Sustainable energy innovations: The perceptions and experiences among stakeholders in the Netherlands

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Sense-making among stakeholders' regarding sustainable energy practices

Master Thesis: Culture, Organization and Management
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FOREWORD

"Sustainable energy innovations: The perceptions and experiences among stakeholders in the Netherlands? Sense-making among stakeholders' regarding sustainable energy practices" is a qualitative, interpretive research that concludes our enrolment in the Master: Culture, Organization and Management at the Vrije Universiteit of Amsterdam. To complete this study, we conducted primary research among various stakeholders in the Netherlands with the aim to understand their level of experiences and sense-making with sustainable innovation practices.

Two international students; a Mexican and South African conducted the study.

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1.   <u>INTRODUCTION</u>

Energy, the most important issue in the 21st century (Armaroli & Balzani, 2007) is increasingly gaining attention across the globe. After the energy crises in 1973 and 1979, energy conservation became an important topic on the political agenda (Benders, Kok, Wiersma & Noorman, 2006) of many countries. Its importance led sustainability to reach global concern among many governments, businesses and societies, as the world moves towards another energy crisis. According to Armaroli and Balzani (2007), questions pertaining to the earth and its inhabitants to reach their standards of living without devastating the planet, the ability of poorer regions to improve their quality of life, and, whether citizens specifically in the western world change should change their lifestyles and adopt innovative practices, are among the pressing topics amidst stakeholders, governments and policy makers.

Countries are seeking alternative strategies for mitigating climate change (Costa & Kahn, 2013). Dincer (2000, p.172) suggests that sustainable innovations induces local and national authorities to "incorporate environmental considerations". One such environmental consideration includes; renewable energy practices. According to Goldemberg (2007), the initiative of renewable energy is seen as one of the most efficient mechanisms to achieve sustainability. Goldemberg (2007) further postulates that the increased awareness and adoption of renewable energy would foster longevity of the existing fossil fuel reserves, as well as address the issue of global warming and climate change. This theory is also supported by Omer (2008, p.2265) who suggests that the promotion of innovative renewable applications, as well as the reinforcement of the renewable energy market will lead to the "preservation of the ecosystem through the reduction of emissions at local and global levels".

In a small country such as the Netherlands, with a land area of only 41, 543 km^2 (Waterman, Misdorp & Mol, 1998, p.115) the country has become an important player as the European liquid fuels transporter and processing hub ("*Netherlands",* n.d., para. 1). The Netherlands is the second-largest producer and exporter of natural gas in Europe, after Norway. The Government of the Netherlands (n.d), in their report on *Energy in the future,* postulates that a steady transition to greener energy should lead to Dutch energy companies and institutions reaching top status in the economic sector. Simultaneously, there is a strong drive to minimise CO2 emissions, with renewable energy innovations being a fundamental factor in this plan ("*Energy in the future",* n.d., para. 2). It is further stated by the department of Energy Information Administration of the U.S. that while the Netherlands wants to attain a sustainable energy management system, the government recognises the importance for energy supply to be reliable and reasonably priced. To ensure this, the government has adopted a balanced, best value for money green and grey energy supply ("*Energy in the future",* n.d., para. 4).

Sharma and Henriques (2005, p.159) argue, though the implementation of sustainable energy practices may seem like an easy task, the application of sustainable development to business strategy has been actively debated. This is because sustainable practices not only rest with policy makers, but also with businesses and to date, no business has been entirely sustainable (Sharma & Henriques,

2005, p.159). They further suggest, the involvement of stakeholders can be fundamental for the implementation of sustainable practices, but will be based on the level of resource dependency by the business. As such, one stakeholder is the World Energy Council who recently issued a plea for policymakers, governments and other stakeholders to take the issue of sustainable energy more seriously. Further, *"World Energy Council"* (2013) postulate that there is urgency for decisive action to be taken, in order to develop and transform the global energy system.

Macnaghten, Grove-White, Jacobs and Wynne (1995) mention, attempts toward sustainability should involve everybody especially public involvement, a much needed factor for mobilising the sustainable initiatives. In order to gain public involvement towards this new alternative ways for attaining energy, new technologies such as windmills and solar panels, should meet three important factors; firstly they should pursue to fulfil consumers' daily activities, for example, providing energy to any house activity related like having light, being able to watch television, use the washing machine and so forth. Secondly, renewable energy systems should foresee the long-term quality of life and, last, but not least the process should facilitate short-term economic considerations. These three factors are transcendent for people supporting the initiative. Macnaghten et al. (1995) further mention that, though there are considerable reasons why community support needs to be involved during the transition process and also why public decision-making is a vital factor for sustainability; there is still minimal substantiation of such participation and support.

1.1   Research objectives

Due to the growing need for sustainability, many countries are gearing towards the adoption of responsible practices. One such country is the Netherlands, who has signalled strong intention to adopt sustainable energy as common practice, in order to become a green society by 2025. No doubt, a shift towards renewable energy as an alternative would cause uncertainty and a lack of support among; locals who may not necessarily have full knowledge about its benefits for the greater environment; and businesses lack of cooperation to implement energy efficient innovations. Furthermore, the way in which people make sense of the changes, in their attitudes towards the adaptation thereof is also an important aspect to consider. Moreover, the effective implementation of programme management in relation to innovative practices also constitutes an important aspect.

1.2   Research field

As previously stated, the current study aims to determine the level of sense-making among stakeholders with regard to the sustainable innovation practices in the Netherlands. This therefore meant that the scope of inquiry would primarily focus on the Netherlands, as a study area. The context of the Netherlands makes for an interesting subject, because; the country is considered the largest producer of natural gas in the European Union, and even more because the country has fallen behind with the implementation of sustainable energy systems, especially in relation to other European

countries. Evidently, as a result of the above, researchers would like to investigate why the Netherlands has made little progress with regard to renewable energy initiatives, even though the country possesses the necessary resources and infrastructure for these kind of developments. Moreover, there also exists an assortment of organisations in the private sector that deal with renewable energy systems, involved in the facilitation of sustainable energy innovation, i.e. renewable energy.

The Netherlands is made up of both big and smaller cities, and villages. Some of the stakeholders willing to participate in the study were found by Kien, a private enterprise in the Netherlands committed to implementing new innovative practices in the hopes that it would benefit society, especially, the local communities in the Netherlands. The Kien project has taken place in the following cities and villages in the Netherlands; Rotterdam, Enspijk, and Waalwijk. Researchers broadened this research by conducting interviews in other cities including; Amsterdam, Utrecht, Den Haag, Amersfoort, Hertogenbosch, Eindhoven, and Apeldoorn.

1.3   Research questions

As previously mentioned, sustainable energy innovations have become an important topic on the political agenda of many governments. This therefore leads us to investigate sustainable energy innovation practices in the Netherlands, since the country has signalled strong intentions and strategies to accelerate this societal shift. Based on this, the main research question of the study, is:

What are the stakeholders' experiences in the Netherlands with sustainable energy innovations and what meaning do they ascribe to this innovation practice?

In order to answer the above research question, it becomes important to formulate sub-questions, which will allow us to answer the main research question with more accuracy. The sub-questions to be included are as follow:

What is the current debate on programme management and what is the role of sense-making in this debate?

The above research question will be explored through theoretical and conceptual findings, and debates on the topic under study. The findings therein will shed light and bring to the fore valuable opinions by academic authors. Furthermore, the theoretical framework (Chapter Two) of the current study will assist the researchers to develop a position in relation to the academic debate.

How can sense-making be studied with regard to sustainable development projects?

Once the theoretical background to the study has been completed, and a perspective is formed, we aim to find out the extent to which the findings inform practice. To determine this, we aim to observe, participate and conduct in-depth interviews with stakeholders, government officials, experts, engineers and technicians who are involved with sustainable energy innovations. This will also be done to determine their perceptions about this industry and how they bring meaning to these innovation practices.

What are the perceptions of stakeholders regarding sustainable and renewable energy?

In order to answer the question relating to the perceptions, which constitutes one of the main focuses of this study, the findings during the interviews with stakeholders will be used here. This question aims to determine how sustainability and renewable energy practices are viewed from the perspective of stakeholders.

What is the ideology among stakeholders regarding sustainable innovation practices?

Based on the participation observation and interviews with the respondents, the empirical question will be answered. The findings here will shed light on the ideals among stakeholders and how they can be connected to their beliefs and attitudes. Understanding their beliefs and attitudes deems powerful for knowing stakeholders' meaning making process, as this inevitably governs their actions and decisions to adopt the innovation practices. Conclusions drawn from here can provide governments and policy makers inside and outside the Netherlands with information about the ideology that exists in the Netherlands, with regard to sustainable innovation practices. Furthermore, this will also allow for policy makers and governments to understand whether the current or forecasted innovation practices are in alignment with the ideology that exists in society. The empirical findings will help the researchers to devise conclusions and formulate suitable recommendations for future processes relating to sustainable innovation practices.

1.4   Research concepts defined

During the current study, various concepts will be used to answer the research question. These concepts include: sustainability, renewable energy, sense-making, enactment, programme management, stakeholders, and innovation practice. During the theoretical chapter of the current study the following concepts defined will be elaborated upon to illustrate their theoretical embedment within the topic under discussion.

The following paragraphs will briefly define the main concepts to be used in this study, as it becomes important for the reader to understand our interpretation of the concepts and its applicability in the study.

Sustainability can be defined as meeting the needs of the present, without comprising future generations to reap the same benefits or needs (Omer, 2008). With specific reference to this study, sustainability will be more related to the concept of renewable energy.

Renewable energy or alternative sources of energy can be defined as energy that is obtained in the primary resources like, sun, wind, and water. This can be renewed, whereby the energy moves along in a cycle, reproducing each time producing energy both in this lifetime and predictable quantities of energy when required (Demirbaş, 2006, p.779).

The process of sense-making is when people notice information, in other words, they have an input or stimuli, they scan it and according to their beliefs, culture, social backgrounds, and previous experiences, they give meaning to it or interpret the information (Weick, 1995, p.4).

The term 'enactment' is used to preserve the central point that when people act, they bring events and structures into existence and set them in motion (Weick, 1988, p.306).

Ideology is seen as the basis of the social representations of a group, its meanings in terms of social relations between groups, and its replica as enacted by discourse (Van Dijk, 1988, p.126)

Programme management according to Pellegrinelli (1997, p.141) has become one of the most chosen vehicles for implementing change. He further explains that it also particularly well defined for system changes and for executing strategic changes. Programme management is therefore the "planning, directing and controlling of tasks or activities and resources" in order to successfully execute a project within specific parameters of time, money and quality (Ferns, 1991, p.149).

Clarkson (2005, p.106) defines stakeholders as a person, or group of people that have, or "claim, ownership, rights or interests in a corporation and its activities". They further state that these activities can be in the past, present or future

Nidumolu, Prahalad, and Rangaswami (2009) explain that the key to progress is the implementation of innovation practices. Vanhaverbeke, Van de Vrande and Chesbrough (2008, p.251) describe innovation practice as "new growth opportunities" often through improved technology, systems or practices.

1.5   Research approach

During the execution of this research, an inductive approach will be adopted. Thomas (2006, p.238) describes this approach as a systematic method, whereby qualitative data analysis is usually directed by "specific evaluation objectives". Furthermore, Saunders, Lewis & Thornhill (2009, p.490) explain that an inductive approach involves collecting data, thereafter exploring the data to determine the themes and issues that will be focused on. They further explain that using this approach, the data is analysed as the primary data collection process progresses. The above explanation therefore brought us to the decision that an inductive approach would be suitable for the current study. This is because we intend to condense the raw data obtained from the interviews, establish links between the research objectives and the findings derived from the raw data (Thomas, 2006, p.237), thereby leading us to derive theories from the data obtained (Thomas, 2006). While the current study will also involve participant observation as a data collection method, an inductive approach also allows for notes during participation to be analysed and included in the research findings (Strauss & Corbin, 1998) thereby confirming the relevance of this approach for the study.

Thomas (2006) explains that researchers using the inductive approach, read the transcribed interviews several times to identify themes and categories, with a coding frame being devised thereafter. This will be done in order for the researchers to develop concepts and valuable insights (Sabherwal & King, 1991, p.202) from the data rather than "imposing previous theoretically derived concepts" (Polikinghorne, 1995, p.13).

In addition to the above, the current study is also underpinned by the interpretive research paradigm. The interpretive approach as discussed by Fossey, Harvey, McDermott and Davidson (2002) seeks to understand the meanings of human experiences. Since understanding the sense-making process is at the core of this study, the interpretive approach will allow us to gain insight into how social beings, i.e. stakeholders constantly engage in making sense of sustainable innovation practices (Fossey et al., 2002). Ybema, Yanow, Wels and Kamsteeg (2009) postulate that this approach incorporates a self-conscious awareness on the part of the researcher due to the findings from an interpretive approach not being independent to the researcher (Baily, 2007). This means that during the current study, due to the interpretations made by the researcher, both the researchers and the topic(s) being researched will create knowledge.

With the above being said, in order to understand how stakeholders in the Netherlands perceive and make sense of sustainable innovation practices, we will select various themes and concepts from the interviews conducted with the selected stakeholders. The findings from the data will be coded into themes and issues, which will develop understanding about the sense-making process.

1.6   Research relevance

The growing demand for natural resource, such as energy, has put increasing pressure on the natural environment to produce the energy required. Innovative practices such as the implementation of renewable energy through solar panels and windmill technology has to an extent, lowered the demand on resources in the natural environment. With this being established, the current study therefore aims to ascertain the level of perceptions and experiences among stakeholders with regard to the introduction and implementation of sustainable energy and the practices therein. Furthermore, we aim to determine stakeholders' level of sense-making and how they transition their train of thinking and actions to accommodate the new practices.

Consequently, the study also adds empirical support to the existing theories and brings about insight into the different practices that can be taken into consideration, with regard to the existing model for change. Furthermore, this thesis will comprise an exploratory research with a goal to generate situational knowledge for stakeholders including Kien. As previously mentioned, Kien is a private enterprise in the Netherlands committed to implementing new innovative practices within various societies in the Netherlands. They are determined to implement innovative practices; while at the same time educate society about sustainable energy use. In relation to this, their objective is to aid the community to reach a zero energy environment. Their intention is to do this by creating independent long living homes with technology which allows for the use of alternative energy through solar panels, windmills, light emitting diode (LED) lighting, and the like. This research, as previously outlined will aid the transition to improved practices among the different stakeholders involved in the process.

The adoption of programme management and the model therein will also enable stakeholders to foster the implementation process, and ensure that stakeholders, role-players and the community support the initiative. When projects of this nature are introduced to society, there is a need for support because without this, the project is doomed to fail. Having said this, with respect to programme management, the current study also intends to determine whether the use of programme management can be used to ascertain 'new' (if any) practices or suggestions that could be implemented and realised with respect to sustainable innovation practices.

This thesis will help researchers gain an understanding of sense-making and programme management with regard to the facilitation and implementation of project management. Information in this project will be of particular interest to stakeholders, governments, economists, environmental enthusiasts and policy makers concerned with the process of energy conservation and the implementation of sustainable innovation practices. Furthermore, findings from this research will therefore be socially relevant because all members of society, viz. stakeholders, businesses and communities will gain a deeper understanding into sustainable innovation and how it is perceived in among societal members. Though many studies have been done regarding sustainable energy in

general, not many studies have been done using our approach in the context of the Netherlands. Therefore the findings from our study can be valuable for stakeholders, role-players and government to gauge the situation and know how to proceed with processes of this kind. In the broader context, the findings and suggestions in this study can also be taken up in other contexts of society, who are faced with similar dilemmas and challenges. Furthermore, it will also contribute to the broader body of knowledge regarding sustainable innovation practices.

1.7   Research structure

The study is presented in seven chapters, below is a brief outline for each chapter. The first chapter, which is the introductory chapter, will provide the background to the research problem, and a general overview of the concepts to be included in this study. Furthermore, the chapter also emphasises the research objectives of the study, as well as the research field and approach to be employed and the relevance of the research.

With reference to various literature sources, Chapter Two presents a review of the theory relating to the topic under study. During this chapter, we will discuss; sustainability, renewable energy, the interrelationship between sustainability and renewable energy, renewable energy specifically in the Netherlands, sense-making, and programme management. Having reviewed the relevant academic theory, we will also discuss our position in relation to the academic debate.

In Chapter Three, the research methodology used for the study, is described. It documents the research strategy undertaken, gaining entry into the field, the sampling method used, as well as the research techniques deployed during the current study.

Chapter Four discusses the history and context of sustainable energy practices in the Netherlands. Herein topics such as the oil and gas resources in Groningen, the green drive in the Netherlands, the Dutch government and its stance with sustainable energy initiatives, as well as stakeholder initiatives toward sustainable innovative practices.

Consequently, Chapter Five, will reveal the findings obtained from the interviews and observation methods.

Following, Chapter Six will include the discussion and analysis, with the important findings related to the theory discussed in Chapter Two as well as the empirical questions relating to this study.

Finally, Chapter Seven of this study provides a summary of the conclusions, and the limitations of the study. Suitable recommendations are also provided in this chapter.

2.   THEORETICAL FRAMEWORK

The previous chapter provided an overview of the current research study highlighting its aims and objectives. The following chapter, using various literature sources aspires to provide an overview of the concepts of sustainability, renewable energy in general, as well as highlight renewable energy practices in the Netherlands, in particular. Furthermore, the chapter also intends to discuss sense-making and programme management with specific reference to renewable energy practices and how it is currently being implemented and practiced in the Netherlands. The discussion herein will also briefly discuss the potential challenges of renewable energy innovation practices, facing the Netherlands and the society at large.

2.1   Overview of sustainability and why society should pay it attention

According to the Johnston, Everard, Santillo and Robert (2007), sustainability involves meeting the needs of the present without compromising future generations to be able to meet their needs. In recent years, sustainability has become an important topic on the agenda of many countries, stakeholders, governments, businesses and consumers. This surge has therefore led to this issue receiving growing attention. Moreover, the growing attention is also owed to the fact that sustainability raises the question of whether the current generation can utilise the available resources in such a way that future generations will also be able to benefit from these natural resources (Kotler, 2011, p.132). The European Commission (2014) states that resources are the spine and character of every economy. Currently, the resources are being used in a manner that is endangering its availability for future generations, as well as for communities in developing societies (Lashof & Ahuja, 1990). The European Commission (2014) further states that failure to address the use of resources could lead to serious consequences, which go beyond just the natural environment.

Sustainability is underpinned by three main spheres; environmental, social and economic (Bell & Morse, 2005; O'Connor, 2006). Each sphere consists of sub-factors where the environmental sphere includes the use of natural resources, environmental management, and pollution prevention. The economic sphere is concerned with profit, cost savings, economic growth, and, research and development. On the other hand, the social sphere focuses on standard of living, education, community, and equal opportunity. The diagram below shows an overlap between all three spheres where it can be seen that the environmental sphere overlaps with the economic sphere with a focus on energy efficiency, subsidies/incentives for the use of natural resources. There is an overlap between the economic and social spheres where that overlap is concerned with business ethics, fair trade, and worker's rights. While, the final overlap occurs between the social and environmental sphere focusing on environmental justice, natural resource stewardship, and locally and globally produced goods and services.

From the above it is clear that all three spheres are interrelated and that the practice of sustainability is a balancing act, that should be practiced in the all of society, including; individuals, businesses, governments, policy makers, and education institutions.
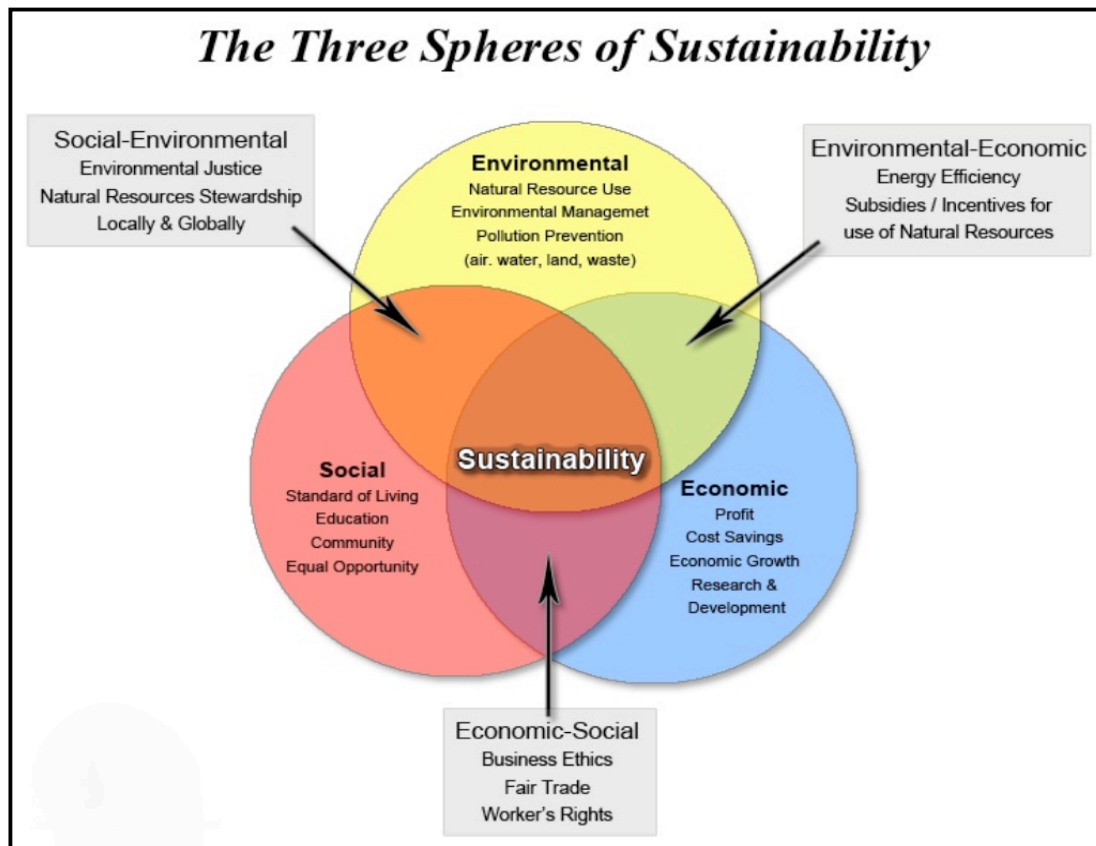
Figure 2.1:Three spheres of sustainability
(O'Connor, 2006, p.289)

The World Business Council for Sustainable Development (WBCSD) (2013, p.2) in their Vision 2050 report state that between now and the year 2050, the world population will increase from 6.9 billion to more than 9 billion. This means that with the increasing population, the demand for natural resources is constantly increasing and more so from the developing or emerging societies/ economies. Furthermore, they ascertain in a study conducted on the ecosystem, it was found that 15 of the 24 ecosystem services have been ruined over the past half century, due to rapid use of fossil fuel-based energy, and natural resources. This degradation in resources surely threatens the supplies of food, freshwater, wood fibre, and fish (WBCSD, 2013, p.3).

In light of the above, it is therefore important for societies to drastically change the manner in which they consume the natural resources. Achieving sustainability should therefore not rest solely with policy makers, governments, etc. but should be everyone's responsibility (McKenzie, 2011).

According to Dincer (2000, p.172), there are several factors that should be taken into consideration when a sustainable development initiative is being executed:

- There should be public *awareness*; reasons why the implementation of renewable energy and its importance should be communicated throughout the media and public/private organisations;

- A clear reason why the initiative is important and why the collaboration of several parties, should be provided to the public. Communication pertaining to the environmental impacts should be communicated, before and after the implementation, and finally, what are the different alternatives of renewable energy available;

- Environmental training should be provided, as failure to do this could have serious implications on the longevity of support by the society. The training could form part of the communication strategy;

- Continual promotion of renewable energy resources should be carried out in order to constantly affirm the importance of the practice in society at large.

- Financial resources required by the end-user should be determined. This factor could be seen as one of the main factors that constitute the acceptance and support for the initiative. If the government supports these initiatives by creating policies to financially help the citizens, those rules should be promoted and shared. For example in the Netherlands, consumers who have purchased their solar panel installation after April 1, 2013 they would be eligible for tax (VAT) refund (around 620 euros) ("*Concept Dorpsplan voor de leefbaarheid van Enspijk*", n.d, p.21); and

- The regular monitoring and evaluation, after the implementation of such technologies in order to ensure that the end-users are sustaining the practices, while at the same time realising a positive return on their investment (Dincer 2000, p.172-173).

In the publication "*Onwards with Profit, People and Planet*" (2001, p.4) business enterprises perceive sustainability not only as a means for achieving a 'greener' society but also as a driving force for continuity. Nevertheless, the association also mentions that there are some factors, particularly in the legislation scheme in the Netherlands, which may serve as an obstacle for any sustainable enterprise initiative and development ("*Onwards with Profit, People and Planet*", 2001, p.4).

Fisk (2010, p.4) explains that the business case for people, planet, and profit, i.e. the 3Ps are based upon various factors, such as; the lucrative new opportunities for sustainable markets, and financing new markets such as renewable energies. According to the author, sustainability shouldn't be seen as a separate department from the business. The 3Ps as they are commonly referred to, are about moving the issues of sustainability from concerns to awareness of the business. These three pillars demand leaders from communities and businesses to ask themselves, what else should be done to improve the conditions of the community? It is not a matter of just being green; it requires

having a more 'joined-up' approach (Fisk, 2010, p.7). It is about rethinking and redefining the sources that societies are using for their own benefit.

To get a clearer view of what the 3Ps represent, the below discussion highlights the definitions for each P;

- *Profit* - relates to the creation of value through the production of goods and services and through the creation of jobs and sources of income. A focus on profit (in the long-term) should create the financial basis for the continuity of the business ("*Onwards with Profit, People and Planet",* 2001, p.9). Finally, companies provide a source of income for their employees and for society as a whole. Therefore, sustainability is becoming a self-evident part of the corporate identity and the brand name that distinguishes it from the rest *("Onwards with Profit, People and Planet",* 2001, p.22);

- *People* - focuses on the company's own staff (inwards) and on society outside the company (outwards). The factor 'people' highlights relations among employees and the creation of policy that provide incentives that enable employees to make contributions to the society (inwards and outwards). This pillar also means to consider and contribute towards the environment where people in society interplay among each other not only inside a company but outside as well ("*Onwards with Profit, People and Planet",* 2001, p.10). Furthermore, this facet also involves improving the well-being of people, through the improvement of air quality, etc. (Vanclay, 2003); and

- *Planet* - points out the concern for the environment joined in the company's business scheme. This pillar requires organisations to have an active role within communities regarding environmental issues. A term often associated with 'planet' is eco-efficiency, which indicates the supply of goods and services that meet human needs, adding with quality life and capacity for ecological system. External pressure plays a vital role for implementing a process and also for competitive advantage among companies ("*Onwards with Profit, People and Planet",* 2001, p.10).

"*Onwards with Profit, People and Planet"* (2001) and Fisk (2010) postulate that the challenge of implementing such practices in any community is to turn the main objectives pertaining to sustainable development, into the aims and daily actions of people, policy makers and organisations. Sustainability cannot be achieved in any congregation (community, village, company) unless people at all levels are aware of the aim and objectives of such initiatives ("*Onwards with Profit, People and Planet"*, 2001, p.18). The implementation needs a top-bottom and bottom-up approach and for such a move, the municipality or the government plays a big role within the various stages of sustainable development ("*Onwards with Profit, People and Planet"*, 2001, p.19).

Furthermore, Hanley, McGregor, Swales and Turner (2009, p.699) divert our attention to their study; *"do increases in energy efficiency improve environmental quality and sustainability?"* which shows that energy demands actually increase in the long-run due to the high level of competitiveness in most *'energy-intensive sectors of the economy'*. With this in mind they suggest this to be an important aspect for consideration among policy makers and government entities, and perhaps the introduction of a *'higher tax on energy use or a carbon tax'* could be introduced. This could serve as a measure to counteract the unexpected increase in energy consumption, especially within energy-intensive sectors (Hanley et al*.,* 2009, p.705).

Though 'sustainability' is concerned with economic, social, ecological and environmental, the current study will focus more on sustainability of the natural environment with specific reference to energy; renewable energy and its practices therein.

2.2   Renewable energy

Dincer (2011) argues that energy is a vital component for socio-economic development and economic growth. However, as discussed in the preceding section, the manner in which energy is being utilised compromises the chances for future generations and emerging societies to enjoy this resource. With this being said, stakeholders and role-players around the globe are focused at finding strategies to balance the demand and supply of energy resources. Failure to act and mitigate this, could lead to a global energy crisis being on the horizon. One such strategy is renewable energy (Dincer, 2011, p.5135), which "produces energy by transforming natural phenomena into useful energy forms". Goldemberg (2007, p.808) explains that renewable energy is a form of energy that can be produced from natural resources that are sufficiently available on earth (Haines, Smith, Anderson, Epstein, McMichael, Roberts, Wilkinson, Woodcock & Woods, 2007). Goldemberg (2007) further postulate that 'renewable' means that the energy can be produced, over and over again utilising the same resources without the fear that the resources would deplete. Sources that can be used to produce this energy include; wind, water, tides, sunlight, and wastes (Armaroli & Balzani, 2007).

Having briefly discussed the concept of renewable energy and what it entails, the following section discusses the different forms of renewable energy.

I.   Solar energy

Solar energy is energy created using the sun's rays to create heat or electricity (Calvin, 1974). This source of energy, as outlined by "*Solar Energy"* (n.d., para.2) is environmentally friendly due to the sun being a natural energy source, and considered renewable because the sun as a source, its resources could never be over utilised and depleted. However, the drawback with the sun as a source of energy is that it is not always available like on days when it is rainy or cloudy, the sun is therefore unable to provide light to feed the solar systems ("*Solar Energy",* n.d., para.3).

II.   Biomass energy

Biomass can simply be described as the left over material from plants and animals (Field, Campbell & Lobell, 2008). Hoogwijk, Faaij, van den Broek, Berndes, Gielen, and Turkenburg (2003, p.119) argue that this source of renewable energy is a fascinating one because resources required are often "locally available" and the conversion into secondary carriers of energy requires minimal capital investment. They further suggest that the use of biomass for energy production can be highly positive for land degradation, and can reduce greenhouse gas emissions. However, cognizance should be taken as extensive utilisation could have negative consequences with regard to land demand and biomass infrastructure (Hoogwijk et al., 2003).

III.   Wind energy

Various authors such as Dincer (2011), Saidur, Rahim, Islam and Solangi (2011), and Kaldellis (2005) suggest that wind energy is the most favourable form of renewable energy because it deems to be an economically viable and environmentally friendly option. Ilkiliç Aydin and Behçet (2011) argue that wind energy can be regarded as the oldest source of power used by mankind during the ancient times, for powering boats, graining and pumping water. Stakeholders, scholars and governments are in favour of wind energy as an alternative because it does not; pollute the air in the case of thermal power plants, produce "atmospheric emissions" that foster acid rain or greenhouse gases (Saidur et al., 2011, p.2424). They further suggest that wind energy can be seen as an important economic generator for rural areas because wind turbines are in most cases built on farms or ranches. On the contrary factors such as the interference with radar and telecommunication, electric and magnetic fields, noise pollution, and deaths of birds are among the main concerns with relevance to wind energy as a renewable energy source (Saidur et al., 2011).

IV.   Geothermal energy

According to Barbier (2002) geothermal energy is power that originates from the Earth's internal heat. This heat is used to generate steam in order to make electricity. Barbier (2002) explain that the energy is found in the rock and fluids below the Earth's crust. In the report titled, "*Why support Geothermal Energy?*" (2012, p.4) it is explained that geothermal power plants are specifically designed to eliminate mining, processing, and transporting that is usually required for electricity production. Among the main drawbacks of geothermal energy as an alternative source of energy is its specification to geologists and scientists only, mining risk, which can be described as the uncertainty with digging underground, and that geothermal energy may not be available everywhere (Barbier, 2002).

V.   Hydropower energy

Flowing water is seen to contain energy and so, hydropower energy is the process where flowing water, is captured and converted into electricity (Kömürcü & Akpinar, 2010). The authors

explain that hydropower energy can be created through various ways, viz., a dam to store water in a reservoir, and a pumped storage plant. Demirbas (2006, p.38) cautions that the construction of hydroelectric power plants (HEPPs) in most instances has a direct impact on the "waterway and on the environmental equilibrium at the plant site" because dams and reservoirs "dramatically alter the landscape".

The discussion above therefore shows that renewable energy can be applied or created using various methods. However, the most suitable method to be applied will be dependent on the context i.e. country, state of the economy, the availability of natural resources, financial resources, geographic location of the destination, and spatial availability (Ramachandra & Shruthi, 2007).

The following discussions deliberate the interrelationship between sustainable development and renewable energy.

2.3 The interrelationship between sustainable development and renewable energy

Dincer (2000, p.157) argues that the world is currently facing environmental problems that should be adequately managed in order to achieve long-term actions for sustainable development. The use of renewable energy is one alternative or solution for the pressing environmental problems. For this reason, it could be argued that sustainable development and renewable energy are closely related to one another.

In order to create awareness about the importance of energy, the researchers would like the reader to do an analysis and imagine what the world would be like without energy. Life in darkness, unable to keep warm, turn on a light or boil a kettle (Dincer, 2000), could become the reality. This was a little exercise to provide a glimpse of what life would be like if correct measures are not implemented to mitigate the over-use of energy resources. Energy is essential for human life and vital for continued human development (Asif & Muneer, 2007). Dincer (2000, p.185) mentions that the global demand for energy services is expected to increase by as much as an order of magnitude by 2050, with primary-energy demands expected to increase by 1.5-3 times. Moreover, Asif and Muneer (2007, p.1389) suggest that the demand for energy is rising due to increasing "human population, urbanisation and modernisation". Furthermore, this has led to different concern already being raised regarding energy-related environmental concerns such as acid precipitation, stratospheric ozone depletion and global climate change (Dincer, 2000, p.185). With the above in mind, there is wide concern that the current energy systems would not be able to handle the future energy demands (Asif & Muneer, 2007).

There is necessity for finding ways to obtain energy through natural resources like the sun, the wind, the rain, tides and so forth, has made sustainable development an important factor nowadays and for the future. Sustainable development within society implies a supply of energy resources that provide service within; a long-term, a reasonable price and can be used for all required tasks without

causing any negative societal impacts (Dincer, 2000, p.172), or without exhausting resources (Reddy & Painuly, 2004). Reddy and Painuly (2004) further suggest that the first step to creating a sustainable environment is to use the current resources efficiently and improve the use of resources that are renewable. Among the most popular sustainable development strategies are mechanisms to foster energy savings on the "demand side", efficiency developments in the "energy production", and the substitution of fossil fuels with renewable energy sources (Lund, 2007, p.912).

As previously mentioned, renewable energy indicates the production of energy by converting natural phenomena (wind, sun, rain and tides) into useful energy forms (Dincer, 2000, p.169). Furthermore, Dincer (2000, p.169) mentions that the global use of renewable energy alternatives will reduce the pollution levels. On the other hand, viewed from a broader lens, renewable energy also has huge potential especially for developing societies to create socioeconomic benefits, "including the diversification of energy supply", improved regional and rural development prospects, and employment opportunities (del Río & Burguillo, 2009, p.1315). The usage of renewable energy responds to environmental responsive alternatives for energy generation. Reasons like this, makes the adoption of such technologies as solar panels, photovoltaic technology and windmills for instance, highly attractive (Gross, Leach & Bauen, 2003). Thus, the utilisation of renewable energy is understood to be a viable source for sustainable development (Dincer, 2000, p.172) for three reasons; the source of renewable energy is considered to have a low if not a zero environmental impact, the usage and acquisition of such energy cannot be depleted, and finally, there are several sources how the energy can be obtained which make the acquisition a flexible one (Dincer, 2000, p.172). Rösch, Skarka, Raab and Stelzer (2009, p.691) suggest that in order for countries to be sustainable, the following preconditions are necessary:

- Equal use of natural resources;

- Non-renewable resources should be utilised in a sustainable manner;

- Protection of human health;

- Sustainable use of the environment as a sink;

- Sustainable use of renewable resources;

- Conserving the cultural function of nature; and

- Securing an autonomous existence.

With the above discussion highlighting the concepts of sustainable development, renewable energy, and the interrelationship between sustainable development and renewable energy, the next section will discuss the renewable energy with specific reference to the Netherlands.

2.4   Renewable energy in the Netherlands

Renewable energy policies are driven by the well-recognised need for a sustainable society (Kwant, 2003, p.265). Hertzog, Lipman, Edwards and Kammen (2001) mention sunlight as one the most important energy sources for the future. The ability to meet the future energy demand can be accomplished by using renewable energy sources. The ability to adopt this kind of alternative sources of energy depends on everybody. Implementing such technologies is a way of assuring the world to be a liveable place, not only for present but also for future generations.

In efforts to improve the position of the Netherlands with regard to renewable energy, an Energy Akkord (Energy agreement) has been implemented. This agreement constitutes the involvement of over forty organisations, including government, employers, trade unions, nature and environmental organisations, civil society organisations and financial institutions. The amalgamation of different stakeholders in the Energy Akkord is aimed at fostering sustainable growth efforts, with the main focus revolving around energy, clean technology and climate ("*Energieakkoord voor duurzame groei*", 2013, para.1). Furthermore, the implementation of the agreement brings hope for affordable and clean energy, jobs and opportunities for the Netherlands.

In the white paper titled *'new energy for climate policy: the clean and efficient programme'* released in 2007, the Netherlands government signalled strongly that there is a drive to combat climate change, adapt to the changes and make a difference to the climate problems in Europe. The White paper further states that that the Netherlands wants to be at the forefront of clean energy by the year 2020 ("*Energieakkoord: schonere energie, meer banen*", 2013) with; lower greenhouse gas emissions, an increased share of renewable energy mix, annual increase in efficient energy improvements and transition to a sustainable system ("*Concerto",* 2014, para.8).   Moreover, the *Energy report 2011* by Ministry of Economic Affairs, Agriculture and Innovation (2011), stipulates that the transition to a cleaner supply of energy must be beneficial for society as well as the Dutch economy, and so they have focused not only on 'green' but 'growth' as a strategic pillar as well. In this way, all ends of the continuum benefit, viz. economy, environment and society.

For obvious reasons, the above goals seem optimistic and would no doubt place the Netherlands in a favourable position with regard to energy efficiency in Europe, and in the world. However, when assessing their goals and ambitions with regard to energy holistically, perhaps it can be noted that their reaction to the crisis could be slightly delayed. When comparing the efforts of the Netherlands, to its close neighbour, Germany, it could be argued that the Netherlands' efforts with regard to energy efficiency are long overdue. With respect to this, Germany could be considered one of the forerunners of energy efficiency, within the European region. According to a report titled *"Oil and gas security: emergency response of IEA countries*" published by the International Energy Agency (IEA) (2012, p.63), "since the oil shocks of the 1970s, Germany" has been promoting energy efficiency improvements across its economy, and especially within its industrial and residential sectors.

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For example, Germany as part of its energy efficiency programme, adopted thermal insulation measures, which reduced heating energy consumption by 30% between 1978 and 1993 (Geller, Harrington, Rosenfeld, Tanishima & Unander, 2006). Since 1990, Germany has managed to achieve steady energy consumption, with the intensity even decreasing due to policy packages, and structural changes to the economy (*"Oil and gas security: emergency response of IEA countries"*, 2012, p.63). Furthermore, the report explains that "Germany's energy intensity declined on average by 1.8% per year between 1990 and 2009" *("Oil and gas security: emergency response of IEA countries"*, 2012, p.63). Moreover, Germany has become a global leader in the building sector with regard to energy efficiency, due to its "energy requirements being set at a national level" *("Oil and gas security: emergency response of IEA countries"*, 2012, p.64).

It can therefore be denounced that the aforementioned ambitions by the Netherlands will require substantial support from the private sector and government. The Dutch Government has realised the need for support, and in an effort to foster support, the Ministry of Economic Affairs, Agriculture and Innovation (2011, p.10) explain that the government will; encourage and support businesses and knowledge institutes to collaborate in the innovation of energy technologies, motivate the production of efficient renewable energy options through the sustainable energy incentive scheme, provide scope for energy options to ensure a consistent energy source, and, encourage energy conservation. Moreover, other measures that have already been implemented to mitigate the crisis, include; changing the "spatial planning, raising dykes and storing water" ("*Energieakkoord: schonere energie, meer banen*", 2013, p.9).

The Dutch government recognises that the transition to a more sustainable system cannot be done without the support of the greater community, i.e. local residents, businesses, stakeholders, etc. In order to bridge the gap and foster support, the government has signed a "sustainability agreement with the business sector, and an agreement on energy and climate with local authorities" ("*Energieakkoord: schonere energie, meer banen*", 2013, p.9), as previously discussed.

In light of the above and in order to achieve their targets, several programmes and projects have been initiated within the Netherlands in order to encourage the Dutch society to join the movement towards a sustainable system and future. Kwant (2003, p.266) brings our attention to several practices that the government performs in order to support local residents in the transition to a sustainable lifestyle. One of these practices is a financial support. An energy tax that reassures renewable energy by making fossil making energy more expensive. On the other hand, citizens that are using renewable energy have the right to receive the zero tariffs for "green electricity". In fact, consumers obtaining their energy through green electricity or renewable energy, no longer have to pay an energy tax since January 1999 (Kwant, 2003, p.266). As a strategy, the Dutch government, decided not to impose the use of renewable energy, but rather create favourable conditions for consumers to supply their energy needs through renewable energy (Kwant, 2003, p.266). According to Kern and Smith (2008, p.4094), in the 90's, several Dutch programmes on sustainability led to the realisation that institutions and culture(s) within a society are important factors to consider when

implementing sustainable development initiatives.

Another support according to Kwant (2003, p.266) is the 'support for investments' on a subsidy on the investment of about 25–35%, depending on the profit and fiscal status of the company. Kwant (2003, p.266) points out that joined with this support, banks offer lease arrangements with renewable energy equipment where fiscal measures are incorporated. These facilities make it appealing for almost all parties within a project to adopt sustainability.

From a long-term perspective, the government aims to achieve sustainability systems for Dutch citizens targeting three main goals within energy policies; security of supply, environmental quality and economic efficiency (Kern & Smith, 2008, p.4098). Further, Kern and Smith (2008, p.4093) point out that the Energy Transition Project (ETP) is an overt endeavour to compliment existing policies with strategic long-term transition approaches intended for structural changes.

Aside from all the efforts and willingness by the Dutch government to transform the society into a sustainable one, Agterbosch, Glasbergen, and Vermeulen (2007, p.1037) highlights the clear complexity and unstable character of the Dutch financial support system when the implementation of such technologies take place. Though The Ministry of Economic Affairs has played a fundamental role in the modification of Dutch policies such as; the liberalisation of the electricity sector and the implementation of policies to stimulate renewable energy generation (Agterbosch et al., 2007, p.1026), the authorisation for the installation of such technologies to create renewable energy, takes a lot of time. This is due to several steps that need to be accomplished for the success of the process, thereby making it challenging for entrepreneurs to join the initiative (Agterbosch et al., 2007, p.1027). One of the main resistant factors mentioned by the author, is the local landscape. He explains that whatever technology (solar panels, windmills, etc.) is to be applied in a house or a community, it needs to match the style of the community and its spatial planning (Agterbosch et al., 2007, p.1027).

Although the Netherlands have initiated ambitious energy and climate policy documents, additional instruments are needed in order to ensure that targets are met ("*Energy efficiency obligations in the Netherlands: a role for white certificates",* 2009, p.2). Therefore, Agterbosch et al. (2007, p.1043) suggests that any sustainable programme implemented, should have an inclusive bottom-up approach. This necessitates the involvement of community and social support, thus creating awareness and support within society.

2.5   Sense-making

Among individuals, the ability to adapt to changing environments (Weick, 1995, p.23) has become increasingly important, as well as the ability to make good sense out of these situations. This is an issue of sense-making because it manages the issues of identity, retrospect, reputation, social contact, and on-going events (Weick, 1995, p.24). According to De Jaegher and Di Paolo (2007, p.497), sense-making is intentional and expressive; and therefore essentially "embodied in action".

Having to work with sense-making is appreciating the smallness, which does not mean that it is insignificant (Weick & Obstefeld, 2005, p.85), but rather signifies the decision that people take whether or not to adopt an idea or initiative. However, more importantly is whether or not the action is implemented or not, and this is what this section of the current study aims to explore. Weick (1988) suggests that the adaptation to new processes especially in a crisis situation becomes even more complex, because often it becomes more difficult for people to conceptualise, understand or make sense of the change. He further states that crises are characterised by "low probability and high consequences", which, therefore leads to the imposition of severe demands on sense-making (Weick, 1988, p.305). This can therefore be linked to the current study since the phenomenon being studied is in itself a crisis, the energy crisis. Albeit; this crisis is being experienced not by any specific organisation, but among the society at large. Implementation varies between people because for some, this could imply a big change and great consequences, not only on a personal level but also at a social one, while for others it could be miniscule. Weick and Obstefeld (2005, p.85) argue that small structures and short moments, sometimes, could have large consequences.

Change is not always easily accepted and in most cases, when change is initiated it invokes emotions within people due to their "current modes of cognition and action" being altered (Gioia & Chittipeddi, 1991, p.433). According to Weick (1995, p.4) the process of sense-making is when people notice information, in other words, they have an input or stimuli, they scan it and according to their beliefs, culture, social backgrounds, and previous experiences, they give meaning to it or interpret that information. When people understand, they act (Weick, 1988). It is this process of understanding, that ultimately influences actions.

The following figure 2.3 better illustrates the sense-making process, and shows that the process of sense-making consists of four stages, namely; stimuli, scanning, interpretation and action.
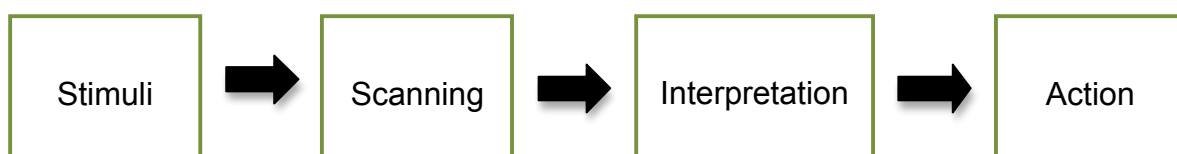
Figure 2.3 Sense-making process
(Jackson, 2010)

During each step of the process Weick (1995) argues that there is a reflective action, which constitutes the moment when people evaluate the scenario, thereby giving meaning to the situation. This is usually facilitated through a reactive process, according to their own interpretations. Situations are comprehended or decoded by people and these serve as a trigger for action (Taylor & Van Every 2000, p.40).

The above therefore suggests that sense-making unfolds as a sequence in which people concerned with identity in the social context of other actors engage in on-going circumstances from which they extract cues and make plausible sense retrospectively, while enacting more or less order into those continuing circumstances (Weick & Obstefeld, 2005, p.83).

Sense-making is central in this theme, because it is the primary sites where meanings materialise, that inform and constrain identity and action (Mills 2003, p.35). When it is said that meanings materialise, it is meant that sense-making is, importantly, an issue of language, talk, and communication. Situations, organisations, and environments are talked into existence (Weick & Obstefeld, 2005, p.83). What can be inferred regarding the above mentioned is that sense-making, is about the interplay of action and interpretation rather than the influence of evaluation on choice (Weick & Obstefeld, 2005, p.84).

There is a concept that describes each cognitive process that eventually ends up with an action, like the one mentioned before. Weick (1988, p.307) terms this process enactment, whereby the cognitive process is referred to as the enacted environment. The enacted environment is the product that is left after the process of enactment has taken place; this is because of its possible relevance. He mentions that the enactment environment is a social construction with multiple interpretations, containing real objects. With specific relevance to the study, these could include the materials that policy makers and stakeholder's use for the creation of alternative sources of energy like wind turbines, solar panels, and so forth. These materials deem meaningless if they are not incorporated into significant scenarios of practice (Weick, 1988, p.307). In other words, implementing these technological advances for the benefit of the final end-users creates expectations for future actions.

Weick (1988, p.307) posits that the enacted environment is composed of private and public factors. The public factors are addressed to the ones that people can observe, apart from the actor itself. As an example it can be the incorporation of new technological sustainable material to the houses of local residents. On the other hand, private factors include those that actors can expect will happen in the future (Weick, 1988, p.307). In this case; energy saving, cost reduction, greener lifestyle, etc. A central point from enactment is the cognition that underlies before the action takes place (Weick, 1988, p.307).

Van de Kerkhof and Wieczorek (2005) divert our attention to another concept prevalent in the movement toward a sustainable society; transition management. They argue, due to the level of uncertainty among stakeholders, there is a greater need for a more proactive approach when it comes to sense-making. Furthermore Van de Kerkhof and Wieczorek (2005, p.733) suggest that to assist the movement from the current state to a more sustainable state, an amalgamation of "technological innovations accompanied by institutional and sociocultural transformations is deemed necessary". In other words, the above in a nutshell constitutes the process of transition management. Smith, Stirling and Berkhout (2005) state that transition management is characterised as a regime transformation,

whereby the key role rests with the external social actors. Loorbach (2010, p.163) explain that "governance processes based on transition management", are intended to generate space for "short-term innovation" and create long-term sustainability foresights related to societal transitions.

When looking at the concept of sense-making and its relevance to the phenomenon under study, many authors explain the ideology among stakeholders, governments and policy makers to be in favour of a more sustainable society, with the idea of implementing energy efficient programmes. Schleich (2009) explain that the improvement of energy efficiency can be seen as an important catalyst for the achievement of global greenhouse gas emission targets. Furthermore, he states that energy efficiency programmes are viewed as a cost saving strategy especially for businesses and households due to the high-energy prices expected in the future.

Gunder (2006) contests by saying that the term 'sustainability' may not be properly understood by everyone, because everyone may not be "seeking sustainability in the same way" (Seyfang & Smith, 2007, p.584). Gunder (2006) explains that the stigma attached to sustainability perpetrates something that is positive, in this case, an energy efficient sustainable environment, and though it would be an 'ideal situation', other pressing issues such as homelessness, racism, and inequality have no longer taken priority as pressing issues (Gunder, 2006).

Based on the above, it can be argued that the sense-making of sustainable innovative practices can be viewed as a transformative process whereby society shifts from a current state to a desired state (Sipos, Battisti & Grimm, 2008). They classify this state as a societal transformative state, and explain that in order to achieve this state, society needs to engage and enact the principles, values and goals of sustainability in order to gain the full perspective of its meaning. When looking at the strategic direction of 'sustainable energy' front runners, such as Denmark, Germany, Sweden, United Kingdom (UK) and Norway, it is clear that each country views the need for effective energy efficiency programmes, with each country implementing exemplary initiatives to combat the energy crisis; lowering carbon emissions and increasing renewable energy sources *("Oil and gas security: emergency response of IEA countries"*, 2012, p.4). It can be deduced that their ideology is in close alignment with the ideas of Gunder (2006), and Schleich (2009).

Zoellner, Scweizer-Ries and Wemheuer (2008, p.4136) explain public acceptance as an important facet to consider for the "transfer of consciousness" into everyday life, and the materialisation of sustainable practices. Ek (2005, p.1677) postulate that though the public opinion towards renewable energy has been largely positive, locals usually resist such projects. Zoellner et al. (2008) further explain that scepticism pertaining to rising costs, administrative zoning and planning and licensing procedures may deter local citizens from wanting to support these initiatives. Moreover, Smith et al., (2005) suggest that in order for the sustainable innovative practices to be accepted by society, the presence of power relations can either block or push the change process.

The above discussion therefore emanates that the sense-making process inculcates transition management, enactment and transformation as key concepts in order to ensure that society makes proper sense of the sustainable innovation practices.

2.6 Programme Management

The assumption can be that stakeholders and drivers for sustainable society need to implement a strong sense of programme management to ensure the successful of the implemented initiative. Lycett, Rassau and Danson (2004, p.289) define programme management as the "integration and management of a group of related projects" with the intention to achieve benefits that would not be realised if they were managed independently. The above definition therefore suggests that programme management strongly requires the need for tasks to be integrated in order for it to be a success (Lycett et al., 2004). Thiry (2002, p.221) supports the same argument as Lycett et al. (2004) but further adds that programme management creates a synergy which generates more benefits than if the projects were executed individually. In simple terms, there is need for collaboration (Hudson, Hardy, Henwood & Wistow, 1999). Ferns (1991, p.149) explain programme management to be the "coordinated support, planning, prioritisation and monitoring of projects" to meet changing needs. Pellegrinelli (1997, p.147) further suggest that programme management groups are existing projects that focus on activities required to achieve a major benefit.

According to Ferns (1991, p.148) many projects are unsuccessful because they fail to deliver the "expected results" therefore necessitating the need for programme management. It is further suggested that the use of programme management can; assist projects to meet their 'business' needs, save costs, allows for greater flexibility, allocate human resources efficiently and effectively, reduce risks, and quantify the benefits of projects.

Programmes are defined in a coordinated way in order to achieve a common goal or otherwise to achieve a goal that wouldn't be fulfilled independently (Pellegrinelli, 1997, p.147). Additionally, he suggests that programmes are different from projects because they respond to three different kinds of inquiries. First, programmes coordinate projects and activities in order to reach a benefit. Second, programmes respond and are modified according to the current business needs, and finally, they take a holistic panorama in order to ensure that the business benefits from the project activities, not just the project client or sponsor (Pellegrinelli, 1997, p.147). Figure 2.4 below describes the fundamental differences between programme and projects. The below diagram shows that programme management is a revolutionary process which takes place over time, rather than projects that are evolutionary and take place over a finite time.

Table 1 Comparison of programmes and projects	
Programme	**Project**
An organising framework	A process for delivering a specific outcome
May have an indefinite time horizon	Will have a fixed duration
Evolves in line with business needs	Has set objectives
May involve the management of multiple, related deliveries	Involves the management of a single delivery
Focused on meeting strategic or extra-project objectives	Focused on delivery of an asset or change
Programme manager facilitates the interaction of numerous managers	Project manager has single point responsibility for project's success

Figure 2.4: Fundamental differences between programmes and projects (Pellegrinelli, 1997, p.142)

Within this study, there are different reasons why the researchers will use programme management for the analysis of sustainable innovation practices.

There are different kinds of programmes management strategies that can be applied, i.e. portfolio, goal-oriented and heartbeat (Pellegrinelli, 1997, p.143). For the current study, a 'goal-oriented' programme will be applied. Pellegrinelli (1997, p.145) explains the goal-oriented programme strategy as that which enables initiatives or developments outside the existing infrastructure or routine, to develop. Based on this, the current study aims to ascertain the 'new' (if any) practices or suggestions that could be implemented and realised with respect to sustainable innovation practices. Relevant to this, Fraser, Dougill, Mabee, Reed and McApline (2006) state that initiatives pertaining to the environment, the formalisation of a bottom-up approach is deemed necessary.

In general, sustainability issues are usually brought to the fore through government or intergovernmental organisations (Frei, Haldi & Sarlos, 2003). They further explain, in most instances like this, it almost comes natural for it to be done using a top-down approach. However, on the other hand, the top-down approach has been criticised because this approach focuses too much on 'outside experts' who are "objective and rational" (Smith, 2008, p.354).

The bottom-up approach is seen more viable due to the "past failings of the top-down approach" (Fraser et al., 2006, p.114) and typically involves the community driving the project (Hempill, Berry & McGreal, 2003). Incorporating a bottom-up approach also means that the local knowledge is valued and appreciated (Smith, 2008). Moreover, Fraser et al. (2006) suggest that the engagement of locals could assist with building community capacity to address future problems.

However, though the bottom-up approach deems favourable for initiatives pertaining to the natural environment, in this case, sustainable energy. Authors suggest programme managers take heed of the following when it comes to the bottom-up approach:

- There could be a critical lack of knowledge among the community members especially by those in charge of implementing the processes (Smith, 2008);

- Can be time and resource intensive (Fraser et al., 2006);

- Initiation of the process can be top-down, but it is vital that the local input is allowed in order to mobilise the process (Fraser et al., 2006).

In light of the above, Jacobsen (1998) thereby suggests that, due to the important interactions between the energy system and the economy, the integration of top-down and bottom-up approaches makes for an important issue.

During the implementation of the programme for the current study, several stages will be incorporated; the first stage is the initiation stage (Pellegrinelli, 1997, p.145). In other words, it involves identifying an opportunity or need to modify a programme. The second step is programme definition and planning, which involves identifying why and how this modification would add value to the current model. Furthermore setting the responsibilities for each of the team so that the project can be managed properly. Pellegrinelli (1997, p.145) mentions the third step would be "delivery" and involves keeping track of the modifications of the model to better the further implementation of sustainability in cities, and within the Netherlands. The result of a better implementation of the model could be a better understanding of the process enabling the stakeholders to cope with the initiative and further to make sense of the innovation travel. Lastly, the final step would be programme renewal, which, according to the author, addresses the identified modifications to the model, giving a better understanding and fulfilling the requirements for the appliance in other cities inside the Netherlands.

While programme management will ensure that work structures are in place for collaboration between the different service providers, sense-making affects the way in which the project and the implementation process is interpreted and accepted by the social environment, in which the project occurs.

The primary goal of this project is therefore, to explore the level of perceptions, experiences and shifts in thinking among the local stakeholders and community with regard to sustainable practices.

2.7   Conclusion

Throughout previous studies, there have been constant discussions around future generations and their ability to benefit from the natural resources, as the present generation currently does. In line

with this, the above theoretical framework therefore showed that the issue of sustainability is real. However, it encompasses various factors, all which are equally important. Although, due to the diversity in sense-making, people rank these factors according to their own level(s) of importance.

Moreover, what becomes important is the manner in which to deal and change the current practices of society, with regard to sustainable energy consumption, etc. Perhaps this constitutes the most important mechanism for change to happen, and though every individual can make a change, change through collaboration becomes more effective for the success of the change efforts. In this instance, thorough planning, effective communication and collaboration underpin the transition process.

3.   RESEARCH METHODOLOGY

The current chapter presents the processes and procedures that were followed during the current study. The research strategy deployed, gaining entrée to the field, the sampling method used, ethical considerations, as well as the sampling size will be included in this chapter. Furthermore, the primary data collection methods; participant observation and interviewing will be included herein. To conclude, the chapter will explain the methodological relevance of the study.

3.1   Research strategy

The intention of this thesis was to shed light on the perceptions among stakeholders in the Netherlands, with regard to sustainable energy innovations, viz. renewable energy practices. More specifically, the study also aimed to determine how stakeholders brought about meaning to these innovations. The depletion of energy resources has caused worldwide anxiety. Being in the Netherlands, who is considered as one of the most energy resource-based destinations, raised an opportune moment for this study to be done.

Snape and Spencer (2003, p.3) suggest that a qualitative approach should be adopted when the researcher wants to provide an "in-depth and interpreted understanding of the social world", in order to understand and learn about the experiences, social circumstances and perspectives of research participants. Since the study wanted to know peoples' perceptions and experiences, it became pertinent to approach the study through an ethnographic lens, using a qualitative approach.

This was because this approach provides rich insights into the thoughts behind the actions of people, especially the stakeholders who are already engaged in the energy sector. Though initially the study was to include both quantitative and qualitative methods. In order to gain insight into the stakeholders and residents' perceptions and experiences; however, the quantitative aspect was revoked due to the unwillingness of the residents to participate in the study. Nevertheless, the qualitative findings were enough to provide in-depth information from the stakeholders. In addition, researchers also adopted an interpretive approach, which was pivotal for an ethnographic study, because it allowed for deepening the understanding and motivation for the evaluation process (Stockdale & Standing, 2006). The study was conducted using participant observation, and in-depth interviews, while applying the theoretical literature to support the research.

The triangulation of methods enabled us to analyse the findings, holistically thereafter offering us liberty to position ourselves, in relation to the findings from all angles of the data, viz. interviews, participant observations and academic literature.

3.2   Gaining entrée to the field

Initially, gaining entrée to the research field deemed an easy task due to our research supervisor, Prof. Dr. Alfons van Marrewijk, being well acquainted with the consulting industry in the Netherlands. The project about sustainable energy fell on his desk in the same instance when my colleague and I signalled intention to do a research study pertaining to change management. Since the project was to incorporate a wide scope, we were offered the opportunity to engage in a collaborative study. His reputation in the industry meant that he was respected; so gaining entrée was no issue, well so we thought.

However, as the project progressed, we realised that Prof. Dr. van Marrewijk as our gatekeeper had no bearing because his role had shifted in this sense. We were no longer interacting with the stakeholders through him, but rather dealing directly with them. Groundwork and building relationships with the stakeholders became our task, without the presence of Prof. Dr. van Marrewijk. During the beginning stages, it was tough as we were confronted with many obstacles, such as; stakeholders not willing to co-operate due to a lack of time, no interest to interact with students, not sure about whether their input would be relevant, and unsure about the progress of their work in relation to the bigger picture. Of course we also realised that being foreigners, possibly, our credibility was not as strong, than if we had been Dutch students.

Nevertheless, as time progressed and stakeholders gained confidence in us, through our interactions with them, and the rapport we built with them, we were invited to attend various meetings and events. These events and meetings offered us the perfect opportunity to be ethnographers; whereby we watched as discussions, interactions and debates unfolded.

3.3   Sampling

As previously outlined, the focus of the current study was to ascertain the experiences of stakeholders in the Netherlands with regard to sustainable innovation practices, more specifically renewable energy and how they brought about meaning to these innovation practices. Initially the study was to be conducted in five cities within the Netherlands, i.e. Bronckhorst, Rotterdam, Enspijk, Waalwijk, and Dongen but due to access challenges, the study population was revised. After meeting with the project managers, Kien, it was established that the study would be extended to all stakeholders and experts involved with sustainable and renewable energy throughout the Netherlands. This now meant that additional desktop research needed to be conducted in order to determine our target and sample population.

Struwig and Stead (2001, p.118-119) state that the sample size is generally, dependent on; the basic characteristics of the population; the objectives set for the research; the data analysis undertaken; the level of credibility assured; the time and financial constraints imposed; the non-

response factors involved; the degree of statistical precision concerned; as well as the basis of judgment made. Furthermore, Coyne (1997, p.623) suggests that the sample selection in qualitative research may have a "profound effect" on the quality of the research.

Salant and Dillman (1994, p.58) posit that the sample selection should define the target population as accurately as possible. For this study, we have chosen purposeful sampling. Purposeful sampling, according to Suri (2011, p.65) involves the selection of "information-rich cases", where researchers can learn in-depth information about the issues that are central to the objectives of the study. In this vein, the focus was on "understanding important cases rather than on generalising from a sample to a population (Patton, 1999, p.1197). Silverman (2010) strongly suggests that during this sampling method, researchers should carefully consider the boundaries of the population and choose a sample case on those grounds. This being said, the sample of respondents for this study included all stakeholders, experts and role-players in the Netherlands who have expert knowledge relating to sustainable and renewable energy. Moreover, Patton (1990) explain that different strategies can be used with purposeful sampling, including; intensity sampling, stratified sampling, typical case sampling, critical case sampling, and snowball or chain sampling. We made use of stratified sampling, which involved selecting respondents from different organisations, departments and job groups. Furthermore, stratified purposeful sampling is often used to capture variations in the phenomenon being studied (Suri, 2011).

Another strategy adopted was snowball sampling; Saunders et al (2009, p.240) suggest that the snowball sampling method is commonly used when it is difficult to determine members from the desired population. Since this was the experience during this study, the snowball method deemed appropriate due to the initial access and participation problems experienced, because the target population became hidden or inaccessible (Cohen & Arieli, 2011) to us. During snowball sampling, identified respondents refer other respondents to the researcher, who could potentially participate in the research (Saunders et al., 2009) or who possess characteristics that are of research interest (Biernacki & Waldorf, 1981, p.141). In this vein, the "snowball sample group grows like a rolling snowball" (Cohen & Arieli, 2011, p.424). Cohen and Arieli (2011) further explain that this method could assist the researcher by locating respondents through a social network, and allow for easier access to the research population, while at the same time, encourage involvement and participation among the target population. Furthermore, it is explained that the researcher should stop accumulating respondents once no new cases are given or the sample is big enough (Saunders et al., 2009).

For the current study, the initial sample was chosen based on the database that was accessed through Kien. The database included all the stakeholders and residents involved with the project, within the five different cities. The database showed that there were approximately 35 stakeholders involved with the project including building contractors; consultants; engineers; technical suppliers; installation technicians; and others. With reference to the residents, forty residents from each city, with a total of two hundred residents were to be surveyed but this aspect of the research was revoked, for reasons mentioned previously.

After many weeks of negotiation, only two cities showed interest to participate in the study, which brought about the decision for the sampling method to be revised. Researchers incorporated the aforementioned methods due to the low access and participation by respondents. Extending the sample reach also meant that the data obtained would be a representative sample of the population, thereby ensuring the reliability of the findings.

3.4   Ethical considerations

Henn, Weinstein and Foard (2009, p.78) posit, that growing concern has been expressed in social research regarding ethics, due to the historic shift that has occurred in the balance of power from the research establishment towards the ordinary citizen. Furthermore, they argue that data collection methods have become far more sophisticated over recent years, probably because many researchers have started using computer technology. Henn et al. (2009) furthermore asserts that it is imperative to remain honest with the respondent and also to ensure that the information obtained will be treated with strict confidentiality and anonymity.

For the purpose of the current study, the following actions were taken in order to make sure that the rights of those involved were respected and adhered to:

- Firstly, a cover letter including the name of the university and the purpose of the research, before the interview was conducted. The introduction provided respondents with the assurance that they could withdraw their participation from the research if they felt uncomfortable about the way in which the research was being conducted **(Refer to Appendix A).**
- Secondly, the assurance of confidentiality with regard to the information given was provided, with no names being disclosed during the analysis and findings.
- Thirdly, it should also be noted that the respondents all expressed themselves willing to participate in the study, with no pressure being applied by either the researcher or the interviewer.
- Lastly, the interviewers were informed of all of the above-mentioned rights, and were requested to inform each respondent accordingly.

3.5   Research techniques

The research techniques deployed for collecting the primary and secondary data included the use and analysis of research-relevant literature and documents, participant-observation and Interviewing. Having said this, each technique will be discussed below to illustrate their relevance and significance. Yanow and Schwarts-Shea (2009) argue that ethnographic research-question formulation, observation, description and explanation depend on the theoretical foundation, and so many academic and research-relevant texts and documents have been reviewed in order to create

understanding, and support claims made in the study.

3.5.1 Literature and documents

The theoretical framework of the current study was extracted from the literature review, which was conducted in relation to sustainability, renewable energy, sustainable energy, sense-making and programme management and the perceptions and experiences therein, or similar in nature.

3.5.1.1 Journal articles

Articles from such journals as the *Journal of Renewable and Sustainable Energy Review,* the *Journal of Economic Psychology, Journal of Environmental Psychology, Ecological Economics, and Energy* among others were reviewed.

3.5.1.2 Internet websites

Information pertaining to the energy consumption, sustainable and renewable energy was obtained from Internet sites as International Environment Agency, Philips, Eneco, and World Energy Council.

3.5.1.3 Theses and dissertations

To assist the researchers regarding the finer aspects of technical writing, completed dissertations and theses were reviewed for guidance.

3.5.1.4 Books

An array of books discussing the topic of energy, sense-making, programme management, and research was used to aid in the compilation of the literature review, and for obtaining relevant information to various concepts discussed in the current study.

3.5.1.5 Government publications

Various government publications, such as the Renewable Energy White Papers, The International Solar Energy Society, and Energy Reports were also consulted in the completion of the current study.

The above-mentioned sources were critically examined for the literature review in the current study.

3.5.2 Participant observation

Van der Waal (2009, p.29) postulates that participant observation involves "making use of oneself as the basic research instrument" through immersion with the social environment under study, in order to gain insight into an enquiry of research. Further, Becker (1958) explains that researchers watch the people they are studying, to see how they behave in situations. Tedlock (1991) supports this statement by explaining that through participant observation, human understanding is achieved

because of the fieldworker's learning through thinking, seeing, feeling and even being native in the organisational setting. Van der Waal (2009) states; during this process, the researcher is cognizant and open to the events and interactions encountered. Further, he explains that the key to this method is the ability of the researcher to listen attentively and observe as closely as possible, in order to gather all data within the research setting.

Because the current study aimed to determine the perceptions and experiences of stakeholders with sustainable innovation practices, the observations were scheduled to take place at events such as meetings, gatherings and round table discussions, with the following observational criteria, as shown in Table 1 below.

Observational feature	Explanation
Participants	Personal characteristics, verbal behaviour, body language, facial expressions
Actions	Acts, feelings, behaviours, communication

Table 1: Observational features

The above observations aimed to understand the level of dialogue, interest and communication among stakeholders at events. Since the topic under study required the support from local municipalities, residents, community stakeholders, etc. the attendance to events became pertinent in order to understand how the stakeholders make sense of this process. Through observing interaction, communication, body language, facial expressions and the setting, it could shed light on important questions.

3.5.3   Semi-structured Interviewing

In addition to participant observation as a method, we also adopted interviewing as a research strategy. Di Cicco-Bloom and Crabtree (2006) explain that semi-structured interviews are the most common method for qualitative research. Further, Di Cicco-Bloom and Crabtree (2006) postulate that it could take place with an individual or groups of individuals where the interview lasts from thirty minutes to hour(s). Saunders et al. (2009) explain that semi-structured interviews provide an opportunity for researchers to probe the respondent for answers. This is especially valuable when the researcher requires an explanation from respondents. Further, they argue that semi-structured is particularly concerned with understanding the "meanings" that respondents ascribe to various phenomena. Jarratt (1996, p.9) postulates that this method allows for "unexpected facts or attitudes to be explored". An important aspect with interviews is that a neutral, unthreatening environment should be chosen for the place of interview, as this will encourage the respondent to open him or herself to the "underlying motivations behind their perceptions" (Jarratt, 1996, p.10). In most instances, these interviews are scheduled in "advance at a designated time" and place outside of "everyday events" (Di Cicco-Bloom & Crabtree, 2006, p.315).

When conducting the interviews, participants were chosen based on their level of expertise with sustainable and renewable energy practices. This was because we wanted to gain an in-depth understanding about these practices, from a mixed sample of respondents. Table 2 below depicts the stakeholders interviewed for this study, which shows a variation of experts in order to obtain an array of opinions and views.

No	Occupation	Sector	Company	Sex
1	Researcher	Education	Urgent Change Lab	Male
2	Researcher	Oil and gas industry	Energy for One World	Male
3	Policy Officer	Government	Geldermalsen Municipality	Male
4	Urban Project Consultant	Consultancy	Blijstroom	Male
5	Energy Consultant	Energy	Stichting Kien	Female
6	Programme Manager	Energy	Stichting Kien	Male
7	Sustainability Analyst	Energy	Philips	Male
8	Energy Consultant	Energy	Stichting Kien	Male
9	Public Relations Manager	Energy	Eneco	Male
10	Policy Officer	Government	Waalwijk Municipality	Male
11	Real Estate Advisor	Real Estate	Waalwijk Casade	Male
12	Mechanical Engineer	Energy	Park-Id BV	Male
13	Management Consultant	Electricity	Royal Haskoning Enhancing Society	Male
14	Programme Manager	Sustainability Projects	Stichting Doen	Female
15	Energy Policy Analyst	Consultancy	Nlingenieurs/ Duurzame energie koepel	Male
16	Engineer	Energy	Tauw	Male
17	Consultant	Energy	Zon-Licht/ Rexel	Male

18	Climate Change Advocate	Energy	Urgenda	Male
19	Consultant	Consultancy	De Leidse Doetank	Male
20	Consultant	Consultancy	Enspijk	Male

Table 2: List of interviewees and their characteristics

The above table shows that twenty respondents were interviewed during this study. All interviews were executed via face-to-face dialogue using a tape recorder, with the exception of one interview that was conducted via Skype due to the respondent being out of the country. The majority of the interviews took place in the formal work environment of the respondent with one being held at Starbucks coffee. The duration of the interviews ranged from 1 hour to 1 hour and 30 minutes depending on the conversational flow of the interview, availability of time on the part of the respondent and intensity. All questions asked during the interview were related to a variety of topics, all aligned to explore the phenomenon under study.

A total of twenty interviews were transcribed with the data amounting to 320 pages. Transcribed interviews represent the raw data of the research, and therefore provided "a descriptive record of the research" (Pope, Ziebland & Mays, 2000, p.114), thereafter requiring the researcher to make sense of the data through interpretation. Apart from audio-recording the interviews, it was also important to take notes during the interview, in case a technical glitch or malfunction (Saunders et al., 2009) occurred. Moreover, they recommend that once the interview is complete, a full record of the interview should be completed, so that all details are recorded whilst the interview is still fresh in memory. All the interviews were typed out to ensure data diversity and relevance, also enabling the researchers to easily sift through for noteworthy information. Within three days after the interview was conducted, they were transcribed to ensure that the impressions, content and experience were captured whist the information was still fresh in mind.

The interview questions were structured in such a way that they encouraged the respondents to openly share their views, due to most (if not all) of the questions being open-ended or semi-structured in nature. Though most of the questions to a certain degree were prepared beforehand, we exercised flexibility, as we preferred for the interviews to continue more like an intense conversation rather than an interview. Notably, because we were dealing with professionals and experts, the impression we received from their engagement with us was that the majority of the interviewees preferred a more formal interview rather than an informal or loose one. This could be owed to their level of professionalism and the nature of their work in the industry. In fact, this did not deter them from openly sharing their experiences and rather seemed to encourage their level of participation and articulation.

Of the major benefits associated with this method was the opportunity for questions to be prepared ahead of time, allowing informants the freedom to express themselves in their own terms and can provide reliable, and comparable qualitative data (Cohen and Crabtree, 2006). Apart from audio-recording the interviews, it was also important to take notes during the interview, in case a technical glitch or malfunction (Saunders et al., 2009). Moreover, they recommend that once the interview is complete, a full record of the interview should be completed, so that all details are recorded whilst the interview is still fresh in memory.

3.6   Research analysis

Attride-Stirling (2001, p.385) argue that research using qualitative methods has received growing attention because it allows the researcher to obtain a "deeper understanding" of the phenomenon and its dynamics under study. Ritchie, Spencer and O'Connor (2003) explain that before the analytic process, the researcher is faced with a mountain data. This being said, they suggest that the first step involves sorting and reducing the data in order to make it more manageable. On the other hand, Attride-Stirling (2001) postulates that though this research method may be more favourable among researchers, its analysis is not always an easy task. She further states that if qualitative research is to yield meaningful and useful results it becomes important that the data be analysed in a methodical manner.

Taking the debate on the analysis of qualitative research into account, we were cognizant of the challenges with qualitative analysis. The analysis of the data collected for the current study i.e. interviews, field notes and observations were characterised by "intensive and repeated reading of the material" (Schmidt, 2004, p.254). Interviews were transcribed, with all errors eradicated due to "corrective listening". Through the 'saturation process' whereby all data is cleaned and checked, all errors known the researcher were eliminated (Di Cicco-Bloom & Crabtree, 2006, p.318).

During the saturation process, we colour-coded all the important descriptions, perceptions, experiences, views, themes and ideas, after which they were categorised accordingly. Using the inductive analysis approach, data was categorised based on the themes developed, which were directly linked to the questions to be answered in this study.

Another important aspect discovered during the research project, was that the analysis process did not take place periodically, but could rather be seen as an on-going and continuous process. This was because constantly, new ideas emerged through the analysis and repetitive reading of the data process.

Over time, the analysis process became more manageable however, the amount of data at times, was overwhelming due to the amount of interviews, level of depth and direction of the conversation. Nevertheless, the entire process was enriching in itself and offered great insight into a purely qualitative study.

3.7   Research evaluation

As discussed in section 3.6 above, qualitative research has received growing attention in academic inquiry. This is because of the potential depth it provides to researchers during the exploration of societal issues under study. Because of this, much emphasis has been placed on the trustworthiness of this research approach, therefore becoming a critical element to consider while using this approach. This is also due to the fact that the value of scientific research is somewhat dependent on the researcher's ability to "demonstrate the credibility of their findings" (LeCompte & Goetz, 1982, p.31).

3.7.1   Reliability and credibility

Reliability, according to Lewis and Ritchie (2003), concerns the process of replicability and degree of consistency (Hammersley, 1992). Reliability questions, whether using the same or similar research techniques and method of analysis, if the same findings would be generated (Long & Johnson, 2000). In plain terms, reliability involves the replication of a research in the same setting in quest of attaining the same (similar) findings. Further, this process can also be referred to as the consistency of research (Lewis & Ritchie, 2003). The authors further state that achieving consistency in qualitative studies has been questioned because in most instances, the phenomenon under study tends to be complex. Further, it becomes even more complex because the researcher participates during the data collection process, thereby contributing to the interpretation and meaning-making processes. In this vein, the researcher engages in active participation with the subjects under study, thereby making the researcher and the researched valuable contributors to the meaning-making process. For this reason, the current study has been persuaded by multiple interpretations and social constructions.

To ensure reliability, the following step was taken by the researcher:
- Errors and problems in the questions were rectified prior to the commencement of the study, having been detected between the researchers and the research supervisor.

Silverman (2010) explains that the data extracted should be positioned within the local context in which it was derived. In this case, the data originated from the views of different stakeholders working within the Netherlands. And so, if the same study would be conducted in a different setting, most likely the outcome with regard to the findings would produce different results. Moreover, due to every qualitative researcher possessing his or her own level of interpretation, subjectivity is high thereby contributing to the originality of the research.

Further, reliability can also be achieved through transparency of the data in which the researcher explicitly describes the research strategy and methods used during the data collection process (Kitto, Chesters & Grbich, 2008), as was illustrated above. Another manner in which the

researcher can achieve reliability is through reflexivity and evaluative rigour. This is where the researcher places him or herself within the contextual setting and theoretical debate to develop and relay his stance on the phenomenon being studied, without any bias. With relevance to this study, this has been completed where we explained our academic position in relation to the models, concepts and theories used during this study, and their relevance to the study.

3.7.2   Validity and trustworthiness

Measures of validity in research refer to the instruments (interviews, field notes or focus groups) used to collect the data. As outlined by De Vos, Strydom, Fouche and Delport (2006, p.345), the validity of the measurement procedure is the degree to which the measurement process measures the variable that it claims to measure. In other words, whether the measurement instrument actually measures what it was intended to do (Long & Johnson, 2000).

Semi-structured face-to-face interviews were conducted with respondents i.e. stakeholders, experts and engineers involved with sustainable energy and renewable energy projects in the Netherlands. The questions in the interview were determined using the research questions and objectives. However, previous studies by Walker, Devine-Wright, Hunter, High and Evans (2010), Dincer (2000) and Turner (1999) on sustainable and renewable energy were also used as a guideline to assist in the formulation of questions.

In order to achieve trustworthiness in the qualitative part of this research, the study was guided by six suggestions as outlined by Yanow et al. (2006, p.59). First, they suggest providing a thick description or in other words, deep description of settings, event activities that take place within the organisation. This will bring meaning and a more vivid idea of the experiences lived inside the organisation and the people studied. Second, they also use reflexivity this in order to help create understanding about the researcher as an instrument through which the research is produced (Yanow et al. 2006, p.60). They mention that factors like academic background, nationality, and difference in experiences will further develop understanding and provide a more thorough analysis of the situation per se. Third is triangulation, which can be understood as the use of different tools in the research phenomenon (Yanow et al., 2006, p.60), which, in this case they will be described below. The different tools used will ensure access to data needed to conduct the research. The fourth according to Yanow et al. (2006, p.60) is to constantly change processes or adjust the conduct of research as if those processes might be audited. This will create clarity and create transparency for the reader of the research. Fifth is a "negative case scenario" which means that constant thinking about the phenomenon in the organisation it is done, whereby things are not taken for granted and if a case scenario is starting to be repeatedly or monotonous, other questions need to be raised. It is the aim of not looking just for confirmatory evidence alone, but to keep checking for other alternatives (Yanow et al., 2006, p.61). Sixth is member-checking. And as contended by Yanow et al. (2006, p.62) this

requires going back to the participants in the study, in order to verify that the information interpreted is the same as that intended by the participants.

3.7.2.1   Internal and external validity

Malterud (2001) explain that internal validity asks whether the study investigated what it was meant to. She further suggests that research is usually conducted so that the information obtained can be used beyond the study setting, however, not all studies produce universally transferable findings. Moreover, Baily (2007) states that due to this, the term credibility has often been used to substitute internal validity. This is because it addresses the believability, authenticity and plausibility of research (Baily, 2007).

Furthermore, the current research project also deployed multiple methods for data collection and for this reason; the data collected were triangulated in order to attain quality and comprehensiveness in our research.

While the above describes internal validity, the following section will discuss external validity of this research. According to Malterud (2001), external validity questions in which contexts the findings can be applied. This means the generalisability of the research sample (Baily, 2007); the ability to generalise from one sample to the larger population or from one setting to another (Baily, 2007). Due to qualitative researchers aiming for transferability, rather than external validity, to find out whether findings are transferable or applicable beyond the settings, situations, and participants included in the research, external validity becomes important for this research.

3.8   Methodological reflection

The current study comprised a collaboration of two researchers from different historical, geographic, cultural and research backgrounds. One being from Mexico and the other from South Africa was thought to make for an interesting collaboration. During the initial phase of the study, it was decided that both a quantitative and qualitative approach would be adopted, with both researchers being able to focus on a particular approach. However, as the study progressed, and the challenges emerged, in the end, the study would only comprise of a qualitative research approach. Eliminating the quantitative aspect now meant that residents from communities would no longer be involved in the study, with only stakeholders being part of the target population. Further, this also now meant that the workload needed to be revised and so we decided that both researchers would be present and involved during the interview of respondents' process.

During the first few interviews with Kien members, we found that the presence of both researchers, intimidated the interviewees with them exhibiting closed-off behaviour such as lack of conversational responses as well as uninviting body behaviour. One interview in particular, the respondent behaved in an unpleasant manner toward the researchers making snide comments,

unpleasant body language and facial expressions. During the reflection of the interviews, researchers found this type of behaviour to be compromising for the data collection process and decided to use a different approach. From this point forth, we thought we should try the interview process with just one interviewer present. We thought this to be a better alternative due to the presence of both researchers creating a rather intimidating and interrogation like scene rather than a conversational interview. At this stage, collecting the data was more important than the attendance of both researchers, so we decided to divide the tasks between ourselves.

This now meant that the each researcher would be allocated specific tasks in order to ensure that the workload was evenly split but more importantly that the study process would progress, for successful completion. One researcher was allocated the responsibility of conducting interviews, while at the same time; the other researcher would be gathering the secondary data for the theoretical framework. Notably, the primary data collection process was not an easy task with countless challenges confronting the study process. Initially we were to conduct interviews with respondents from a pre-determined database of respondents, but as we discovered there was a high reluctance to participate from this list of respondents. This required us to revise our approach and after some brain storming we decided to research all commercial entities involved with sustainable innovation practices in the Netherlands. As time consuming as this task was, it was the only option. We managed to find approximately 38 companies who were involved with these kinds of projects in the Netherlands. After which, we decided to contact these potential respondents via telephone. After explaining our study to them via telecom, we followed up the communiqué with an email giving further detail, and requesting their participation.

As one can imagine, slow responses and rejection emails can be really demotivating but at the same time we tried to maintain positivity. Eventually, responses slowly started picking up and though they were slow, every interview was significant and important for us, as reaching our target of 20 interviews was all that mattered. Finally, toward the end of May, we reached our target and almost immediately commenced with the transcription of the completed interviews. Furthermore, language in certain instances also deterred respondents from wanting to participate in the interview, because some respondents preferred to communicate in Dutch, while the researchers' native languages are English and Spanish. However, the language difference also created an interesting opportunity. Whereby during the ice-breaker stage of the interview with one of the stakeholders, the stakeholder requested if the interview could take place in Spanish.

Throughout the interviews, especially with respondents who exhibited poor participation, body language and verbal behaviour, the researchers needed to take care not to become biased by the information being collected through the dialogues. This was a challenging task however the researcher used the different opinions and views expressed by the various stakeholders to confirm and test the similarities in the opinions among the stakeholders.

3.9 Personal Reflections

Being given the opportunity to do research in the Netherlands has truly been a rewarding experience. Not only was it valuable towards the attainment of our Masters degree, but it also offered us an opportunity to engage with locals on a professional and personal level. Though the level of engagement was only done during the interview process, nonetheless it offered us insight into the culture of the Dutch people. It is important to add here that entry to the field was not an easy task, as there was an instance where a stakeholder displayed impolite and rude behaviour, but as we came to understand, this is sometimes the way people behave when they feel like they are being interrogated. Of course as a researcher(s), this is not ideal but one needs to prepare for instances like this. We realised that as expats, we did not quite understand the Dutch's way of doing or saying things, but as the study process progressed and engagement with various people in the field, we realised this is just how the Dutch people are. Straight forwardness was part of their cultural behaviour. No doubt, instances like this can really test your patience.

On a more positive note, the topic under study being completely new for us both, gave us immense insight into the energy sector, the crisis as well as the different measures being put into place to combat the issue of climate change. Since we are also inhabitants of the world, this gave us knowledge about how we can combat climate change, and further more, take this knowledge back to our home countries. And since we both originally come from developing societies, the information gained is indeed valuable for us, and our ability to filter the information gained in the Netherlands, into our society.

4.   HISTORY AND CONTEXT

The following chapter will discuss the historical and contextual background. The aim of this is to illustrate the Netherlands' position with regard to sustainable energy innovation initiatives, oil and gas industry and the current green drive in the country. The findings from this will assist us during the interpretation of our findings, and will also enable us to contextualise sustainable innovation practices in the Netherlands.

4.1   Gas supply in the Netherlands

Within the European Union, the Netherlands is considered the largest producer of natural gas according to the source titled; "*Groningen gas field*" (n.d., para.1). They further state that the field is amongst the largest gas fields in the world. Production of gas in the Netherlands started in 1963, with gas being produced using 296 wells on 26 different production sites ("*Groningen gas field",* n.d., para.1). Figure 4.1 below shows the geographic location of Groningen. Though the area is only 900km2, the area is concentrated with gas and when originally discovered had original reserves of 1,325 Bm3 (Whaley, 2009).
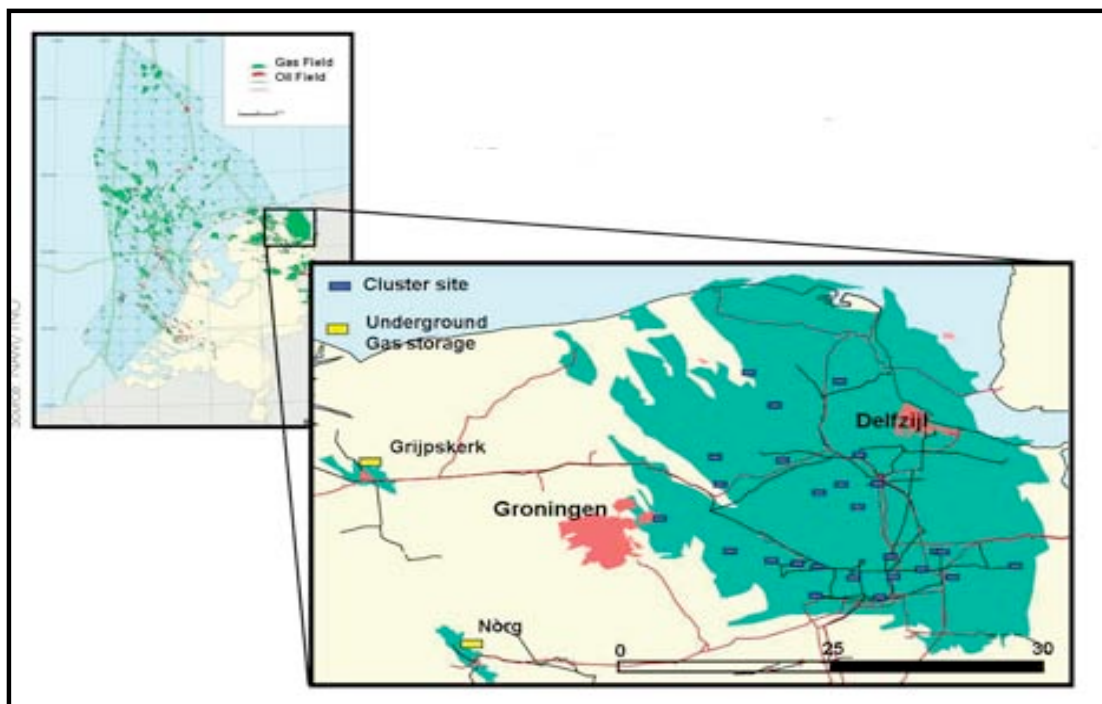
Figure 2.5: Geographic location of Groningen gas field
(Whaley, 2009)

The gas industry is crucial for the Dutch economy with natural gas revenues generating around 10 billion euros per year ("*Gas",* n.d., para.2). Furthermore, the source "*Gas*" (n.d., para.2) states that approximately half of energy consumption in the country comes from natural gas. The surge of gas in the Netherlands led resulted in houses converting to natural gas as their main energy

source. In this instance, businesses were also able to cut back on costs by switching to natural gas (Whaley, 2009). In hindsight, the Netherlands produces more gas than it can consume domestically, thereby making it a net-gas exporter ("*Oil and gas security: emergency response of IEA countries*", 2012, p.18). With the tax and revenues generated from gas sales, the Dutch government was able to increase the standard of living, health and education in the country.

However, due to the excessive production, gas reserves have slowly started to decline, and by the looks of it, the Netherlands will only be able to maintain its current competitive position until 2025 ("*Gas*", n.d., para.3). This has led the Dutch government to devise a plan for the region to become the gas interchange of North Europe, however not only as a producer of gas, but also as a transit, storage, trade and knowledge developer (*"Gas"*, n.d., para.4-5)

4.2   Sustainable energy in the Netherlands

The sustainable energy sector, though only a small part of the Dutch economy, has shown steady growth between 2008 and 2011, within most economic indicators (Zult, Vuik, & Van Rossum, 2013). This suggests that the sector is growing in the Netherlands especially with relevance to employment, innovative production, exports and a move towards a 'greener' economy. Further, according to the report "*the Netherlands: we know wind power*" (2010), the Netherlands is ideally located to become one of the leaders in the supply of offshore wind. This is because the region strategically borders on the leading offshore wind energy countries while at the same time has direct access to large harbours. The intense logistics required for the transportation and assembly of turbine components has resulted in a shift toward coastal manufacturing thereby putting the country in an even more favourable position, when compared to Germany, Denmark, and the UK.

However, the above position by the Netherlands is compromised. Dinica and Arentsen (2001, p.1) argue "despite a long and strong tradition in the use of wind milling techniques in the Netherlands, the rise of wind power technology has been surprisingly slow and full of obstacles". Consequently, resulting in the Dutch falling behind with domestic targets when compared to the other Western European countries, thereby threatening their advantageous position. Further, the Netherlands is ranked within the "top 30 countries in the world for high population density" (Jefferson, 2006, p.581). He further suggests that this is largely due to more and more land being used for housing and infrastructure developments substantially decreasing natural habitats, increasing energy use and carbon emissions.

The above complications forced stakeholders, viz. the Dutch government for one to pay closer attention to sustainability. Through this learning, the government adopted a new perspective evident in the development of new policy initiatives with a focus on climate change, loss of biodiversity, and overexploitation of resources (Kemp & Loorbach, 2005). In line with this, the need for partnerships is also prevalent for knowledge sharing (Glasbergen & Groenenberg, 2001). However, they explain that

partnerships sometimes require government intervention for policy development especially with regard to innovation breakthrough.

4.3   Green drive in the Netherlands

In each section, 4.1 and 4.2 above, it can be seen that the country is well suited for sustainable energy innovation practices, albeit government intervention is imperative for the transition to a sustainable energy environment. Evidently, the Dutch government is geared to change the situation in the Netherlands especially with relevance to energy and the level of consumption. Dinica and Arentsen (2001, p.2) argue that the Netherlands has built and re-shaped its focus around renewable energy over the last three decades, with the main focus being wind "turbine technology in order to deal with the resource diversity problem". The Energy Research Centre of the Netherlands, in their report titled *"Energy efficiency obligations in the Netherlands: a role for white certificates"* (2009), state that the Netherlands devised ambitious targets to reduce greenhouse gas emissions, increase energy efficiency and renewable energy. These targets coincided with the formulation of a climate policy in 2007. In alignment with the EU 20-20-20 targets, the climate policy was specifically targeted at changing the behaviour of citizens in both the residential and commercial sectors ("*Energy efficiency obligations in the Netherlands: a role for white certificates",* 2009). According to the *"Environment"* report by the Government of the Netherlands (n.d), the most prevalent targets of the policy are:

- 20% reduction in EU greenhouse gas emissions below 1990 levels;

- 20% of EU energy consumption from renewable resources; and

- 20 % reduction in primary energy use compared with projected levels to be achieved by improving energy efficiency.

The above targets are set for all EU member states. In response to the above targets, the Netherlands is working fiercely to meet the reduction in greenhouse gases by reducing energy consumption, using more energy from renewable sources and emission trading with other countries (*"Environment"*, n.d). There would be a surge for investment in renewable energy initiatives due to the increased interest for solar PV, offshore wind, onshore wind and co-firing biomass ("*An outlook for renewable energy in the Netherlands"*, 2012, para.1).

In light of the above, perhaps the message and efforts by the Dutch government has reached consensus within the commercial sector. Owing to the development of platforms for energy awareness such as De Energieversnellers where energy initiatives, problems and solutions can be shared. Platforms like these allow for interesting discussion and communication among stakeholders who aim to mobilise the transition to sustainable energy use in the Netherlands. Further, many businesses such as Eneco, Stichting Doen, Energy for One World, Duurzame Energie Koepel, De Groene Zaak are gearing their business models for sustainable innovation practices and transition. De Groene Zaak for instance is focused on moving toward a sustainable economy with their slogan *"Creëert de economie*

van morgen vandaag" clearly illustrating that they want to transform the economy to become a more sustainable one. On the other hand, Duurzame Energie Koepel is more fixated on renewable energy with its main aim to increase the influence of politics and policy in favour of renewable energy. While Eneco aims to assist consumers through education on how to lower their energy use, transition to renewable energy, and reduce the negative environmental impacts. The above highlights only a few businesses in the Netherlands who have geared their efforts toward a sustainable environmental system. There are many other companies who have adopted the same strategy. The strategy among businesses looks impressive and much in alignment with the goals of the Dutch government, but one could question whether the goals, mission and vision of these entities are realty impacting on the behaviour of society.

Having discussed the above, the following section of the current study will discuss the findings of the study.

5.   RESEARCH RESULTS

In this chapter, the perceptions among stakeholders regarding; renewable energy, sustainable innovation practices as a transformative process and national co-operation among stakeholders will be explored, using the techniques and approaches as mentioned at the beginning of this research. Furthermore, the cultural ideologies regarding sustainability and renewable energy, behaviour among Dutch people with regard to adopting sustainability, and the relations among the different stakeholders will be discussed in the current chapter. The findings will shed light on the current situation of sustainability and renewable energy in the Netherlands.

5.1   Perceptions among stakeholders: sustainable practice

The majority of respondents perceived renewable energy practices and sustainability as a suitable mechanism to develop and move towards a sustainable energy system in the Netherlands. They highlighted that there are more benefits affiliated with the implementation of a sustainable energy system than negative aspects. There are several reasons and motivations for their views in this respect, and why people want to move towards a sustainable system. We can elude different factors to this innovation road that make it attractive for any inhabitant or a society to implement sustainability.

In light of the above, the following paragraphs aim to highlight the motivations toward a sustainable system, as well as the resistance affecting the transition toward a new way of doing things. Further, in this section we will also explain the factors that stakeholders consider important regarding the implementation, as well as the long-term implications of this movement.

5.1.1   Sustainable energy practices: necessity and attainment

Until recently, fossil fuels were among the main producers of energy. Globally, it is known that fossil fuel resources are rapidly depleting due to over utilisation, and over-use because of the increasing demand for energy. Not only is its supply depleting, but academic scholars have debated its effects on the natural environment such as; threats to human health from carbon emissions and the production of greenhouse gases which are among the main contributors to global warming (Lashof & Ahuja, 1990).

With respect to the above, during the study it was found that the majority of respondents' recognised the need for changes in the energy production and consumption process, to lower the negative environmental impacts, and to change the global environmental situation. Three of the respondents had the following to say in this respect:

"The world is going to consume so much more energy and it is evident that there are so many people wanting the same energy as Holland, Germany, etc…" (Interview with the Founder of Energy for One World).

"I believe we have to work in a better world and instead of being part of the problem I want to be part of the solution… everything you do has to support a sustainable future." (Interview with Public Relations Manager at Eneco).

"Things have to change… it is our obligation to our world and the world of our children to change things… not only about energy but also how we use the raw materials, which are slowly decreasing…" (Interview with Programme Manager at Kien).

Based on the views and opinions expressed by the respondents, the above is in itself evidence that the Dutch society have realised the need for sustainable practices. Further, during the primary data collection process in; Rotterdam, Enspijk, Eindhoven, Amsterdam, Den Bosch, to mention a few, the researchers noticed the installation of solar panel energy systems which further suggests that though the findings discussed in the study are primarily based on the opinions of stakeholders, the residents in the Netherlands have also recognised the need for sustainable practices. Respondents confirmed the following:

"The growth of solar panels in the Netherlands is doing so at a very fast pace, so it is working, people are picking up the technology and starting to invest." (Interview with Public Relations Manager at Eneco).

"We have reduced our carbon footprint for business travel by promoting video conferencing so not flying around the world for every small meeting… air is a very polluting way of travel." (Interview with Sustainability Analyst at Philips).

"We focus actively on energy efficiency… we clearly support these developments. In terms of our manufacturing activities, we focus on improving energy efficiency of our products and a lower impact on the environment." (Extracted from the Philips.nl website).

Constant debates around energy have stressed the need for society to adopt renewable energy as common practice. Haines et al. (2007) explain; there are different reasons why society needs to consider renewables as a vital and a needed step for the development of different societies around the world. One of these reasons is that 350 million households around the world do not have access to central power energy networks (Armaroli & Balzani, 2007). Armaroli and Balzani, (2007) further explain that the incorporation of renewables as a standing item on the agenda of many governments would mean the formation of decentralised electricity systems. This would not only mean

residents independency from big electricity companies but also an avoidance of pricy transmission grids. Eneco (n.d) says the following about this:

"If you know how to use energy saving, it is much easier… smart transmission grids (meters) give you insight into energy consumption… by day, week, month and at a glance." (Extracted from the Eneco.nl website).

In light of the above, respondents explain that there has been a surge in the interest for renewable energy practices, highlighting it as a pressing issue throughout the Netherlands. They suggest that more and more residents are transforming their homes, by implementing renewable energy practices and measures. However, respondents have also explained that scepticism exists with regard to whether the switch to renewable energy is enough for the Dutch society to make an impact on the overall problem:

"It is definitely increasing (the demand for solar panels) but the question is if it is increasing enough to achieve the goals… all the developments that you see; owners of houses buying solar panels, people talking about it a lot." (Interview with Sales Consultant at Rexel).

Researchers found three main reasons why the Dutch were inclined to adopt renewable energy practices; (1) financial benefit (making profit), (2) independency from large energy companies and finally, (3) because renewables promote green and the clean obtainment of electricity, thereby effectively reducing CO_2 emissions.

Most of the stakeholders have asserted that the change must be done now, stressing a sense of urgency, in order to reach a sustainable system. Above that, respondents argued that everyone wants to live in a sustainable world. Currently, the global energy supply cannot cater for 9 billion inhabitants, searching for energy and an improved lifestyle. According to Armaroli and Balzani (2007), in 2004 the use of solar energy has avoided the production of 25–30million tons of CO_2.

"There is this whole urgency thing behind it because the general public roughly knows that climate change is happening and that we need to do something with this renewable energy, we need to take certain measures even before 2020." (Interview with Climate Change Advocate at Urgenda).

Moreover, there is a tendency among people that are enrolled in a certain way to this initiative; they want to persuade more and more people to join and to be aware of this movement. They are convinced that this type of energy helps everybody and that society can rely on it. Every stakeholder that we interviewed was conscious that this change should be done inclusively. This means that it can't be done within just a few members of a community and it will take time for this transition to take

effect, however, participating in this movement as the first entrepreneurs in a society is a powerful driver that motivates people to continue mobilising the process.

> "Everyone who is organising this; as a volunteer or working in this subject, recognise it to be an important, however, everybody needs to get involved." (Interview with Energy Consultant at Kien).

However, what we found during the interviews with respondents is that; they felt that the matter is viewed too much, from a short-term perspective, where respondents explained that they do not adopt led lighting systems because it is more expensive than regular lights. This may hold true, but in this regard, they lack to understand the long-term benefits affiliated with the implementation of led lighting, whereby the return of investment would be realised within less than a year after the implementation.

> "There is too much short-term thinking whereas there is no long-term vision, like the 'where are we going'? We have to move towards a decentralised renewable energy system." (Interview with Climate Change Advocate at Urgenda).

As previously outlined in the theoretical chapter of the current study, achieving sustainability should not only rest with policy makers, and governments, but should be the responsibility of everyone (McKenzie, 2011).

Despite the need for renewable energy, only 4.4% of the energy collected in the Netherlands comes from renewables *("Energy in the Future",* n.d). One of the main goals for the European Union commitment is to increase this percentage to 14% by 2020 (Snijder & Van Der Graaf, 2014, p.33). Albeit, the majority of stakeholders suggest that the buying and implementation of renewables is increasing, they dispute the fact that only 4% of the energy in the Netherlands comes from renewables, and this according to them is still a low figure. They feel that the Netherlands has an innovative and educated society, which could help in speeding up the transition process:

> "The Netherlands, people are quite innovative… so I think there are some innovative companies… but in general if only 4% are from renewables then I would it is not leading yet…" (Interview with Sales consultant at Rexel).

> "There is a very high knowledge level in Holland… there is lots of potential to bring this type of initiatives into the spot light and try to internationalise them." (Interview with the Founder of Energy for One World).

"Innovation attracts younger and smarter people, which brings with it growth, instead of slow growth it brings fast pace growth and this is what we need in the Netherlands..." (Interview with Public Relations Manager at Eneco).

Most of the interviewees expressed disappointed and pessimism with regard to the increase of renewables to 14%, by the year 2020. They accept that the Netherlands needs to adopt these new technologies and ways to obtain energy, however, this process might be slower and should rather be viewed from a long-term perspective with respondents explaining the following:

"Economies don't like revolution, they like evolution, they have to gradually transition, at a steady pace." (Interview with Public Relations Manager at Eneco).

"…Creating long-term business value and contributing to a sustainable future are mutually reinforcing." (Extracted from the Philips Sustainable Innovation report by Seebode).

According to respondents, within the Dutch society exists a large sum of people who are not bothered about the manner in which energy is obtained, neither about the consequences of negative energy production. Their only concern is the availability of energy; irrespective of how it is produced or which raw materials are used to produce the energy supply. In this respect, many of the stakeholders explained that they took it upon themselves to create further awareness and communicate the consequences of careless behaviour, while at the same time also creating awareness about the benefits of moving to sustainable processes. Respondents explained the following in this respect:

"…There is not enough reasons to keep communicating to anybody who wants to know and wants to hear why sustainability is for us the only way forward." (Interview with Public Relations Manager at Eneco).

"The challenge with our society is that many people work in companies that do not satisfy their lives or their lifestyles, so I create awareness about this too… I like people proud of their work." (Interview with the Founder of Energy for One World).

Here we can identify the insistence of the stakeholder that everybody participating in the transition has an inherent motivation on helping the society in his or her own local context. Moreover they also hold everybody's involvement and participation for the transition in high significance for the success of the transition process.

5.1.2   The current thinking of the Dutch society with respect to sustainable practices

The aim of this section is to discuss the perceptions of sustainable practices; what respondents perceive the benefits of sustainable practices will bring to the country. Further, this

section also discusses the resistance and the apathy that is seen among respondents with regard to sustainable practices.

Among most of the stakeholders interviewed, the researchers could identify that there were different reasons why the interviewees were involved with sustainable practices. These factors were based on what is currently called 'the triple bottom line', which refers to the economic, environmental and social values that these innovations in sustainability ascribe to. However, during the current study, the terms; 3Ps were used, which refer to the same three factors (triple-bottom line) as mentioned above.

Stakeholders explain that the issue of sustainability is not only focusing on the environment, and social aspects, but also about the sustainable profit generated by the business sector. Businesses are now shifting their efforts due to the growing need for companies to incorporate the corporate social responsibility factor. According to Savitz and Weber (2014) understanding sustainability implies creating a balance with these 3Ps through a movement thus, creating value for the whole of society. Interviewees stated the following:

"In business, if you can't prove that there is profit then there is not many people that want to save the planet, it needs to be combined…" (Interview with Energy Consultant at Kien).

"…Achieving a sustainable society, should be in the interest of P (people) and P (planet)… but companies are facing challenges because they are sometimes focused on profit, which becomes the main goal of businesses because they want to become an active industry." (Interview with Programme Manager at Kien).

"The situation is how you want to place people planet profit in a location and in an industry or business opportunity, the trick is not to be dogmatic, to say 'we need to have a target'… no, it is the goal of the real people around the real table and looking at the real situation and determine the value given to each of them; to the people, profit and to the saving of the planet in this location." (Interview with the Founder of Energy for One World).

In line with what was previously said, stakeholders viewed the 3Ps as a challenge as well as an opportunity for the progression of sustainable practices. Interviewees explained that the 3Ps are the main factors that underpin the adoption of sustainable practices in their organisation and their lives. They believe that sustainability should not only be focusing on the environmental factor; trying to avoid pollutants emitted, minimise the carbon footprint, water and energy efficiency and so forth. But, that all environments including social and economic should be at the centre of sustainability. In the context of the Netherlands, the country needs to heighten the benefits of its current natural resources and use them for the benefit of the society, viz. wind energy. Implementing any kind of renewable

energy is equal to creating new jobs, increase monetary flows, enhance supplier relations among others, according to one respondent:

"If you look at it from a positive perspective (of sustainability) it will generate loads of jobs, especially jobs and skills that have left the Netherlands in the last 10-20 years; production facility jobs, factory jobs…" (Interview with Public Relations Manager at Eneco).

While the above quote and brief discussion is closely aligned to the economic scheme of sustainability, the social scheme is more affiliated to the local residents. Socially sustainable practices improve the quality of air due to lower carbon emissions, increased well-being and increase in the overall human rights (Vanclay, 2003).

"We improve the quality people's lives through timely introduction of meaningful innovations." (Extracted from the Philips.nl website).

Furthermore, in addition to these factors, there are several other motives or drivers why stakeholders adopt renewables into their businesses and/or houses. According to the responses the main motives why people adopt solar panels or windmills are based on the following:

The below quotes signify the general responses among the stakeholders regarding the drivers that motivate people to adopt renewable practices into their homes or businesses.

"The reasons for joining the initiative are financial, dependency, and to be clean with the environment..." (Interview with Sales Consultant at Rexel).

1) Dependency reason: "Now people are far more focused of how can I take care if myself so if you look at energy, how can I make sure that I'm taking control over my own energy supply, and its possible because technology has developed and gave us possibilities like solar or investing in wind mills." (Interview with Public Relations Manager at Eneco).

2) Environmental reason: "Many people go into the environmentally sustainable business because they want to do good for the world." (Interview with Energy Consultant at Kien).

3) Financial reason: "If you use less than the cells make, the profit comes from the cells and that pays for the initial bill of the cells and after six years they have paid back so much that they are only making money." (Interview with Human Resource Consultant at Enspijk Inhabitants Association).

Researchers could identify that among the majority of respondents, the financial reason was the main reason why people wanted to implement renewable practices, with the following quote illustrating this:

"…If you have solar panels, you can get back some money from the energy tax, but this might change… so if I don't get any money back, then why should I change to solar panels?" (Interview with Policy Officer at Waalwijk Municipality).

However, we also encountered stakeholders that highlighted environmental importance, as a reason to join the sustainable movement. Respondents argue that the implementation of solar panels or windmills are more in line with environmental developments, they should however, be done so from a more social perspective. This is a topic that will be deepened in the following section.

Some respondents also suggested that the Dutch society preferred to do things independently, due to their lack of trust with bigger companies. In this vein, without the interference of large entities, they made a conscious choice to shift their thinking, and adopt sustainable innovations such as solar panels or windmills. Nevertheless, most of the respondents believe that society should adopt sustainable innovation practices, through intrinsic motives without seeking some sort of financial benefit:

"There is always a reason why not to do it… but if you do it from within yourself… and the primary goal is to save energy, then the costs would be a secondary factor..." (Interview with Real Estate Advisor at Waalwijk Casade).

Many of the stakeholders interviewed, explained that when people are motivated to make societal changes from within themselves, they can help the cause and mobilise it. However, the lack of financial aid could hinder the success of the adaptation process:

"There is no financial incentive to change to sustainable practices, I think that is the problem… consumers wont feel the need to do it from inside…" (Interview with Policy Officer at Waalwijk Housing Municipality).

This therefore brings us to the point that in general, the Dutch society are eager to change their consumption behaviour through; responsible water use, energy efficiency mechanisms, the installation of led lighting, improved home insulation, and keeping track of their ventilation system. Respondents concurred with this, with one respondent suggesting the following:

"I think that everyone in its life can do something to be part of this movement, if only to put a solar panel on your roof, or if you don't have roof there are many other things that you can do to be part of that big transition…" (Interview with Climate Change Advocate at Urgenda).

The objective of the initiative is that everybody involved produces their own green electricity; therefore they would be contributing to sustainability and a greener scheme. However, if stakeholders do not have the necessary financial resources to adopt a solar panel, there can be countless options to adjust their behaviour. On the other hand there is a current debate by Armaroli and Balzani (2007) that even the most educated people within developed countries do not give much attention to the importance of renewable energy. However they explain that in general, there is a lack of knowledge (deep) in society about the over-utilisation of energy.

Furthermore, there also exists a dilemma with regard to windmills in the Netherlands, whereby, according to the respondents, most of the local inhabitants disapprove of this technology because they find it to be unattractive for the 'image' of the country. Furthermore, windmills also cause noise pollution, and a disturbance for the commonwealth of the Dutch society. While this may hold true among some citizens, the respondents interviewed for this study, contest the idea of the local citizens, and explained the idea of local citizens as:

"One of the things that we need is wind on land, but as you can imagine, windmills are noisy, they are visible because everybody can see them, and in the Netherlands we don't have very much places where we can put these things without affecting people's … hmmmm décor." (Interview with Public Relations Manager at Eneco).

"Wind turbines… research showed an acceptance of wind turbines but it was the ultimate backyard response, as long as we cannot see it, and as long as it is far away beyond the horizons, and we are not able to hear it, then it will be okay…" (Interview with Policy Officer at Geldermalsen Municipality).

This brings us to the idea that the local citizens do not truly understand the essence of windmill technology and the potential benefits it brings for their community, and other Dutch communities at large. This means that the current thinking in the Netherlands is two-fold, where on the one side are locals (businesses and individuals) who are motivated to mobilise and implement sustainable practices into their homes and lifestyles, while on the other hand are local citizens who lack concern about the global energy crisis, and its impacts, even within the context of their local setting. This means that more efforts are required to switch the thinking of those who are still naïve` about the severity of the energy crisis. The following passages represent respondents' views on this matter:

"Not everybody is convinced that sustainable energy is important, people say well we have oil and gas... that is another reason for thinking that there are other important things that we have to do... energy is not a topic in their minds." (Interview with Real Estate Advisor at Waalwijk Casade).

In efforts to change the lack of knowledge, drive and motivation for a greener society, some of the stakeholders interviewed explained that they are playing an active role in trying to persuade the thinking of the 'sleepers' in society, as well as helping those who want to change their behaviour, thinking and lifestyle to be more fitting with the local and general objectives of sustainability. One respondent explained that their company engages in the following:

"… We try to involve construction companies for sustainable energy production… construction industry can play a significant role in providing information in giving the right arguments in co-creating with the building owners the best solution for their buildings…" (Interview with Programme Manager at Kien).

Nonetheless, respondents are convinced that society can adapt and mitigate climate change with the use and implementation of solar panels or any kind of renewable energy technology. Notwithstanding the fact that the transition is coming, and due to this process being a long-term one, it may take the Netherlands much longer than it had initially anticipated, but in the long-term it will be realised.

5.2   Sustainable innovation practices as a transformative process: transitioning the Dutch society

The previous section discussed the need for sustainable practices and also highlighted the current thinking of the Dutch society with regard to sustainable processes. This section aims to discuss in more detail the perceived changes required in order to reach the objectives of the transformative process. During a transition process, the most important factor is the willingness of people to adopt the transformative plan. Also, the level of commitment is an important aspect when wanting to transition from one way of doing things, to another. However, as with every change effort, the most effective means to accomplish this needs to be explored, in this case, whether top-down or bottom-up steering efforts are required.

5.2.1   Transforming the thinking of the Dutch society

Every society possesses unique characteristics, and this is no exception for the Dutch society. It is no secret that the Dutch society possesses a well-defined middle class, coupled with strong work ethics, industrial expertise, professional specialists and social and cultural experts (Kriesi, 1989). With respect to this, respondents concur with the ideology of Kriesi (1989). One respondent explained the following:

"The energy market, the renewable energy is all about energy transition, so going from an old system, that works (oil, gas, coal) to a system we want (sustainable), or at least some of us

want… A lot of people do not care… We are trading people… we don't think systems."
(Interview with Mechanical Engineer at Park-Id BV).

Armaroli and Balzani (2007) raise the question whether a change in behaviour among citizens of the Western world is needed, to grasp and shift to innovative social and economic paradigms. They explain that the lifestyle led in the West, thus far, creates and increases disparities. For this reason they suggest the need for a new way of thinking in order to fully understand the extent of the world's problems. Most of the respondents agreed that a shift in thinking is required, and this can be done using various strategies:

"An open mind… you cannot create too many dogmas about how things need to go, you have to reinvent yourself and really reinvent your way, your thoughts…" (Interview with the Founder of Energy For One World).

"If you start with an idea, its something you can do yourself, it's a process and if you do not know yourself what you are doing, you go much deeper, and attend conferences to educate yourself…" (Interview with Mechanical Engineer at Park-Id BV).

Respondents viewed communication as a powerful tool in changing the behaviour and mind-set of people in order to reach transformation:

"We have 2.2 million costumers in the Netherlands which is a large group, we are providing them with 100% sustainable energy, we are trying to communicate them about why are we are heading on the sustainable route for the future, what are the good things about it and what are the difficult parts that every process have some set backs, trash wholes that are throwing up, so we need to communicate at least with 2.2 million costumers why we are taking this route." (Interview with Public Relations Manager at Eneco).

"The main thing is to change people's mind… our director conducts about 200 speeches every year, whereby she is constantly motivating people to change technology, behaviour and their mentality… We have programmes to change the mobility of employees of businesses…" (Interview with Climate Change Advocate at Urgenda).

"We are always trying to encourage people in our building to save energy… by doing small thing, like insulation… people need to just adjust their behaviour to save energy because I know many people who have a second or third fridge, tropical aquariums, Jacuzzis, which uses high levels of energy." (Interview with Policy Officer at Waalwijk Municipality).

"The information we give during presentations are more in general… why solar energy, why saving energy… I don't just want to be the one to talk, we encourage questions…" (Interview with Sales Consultant at Rexel).

The previous comments are clear examples of established organisations that are committed in transitioning the thinking and behaviour of the Dutch society, in order to reach sustainable practices. Through explicit communication methods, they are creating and increasing the awareness about the benefits of adopting sustainable practices. Through these communicative efforts, they are also able to convince the public that renewable energy is a suitable alternative for energy attainment, viz. windmills, solar energy, etc. Their efforts can be seen as 'coaching' the public in order for them to adopt energy technological advancements for societal transition.

Furthermore, to exert influence on the transition process, an agreement, Energie Akkord (Energy agreement), was signed among stakeholders in order to speed up transformation process as well as, to promote sustainability. The following is said about the Energie Akkord:

"Energie Akkord, the energy agreement was signed by 40, or more parties representing different societal interests… and the government said well if there is so much support for a new vision on energy, then we will embrace it and will make the political line for the next years until 2020." (Interview with Public Relations Manager at Eneco).

"Energie Akkord, allows for cleaner energy and more jobs… it is the future of energy in the Netherlands agreed between environmental organizations, electricity producers, employers and employees… There is a fund of €600 million for people who'd like to make their home more energy efficient." (Extracted from http://www.rijksoverheid.nl).

With regard to implementation of the Energie Akkord, though the idea behind it can serve as an important catalyst to foster sustainable practices, stakeholders expressed scepticism about policies and initiatives informed by the Dutch government. This is because most of the energy policies informed by the government are changing within a short period of time, sometimes even within 4year periods. This leads to uncertainty and unrest among locals especially with regard to sustainable energy initiatives. The respondents said the following in this respect:

"If they know it will change (policies), they won't put money on it. Dutch people are really conservative on where they invest their money." (Interview with Public Relations Manager at Eneco).

"If the current policy stays, it will take me 8 years to pay for the solar panels, but if it doesn't stay then all of a sudden it takes me 15 years… changes cause lots of insecurities, and

insecurities kills initiative, it kills the fact that people want to act." (Interview with Climate Change Advocate at Urgenda).

"Some of the policy makers are great, and some of them are awful" (Interview with Management Consultant at De Leidse Doetank).

"…The Netherlands is changing every four yeas, there is no stable policy…" (Interview with Real Estate Advisor at Waalwijk Casade).

"The rules in the Netherlands are not stable, they are always changing and that brings uncertainty for people." (Interview with Policy Officer at Waalwijk Municipality).

"Dutch government changes the policies again and again… this ruins initiatives… it is very important for investments and local initiatives that you have a stable government, in this way you can trust the initiatives and the subsidies." (Interview with Sales Consultant at Rexel).

Though the above can be considered a weak point in the Dutch system, stakeholders still hold confidence, albeit not much, in the agreement and its ability to recruit more people to join the movement, especially since the policy necessitates collaborative practices:

"The Netherlands are known for their 'polder model', which means that if you want something to change within the Netherlands, you have to buy in all kind of Dutch society; you need the government, civilians, political parties, employers…" (Interview with Public Relations Manager at Eneco).

"Implementation of the agreements (Energie Akkord) should result in an affordable and clean energy, jobs and opportunities for the Netherlands in the clean technology markets." (Extracted from http://www.energieakkoordser.nl/energieakkoord.aspx).

As previously discussed, whenever a transition takes place, there is a shift from one way of doing things, in this case, energy consumption towards a different way of doing thing. In simple terms shifting from traditional energy (fossil fuels) to renewable energy (solar, windmills, biomass). A change of this sort does not take place over night, and a well-constructed transformation plan is needed. Energy from fossil fuels should progressively be used only for creating the conditions for a smooth transition toward the development of new energy sources (Armaroli & Balzani 2007). Respondents think the following in this respect:

"So balancing supply its going to be a big topic in the future, so its no longer about questioning about if should we do clean tech or should we do renewables but its more about how do we integrate it when it is coming to the grid and how do we reach with the demand

and the supply, the supply is going to be more and more renewables which are fluctuating and uncertain." (Interview with Mechanical engineer at Park-id BV).

"Very difficult to influence the behaviour of people… the last two years we saw plenty of house owners changing to solar panels, however, five years before that, this was not the case… something is changing, they see panels at neighbours houses, and then they want it too…" (Interview with Real Estate Advisor at Waalwijk Casade).

"Initiatives of this sort are difficult, so you need a plan… some people have the idea, but you need to plan, and also because a high level of financial resources are required…" (Interview with Management Consultant at De Leidse Doetank).

"… They want to make it measurable… we want to go to 14% in 2020 and 16% in 2023… more money for the building of wind mills, solar panels, factories, and everything that has to do with sustainability…" (Interview with Public Relations Manager at Eneco).

"New buildings tend to get better energy savings… because the government now states that you can't buy a building that utilises a lot of energy." (Interview with Policy Officer at Waalwijk Municipality).

In the Netherlands there is still a great majority of 'sleepers', as respondents refer to them. They explain sleepers as people that are not well informed and lack the knowledge regarding the benefits of sustainability. At the one end, it can be explained as a lack of interest in sustainability however, it can also be that they are this way due to the lack of knowledge about these movements. One respondent explained the following:

"There is a great majority of sleepers, people who are not interested in energy, of course they are interested in the price they have to pay for it, but not interested in who delivers it or where it comes from, that's the group we need to convince that it is interesting and that its changing the world... the 80% that are sleeping they need to be woken up." (Interview with Public Relations Manager at Eneco).

In light of the above views, some respondents assert that the Dutch government should stop providing the subsidy at some stage. They view the subsidy as a good tactic to trigger interest about sustainable practices, among local businesses and citizens. However, keeping it as a standing situation would mean that society would not recognise the urgency to implement sustainable practices, and also that they will only do so for the financial kick back:

"There should not be any subsidy, if you keep giving subsidy to the inhabitants in the Netherlands, they will always choose it for the financial side of the deal, and we need

costumers choosing for sustainability because they believe in sustainability, not because they can earn from it… it has to be made attractive to them from an inside motivation not because of a financial motivation. Subsidy is a necessity because it helps the process to take off, it helps getting people interested, it helps building up a mass of people who are investing in technology in solar panels for instance, but as soon as you have reached the desired level you have to stop with the subsidy..." (Interview with Public Relations Manager at Eneco).

The transition can be accelerated if people that passed through or experienced this transition share it with the rest of the neighbours. In this way activists, can lure interest to sustainable practices, and to the implementation of renewable energy practices. Consequently, sharing a positive opinion about sustainability will not only help people get informed about the topic. It will also clear the mind of others that have already been interested in creating their own energy system but they didn't know which step to take, and where to get the technology necessary for the inversion.

"It is very important that people see their neighbours doing that as well, you need a kind of ambassador… if one sheep is under the dam others follow… that is a saying that we have in Holland… they don't know why they do it but they see it and then they do it." (Interview with Real Estate Advisor at Waalwijk Casade).

"People know about sustainability and as very simple use isolation in the house, change the glass to double glass… everybody knows that, but what they do not always know is what does it cost? How much to I save, and how much is the pay back time." (Interview with Sales Consultant of Rexel).

Moreover, the findings also suggest that respondents are generally optimistic about the situation in the Netherlands, and that sooner or later the country will face the transition from fossil fuel to renewable energy source. Though at this stage, they are not sure how long this will take or when this will happen, but with gaining more support and awareness they feel that the process could progress faster. At least what we can see is that members in the society are aware that change is needed. They are cognizant that if societies continue with the current production and consumption of fossil fuels, the presently known reserves of oil will sustain only another 41 years, natural gas 64 years, and coal 155 years (Goldemberg, 2007), along with all the pollution from these energy production processes. There should be a change in the mind-set of people; however, there are a lot of complexities that involves the transition, from an old system that works. The society 'sleepers', need to be convinced that the renewable energy is the way forward for a greener and sustainable society:

"There is a long way to go, but you have to start somewhere, and my goal is to do what I can…" (Interview with Sales Consultant at Rexel).

"People who have invested, they understand that it is a long-term process with long-term profits…" (Interview with Programme Manager at Kien).

"The big issue of today, is how to get from this point to that point… to the transition… about changing the interest set… the financial interest, so people have build power plants with the idea that they will have pay back after 40 years, and after 10 years the energy transition comes and say: we don't need you anymore because we are going to build wind and solar so those people that have those investments on this nuclear, coal, oil plants, the new industry, the whole supply chain." (Interview with Mechanical engineer at Park-id BV).

The researchers considered the above valuable for successful transition; inhabitants, stakeholders and the government need to work together. Energy efficiency and sustainability is a lifestyle, not a task only to be executed by selected members of society. Respondents also agreed this to imperative:

"We are on a high level involved with several initiatives from government… maybe because we are a high level stakeholder we know the ways to get involved with the projects… indeed collaboration is the key, we cannot do everything by ourselves so we need partners for practically everything that we do… choosing partners wisely is important and communication with them is even more important…" (Interview with Sustainability Analyst at Philips).

The findings in this study suggest that the transition within the Dutch society to a sustainable system is a long-term process that can be attained, but with the efforts and commitment of everyone.

5.2.2   Top-down vs. bottom-up approach

During this section of the study, we aimed to determine how respondents perceived the implementation of sustainable practices with regard to top-down or bottom-up approaches, respectively. In this regard, we aimed to ascertain whether they perceived the process to be facilitated from a top-down or bottom-up approach.

In general, sustainability issues are usually brought to the fore through government or intergovernmental organisations (Frei et al., 2003). They further explain, in most instances it is almost natural for it to be facilitated using a top-down approach. The findings suggested mixed perceptions with some in favour of a top-down, while others more suggestive of a bottom-up approach. According to Goldemberg (2007) achieving sustainability should not lie solely with policy makers, governments, etc. but should be everyone's responsibility. Jacobsen (1998) states, due to the important interactions between the energy system and the economy, the integration of top-down and bottom-up approaches makes for an important issue.

The findings suggested that there were mixed perceptions of how the implementation of sustainable practices should be done. On the one hand some respondents favoured a top-down approach under the leadership of government, engineers, and experts from the industry. While at the other end, some preferred a more bottom-up approach with the process being driven by local residents. Interestingly, some of the respondents also indicated a combined approach with government initialising the movement (top-down) but the process being facilitated by local citizens (bottom-up). Respondents suggested that both implementation methods, viz. top-down and bottom-up are indeed dependent on another. As both facilitators are needed to ensure the success of the transition. Whatever the reason, they have chosen to initiate this commencement (environmental degradation, dependency from large energy companies or financial benefit), they require the assistance of policies in order to supply or facilitate the implementation of such initiative. The respondents expressed the following with regard to the above:

"Depends on the project… usually top-down but this is not specific to the Netherlands… but mainly site specific projects are really bottom-up. Well in general indeed, the big carbon footprint reduction programmes are top-down, but there is also lots of bottom-up as well…" (Interview with Sustainability Analyst at Philips).

"The government is not doing it fast enough, so lets do it ourselves… so the government says okay lets accept this initiative and involve them in our policy, but don't do anything and let the initiative move as it wants… therefore bottom-up… Problems with bottom up, if you are a social entrepreneur, people find it hard to cooperate with you… politicians think that social entrepreneurs are only about making money for social enterprises…" (Interview with Management Consultant at De Leidse Doetank).

"We want bottom-up but it is always top down. It is good, but people need to understand it… we try top-down but bottom-up is not in the belief of people. We need the consensus of minimum 70% of tenants, so bottom-up and top-down need to go together." (Interview with Policy Officer at Waalwijk Municipality).

"People don't trust the big companies… especially when it comes to binding crises… in the old days, churches were trusted, the police was trusted, the CEO from a large company was trusted… now, people are more focused about how I can take care of myself and in terms of energy, how I can take control of my own energy supply. Per community, it is happening more bottom-up. The challenge is, will the bottom-up win? (Interview with Public Relations Manager at Eneco).

"They call themselves energy corporations… they think we need to do something regarding sustainability, and that is typically bottom-up… at the same time the government tries to help

them, so they stimulate these community projects with getting a reduction in their energy tax…" (Interview with Sales Consultant at Rexel).

"I don't know bottom-up or top-down, because I tried to arrange a meeting as I wanted to know if there were some people who would be interested to participate… I think it is better to do it both, both top-down and bottom-up with professionals and inhabitants involved. If we can bring them together, in realising attitudes and innovation between the different parties." (Interview with Urban Consultant at Blijstroom).

"I believe in a mixture of different ways with regard to implementation… bottom-up and top-down. I see this as an opportunity, because there are different expertise willing to give an opportunity for the future." (Interview with Mechanical Engineer at Park-Id BV).

"I believe in both… we have an open mind, so we have to embody and make strategies and path ways… (Interview with Founder of Energy for One World).

"Top-down… because government should agree towards a renewable energy system. However, we also want people to take their own initiative… create the movement, and once people want to do it themselves then we step out." (Interview with Climate Change Advocate at Urgenda).

"A bottom-up implementation… the organisation of the inhabitants the volunteers who work on it and want to have it done, they need to be in the lead, in the sense that they must want it, they must make the link with the local people, and then in that sense a top down approach." (Interview with Energy Consultant at Kien).

Policies, and the support of top-down approaches are the key point for these initiatives. However, durability, reliability, backup and the involvement from local residents, and interested parties are vital in this process. Without the collaboration between the top and bottom elements, the successful implementation of sustainable innovation initiatives could be highly compromised. On the other hand, the government has implemented various initiatives to mobilise the shift to a sustainable system; however, respondents find the Dutch government's involvement too low. Nonetheless it can still be considered a movement that is embracing a new way of doing things around the concept of sustainability.

5.3   National co-operation; learning, managing and adapting

During the following section, the position of the Netherlands in comparison to other European countries with regard to renewable energy practices, and the co-operation and collaboration between different stakeholders in support of sustainability will be discussed here.

5.3.1   The Netherlands in comparison to other European countries

Interestingly, during the interview process, respondents constantly compared the situation in the Netherlands with other European countries, viz. Germany, Denmark and the UK. This comparison could be owed to the fact that the Netherlands aspires to be at the forefront of sustainable innovation. However, as discussed in the theoretical chapter of the current study, the Netherlands could be considered too ambitious with its goals regarding sustainable innovation practices. Denmark, Germany and the UK are already too far ahead with sustainable initiatives.

When respondents were asked why this could be the case, they expressed the following:

"Germany was forced to make different choices. Fukushima disaster was one of the tipping points for Germany, when they decided to stop with nuclear energy. I believe they have about 20 nuclear plants in Germany… the Government said they want to stop with this, and in this respect … you devised a policy to support this decision. The sustainability policy meant that subsidies were introduced for the investment in solar panels, wind energy initiatives… a lot of investments were put in the market by the German government for the promotion of renewable energy, in the Netherlands there was no such tipping point stronger in the past years." (Interview with Public Relations Manager at Eneco).

"The taxes on energy are still so high… Holland has the highest taxes on energy of the whole Europe so even if they lower the taxes on electricity, it is still high in comparison to our next door neighbours, like Denmark, Germany, Belgium and France." (Interview with Policy Officer at Geldermalsen Municipality).

"I think it is a good question to ask… why has the Netherlands fallen behind in comparison to Germany and Denmark… in Germany, the government has really supported the implementation of sustainable energy funds or sustainable energy technologies, even for private people to put solar panels on their houses… there has been lots of government support financially." (Interview with Sustainability Analyst at Philips).

"In the Netherlands we tend to have solar panels in the roof that are subsidised but only a small amount of it, in Germany the entire process is subsidised… in Germany they subsidise every kilowatt." (Interview with Policy Officer at Waalwijk Municipality).

"Germany's political system hasn't changed in years, and in the Netherlands it's changing all the time, sometimes every four years…" (Interview with Real Estate Advisor at Waalwijk Casade).

"The big difference with Germany, is that Germany had a mission, they formulated a mission about where they are going, and that created clarity because they got the directive from the Government… we (Netherlands) don't have that real mission, we don't have a clear mission from our political system. Further, we also don't have the incentive structure like Germany. Germany created financial incentives to really get the whole solar industry going." (Interview with Climate Change Advocate at Urgenda).

"We have a government who is allowing all kinds of scenarios to take place in Holland. They didn't have a good strategy or policy over the last 20 years… there was no real stewardship, no funds for energy transition, and no money for sustainable development. Currently, the government has minimal role in intervention…" (Interview with Founder of Energy for One World).

"In Europe we have Germany and Denmark leading the way… the main reason for the energy transition in Germany is to become less independent from Russia. Germany also realised that they not only have their own coal and gas, but knew it would diminish… German and the Danish are really for their people, by how they think, how they work, how they separated their garbage 20 years ago… Netherlands is so slow." (Interview with Mechanical Engineer at Park-Id BV).

"In Germany, they made the choice to change soon. In the Netherlands, we didn't." (Interview with Sales Consultant at Rexel).

"In Germany, the financial rewards are higher than in the Netherlands, so in Germany, the stimuli to invest was higher because ther German Government had to do it at a faster pace, they need more green energy to compensate for the loss of nuclear plants." (Interview with Public Relations Manager at Eneco).

Due to the antecedent just mentioned, respondents explained that Germany had progressively moved forward with sustainability because they have also had higher economic rewards than in the Netherlands. In Germany the stimuli to invest in renewables is superior, because the government had to do the transition faster in order to compensate for the absence of the nuclear plants. In the Netherlands there hasn't been any event similar or equivalent, to stimulate the government to speed up the transition, albeit, the global energy crisis should be seen as an 'event' in itself as a catalyst for change.

5.3.2   Co-operation and collaboration between stakeholders

Throughout this study, the topic around collaboration and co-operation was raised. Hudson et al. (1999) suggest that there is belief that collaboration will take place when it can show that the same

efforts can be efficiently achieved through working together, rather than separately. The findings in this study suggest that respondents understand the need for collaboration to successfully transition to a sustainable energy system. However, the ideology that currently exists in the Dutch society exhibit instances where it can be assumed that the Dutch society may not be ready for collaborative efforts. Interviewees' responses in this regard explain the following:

"Sustainable large scale transitions projects would be best served if parties could come to the table and start learning alliance between them, cross the seals, cross the company boundaries and say we are going for a seven year long energy big scale large learning project and we start small but we build up big." (Interview with Founder of Energy For One World).

"Make sure every layer of society is involved… from political to environmental, NGOs, etc. Anyone who wants to talk about… you have to be open and transparent about the ambitions, and make sure that there is no political colouring." (Interview with Public Relations Manager at Eneco).

"There are lots of stakeholders and they need to be focused on supporting the inhabitants as much as possible… lots of preparation and organisation…communication is also very important to keep all members involved." (Interview with Energy Consultant at Kien).

"Get in contact with all the organisations, also professional organisations, to understand their interests in sustainable innovation practices." (Interview with Urban Consultant at Blijtroom).

"Try to find solutions together… realising what is important for every stakeholder and keep it in mind. It is important to keep good relations among one another." (Interview with Sales Consultant at Rexel).

"Bring industry people together, and discuss ways forward… Create a team spirit, because the essence to succeeding in any project is to lowering the barriers." (Interview with Public Relations Manager at Eneco).

"When bringing people together, it is important that they trust in each other…" (Interview with Management Consultant at De Leidse Doetank).

"Indeed collaboration is the key… we need partners for practically everything." (Interview with Sustainability Analyst at Philips).

Within the Dutch society are projects taking place to reach the end-users, to adapt and modify their lifestyles. 'A project recently undertaken by Urgenda, was done to modify the behaviour of

employees at various organisations. The aim of the initiative was promote greener practices through the alternative use of public transport as a more preferred mode of travel.

Project-IV is doing research about a new way for energy storage. They believe that it is no longer a question if renewables are important for the future. Consequently, they try to find a way to make more effective the provision and storage of the energy for the upcoming scheme.

"Zon en Licht", created by Rexel, is working together with Philips, among other companies, to educate people about the installation of solar panels and LED lighting. **(Refer to Appendix C for detailed information about this collaboration).**

Stakeholders, before initiating any alliance or even starting a project, state that communication is imperative. In addition to communication, stakeholders also suggested that collaborative work require all parties to share common goals. One respondent stated the following:

> "The Netherlands made 40 parties signs the energy program together so NGOs, the government, electricity companies, politicians. They all said this is a program that we support.. and that program has got tough calls for the future." (Interview with Public Relations Manager at Eneco).

According to respondents, it is a good idea that all parties involved sign a manifest where they all agree to supporting the cause, with its stated responsibilities, tasks and timeframes. This not only allows all parties involved to have a clear understanding, but it also makes the agreement transparent. The approach used to persuade inhabitants or companies to join is important, with an interviewee stating the following:

> "The cool thing is that it's a battle, so you have this different houses, this different companies, and they get all excited because they all want to produce the most amount of energy and they actually make a profit out of it, because they win doing that! But if you just come and you say you should do this because you save money… I have a million things on my mind, but if you make this in sort some of competition challenge, then things change." (Interview with Climate Change Advocate at Urgenda).

Furthermore, respondents agree that there are two levels of trust; trust in between stakeholders and trust that the project will be successful. People in charge should make sure that individuals' perception is this one. One of the biggest reservations among respondents is the loss of faith in the strategy and vision of the sustainable initiatives:

> "I think a failure would be if we would let our vision are strategy towards the future lose… so if we would say now we can do a little bit more money by selling coal energy that would

cause a loss of faith that our costumers have in us immediately." (Interview with Founder for Energy for One World).

The above discussion of the findings highlighted some important trends. Its evident that members of the Dutch society are cognizant of the fact that changes are needed in order to transition from the current energy utilisation to a system that is more sustainably friendly. What we see is that perhaps they lack the knowledge and implementation strategy, necessary for successful transition. Trust with important entities, such as the Government is missing, which, is a crucial factor for the success of the movement towards a sustainable system.

6.   DISCUSSION AND ANALYSIS

The aim of this section is to explain the most important findings from the previous chapter and analyse them in accordance with the theoretical framework of this study. Further, this chapter will give us with an opportunity to provide a more in-depth discussion about the most important findings, and how they relate to the phenomenon under study.

Having looked at the overall picture in terms of the theoretical framework and the findings we would like to divert readers' attention to the following conclusions, which will be discussed below.

In the Netherlands we saw the tendency of innovation changes to be initiated and implemented using the bottom-up approach. Generally, the bottom-up approach is characterised by community members who have taken the liberty to drive projects on their own, without or very little assistance from top-down facilitation. From what we found, most of the initiatives pertaining to sustainable energy in the Netherlands are mobilised from grassroots level. However, what is important to note here, is that the bottom-up initiators are not completely oblivious to top-down paradigms, as in most cases the implementation of strategies by bottom-up initiators are as a direct result of top-down directives, i.e. government policies. On the other hand we also saw top-down involvement, albeit very miniscule. The top-down approach typically involves a high level of control and command, and is usually directed by the government. Interestingly, though this constitutes top-down movements, we saw very little of this kind of implementation in the Netherlands. Top-down involvement was evident, however, it could only be seen through policy implementation as opposed to actual top-down steering. In simple terms, what was lacking here is the actual involvement by government and policy-makers in steering and facilitating the change process. Furthermore, the lack of involvement and steering by government has led to the conclusion that the current positioning of the government is not conducive for bottom-up movements. In this respect, the laissez-faire attitude by the Dutch government has also caused a feeling of distrust towards government among the community members.

Fraser et al. (2006) suggests that during environmental initiatives, a bottom-up approach is necessary. However, Hempill et al. (2004) suggest the necessity for a top-down approach. What we therefore see are different authors contesting the ideas of one another in terms of top-down and bottom-up approaches.

As previously stated, the programme management strategy to be adopted was a 'goal-orientated' one, because the existing situation in the Netherlands required initiatives that would be developed outside its current routine of practices. Throughout the study process we saw initiatives that were implemented, directly or indirectly aimed at achieving the goal for reaching a sustainable system, and minimising irresponsible energy consumption, in the Netherlands. Albeit, some stakeholders' efforts were more vigorous than others, nonetheless, we found them to still have value for the change

process. With respect to the previous observation, some stakeholders were directly involved with initiatives such as the implementation of solar panels, windmills, and led lighting. While others invoked changes in society, through communication, awareness and marketing campaigns. Nonetheless, no matter how big or small the efforts were, they were all done with the intention to bring about change to the current energy consumption patterns in the Netherlands, and to reach the goal of sustainable energy system. In this respect, we can say that the efforts for sustainability in the Netherlands are in accordance with Pellegrinelli (1997), who suggest a goal-orientated mind-set is needed for the achievement of shared benefits (sustainability goal).

Moreover, we also identified that a lack of awareness pertaining to the interrelated nature of bottom-up and top-down approaches are prevalent in the Netherlands. Consequently, due to the lack of awareness, the initiatives are mostly independently administered. This suggests that the current practices in the country are not aligned with the views of Lycett et al. (2004), who suggest that programme management requires collaboration between different members of society to assure the success of the initiative. In this instance, very little examples are found in the field that suggests the collaboration between both approaches, specifically relating to environmental innovation practices. What we identified was the dominance of bottom-up movements, which are currently not leading to the success of local, and governmental objectives. This leads us to believe that the difficulties in amalgamating the approaches are due to the lack of collaboration efforts by the facilitators of both approaches. This could be owed to the deeply imbedded trust issues currently influencing the decisions of stakeholders. The lack of trust with government posed a major limitation for the progression of sustainability initiatives, in the Netherlands. For obvious reasons, this has been highly disadvantageous for various engagements since the change movements in the country are primarily mobilised through bottom-up facilitation. Consequently, the deep distrust and lack of involvement by top-down facilitators has resulted in the unfeasibility for innovation practices to be scaled up.

Having discussed the analysis pertaining to programme management practices in the Netherlands. The following section will discuss another particularly interesting observation unveiled during the study.

When it came to sense-making, the interpretations of innovation practices are understood differently among bottom-up and top-down facilitators. This is evident in their motives for joining innovation practices; while at the same time has a profound impact on their sense-making of these practices. Furthermore, what we saw was that the diversity in the sense-making affected stakeholders' adaptation to the current energy crisis, directly affecting their enactment. We also saw that stakeholders involved in the different implementation paradigms have the same objective, i.e. to achieve sustainability and promote the use of renewable energy sources. However, due to the diversity in their background, values, culture, behaviour and practices, stakeholders' interpretations differ, thereby leading to diversity in their enactment. This was particularly the case, when it came to stakeholders' adaptation and adoption of sustainable energy practices. Some of the stakeholders

signalled the alterations to their home with the implementation of solar panels, insulation and photovoltaic cells. On the other hand, some stakeholders' openly admitted that they had not altered their home or behaviour to accommodate sustainable practices.

Moreover, what we also saw in this respect was that the differences in interpretation and meanings ascribed to the practices caused diversion. The diversion identified led to different motivations for joining the initiatives. More specifically, in this respect we are referring to the sustainability initiatives, i.e. the 3Ps. Due to the diverse interpretations, we saw that some stakeholders joined the practices for economic reasons, while some were motivated by environmental, and others for social reasons. In this respect, one of the prime reasons why stakeholders adopted economic factors is because they created it's meaning around profit, saving costs and a positive return on investment. This means that for the economic enthusiasts, monetary reasons were where their sense-making revolved around. Another reason that prompted stakeholders to join were for social reasons, including; the creation of jobs, improvement in education and learning prospects and to increase the standard of living. Finally, some joined for environmental reasons; to improve the utilisation of natural resources, and mitigate climate change. Furthermore, what stakeholders didn't realise is that even though they may have been motivated to adopt sustainable practices because of financial, social or environmental reasons, respectively, all the spheres are interrelated. In other words, even though they may have been alluded to one, two or all three spheres, they are all interrelated and overlap in one sense or the other. Thereby, all efforts, though some not explicit, are contributing to the common goal in one way or the other. The analysis suggests that while the sense-making process differs among the stakeholders, thereby leading to diversion, in some way or the other the theory does inform practice. This means that during interpretation, with all stakeholders, a reactive process occurred, confirming the views of Jackson (2010), Weick (1995) and, Taylor and Van Every (2000).

7.   CONCLUSIONS

In the final chapter, the research question will be answered incorporating all the observations, findings and analyses as discussed above. As a starting point, we will answer the four sub-questions separately. Thereafter, the main conclusion will be discussed, followed by the recommendations for stakeholders within the Netherlands, and in the greater society who are faced with similar challenges as those experienced in the Netherlands. The recommendations will be based on lessons learnt during the conduct of this research study.

7.1   Answering the research sub-questions

What is the current academic debate on programme management and what is the role of sense-making in this debate?

The current academic debate on programme management explains the necessity for its implementation, in order to successfully achieve the goals of the initiative, in this instance, the energy change process. This is because programme management creates a synergy and platform for the integration of a group of related projects (Lycett et al, 2004) in order to meet business needs, cost saving strategies and flexibility within the environment (Ferns, 1991). Furthermore, academics explain that revolutionary changes, in this case, the energy transition process in the Netherlands should take place over a period time so that stakeholders, society and governments are given sufficient time to adapt and make sense of the change. This is vital for the success of the change because when projects of this kind are rushed and forced, it could be detrimental for the overall success.

Moreover, debates also highlight the need for the interaction of different managers (Pellegrinelli, 1997), in order to attain various levels of expertise, knowledge, and experience. This varied expertise can be brought to the fore during the planning, discussion, and execution phase(s) of the change process. This means that the success of the initiative is not only overseen by one person/group but rather by a few people/groups who all work together to achieve the success of the process.

Furthermore, authors also suggest three different kinds of programmes that can be adopted for the implementation of initiatives, whereby a goal-orientated programme approach (Pellegrinelli, 1997) was adopted in this instance. Implementation of this kind can enhance the development of initiatives, especially those external to routine practices. In this vein, the bottom-up programme management approach is born, due to members of society (independently) initiating movements for change. Although the efforts are independent, society's undertaking(s) are done so with the goal (common) to address the issue around sustainable energy practices. Furthermore, during a bottom-up approach it is suggested that a programme definition and planning be adhered to. This will facilitate

better understanding of the change process and enhance the sense-making among the different stakeholders, community members and interested parties (Fraser et al., 2006).

Having discussed the debate around programme management, the following paragraphs will highlight the role of sense-making in this debate.

Sense-making can be explained as the ability to interpret and accept (Weick, 1995) the changes proposed in the environment, so that one is able to make 'good' sense of these modifications. Having said this, sense-making therefore allows societal members to understand the programme management process that will transform the current state of affairs to the desired state of affairs. This means that they are able to conceptualise (Weick, 1988) the process, as in many instances changes in the environment result in low probability with high consequences (Weick & Obstefeld, 2005).

The final stage of enactment is usually where internal change is brought about, as this stage constitutes the modification of behaviour, and action (Taylor & Van Avery, 2000). Furthermore, since this is the stage of enactment, it is also here that society materialise the meanings of change through talk between different members of society. In this sense, the change is talked into existence and awareness of the issue is created. This therefore brings us to the conclusion that sense-making constitutes a transformative process, thereby enabling transitions to be realised. However, for this to be effective a proactive approach is required, especially because change does not take place independently. Due to 'sustainability' being understood differently among society, the key for change rests with all parties, including external and internal social actors.

How can sense-making be studied with regard to sustainable development initiatives?

As previously mentioned, studying sense-making involves appreciating the smallness (Weick & Obstefeld, 2005). In this sense, it involves understanding how people bring about meaning to an issue, phenomena, or problem. Moreover, it also encompasses the element of adaptation. Since the current study focused on understanding stakeholders' experiences with sustainable innovation practices in the Netherlands, and how they make sense of these practices, approaching the research question with a 'sense-making' lens seemed the most suitable. This question of the research study was therefore related to the methodology, specifically the data collection method adopted for this study.

With the above in mind, the interview questions were structured, open-ended allowing respondents to openly and freely express their feelings and opinions pertaining to sustainable innovation practices. The questions revolved around key concepts used during this study, such as; perceptions of sustainable and renewable energy practices, benefits for implementation of such

practices, perceptions of collaborative efforts, factors constituting programme management, and communication practices (existing and desired).

In light of the above, we needed to gain insight into the internal feelings and views from stakeholders about these practices. This meant that our study would not only encompass the external behaviour of stakeholders, but more so the deeply embedded feelings, views and opinions that they have. In order to explore this depth, we found in-depth interviews and observations as the most suitable method to uncover these feelings and views. Because the phenomenon under study is deeply related to the behaviour, culture, past experiences, and interpretive schemes; exploring it using this approach became inherently valuable. This also led us to the assumption that understanding past behaviours gives us insight into 'best practice' for future behaviour (Kurtz & Snowden, 2003). In this way, we gained sufficient insight into the sense-making among stakeholders' experiences in relation to the above mentioned practices. It also allowed us to conceptualise the ideology that exists within the Dutch society with regard to these practices, and the rationale in their behaviour (positive and negative).

The above therefore brings us to the conclusion that in certain instances theory does inform practice. This was evident during fieldwork observations where we came across windmills, as well the implementation of solar panels at many households. Interestingly, we found that the solar panels were not only prevalent in more developed cities, albeit not in abundance, but they were spotted in smaller villages as well. During the interviews with stakeholders we also gained insight into some of them implementing solar panels and photovoltaic cells in their homes, for the transition to sustainable innovation practices. However, the above heralds the need for more widespread adoption of renewable practices. This is because even stakeholders, who work for organisations wanting to change the energy system in the Netherlands, and who possess knowledge about the benefits of renewable energy, have not adopted sustainable innovation as common practice.

What are the perceptions of stakeholders regarding sustainable and renewable energy?

Rothman and Lihcter (1987) posit that public attitudes towards the environment have undergone a dramatic change. Often, public acceptability is viewed as a barrier towards the development of sustainable energy practices (Wright, 2004). Knowledge pertaining to stakeholders' perceptions of sustainable and renewable energy practices is therefore crucial to better understand society's comprehension about these practices, because perceptions are closely linked to interpretative schemes. In other words what is already known and understood about these practices, among members of the society (local and general). Research has established that there is global recognition, for sustainable energy to become mandatory practice. This signifies, strong public (general) support for such practices. However, in many instances, it is at local level that opposition for these practices occurs (Wright, 2004). In the context of the Netherlands, little is known about how stakeholders perceive these practices. Therefore, it becomes important to know what stakeholders

understand by sustainable and renewable energy, since there are plans to transform the society, by incorporating these as common practices into the Dutch society.

Renewable energy is understood as a suitable tool to lower the negative environmental impacts, and change the global environmental situation. At the same time, it becomes apparent that the incorporation of renewable energy as common practice in the Dutch society is viewed valuable for improving energy efficiency throughout the country. This therefore brings about the conclusion that sustainable energy practices are perceived as a reliable energy source. However, in order to maintain consistency with sustainability, a balance needs to be created with the 3Ps, to ensure that all the environments, viz. economic, social and environmental are at the centre of sustainability, with all three facets receiving equal attention, and development.

Despite the positivity above, there exists scepticism among the Dutch society's impact on the overall problem. This is due to the belief that their shift towards a sustainable system would not positively impact the overall problem. Consequently, this brings about the understanding that there is divergence in the depth of knowledge among the stakeholders, with specific reference to the global energy problem.

Furthermore, it can be concluded that, at a general level, sustainable energy practices are perceived as a reliable energy source. Signifying that sustainable and renewable energy are generally, positively perceived among the stakeholders. Moreover, the current level of knowledge is fairly sufficient among stakeholders, in order to mobilise the sustainable energy transition process. Collectively, the insights pertaining to the perceptions and knowledge level among stakeholders provide a basis for policy makers, governments and interested parties to understand how a diverse range of factors within the Dutch society, shape the perceptions around sustainability. Furthermore, understanding the perceptions also serves as a stepping-stone to mobilise the energy transition process in the Netherlands.

What is the ideology among stakeholders regarding innovation practices?

Many societies in Europe are facing political gridlock due to pressing climate change issues. This has led to countries seeking alternative strategies for the mitigating climate change (Costa & Kahn, 2013). As previously discussed, the Netherlands is no exception to the above, with the implementation of fierce policies and innovation practices, specifically renewable energy technologies, all in the hopes to encourage energy conservation throughout the country. Understanding the ideology among stakeholders, therefore intended to ascertain the connection between the stakeholders' beliefs and attitudes (Lannamann, 1991) with respect to the innovation practices being integrated into the Dutch society. Attaining insight into stakeholders' beliefs can be seen as a "powerful predictor" (Zia & Todd, 2010, p.2) to know the enactment of stakeholders regarding government policies.

Renewable energy practices are believed to be an effective mechanism to develop and move the Dutch society towards a sustainable energy system. Conversely, the integration of innovation practices rests on the premise that it should be an all-inclusive process. This means that all members of the community should be involved, so that the process not only lies with policy makers and governments, but with everyone. It is noteworthy that in the Netherlands, this is no the current practice. The energy transition process is power dominated, whereby orders are directed from the top level, thereby leaving minimal room for lateral thinking and decision-making. This means that the process is deliberated by top-down facilitators, and incorporated by bottom-up facilitators. In this respect, the current ideology is that the change processes are driven from the bottom-up whilst it should be facilitated from the top-down as well.

The government is motivated to further develop renewable energy practices in the Netherlands; however, the current ideology among stakeholders regarding sustainable innovation implementation is not aligned with government objectives. This is because there is too much focus on financial benefits, and gaining independence from large companies, insinuating that the internal drivers for change are misaligned with government efforts. Understandably, the need to gain independence from larger companies is owed to the lack of trust in them. In essence, a strong short-term focus is prevalent within the Dutch society. Consequently, the short-term ideals almost prohibit the promotion of long-term social changes. Besides, the dominating short-term ideology, it was also asserted that a lack of knowledge permeates the change process, especially about renewable energy innovation practices, i.e. wind mills, solar panels, etc.

On the other hand, the communication ideology that exists in society is seen to be powerful for the transition process, in order for more awareness, and communication about the change to reach a wider audience. This is because alterations to society's behaviour, consumption and attitudes, cannot be done overnight, but rather over a longer period of time.

The above signifies that the current ideology that exists among the stakeholders does not necessarily promote the transition to a sustainable energy system. Overall, there is recognition among society that innovation practices are required, but perhaps the too strong presence of government, and bureaucracy is causing the locals to become despondent towards the change process. In essence, there is a misfit between government objectives and societal drivers for change.

7.2   Answering the main research question:

What are the stakeholders' experiences in the Netherlands with sustainable energy innovations and what meaning do they ascribe to this innovation practice?

Currently, sustainable energy innovation practices are seen as an important vehicle for changing the energy consumption patterns in the Netherlands. Sustainable innovation practices are

commonly believed to be positively suited for mitigating climate change. Furthermore, society is cognizant that changes in behaviour and attitudes among the various stakeholders are necessary to ensure the successful transition to sustainable innovation practices, in the Netherlands.

The Netherlands has been pioneers with renewable energy initiatives, being among the first countries in the world to introduce windmill technology. However, though this was the case, this technological advancement has faced many challenges, mostly resistance from local residents, as previously discussed. Therefore, to date, the experiences with sustainable innovation in the Netherlands have been characterised by high levels of resistance, and uncertainty due to government's instability regarding the development of initiatives, policies and even decision-making. More specifically, deep trust issues, between society and government, as well as with larger companies, plague the adoption of sustainable innovation practices. The underlying power struggles are manifesting itself at all levels of the change process. This could be owed to the lack of willingness to co-operate and work together, among government, larger companies, and community members.

With specific reference to their meaning-making of these practices, evidently, it can be detected that they do not hold the introduction of sustainable innovation practices, in high regard. In simple terms, there is no urgency in society about changing the current system to a new way of doing things. Though, on some level of consciousness society is aware that the world is facing a global energy crisis. However, their level of consciousness is not deep enough to move them from their current state of mind (behaviour) to the desired state of mind (behaviour).

7.3   Main conclusion

There is recognition and acceptance among societal members that a change in physical, behavioural and mental level is needed for the effective adoption of sustainable innovation practices. In practice, this involves a complex process, because changing the behaviour and attitudes of society is a challenging process. It involves altering the deeply embedded cultural values of society. At first attempt, change is not usually embraced and welcomed because it brings a level of uncertainty. This is especially true when change is ordained through government policies and initiatives.

There is common belief that change processes require thorough planning. However, during crisis situations, changes can be characterised by strong domination from one entity. In the case of the energy crisis, it makes sense for the transition process to be initiated by government, through the implementation of policies, and initiatives. In this vein, the initial phase(s) require the steering of top-down processes. However, because changes as such require high commitment and motivation from the end-users, i.e. society, their input or contribution becomes imperative. This brings about the need for bottom-up processes. Ideally, the amalgamation of top-down and bottom-up processes deems to be suitable for successful change, because, collectively, collaborative practices promote knowledge creation, and innovative thinking. However, in practice this task is not been easy, especially when the

different players have opposing ideals. In other words, the motives that drive these players are in total contrast to one another with players at the one end of the pendulum motivated to inculcate the sustainable innovation practices due to the global energy crisis, sustainable principles, and energy conservation. While at the other end of the pendulum, players are primarily driven by economic interests.

In light of the above, the absence of trust compromises the success of the change process even further. This is probably why sustainable innovation practices in the Netherlands are faced with high level of resistance and opposition among society. Moreover, the underlying conflict between government and society will dampen the process even further. As explained above, collaboration will ensure that all interested parties would move into discussions with one another, innovativeness will be expanded and, ultimately, the adoption of sustainable innovation practices will follow.

7.4   Research implications

The research has shown the dynamics surrounding change initiatives that aim to mitigate the global energy crisis. More specifically, it has shown that even though there is wide spread understanding that change is needed, the move to the desired state is indeed a complex process. Therefore, studying such a project provides valuable insights into the social experiences, perceptions and opinions of stakeholders, who very often are at the forefront of initiating and executing sustainable initiatives. This in turn, allows for a deeper understanding into their motives behind their initiatives (individual or business) and change efforts.

Further, the research also illustrates that the battle for energy conservation requires combined efforts, from everyone irrespective of the level of expertise, and hierarchical status in society. This means that top-down and bottom-up facilitators need to set aside their unconscious battle with one another and work together to achieve the overall goal, and transition to a sustainable society. This is because at the end of the day, all parties are engaging in sustainable practices to achieve the same goal, although the manner in which they go about it, due to individual sense-making, could differ. Ultimately, collaboration will foster mutual learning, knowledge and expertise sharing, which will create the platform for successful management and goal attainment.

7.5   Reflections and recommendations for stakeholders, governments, and policy makers

The following information is relevant for stakeholders, government, policy makers and academics have an interest in the topic under study.

7.5.1   Lessons learnt

There were many lessons learnt during the development and execution of this research project. These lessons are particularly applicable to stakeholders, government, policy makers, academics or interested parties who aim to confront the challenge of the global energy crisis. These confrontations include the introduction of policies, initiatives and change efforts to society.

The following section explicates the factors or proceedings, which should have been done differently to foster more support for the implementation of sustainable innovation practices. Table 3 below illustrates these factors, with supporting quotes from stakeholders.

Factor	Stakeholder quote
Changing the perspective	There is too much short-term thinking whereas there is no long-term vision, like where we are going. (Climate Change Advocate at Urgenda).
More innovativeness	Innovation attracts younger and smarter people, which brings with it growth, instead of slow growth it brings fast pace growth. This is what we need in the Netherlands. (Public Relations Manager at Eneco).
Increase the knowledge among society	Not everybody is convinced that sustainability is important… there are other important things that we have to do; energy is not a topic in their minds. (Real Estate Advisor at Waalwijk Housing Corporation).
Involve all members	Try to involve construction companies for sustainable energy production…construction industry can play a significant role in providing information in giving the right arguments. (Programme Manager at Kien). Make sure every layer of society is involved... from political to environmental, NGOs etc. (Public Relations Manager at Eneco).
Facilitate the involvement of locals	Make the link with the local people (Energy Consultant at Kien)
Promote collaborate efforts	Bring industry people together, and discuss ways forward… create a team spirit, because the essence of succeeding in any project is to lowering the barriers. (Public Relations Manager at Eneco).
Improve communication about the change process	Try at least to talk more about it [sustainability] among each other… do everything to inform the employees and promote it and explain why we are doing this and why it is an interesting offer. (Sales consultant at Rexel).

Establish trust in the environment	It is more important to explain a bit about why I want this. I have to explain, this is what I am saying and I want to have this because this is what I need… If we can talk like that we can come together and find a solution for both (Management Consultant at De Leidse Doetank).

Table 3: Factors for improving the research

7.5.2 Recommendations

Besides the lessons learnt from the project, there are recommendations that we propose. Stakeholders, and the private and public sector that aim to revolutionise the global energy crisis could adopt these recommendations.

The need for an institutional player

Currently, in the Netherlands, there exists a strong top-down directive with regard to renewable energy innovation. However, there is a high level of resistance among the local citizens, and the business sector towards government directives. This is owed to constant changes in policies, causing great uncertainty among residents, and little to no efforts to work with end-users. Distrust with government entities, as well as between the different organisations trying to create sustainable shifts in the society has been detrimental for the change process. Accordingly, members of the Dutch society do not give too much credit to government policies, because locals do not believe that the government has their best interest at heart. Accordingly, the poor performance of the government with regard to the creation of effective regulations in the energy sector has not helped the transition process, but rather aggravated and disadvantaged it.

With members in the society only initiating sustainable movements, suggesting that bottom-up implementation are the only initiatives are taking place. This is a favourable condition in order to initiate sustainable development initiatives and create awareness inside a community. It facilitates the circumstances and makes it appealing to neighbours to join the movement. However, a more inclusive process is required.

As changes of this nature, are dependent on community members, because ultimately, they are the end-users of the change. Community involvement is important, however, top-down involvement is also required.

In addition, because of the delicate situation in the Netherlands, it is suggested than an institutional player is introduced to the transition process. The introduction of this 'player' would promote and strengthen the movement. An institutional player is needed in order to get the process going. The institutional player(s) would facilitate the process; bridge the gap between different entities,

role-players and government(s), i.e. local and regional, create a network among the different stakeholders and also create a platform for communication between interested parties. Further, since trust is lacking in society, the institutional player through communication and collaboration with various stakeholders, through collaborative efforts between government with businesses, knowledge institutes and local citizens could mean greater support for policies and initiatives. In this way, the institutional player could also facilitate interaction between the bottom-up and top-down paradigms, and show them that the coalition and cooperation between both facilitators gives a transcendent meaning and gives a promising scenario for the initiative.

In light of the above, we want to emphasise the importance of cooperation between facilitators of top-down and bottom-up approaches. The integration and management of both sides is vital for the movement since working independently has led the Netherlands to fall behind with its sustainable energy initiatives. It is clear that government does not support the micro initiatives due to the fact that they believe that members of the private sector only wish to capitalise (profits) from the subsidy processes. Though the implementation of bureaucratic regulations would assure government that the businesses/organisations promoting sustainable energy practices are legitimate, on the other hand, they are deterring the private sector from wanting to become involved with these innovative practices.

The micro processes are not leading the Netherlands to a faster transition in reaching the goals of a sustainable energy system. There should be a more active involvement of institutional players to fast track the process. Government should have a much bigger involvement in the micro network in order to assist these initiatives at a more local level. In other words, municipalities should be more involved in aiding with what it is needed in order to back up the movements.

Getting people to work together over long-term will allow for the trust to be built. In this respect, the institutional player could help with this process. The institutional player should be involved with the process during the planning, and commencement of the transition. However, the role of this mediator should be directed towards guidance and communication between the different stakeholders involved, in gaining momentum with the process.

The government networks need to support the chain in order to foster more activity with the local initiatives. Equally they need to have a goal-oriented programme, which will enable initiatives or developments outside the existing infrastructure or routine (Pellegrinelli, 1997, p.145) to happen. In this case, the objective of moving towards a green energy system. Municipalities should work jointly with bottom-up movements that are interested in implementing sustainability programmes within their communities. They should provide a block-to-block fund in order to foster sustainability (Agentschap NL, 2013).

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APPENDIX A: COVER LETTER FOR STAKEHOLDERS

To whom it may concern,

Dear Stakeholder,

We Beatriz Ramirez and Nuraan Hendricks are students currently completing a Masters in Culture, Organization and Management at Vrije Universiteit (VU) Amsterdam.

As part of our study, we are required to complete a thesis project with qualitative research methods. ***Our study aims to determine the stakeholders' experience in the Netherlands with sustainable energy innovations and what meaning they ascribe to the innovation practice***. We aim to understand your perceptions, experiences and expertise within the industry, and use this information to support our arguments for the transition to a 'greener' society.

Whether your experience, or expertise with the industry has been recent or previous, all information and knowledge is valuable, because knowledge sharing and dissemination underpin the phenomenon of sustainability.

It should also be noted that the information provided by you, will be treated with strict confidentiality and anonymity, and will only be used for academic research purposes. The information provided by you will be included in our final research project (thesis), and upon request, can be used by experts and stakeholders to assist with the broader implementation of sustainable energy, i.e. renewable energy.

What we require is to conduct a short interview with you at a time and place that is convenient for you, either via Skype, face-to-face or over the telephone.

If you would like further information and also verification of legitimacy, you are most welcome to contact our research supervisor, Prof. Alfons Marrewijk at a.h.van.marrewijk@vu.nl

Your assistance in this regard would be highly appreciated

Thank you for taking the time to consider our request,

Kind Regards

Nuraan and Beatriz

Introduction:

The following study aims to determine the perceptions of the different stakeholders with the implementation of sustainable energy projects around the Netherlands. The questions asked during the interview deals with your personal views and opinions, and how you experience sustainable energy practices. Your responses from the interview will help gauge an idea about the general feeling about sustainable energy practices and also offer recommendations to other stakeholders involved with such kind of practices in order to implement it more successfully. The interview should take approximately 45 minutes to 1 hour. Your participation in this study is strictly confidential, and the information obtained will not be divulged to any third party entities. It will be used primarily for research purposes. In order to accurately keep track of information and to ensure that no responses have been misinterpreted I kindly ask you if you would let me tape this interview. Subsequently the tape will be destroyed. Your participation in this study is very important. If you wish at any time to stop the interview, you may do so and you should feel free to ask me any questions concerning the study or interview. Shall we begin?

General icebreakers
1. Please can you state your full name?
2. What is your profession?
3. What is your role with sustainable energy practices or current project? How do you fit in the scheme of things?
4. How long have you been involved in this sector?
5. Do you attend regular meetings relating to sustainable energy practices, and if so, where?

Sense making regarding sustainable energy innovations:
1. Can you explain your view on the term sustainable energy?
2. What do you understand by the term renewable energy?
3. Do you think there is a difference between the 2 terms, i.e. sustainable energy and renewable energy?
4. In your opinion, does the implementation of renewable energy practices hold high significance for you?
5. Why do you think implementing sustainable energy is important?
6. Top-down or bottom-up. Which method would be more suitable for implementing the project?
7. Whose responsibility is it to foster sustainable energy practices?
8. Do you consider yourself a "good citizen" by implementing these initiatives in your community?
9. Why do you think this?
10. Which in your opinion are the perceived benefits for the implementation of sustainable energy?

11. What do you think are the long-term implications for the implementation of renewable energy in the community?
12. What can you tell me about the 3Ps? People, Profit and Planet?
13. Relationship of sustainability of the Netherlands with other countries; why has Holland fallen behind?

Experience within the project
1. How do you perceive the success and failure of the implementation of the project?
2. How was the final project sold to intended users meeting functional and technical specifications?
3. Do you work in collaboration with another stakeholder?
4. How often do you meet with these stakeholders?
5. Do you think better cooperation and collaboration methods could strengthen the implementation process?
6. Are there any meetings for providing feedback of the process so far?

New practices
1. How do you think collaboration can be assured between the different stakeholders?
2. Is there something of the process that you would change or delete?
3. Which factors do you perceive to constitute the criteria for finishing the project on time?
4. Do you consider that by having included the government or municipalities in campaigns about environmental responsibility would encourage more people to join the initiative?
5. Do you know if there is a specific campaign for the people that do not want to join?
6. Do you think more communication needs to be made available about sustainable/renewable energy practices?

Zon en Licht Project

Zon en Licht is a project carried out by several stakeholders interested in renewable energy and energy efficiency, in the Netherlands. Among the stakeholders involved are Philips, Rexel, Econet, and Philips employees; the general end-user.

Rexel's role in this project is to serve as a mediator or facilitator between Philips and Econet. They are responsible for buying and selling components towards contractors and installing companies. In other words they are the ones who possess the resources (solar panels and led lighting). Additionally they are the link between the end-users and the installation and construction companies. Their role involves an active participation and contact with the end-users. Rexel is looking for ways to create demand among end-users, so they are not waiting for the end-users to contact them, but on the contrary, they are thinking on how they can make contact with the end-users, on behalf of the installation companies.

The project begun when Rexel and Philips established a working relationship. Philips identified the need to create awareness about sustainability among their employees. On the other hand, Rexel would provide Philips with the necessary information, and products to Philips. In other words, Rexel owns equipment needed for the implementation, and knows an installation company that would be able to install the technology. In addition, the price of buying and installing the equipment would be considerably lower due to higher levels of demand.

Philips internally communicated to all its employees the intention to engage in the project with Rexel. Subsequently, Rexel contacted the end-users and arranged several meetings with them. Throughout these meetings communiqué revolved around the need for the Dutch society to commit and switch to sustainable energy practices, i.e. the current need for renewable energy practices and how staff can join these initiatives.

Further, they motivated households to join the initiative by giving a more flexible and lower price for the acquisition and installment of the technology. And finally, they also offered a personal advice, conducted by the installation companies, to show interested employees a sample scenario of the return investment and future energy consumption patterns within homes, when implementing solar panels or Led lighting systems. The internal marketing and promotion of this project at Philips is forecasted to last for at least one year.

As a second step, anyone interested in adopting sustainable practices, Rexel in close collaboration with the installation companies organise site visits to the homes of the interested parties. Econet provides advice to the inhabitants, on the best solution within their budget, for their home with regard

to energy saving techniques. Once this step has been fulfilled, a cost analysis is done to provide consumers with an outline of their current costs using their current energy management system, and what their costs would be using a new sustainable energy system.

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