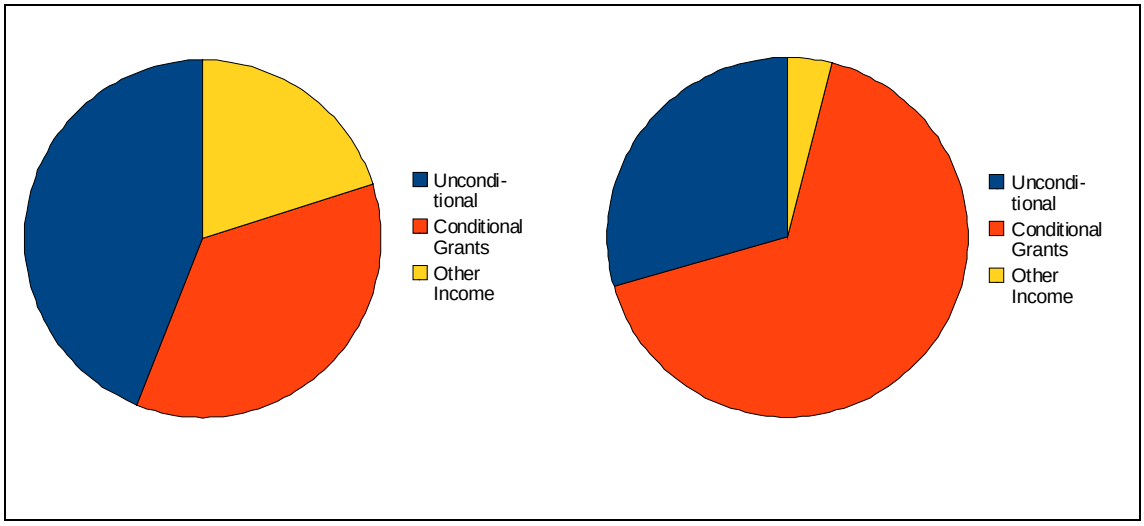

Figure 6.7: Municipal and Provincial Income in 2007 (Allers et al., 2008)

The biggest difference between New Zealand and Dutch local government politically is the appointment of the heads of local government. Dutch municipal and provincial government are split into the council and the executive. In both the provincial and municipal government, the executive is chaired by a representative appointed by the central government. Not only is this appointee much more likely to share central government's objectives, but local governments have no way of removing them if objectives vary. In New Zealand, however, mayors, the head of the city councils, are directly elected, while in the regional councils, chairmen are elected from within the popularly elected councillors. Dutch councils, however, are gaining more autonomy in practice by gaining more say in the appointment of the mayor (Figee et al., 2008). This suggests that, like Dutch financial autonomy, there is a desire to be more like the New Zealand model.

Observations

Because of the difference in autonomy, it is expected that the Netherlands will have more specific plans. Funding sources differ significantly when comparing Dutch and New Zealand local governments, and have an impact on the environmental management approach. When proposing and implementing air quality activities, Dutch policies include a lot more detail as to the source of the funds. Many of these funds, such as EU Structural funds, require detailed plans before money is awarded, thus leading to more specific and therefore measurable activity plans. Coupled with the EMA requirement of annual reports, the Dutch have a wide range of progress reports readily available online. Interviewees (2013) also indicated that there was very little room for discretion between the provinces and central government, and the municipalities and the provinces. This

plan specificity is not as apparent in New Zealand. Detailed budgets, for example, are only found in the Long Term Plans of both Southland and Manawatu-Wanganui, which are not established under the RMA. While regional councils do, of course, have budgets, the lack of specific planning can reflect local government autonomy, as it indicates that the regional councils are less accountable to central government. Local governments do not have to convince central government to grant them funds by proposing detailed plans, nor do they have to account to central government how they spent the money. Because the regional councils are spending their own money, how they like, there is also more flexibility in the plans. This flexibility and lack of clear budget, however, is not always efficient. Southland, for example, spent less than half the money set aside to assist with fitting cleaner heating (Southland Annual Plan, 2011-2012).

Plan specificity of activities and limits also differs between New Zealand and Dutch policies. The New Zealand National Air Quality Standards, while offering general suggestions, do not detail how the limits are to be implemented. There is also little suggestion for different levels of government. Dutch policies, however, are quick to describe the activities they plan on implementing, as well as activities other levels of government should be performing, and offering suggestions as to how they can improve air quality.

While plan specificity may be a manifestation of another underlying policy factor, for example policy cultures, plan specificity can be used as an example of how local government autonomy can influence environmental management. The observation therefore corresponds with the expectation that countries with more NPM influences will have less specific plans.

Expectation 3.2

Countries with greater NPM influence are expected to have less interaction between authorities responsible for air quality management than countries that do not.

Because New Zealand exhibits more NPM characteristics, it is expected that there is less interaction between the various units responsible for air quality management. This not only means less consultation and coordination between the levels of government, but also between municipalities and regional councils. Consultation and cooperation require large amounts of resources. Resources are spent on transportation, communication technology, venue costs, as well as non-financial costs such as the time of attendees and the time spend discussing. Under the doctrines of NPM, consultation and cooperation should therefore be employed only when necessary in order to improve efficiency.

Observations

When analysing the policies, Dutch municipal policies invariably include a section on how they are going to coordinate with their neighbours and the Dutch municipalities consult extensively with each other.

As an interviewee (2013) pointed out, direct consultation with central government is near impossible, given the large number of municipalities. Municipalities are, however, represented within the provinces and within coordinating groups such as the Omgevingsdienst Haaglanden (ODH) in Zuid-Holland which provides a forum for nine municipalities (including Delft) and the province. The ODH not only encourages consultation, but also has the capacity to act as the official implementer and enforcer of

many municipal policies. While Local Government New Zealand, the peak body representing all the New Zealand local governments provides a focus of consultation, its capacity is restricted to supplying recommendations, and thus has no formal power or authority.

Dutch municipal policies also invariably include a section or chapter on how they are going to coordinate with their neighbours. This is usually focused on the flow of information between authorities (c.f. Noord-Brabant's Smog Regulations 2010). Community involvement is highly valued in the Netherlands, with the traditional 'Three C's' of Dutch governance standing for 'consensus, consultation, and compromise' (Hendriks & Tops, 2003), and strong emphasis is made on consultation both between different municipalities, and also between levels of government (c.f. EMA 1993).

Cooperation between regions is conspicuously absent in New Zealand policies. The Southland Policy Statement, for example, only mentions its neighbouring regions by way of introduction “Cross boundary issues with regard to air quality in the Southland Region exist... between the Southland Region and its neighbouring Otago and West Coast Regions...” (p. 67), yet does not elaborate how the cross-border pollution is to be mitigated, merely the effect it has on Southland. Even in the Manawatu-Wanganui One Plan (part II), consultation with neighbouring regions is absent. This is more surprising than the Southland case, as the Manawatu-Wanganui region has three territories which lie party in 2 different regions. Even within the territory there is no consultation, and although the territories are albeit rather small, this demonstrates a distinct lack of consultation between units. Although cross-regional air pollution is not as big a problem in New Zealand as in the Netherlands owing to size and population density, the lack of cross-regional cooperation suggests that regions are so autonomous they will not even work together. An interviewee in the Manawatu region (2013) cited this almost complete lack of central government involvement as a hindrance to successful environmental management, an option also shared by the OECD in its 2007 Environmental Performance Review, as there is no coordinating force, despite the RMA's attempts to provide an integrated approach.

In practice, however, there is more cooperation between the New Zealand authorities. The Manawatu-Wanganui Air Plan lacks cooperation measures with other regions, but an interviewee who worked on the Plan design (2013) recalls cooperation with the neighbouring Hawke's Bay Regional Council. In order to improve efficiency, the two regional councils hoped to design one plan that could be translated into both regions with only minimal adjustment. While this approach was ultimately unsuccessful, it is an example of cooperation between regional councils for the sake of efficiency.

Expectation 3.3

In countries with greater NPM influence, it is expected air quality management authorities have more capacity to carry out their tasks

In countries with more NPM influence, local governments play a larger role in environmental management. What is expected, though, is that these institutions have the capacity to bear the responsibility of environmental management. This includes the funding, the technical skills, the staff, the legal competencies, as well as political power and the will to adopt change.

The policies themselves, of course, state that the required resources are available for their own successful implementation, in both the Netherlands and New Zealand. The RMA and the EMA especially detail carefully the competencies, the responsibilities, and the funding options for local governments. In practice, however, it is expected that local governments have the required resources. The bulk of the observations, therefore, are drawn on information provided by interviewees.

Official Capacities

In New Zealand, the 1988 State Sector Act decentralised central government responsibilities to agencies and Crown Entities, strengthening the capacities of actors outside central government, reducing central government responsibilities. In a similar vein, the 1989 Local Government Act (LGA) revision also delegated public services to local governments in the hope of cutting central government costs and giving chief executives authority to control the tenure, promotion, and pay of their staff, like private business managers (Moynihan, 2006). The LGA 2002 also strengthened the power of local authorities with a general empowering clause. By giving local governments more power, it puts them in a better position to hear and react to citizens' needs.

Regional councils and unitary authorities have primary responsibility for managing air quality, and have several tools at their disposal. As well as establishing regional plans and granting resource consents, councils can also carry out education campaigns and provide incentives for people to use cleaner forms of home heating (MfE, 2011). Despite high local government autonomy, the Minister for the Environment is able to intervene in the case of serious breaches or concerns about the actions or inaction of a council (MfE, 2011). Under the RMA section 27 regional councils also have to provide implementation information to the Minister of the Environment on demand within a 20 working day timeframe.

The Dutch central government is also currently devolving more power to local government (Government of the Netherlands, n.d), with the ultimate aim of reducing the size of central government. Municipalities and provinces are becoming amalgamated in order to increase administrative and organisational strength (Figee et al., 2008). Currently, though, the functions of Dutch local government include establishing local by-laws, tax orders, and building codes, as well as dealing with licensing. While municipalities are constrained by provincial, national, and EU policy, they do have the ability to attach specific conditions to licences and exemptions, and control grants.

Observations

Dutch air quality policies place a heavy emphasis on traffic regulation and reduction as the principal tools for improving air quality, as was discussed in theory one. While, as expectation 1.2 concluded, vehicle traffic is addressed because it is the prime source of PM_{10} (Noord-Brabant Province, 2011), what is absent in the policies are any other measures. This suggests the municipalities only have this one tool at their disposal. Municipal activities were almost exclusively traffic based; for example banning heavy emissions in city centres (implemented in Delft), encouraging public transport, alternative modes of transport, and car sharing. While the effectiveness of such measures are not to be underestimated, such limitations and narrow policy scope are not pronounced in New Zealand legislation.

New Zealand policies are generally less specific than their Dutch counterparts, and have less prominent themes. Regional councils place emphasis instead of resource consent, and the conditions which need to be met for applications to be successful. In terms of their capacity as primary environmental authorities, however, New Zealand regional councils have a much wider task span than they do on other policy issues (Norton, 1994). Although researchers have often pointed out the short comings of the local government structures (c.f. McNeill, 2008), citing a lack of funding, technical skills, and central government coherence, regional councils still have more power than their Dutch counterparts. One interviewee (2013) used the example of the National Policy Standards. Not only did regional governments oppose their instatements and delay the design process, but once the Air Quality Standards were in place, regional councils still refused to take measures to comply with them, leading to the central government backing down and making more lenient standards.

Funding was the main constraint mentioned by interviewees, both in New Zealand and the Netherlands. In the case of the Manawatu-Wanganui region (interviewee, 2013), the air quality department had to fight hard for money to set up and maintain an air quality monitoring programme, with both the rest of the regional council and the central government claiming air quality was less significant than other policy issues, and thus unworthy of large amounts of funding. Funding not only influences the policy tools available to local governments, but also the ability to carry out such tasks. In the case of Delft, the lack of funding impacted the rate of enforcement, with too few control officers available to issue infringement notices to trucks in the milieuzones not meeting regulation (interviewee, 2013).

Dutch municipalities can also receive funding from the EU, but it is unclear whether these EU resources are sufficient. The process of applying for EU Structural Funds is, however, costly. Not only must both the local body and their proposed plan be eligible for EU funds, but they must cover most of the costs of the project themselves before applying for assistance. This condition is the check by the EU to ensure money is spent on genuine projects, rather than bogus claims for “free” money. The actual application process is also expensive, with many municipalities not having the resources to submit the required reports documenting the use of the money, often making the official energy required more than the amount of money being sought (de Rooij, 2002). Both municipal and provincial governments across the Netherlands lament the reduction in funding, and this was mentioned in all interviews. With the current economic recession, it is perhaps understandable that money is less forthcoming, but it is uncertain whether the EU would ever be able to provide sufficient resources, given the EU itself has a relatively small budget (Hix & Hoyland, 2011). As an interviewee pointed out (2013), with more resources more can be achieved, so there are never 'enough' resources. What constitutes as 'sufficient' therefore is enough resources to effectively manage air quality. A more decisive definition of 'sufficient' would perhaps make little difference to the outcome of this study.

Technical skills are also a constraint on the capacity of local governments. As an interviewee in the Manawatu-Southland region (2013) pointed out, there are very few air quality specialists in New Zealand, and many are working in the two high-risk pollution areas of Christchurch and Auckland. He went on to explain how this impacted the design process of the Manawatu-Wanganui Air Quality Plan, as not only were the expertise not available within the regional council, but when the contract was tendered out, none of the

responses had the appropriate mix of air quality and public management skills. While this was resolved by the interviewee establishing his own team, the process was difficult. A similar issues was also present in the Netherlands, and although neither of the Dutch cities studied are small in size, Dutch municipal governments have between 9 and 45 members (Anderweg & Irwin, 2009), and while this does not include public servants, budgeting is also done on size. It is therefore not possible to have environmental, and especially air quality, experts in all small municipalities.

While the provincial government has a limited impact on policy-making in general, environmental protection and transport infrastructure is one of the few sectors it does have competencies (Anderweg & Irwin, 2009). Acting as an intermediary between local and national authorities, the provincial government deals with other governments rather than with individual citizens. Despite their superiority over municipal governments, provincial governments only have one tenth of the budget than that of the municipalities, and consequently have a much smaller staff (Figee et al., 2008). This means that although provinces may have more resources to spend on environmental management, since it is one of the few competencies, the provinces have less initial resources.

An interviewee at Dutch provincial government (2013) referred to the current rearrangement of the Dutch provinces. He pointed out that in 5-10 years it is unlikely that any provinces would exist, a fact supporting the argument that provinces as they are ineffective. He was quick to point out, however, that in the case of environment, and especially air quality management, the abolition of the provinces would have negative effects.

The interviews therefore suggest that while local governments officially have the capacity to successfully and efficiently management air quality, in practice there is a lack of both technical skills and funding. The expectation therefore only partly holds. In New Zealand the conclusion is similar, with the expectation only holding in some cases, as evident by the claims by academics and practitioners that local governments do not have access to the necessary capacities.

Chapter Seven: Discussion

While there are similarities between the four case studies, there are also differences. This section discusses the expectations and observations, and compares the variance both between the case studies, and between observations and expectations. As a starting point, table 7.1 gives a general summary of the expectations and the observations of each case study, stating whether the expectations matched (+), whether it did not (-), or whether the expectation was partly true or unspecified (+/-). The rest of this chapter is divided into the three theories, which are discussed in order to understand why they correspond with expectations or not.

Table 7.1: Summary of Expectation and Observation Congruence

Theory	Expectation	Delft	Eindhoven	Invercargill	Palmerston North
Physical and Geographical	1.1: Countries with close neighbours will put greater emphasis on international cooperation than isolated countries	+/-	+	+	+
	1.2: Climate and resource availability affects the source of air pollution, resulting in the utilisation of different policy tools	+	+	-	+/-
	1.3: Worse air quality results in the issue having more salience	+/-	+	-	+
EU Membership	2: Members' national and sub-national policies will mirror EU directives	-	-	n/a	n/a
New Public Management	3.1: Countries with NPM influence will have less specific plans.	+	+	+	+
	3.2: Countries with NPM will have less interaction between air quality management authorities	+	+	+	+
	3.3: Countries with NPM will have air quality management authorities with the capacity to carry out the task of air quality management	+/-	+/-	+/-	+/-

7.1 Theory One: Physical and Geographical Features

Starting with the first theory of physical and geographical characteristics, the first expectation showed convincing positive relationships to the respective observations. Areas with close international neighbours did show more international consultation. Even the discrepancy between Eindhoven and Delft builds the case for the expectation, as Eindhoven is closer to international borders than Delft. There was no significant mention of international cooperation, or even acknowledgement of international actors, in any of the New Zealand policies, while many of the Dutch plans at least identified them as actors in Dutch air quality management, even if most did not formally elaborate on what steps are to be taken to either coordinate or mitigate the effects. International cooperation is much easier for Dutch local governments, as not only does it take little time to travel across the border (compared to the three hour flight needed to get from New Zealand to Australia), but time zones are the same. This means that international conferences using technology do not requiring one party to work outside normal working hours. Correspondence is also easier, as emails and phone calls can be answered immediately, again as office hours are similar. Language differences may be used to explain why

Eindhoven has more contact with Belgium than it does with Germany, but the reason is more likely because the Noord-Brabant province does not border Germany. This then suggests that the provincial boundaries shape international coordination.

The second expectation, that countries with different sources of pollution use different policy tools, seems to only hold in some cases. Southland's regional policies, despite evidence claiming solid fuel is the primary contributor to air pollution, do not make any specific provisions addressing this issue. It could be argued that since the policy is old, it is outdated. It should be noted, however, that solid fuel burning in private homes is not a new phenomenon, and is unlikely to have changed significantly since the 1990s. Even if there was no conclusive research at the time of policy design in the early 1990s, it is expected that home heating would at least warrant a special mention. As an interviewee in Southland pointed out (2013), though, it is difficult to address the issue of home heating. By simply forbidding people to burn solid fuel, many families, especially those unable to afford an alternative, would experience detrimental effects on their health and well-being. The Netherlands' initial situation differs from the New Zealand not only because of the internal sources of pollution, but the fact that the municipalities recognise that almost half of the pollution originates in other countries (Delft Air Quality Action Plan, 2005-2020). As an interviewee pointed out (2013), the municipalities are powerless to address the problem at the source of emission. When ignoring this issue and focusing on projects which can be achieved, the Dutch observations support the expectation – emissions from traffic are a major issue, and most policies provide appropriate measure to address this issue. What is not clear, however, is whether the focus on traffic (such as milieuzones and Delft's initiative to encourage bike couriers) is a response to an acknowledgment that traffic is the major emissions' contributor, or whether it is merely the only tool available to the municipalities, thus giving them no option. Noord-Brabant identifies agriculture as a source of air pollution, yet has no measures in place to mitigate it. These measures are left to other policy sectors, in the hope that regulation of agriculture will also in turn lead to improved air quality.

The expectation that areas with more air pollution will place more importance on air quality management in their plans also holds, to some extent. In the Manawatu-Wanganui region, for example, air quality plays little role in many environmental policies, and when it is mentioned (like the Long Term Plan), it is often just a seemingly token effort to include air quality. The Dutch policies, on the other hand, mention air quality regularly, and put effort into identifying various ways to mitigate it, offering recommendations to all other levels of government, including the EU. In practice, however, air quality is less important that water management and economy. Not only do staff feel they are denied sufficient resources, but air quality is often given a backseat during consultation where air quality is not the sole purpose for the meeting. The amount of salience given to air quality may not, however, be entirely dependent on air quality. Areas with bad air quality will likely have more health experts and people with respiratory disorders (as pointed out by an interviewee), and their actions, as voters, may drive up air quality importance within the local government.

7.2 Theory 2: European Union Membership

It was expected that EU would be a significant factor influencing the air quality management of its members. Not only is EU legislation binding and supersedes national law, but the EU plays a large role in many other policy sectors, from economic and financial to immigration and employment. When comparing the expectation that Dutch

policies would mirror EU policies, however, the observations did not correspond. While the Dutch have adopted the required pollution limits, there are signs that the Netherlands is attempting to use the EU legislation to achieve their own objectives. This is seen by the initial inaction by the central government, and the application for implementation deadlines. When comparing the Netherlands as an EU member with New Zealand, a non-EU member, the pollution limits are identical. This suggests that the Netherlands may have instigated similar measures, regardless of whether it was part of the EU. Even funding, as discussed in expectation 3.3 suggests the EU contributes relatively little to local governments, suggesting that financially local governments in EU and non-EU countries would have similar opportunities.

By comparing the difference between New Zealand as a non-EU member and EU policies, it was possible to get an idea of how the Netherlands approach to environmental policy might alter if the Netherlands was not an EU member. New Zealand has fewer allowed exceedances, thus indicating more ambitious goals than the international norms. The reasons for reducing exceedances rather than pollution limits could include a lack of resources available to conduct individual analysis on feasible limits. Despite health experts advocating for pollution limits to be as low as possible, it is impossible to reach zero pollution. This idea is carried further to the multi-speed implementation approach adopted by both the Netherlands (with its delayed implementation of the EU Directives) and New Zealand (with the three different implementation deadlines for Air Quality Standards). In a broader sense, the mere fact both countries have airsheds (or "knelpunten") shows both countries recognise that areas with different initial air quality are to be treated differently. The similarities between New Zealand and EU policies suggest Dutch environmental management would likely not change significantly, however, such counterfactuals offer no concrete evidence. What can be inferred, though, is that both the EU directive and the New Zealand Ministry for the Environment Guidelines state World Health Organisation Standards as the source of the limits. This suggests that the Netherlands too would have adopted these limits had it not been part of the EU. This indicates that EU membership has very little influence over pollution limits.

The EU's influence over Dutch national policy should not be underestimated, and measures, such as the NSL, are being taken to reach the limits. It is also possible that EU membership influences air quality management indirectly. It could be argued that EU membership provides a forum for international consultation, or even informal cooperation, as representatives with similar expertise from different countries are brought together in Brussels. It is also unclear from this study how much involvement the Netherlands had in the design of the Air Quality Directive, and how much the Netherlands was able to influence the outcome to its own ends. More research is therefore needed in order to examine the exact influence of the EU on Dutch air quality, although from this analysis, it is clear that it has limited influence over Dutch air quality management.

7.3 Theory 3: New Public Management

Despite the recent decline in New Public Management, NPM was apparent in many aspects of environmental management. This could partly be due to the fact that many of the policies, especially all the Regional Policy Statements and Air Quality Plans from New Zealand were established in the 1990s. This suggests that during the planning process in the early 1990s NPM was still popular. Another reason is that New Zealand local governments have not significantly changed since the New Public Management

reforms, leading to highly autonomous institutions which (theoretically) have the ability and funding to carry out air quality management.

The expectation that local government autonomy will also extend to air quality management in countries with New Public Management was supported by the observations. Local government funding, used as an indicator for autonomy, clearly established that New Zealand local governments were more autonomous than their Dutch counterparts. This translated into less specific air quality management. New Zealand local governments do not provide specific activities or budgets within their policies, and while there are annual reports, the degree to which the plans are monitored is significantly less than the Dutch. What is unsure, however, is whether this cause and effect cannot be explained by other factors. The vagueness of the plans may be because of the validity length of policies, which under the RMA must be revised every ten years. This is significantly longer than the Dutch policies, which are to be revised every four years. It also could be influenced by a lack of technical expertise needed to make more specific plans, or a policy culture that existed before NPM, which encouraged local government and implementation flexibility. Local government autonomy, however, is a significant factor in New Zealand's public policy approach, and the expectation does fit the observation. It is therefore concluded that local government autonomy under NPM affects air quality management, using the example of plan specificity.

The second expectation, limited consultation in NPM countries, appears to be supported by the observations. The Netherlands does have more formal consultation measures in place than New Zealand. What is not taken into account is the implementation of such measures, and the informal consultation. It could be that further research reveals that New Zealand does indeed carry out extensive consultation. However, as this research focuses primarily on the formal policy plan, this is irrelevant. Limited consultation, however, may not just be a consequence of NPM, but rather of history. Dutch local government have a long tradition of consultation. Not only do close urban centres make it very easy to travel between municipalities, thus making consultation much easier, but it increases the incidence of cross-border pollution, thus increasing the need for cooperation. New Zealand, on the other hand, does not have these issues, nor a long tradition of local government consultation. Traveling within New Zealand was difficult in the 1800s because of thick vegetation, mountainous landscapes, and even today, most travel between islands is done by plane. For this reason, New Public Management cannot be conclusively identified as the factor behind the differing levels of consultation, and therefore the differing environmental policy approaches.

Dutch and the New Zealand local governments also have different capacities when it comes to influencing higher government levels. Table 7.2 shows a summary of the influence each level of government has over environmental management. The more “+”, the greater the amount of influence. In practice, however, table 7.3 shows a slightly different story than the hierarchical influence shown formally, which is drawn from the idea that each subsequent level of government must correspond to the level above. In practice, the New Zealand regional councils are given more power, as they are able to manipulate central government. This is seen in the adoption of the National Policy Statements and National Environmental Standards (not just for air quality), and the recent delays in implementation. These tables therefore bring together the main difference in air quality management in the two countries – the difference in government levels. Although this was not a theory and care was subsequently taken to try and eliminate the

difference, the interaction between levels of government is a difference that could be examined in future research.

Table 7.2: Formal: influences on environmental approach

New Zealand	Overall	Overall	Netherlands
International Treaties	++++	++++	EU
National Government	+++	+++	National Government
Regional Councils	++	++	Provincial Government
City Councils	-	+	Municipal Government

Table 7.3: Informal: influences on environmental approach

New Zealand	Overall	Overall	Netherlands
International Treaties	+	+++++	EU
National Government	++	++	National Government
Regional Councils	+++	-	Provincial Government
City Councils	-	+	Municipal Government

The second table shows a difference in the levels of government most likely to influence environmental policy. While the city councils in New Zealand have only minimal environmental responsibilities, in the second table regional councils have much more clout, because of their ability to shape national standards. International obligations are also given less importance, primarily because there are few international treaties addressing ambient air quality, and also because, as seen recently in the Kyoto example, New Zealand often does not feel pressured into complying. The Dutch provincial and municipal governments also scored lowly, since they have very little capacity to implement their own policy, or change EU decisions. The municipalities do have more power to some extent, as they can easily adopt traffic policies and small scale community issues.

Chapter Eight: Conclusion

When answering the research question "why do countries adopt different policy approaches at local government level to solve common public policy problems" three theories were used to explain why different policy approaches were used to solve air quality issues. These theories were: physical and geographical differences; European Union membership; and New Public Management reforms. By establishing expectations for each theory, the observations of four case studies, in the Netherlands and New Zealand, were compared. Of the theories, the weakest proved to be EU membership (theory 2). While EU legislation plays a large role in shaping members' approaches to environmental management, there is a high incidence of members not complying, thus diminishing the chance that the EU influences environmental management. This may be via implementation, but also, like in the Dutch cases, asking for extensions and exemptions. This suggests that individual member states do, to some small extent, retain control over their policy approaches. Not only can they find legal loopholes in order to achieve their own goals, but there is opportunity for misinformation. The air quality measurement stations have been accused by observers of painting an inaccurate picture (van Oosten, 2013). Even inactivity can be a conscious decision – the Netherlands has worse air quality now than in 2008 when the EU Directive can into effect, a result of the few measures that were taken. When comparing the observations with expectations, none of the observations convincingly supported the expectation. While the EU cannot be ignored, and does indeed play a role in shaping a member state's environmental approach, the evidence suggests the member state's original approach will determine the extent to which the EU will contribute.

This leaves the remaining two theories to provide the factors influencing a country's environmental policy approach. As Haverland and Blatter (2012:149) point out, theories can be either complementary or competing. In this case, they are complementary, as both theories have an effect on environmental policy at the same time. The high congruence between the observations and expectations suggests both geographical features and New Public Management reforms affect environmental management. Whether there is a dominant theory is now discussed.

Physical and geographical features play a large role. These features are constant, unlike the ideas of NPM which wax and wane. Despite the differences however, both between the case studies, and especially between New Zealand and the Netherlands, there is little emphasis placed on geographical differences in the plans. The Dutch plans have a reoccurring theme that emphasises the role of its neighbours in creating the poor air quality seen in the Netherlands, as well as the high population density within its borders, but these are the only significant physical features to arise regularly. These two features do indeed have a large impact on the Dutch approach to air, as seen by the unwillingness of the Dutch to invest heavily in air quality measures until its neighbours have, and the focus on vehicles by the municipalities. New Zealand policies mention a greater variety of physical features, but no single feature is highlighted as the most significant contributor shaping New Zealand environmental management. Specific geographical features, such as Southland's location in a cold, coal-mining region were not reflected in the policies.

When comparing the environmental approaches, many differences can be attributed to New Public Management. The most obvious differences; local government autonomy

and capabilities, influence and consultation with other government levels, and plan specificity can all be traced back to NPM principles. This would suggest NPM is the major contributor to environmental management. Before this statement can be made with any certainty, however, two important points must be considered. First: is NPM itself merely a symptom of an underlying policy style difference between the two countries? If it is, it would mean New Zealand adopted so many NPM concepts because of its underlying policy approach. This underlying approach would then become the main factor influencing environmental management, just as it influences New Zealand's decision to adopt New Public Management. The second point raises the issue with the term 'New Public Management'. As many academics have pointed out, this phrase is almost a catchall phrase used to describe the reforms during the 1980s, and 1990s. Because of this, and the wide definitions of the concepts, NPM can be used to describe almost anything. Efficiency and effectiveness especially depend on the observer's standpoint and views, as an observer who cares more about economy than the environment will have a different equilibrium between costs and benefits than an observer who values the environment more than the economy. Not only are the pollutants naturally occurring, but it may be economically infeasible to strive for zero pollution. Industry is currently a significant contributor to air pollution, yet eliminating industry is not practical, nor desirable.

What is to be taken from this, then, is that NPM does play a significant role in shaping environmental approaches in developed countries, especially in New Zealand and the Netherlands. More research, however, is required to determine the extent to which the effects are due to NPM, and which effects are in response to the same policy attributes which saw the country adopt the NPM concepts in the first place. Further research comparing the environmental management of NPM-rich countries would also offer a valuable insight. The largest limitation in this study, however, is the focus on policy design. Policy implementation was not considered, and both implementation compliance and styles are likely to have a significant impact on the environmental management approach.

The answer to the research question “why do countries adopt different policy approaches at local government level to solve common public policy problems” is therefore a variety of factors. When looking at policy design, the most significant factor is the extent of New Public Management reforms. This research thus concludes that while western countries have similar environmental goals, NPM inspired reforms in the 1980s and 1990s, subsequently considered outdated, do have a significant influence on the countries' environmental management.

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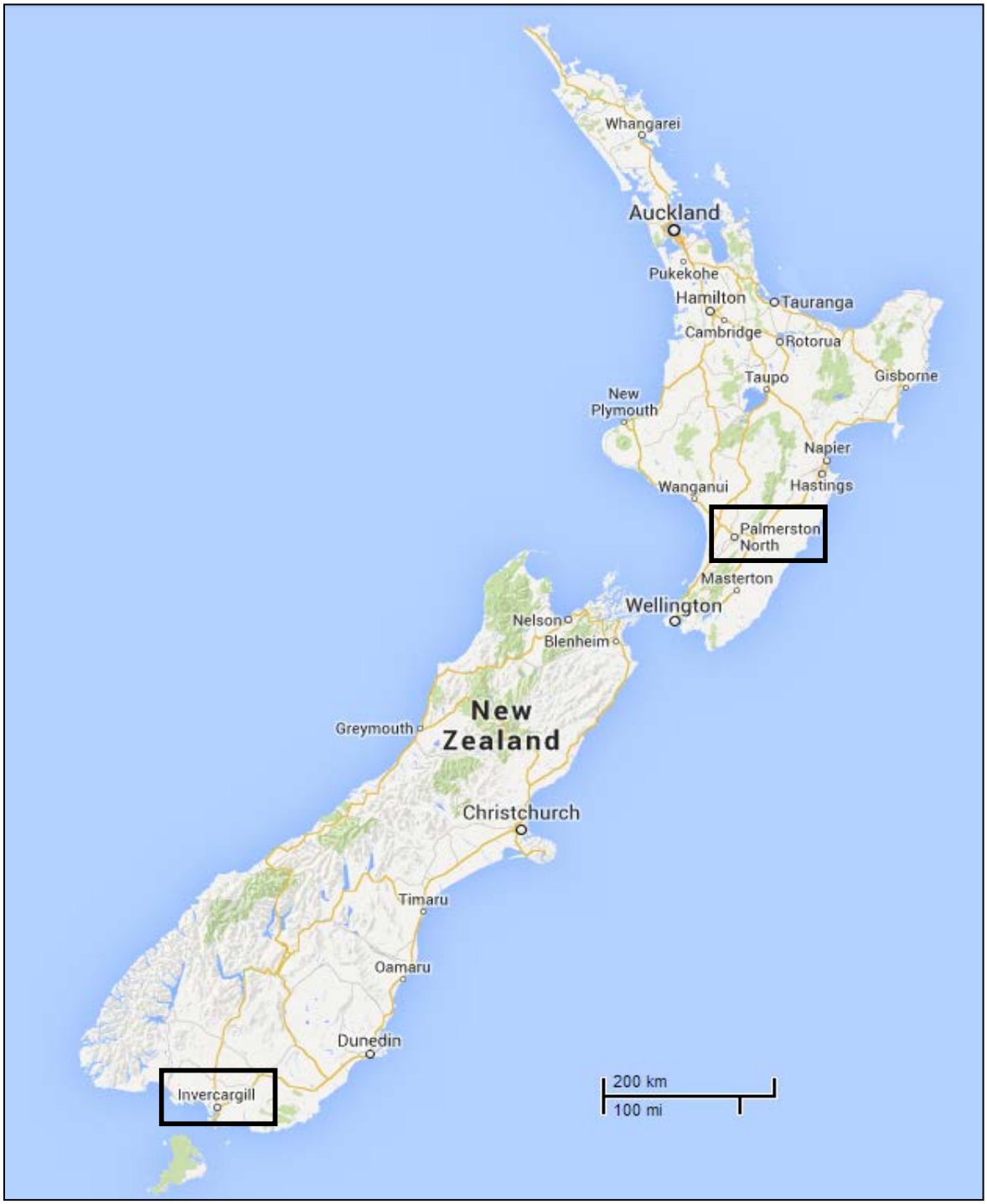
Appendix One: Simple definition of NPM

A definition of New Public Management (NPM) from van Helden and Jansen (2003:70) identifying differences between traditional public administration and NPM.

Feature	Traditional Public Administration	New Public Management
Structure of organisation	Centralised, including uniform control	Divisionalised with units organised by product
Relationships between and within units	Unspecified and open-end agreements	Contract-based
Styles and practices	Governmental ethics and styles	Private ethics and styles
Budgeting focus	Stable, focused on budgets	Efficiency-oriented, aimed at cutting of resources
Management profile	Inactive: policy skills and knowledge of rules are important	Visible, hand-on management
Performance-orientation	Qualitative, implicit standards	Performance orientation explicit, related to clearly defined targets
Focus of controls	Focused on rules and procedures	Focused on output and results

Appendix Two: Maps of the Case Studies

New Zealand



Source: Google Maps

The Netherlands

Source: Google Maps

Appendix Three: Case Study Policies Analysed

Government Level	The Netherlands		New Zealand	
	Eindhoven	**Delft**	**Palmerston North**	**Invercargill**
European Union	EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe		N/A	
National Government	Environmental Management Act (1993) National Environmental Policy Plan (2001) National Air Quality Cooperation Programme (2009-2014) Air Quality Decree[1] (2005)		Resource Management Act (1991) National Environmental Standards for Air Quality (2004)	
Provincial/ Regional Government	Noord-Brabant Environmental Plan (2012-2013) Noord-Brabant Programme (unavailable) Smog Regulations (2010)	South Holland Policy Vision for Sustainability and Environment (Plan) (2013-2017) South Holland Action Programme for Air Quality (2012-2015)	Manawatu-Wanganui Regional Policy Statement (1998) Manawatu-Wanganui Regional Air Plan (1998) Manawatu-Wanganui Regional Council Long Term Plan (2012-2022) Proposed One Plan for the Manawatu-Wanganui Region	Southland Regional Policy Statement (1997) Southland Regional Air Plan (1999) Southland Regional Council Long Term Plan (2012-2022) Iwi Management Plan (2008)
Municipal/City Government	The Natural Step Approach Sustainability Plan Eindhoven Air Quality Action Plan (no date) Eindhoven Programme of Air Quality and Mobility (2007)	Delft Sustainability Plan (2008-2012) Delft Air Quality Action Plan (2005-2020) Delft Programme (unavailable)	N/A	

[1] In 2007 the Air Quality Decree was replaced with the Air Quality Act, becoming part of the EMA. It has been included as it influenced many current policies.

Appendix Four: Policy Analysis Template

Note: not all criteria were used as variables, many offered context, general information, or proved too inconsistent across policies to be used for comparison

Policy	Policy
Date	
Amendments	
Length of Plan	
Actors responsible	
Purpose	
Addressing	
Renewed on time?	
Criticism	
Submissions	
Pollutants	
Pollution Limits	
Enforcement	
Methods	
Implementation	
Implementation time frame	
Delegation of responsibility	
Monitoring of Plan	
Budget	
Horizontal coordination	
Vertical coordination	
National standards deviation	
Time frame for implementation	
Consultation	
Other legislation/policies	
Other actors	

Appendix Five: Sample Interview Questions

Note: The following list provided a basic formula, and questions were asked or not asked depending on previous information availability. This list is also not exhaustive by any means.

1. What are the significant policies relating to air quality management in the city/municipality/region/province?

2. How does the city/municipality/region/province enforce these policies?

3. What are the restrictions facing the enforcement of these policies?

4. What is the relationship between other cities/municipalities/regions/provinces?

5. What is the relationship between the city/municipality/region/province and international actors?

6. What is the relationship between the city/municipality/region/province and higher or lower levels of government?

7. How important it air quality and environmental management in the city/municipality/region/province when compared to other policy issues such as economy, welfare, and other environmental issues?

8. What are the perceived main contributors to environmental/air quality issues?

9. How do you as the interviewee perceive the current state of the air quality compared to the rest of the country? Worldwide?

10. Do you as the interviewee perceive the current system of air quality management as effective?

Appendix Six: Best Practice Guidance supporting documents of air quality management

Best Practice Guidance supporting documents of air quality management under National Environmental Standards for Air. (MfE, 2011)