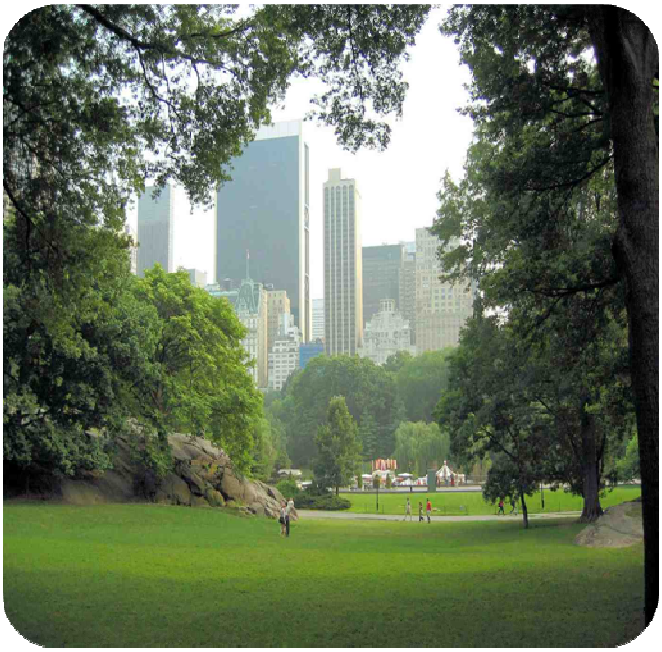
Silence & the City

WPA2: Data collection and analysis in The Netherlands, Belgium, Norway and United Kingdom

QUADMAP



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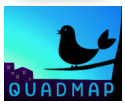

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PREFACE

This report has been written in the spring of 2012 in order to make an inventory of the legislation, the approach and policies on Quiet Urban Areas on the subject of "Quiet Urban Areas (QUAs) Identification, Selection and Management" in the framework of four countries; The United Kingdom, Norway, The Netherlands and Belgium.

EXECUTIVE SUMMARY

DCMR Milieudienst Rijnmond (DCMR Environmental Protection Agency) is the regional environmental protection agency in the greater port of Rotterdam area. The Noise Department of DCMR is involved in a project called the QUADMAP Project, which aims at producing a Good Practices Guide for a harmonized identification and management procedures for QUAs. Therefore, the Noise Department of DCMR requested an explorative and descriptive research in four selected countries; the United Kingdom, Norway, The Netherlands and Belgium, for a sound background research regarding QUAs practices.

RESEARCH QUESTIONS AND OBJECTIVES

This report provides an analysis and an evaluation of the procedures and criteria used for identifying, selecting and managing QUAs in the selected four countries. Furthermore, perceptions of businesses (like restaurants and offices in The Netherlands) towards QUAs in relation to city attractiveness and experiences of experts are investigated as a valuable contribution to the thesis. The ultimate goal of this thesis is to produce recommendations for a Good Practices Guide (to be prepared by the QUADMAP Project Beneficiaries) with advice that can be applied to the best practices regarding QUAs. Therefore, the sub-objective is sharing knowledge and learning from each other based on the analyses.

RESEARCH METHODS

Exploratory, secondary and primary research was conducted through analyzing governmental publications, published by the competent authorities of the four countries, and reports produced by the experts and EU Commission. The primary research consists of a questionnaire of the QUADMAP Project which was approved by the involved project parties. Semi-structured and face-to-face interviews were held with business entities (like restaurants and offices). Furthermore, experts were part of the primary research. Moreover, desk research was performed in order to complement and

compare the findings from the interviews and the QUADMAP Project questionnaire. The model that was used to present all these findings was the Deming 'PDCA' Cycle model.

MAIN RESEARCH FINDINGS AND CONCLUSIONS

PROCEDURES FOR THE IDENTIFICATION FOR QUAS

The United Kingdom (England, Wales, and Scotland) is a country where processes for the identification of QUAs can be found precisely, which can be seen as the guidance for other countries. In Norway and the Netherlands, identification processes were conducted by local authorities, unlike the UK. A precise procedure like in the UK, is not produced by the authorities; however, the separate procedures (public consultations, surveys, noise maps) which were conducted in the identification process, served the same purposes of the UK's procedures. In Belgium, a specific approach for QUAs does not exist. Therefore, Belgium is weak in proving governmental information regarding QUAs.

CRITERIA FOR IDENTIFYING QUAS

In the UK, different criteria exist, considering different aspects of QUAs in the identification process. These criteria are applied to the processes by the competent authorities, by using the requirements of relevant policies and guidelines. In Norway, however, visual qualities of QUAs and user perspectives are taken into account thanks to the perspective of QUAs being a part of people's daily life. In the Netherlands, visual qualities, functionality and safety occur as a result of field surveys conducted by the public. This leads to the conclusion that a higher noise level than the required one would not be of much concern to the public. Finally, the only focus on greenery and noise level in the Brussels Region of Belgium can be a problem for the Region to identify qualified QUAs in the future.

LEGISLATION, PERCEPTION OF BUSINESSES AND LESSONS LEARNT BY THE EXPERTS REGARDING QUAS

With regard to the relevant legislation and policies, all the selected countries have the legislation for QUAs and the legislation is in effect in each country. However, based on the legislation analysis in the UK and the Netherlands, the relevant legislation is supported by policies and governmental commitments, which is not the case in Norway and Belgium. Perceptions of restaurants and offices in the Netherlands are positive towards QUAs as part of the city attractiveness and to locate their businesses around QUAs. Therefore, QUAs add value to both cities they belong to and businesses nearby, because QUAs possess qualities which people consider important in their environment. Experiences of experts suggest that basic preparations include brochures and booklets for the public, pre-designing surveys, trial tests with surveys, and pre-meetings with involved parties will strengthen the success of the process. The need for a budget and support from politicians is also important: when politicians acknowledge the importance of QUAs, this helps to create awareness for QUAs.

RECOMMENDATIONS

Countries should consider producing a precise identification procedure for QUAs by discussing the steps with local authorities. The "Quiet Areas" section of the action plans should not be treated as an add-on, and more information regarding procedures for QUAs should be presented. National (transposed or amended) legislations should force the competent authorities to pay attention to quiet areas, emphasizing how to identify, preserve and manage QUAs in action plans. Moreover, an assessment form (criteria focused) should be designed by local authorities, as a practical and time-saving part of the identification process. Although a multi-criteria approach should be always considered when identifying QUAs, "The relative quietness of the area" and "Visual attributes" should be taken into account as the most important first two criteria. Finally, politicians should be informed by QUAs' benefits and should be involved in creating awareness for QUAs.

INTRODUCTION

1.1 REASON FOR THE RESEARCH

"Policies are a bit like leaves… they grow and they fall downwards. And it's only when they reach the ground that we have to deal with them practically. This is where you come in."

Janez Potocnik - EU Commissioner for Environment

In 2010, Janez Potocnik finalized his speech (Potočnik, Janez, 2010) with these words, when he addressed cities at a seminar on sustainable urban development in Brussels. The quote is an overview of both how European cities deal with environmental challenges and how authorities are approaching these challenges. Nowadays, one of the environmental challenges is noise, affecting a large number of Europeans. People in urban cities are mostly exposed to noise, because the number one noise source is traffic in cities. QUAs are the only areas in cities where people can escape the noise and can have quality time in a natural area.

However, these areas are not identified nor protected to the increase of noise for a sustainable quality of life in urban cities. As a result, the European Union adopted the European Noise Directive (END) in 2002. One of the objectives of the END is to draw action plans in Articles 8 (1b), stating the aim to protect quiet areas against an increase in noise.

The problem is that there are different interpretations in EU countries as to how to fulfill this. This is mainly due to that quiet areas were not clearly identified in the END. Furthermore, different approaches, methods and criteria were conducted by the authorities after the transposition of the END into national legislations of the countries. The result was inhomogeneous approaches for identifying QUAs across the European Union.

1.2 MAIN RESEARCH GOAL

A sound background research of procedures, different criteria, legislation, perspectives of businesses and experts regarding QUAs is needed through secondary (governmental publications, reports) and primary research (questionnaire and interviews) in order to provide conclusions and recommendations for a Good Practices Guide regarding QUAs to the QUADMAP Project beneficiaries in the framework of 4 selected countries (the United Kingdom, Norway, the Netherlands and Belgium).

1.3 DETAILED READING GUIDE

Procedures and criteria of the selected countries would provide knowledge of what works best, and what kind of criteria were emphasized by the countries. This forms a big database of procedures and criteria for final conclusions. The UK is a unitary state where England, Wales, Scotland and Northern Ireland all separately implement the legislation regarding QUAs through a centralized governmental agency. Therefore, differently from the other countries; the identification, selection and management procedures for QUAs provide a crucial knowledge to the QUADMAP Project beneficiaries. Norway and the Netherlands however, work locally, the appreciation of criteria regarding QUAs and the way procedures regarding identification of QUAs are conducted differ slightly. In Belgium, three regions work individually regarding QUAs. Therefore, the focus on quiet areas regarding the procedure and criteria differs in Belgium as well.

The perception that businesses (like restaurants and offices) have of QUAs, is also bound to play a part on the thesis for the QUADMAP beneficiaries in terms of having an overview of how this perception and attitude of businesses related to city attractiveness. When local business practices and culture encourage QUAs, then the awareness and priority for QUAs would be increased by the authorities and politicians where policies and governmental commitments is crucial in the identification, selection and management of QUAs. QUAs are usually areas include greenery which make cities beautiful for citizens, visitors and investors. Having a business location next to a QUA for restaurants and offices is an important decision because of its advantages. Research[1] shows that businesses usually locate their offices where urban development and QUAs are provided. Norway is known for their large green parks in cities so that makes it an interesting research compared to the Netherlands and Belgium where quiet green areas in cities are common but not as large as Norway's QUAs.

Another subject of interest is the lessons learned by the authorities involved in the projects for identifying QUAs in the selected countries. Depending on the importance and relativity of these lessons, conclusions and recommendations will be described.

[1] Smeets, H. Gaddet, J "Het Grote Groenonderzoek" 2009. Amsterdam

Once all the information is gathered and analyzed, we can provide an advice to the countries that have gaps in their legislation, procedures and criteria. In other words, we can explain which steps in procedures and criteria need to be improved and would be most applicable in order to create successful identification procedures for QUAs. Based on the perceptions of businesses in the Netherlands that have already operated around QUAs as well as based on the interviews with experts already involved in the identification processes of QUAs, clear ideas for recommendations for a Good Practices Guide will reveal itself besides secondary research, governmental publications and recommendations from studies conducted regarding QUAs. Eventually, in turn, this information will be presented by means of this paper to the QUADMAP Beneficiaries. Based on the selected country researches, recommendations will aim to share knowledge and to stimulate countries to learn from each other on the road to a Good Practices Guide for QUAs.

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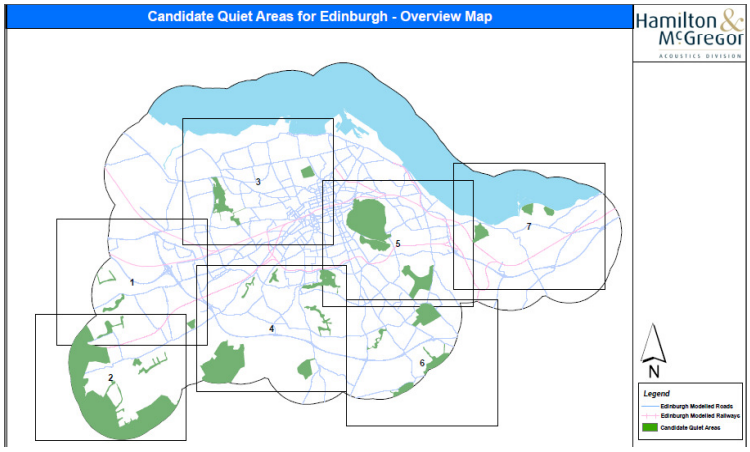

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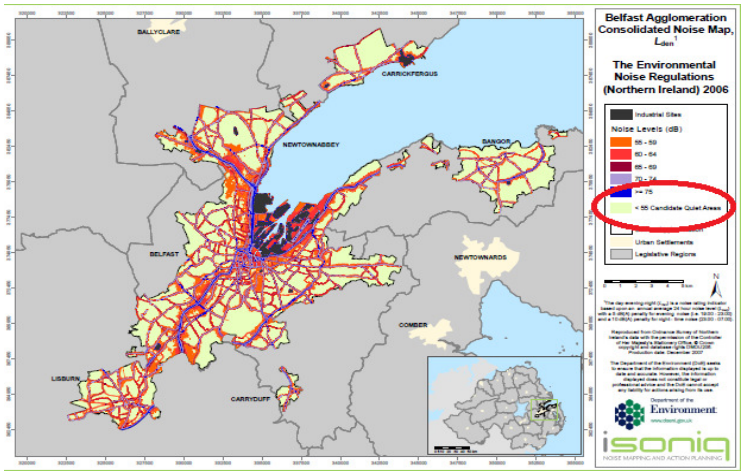

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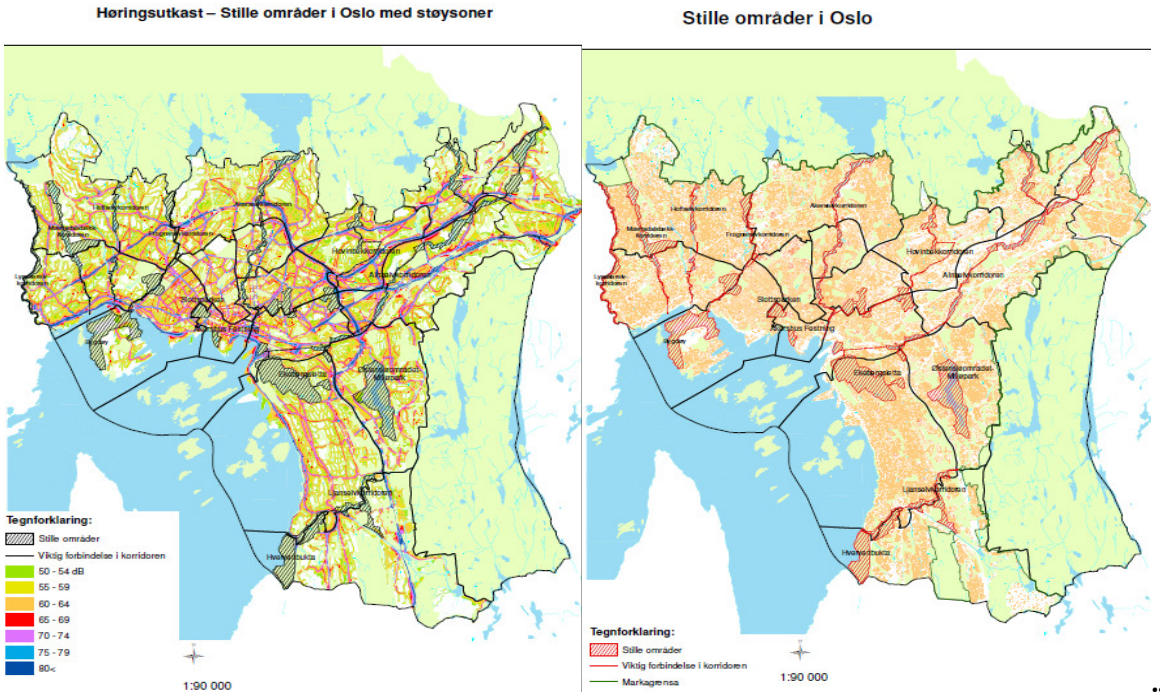

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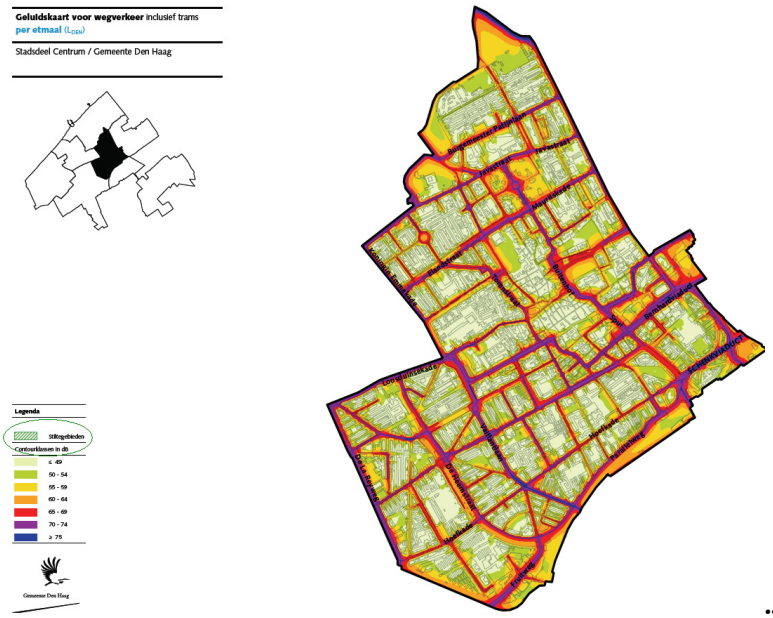

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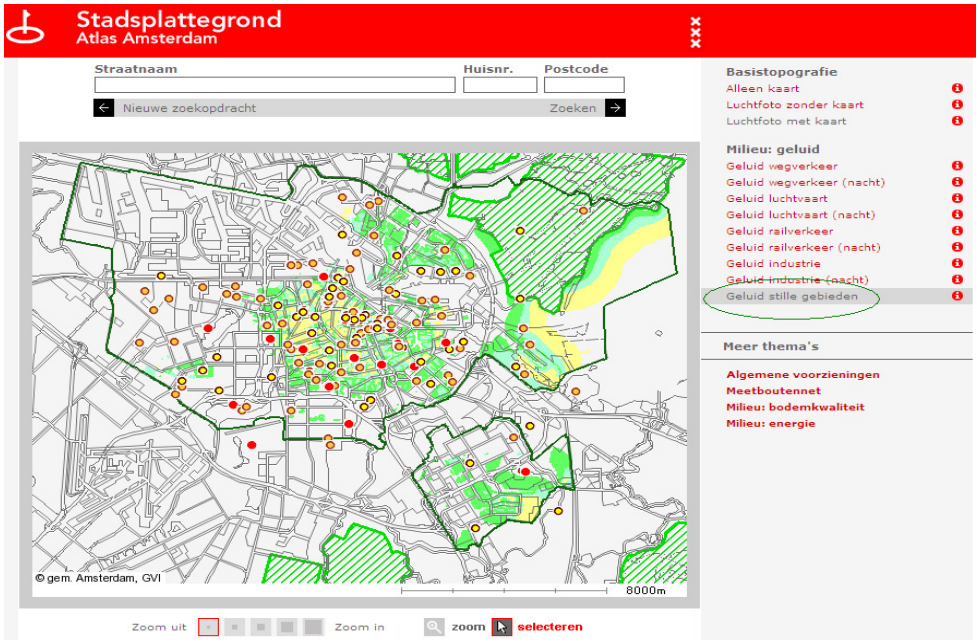

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The following page will be dedicated to Chapter 1. Chapter 1 concerns the "problem" to be researched and a more clear definition of it.

Also, the research objectives and questions will be presented. By means of linking the "bones" of the Fishbone diagram to the main research objective, a more clear definition of the direction to the research will be described.

CHAPTER 1

INTRODUCTION CASE STUDY – SILENCE & THE CITY

The aim of this thesis is to produce a set of recommendations for a Good Practices Guide, which provides countries with advice to apply best practices regarding QUAs[2]. This will be done, based on data from the United Kingdom, Norway, the Netherlands, and Belgium. Therefore the sub-objective is to share knowledge and experience and therefore learn from each other, based on the analyses regarding QUAs throughout this thesis.

The END was adopted on June 25, 2002 (European Commission, DG Environment). This directive is where "quiet areas'' is originated from. In the END, there is a requirement urging all Member States to transpose the END into their national legislations by 18 July 2004; while the deadline for adopting action plans for major roads, railways, airports and agglomerations[3] was required to be fulfilled by 18 July 2008 (European Commission, DG Environment).

Next, the Article 8 from the END is presented (European Commission, DG Environment), in which quiet areas are mentioned in the article for action plans:

> Article 8
> Action plans
> 1. (b) agglomerations with more than 250 000 inhabitants. Such plans shall also aim to protect quiet areas against an increase in noise.

The END identifies the importance of so called quiet areas. As part of the action plans, Member States were required to introduce specific measures and to determine areas in order to protect quiet areas in agglomerations against increase of noise. However, the END left most of the authority and management for the procedure of these quiet areas to the discretion of Member States.

The consequence of this discretion led to different approaches across the EU regarding QUAs. Member States produced approaches, strategies or defined quiet areas related to their specific and unique contexts. As a consequence, cooperation regarding QUAs identification, selection and

[2] Quiet Urban Areas

[3] 'Agglomeration' shall mean part of a territory, delimited by the Member State, having a population in excess of 100 000 persons and a population density such that the Member State considers it to be an urbanized area.

management amongst Member States is now a difficult task. As a result of this extremely fragmented and inhomogeneous situation of current practices about identification, selection and management of QUAs, the QUADMAP (Quiet Areas Definition and Management in Action Plans) Project has been proposed by Italy, The Netherlands, Spain and France, and the project is co-funded by EU Commission in the framework of Life+ Programme[4].

Therefore, the purpose of this research is to gain more insight in the approaches, knowledge, and experiences regarding QUAs in the selected countries; the United Kingdom, Norway, The Netherlands and Belgium. The sub-objective is sharing knowledge and experience, and therefore to learn from each other, based on the analyses regarding QUAs.

1.2 PROBLEM DEFINITION (FISHBONE ANALYSIS)

The main problem of this study, as this is presented in the Fishbone Diagram, is "the fragmented and inhomogeneous practices about identification, selection and management of QUAs" that cause inconsistency amongst countries, which requires an EU–wise homogeneous approach in the next years.

The "backbone" of the fishbone shows 4 main branches that compose the causes and effects of the main problem, in order to tackle the issue in detail below:

1.2.1 DIFFERENT DEFINITIONS OF QUAS

The definition for quiet areas in agglomerations in the directive leaves discretion to the selected countries in determining and identifying quiet areas (European Commission of the European Communities, 2002). Article 8 of the END states that action plans for agglomerations should aim to protect quiet areas. The judgment and responsibility in both defining and protecting quiet areas is left to the Member States. The consequence of this discretion led to differences in approach and procedures for quiet areas in the selected countries.

Following is the most significant, existing definition in the END, which should be taken as guidance while determining quiet areas in agglomerations:

> (l) 'quiet area in an agglomeration' shall mean an area, delimited by the competent authority, for instance which is not exposed to a value of Lden[5] or of another appropriate

[4] LIFE is the EU's financial instrument supporting environmental and nature conservation projects throughout the EU, as well as in some candidate, acceding and neighbouring countries.

[5] Lden is an indicator of the overall noise level during the day, evening and night which is used to describe the annoyance caused by exposure to noise.
The noise indicators Lden and Lnight are used in the making of strategic noise maps. (The END)
dB: Measures sound level of noise in Lden.

> noise indicator greater than a certain value set by the Member State, from any noise source;

This definition leaves room for interpretation, critical reflection and adjustments to the context of the country or local area. This thus creates difficulties in the implementation or to find places which would be agreed by all the Member States. As a result, there are many different definitions and therefore procedures for identification by the different Member States.

1.2.2 DIFFERENT CRITERIA FOR QUAs

Each country is unique and has its own interpretation and perception of what makes an area quiet. Different criteria for quiet areas are used due to the need to define and assess quiet areas with different attributes, rather than doing this only with a noise indicator (L_{den}). The END leaves the discretion to countries by only indicating that L_{den} might be used for this purpose. This then allows countries to adopt different approaches with different local criteria in identifying QUAs. Furthermore, even if a Member States chooses to adopt an appropriate noise indicator, the END leaves it to the Member States to decide on appropriate limit values.

1.2.3 DIFFERENT NATIONAL LEGISLATIONS ON QUAs

National legislation of the selected countries has different contexts about QUAs. In the United Kingdom, England, Scotland, Wales and Northern Ireland transposed the END separately in 2006 (The Environmental Noise (England) Regulations 2006). As a result, all legislations have similar but still different contexts regarding QUAs.

The END was transposed in the Norwegian Pollution Regulation on 1 July 2004 (The Pollution Control Act) (Vernon, Dr Jan). The legislation context includes a detailed definition of QUAs, in contrast with the UK, the Netherlands and Belgium.

The Netherlands has transposed the END into its national legislation (The Noise Abatement Act) in 2004 (Vernon, et al, Jan). However, the Netherlands has already had the Environmental Management Act since 1993. The Act keeps the regulation for protecting quiet areas.

The regulation regarding environmental noise in Belgium was called the Evaluation and Management of Environmental Noise (Vernon, Dr Jan). The END was transposed by the Brussels Region on 1 April 2004, amending the order of 17 July 1997 regarding the fight against noise in urban areas. In the Flanders Region, it was transposed by Decree of 22 July 2005 (Vernon, Dr Jan) on the evaluation and management of environmental noise. In Wallonia, it was transposed by Order of 13 May 2004, regarding the evaluation and management of environmental noise. However, these transposed legislations have the context of the END with vague definitions of QUAs. Therefore, this different

context of the legislations led to different, inhomogeneous approaches for identifying, selecting, and managing QUAs.

1.2.4 PRIORITY AND IMPORTANCE GIVEN ON QUAs DIFFER

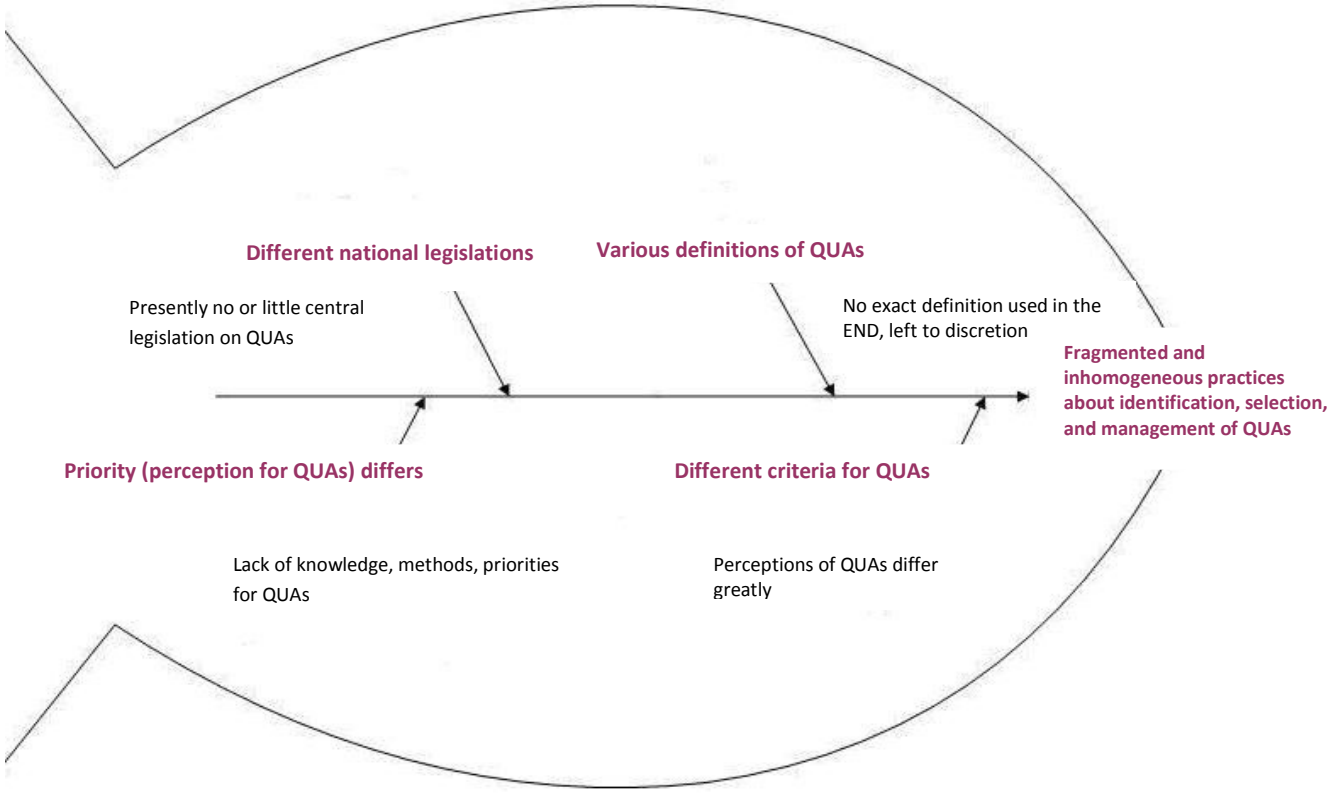
The United Kingdom did not have a specific legislation for QUAs; however, after the adoption of the END, the states of the UK transposed the END on a centralized state level, while varying slightly on content and requirements regarding QUAs.

Norway also had the relevant legislation for QUAs after transposing the END (The Pollution Control Act) on a local level, with a specific legislation compared to the other selected countries. Norway started to work actively on QUAs since 2004. Instead of applying it to the whole country, Oslo is the only city in Norway where projects for QUAs are conducted.

The Netherlands has a unique situation compared to the other countries. Priority was given to quiet areas even before the END in the national legislation. After the END was transposed the into the Noise Abatement Act, the transposition of END into the national legislation was conducted by municipalities and provinces that worked to fulfill the requirements by determining noise maps and developing action plans based on those noise maps.

The three different regions in Belgium worked individually. The Brussels Region is the only region that processed on the 'Quiet Areas Strategic Plan'. However, the Flanders Region's priority is "quiet areas in the country side" rather than "quiet areas in agglomerations" (QUAs). Wallonia transposed the legislation, but here no information is available to the public regarding their activities.

Below is a graphic representation of the fishbone diagram, which presents the "backbone" of the issues for this research:


Different national legislations
Presently no or little central legislation on QUAs
Various definitions of QUAs
No exact definition used in the END, left to discretion
Fragmented and inhomogeneous practices about identification, selection, and management of QUAs
Priority (perception for QUAs) differs
Lack of knowledge, methods, priorities for QUAs
Different criteria for QUAs
Perceptions of QUAs differ greatly

1.3 RESEARCH OBJECTIVES

The main objective of this research is to find out the applied methods and approaches for identifying, selecting and managing QUAs, particularly in the United Kingdom, Norway, the Netherlands and Belgium.

The sub-research objectives are:

- *To find out the used criteria in identifying and selecting QUAs in the selected countries (the United Kingdom, Norway, the Netherlands and Belgium);*
- *To find out the legislation and policy that are in force for QUAs and to review these legislations and policies;*
- *To gain more insight in the perception of businesses (restaurants and those who have offices located nearby a QUA) towards QUAs in relation to city attractiveness and location choice for their businesses;*
- *To find out the lessons learnt by experts who have worked or were involved in a project or study for QUAs.*

The ultimate goal of this thesis is to produce a set of recommendations for a Good Practices Guide (to be prepared by the QUADMAP Beneficiaries in a later stage of the project), with advice that can be applied to gain the best practices regarding QUAs. The sub-objective is to share knowledge and to learn from each other, regarding QUAs.

In order to prevent any misunderstanding for the end result, it should be noted that it is not the final objective of this thesis to create a common approach or method for QUAs. Furthermore, it is impossible to describe this, due to the unique features, differences and perceptions towards noise and quietness in each country.

1.4 RESEARCH QUESTIONS

The main research question of this thesis research is:

"Which methods and approaches are used in identifying, selecting and managing QUAs in the United Kingdom, Norway, the Netherlands and Belgium?"

The sub-questions of this thesis are:

- Which criteria are used to identify and select an area as a QUA in the United Kingdom, Norway, the Netherlands, and Belgium?
- What are the legislations and policies that are in force for QUAs?
- What is the perspective of businesses (restaurants and offices) regarding QUAs in relation to city attractiveness and as a location choice for their businesses?
- What are the lessons learnt by experts who worked with or were involved with a project or study for QUAs in the United Kingdom, Norway, the Netherlands and Belgium?

1.5 RESEARCH DESIGN

The topic of this thesis is identification, selection and management of QUAs as a result of the END, which is agreed by all Member States in 2002. After the research questions were established, several data collection methods will be used to gather the necessary information to provide a sound investigation analysis.

The majority of this thesis research will be based on the use of pre-existing literature, publications and reports that have been published within the last ten years. A detailed review will be made of the respective national laws of the selected countries in the framework of this thesis, regarding QUAs. In order to evaluate whether or not the content of the literature is reliable, the credentials of the authors, and timelines of the research will be assessed. Reliance will be on sources such as the internet, several publications and the data gathered through questionnaires, semi-structured and face-to-face interviews. This will ultimately lead to the results of this thesis. The exploratory and descriptive method of research will be used for this thesis.

The data collection methods in this research are listed as follows:

Secondary Research - Published Sources: Secondary data are data that were previously collected and assembled for a project other than the one at hand (Babin, Barry J., and William G. 160). Desk research will be one of the methods of secondary data, through which information will be withdrawn from existing sources of information and from researches from the past. This will give a general overview on the applied practices, and experiences in the selected countries.

Primary Research – Survey (Questionnaire): The survey method is a technique of gathering data by asking questions to people who are thought to have the desired information (Survey Method, Management Study Guide). The main research question of this thesis will be found by means of a literature study and a questionnaire (See Appendix 1), which was specifically prepared for QUAs by the QUADMAP Beneficiaries (Italy, France, Spain and the Netherlands) and was approved by the University of Florence. The questionnaire will be used as the main instrument for data collection in this research; a sample of municipalities, environmental agencies and relevant organizations has been identified for the questionnaire sample.

Semi-Structured, Face-to-Face Interviews: Through semi-structured, face-to-face interviews, the researcher will have a list of themes and questions to be covered, although these may vary

from interview to interview. For the purpose of this thesis, experts from several municipalities, environmental agencies and relevant organizations are selected for interviews regarding QUAs.

Email Correspondence: Information will be acquired through email correspondence with organizations and individuals who worked on QUAs approaches and methods with respect to the END. Whether these are reports from companies or personal opinions, email correspondence proves to be a quick and reliable source of information to complete questions that have been missed in other parts of the investigation.

Tertiary Sources: Also referred to as "search tools", are designed either to help locate primary and secondary data sources (Mark Saunders, Philip Lewis, Adrian Thornhill). Therefore, they include indexes and abstracts, as well as encyclopedias and bibliographies.

The graph presented in Chapter 3 for Methodology (Section 3.3 for Research Methods) presents the research questions, research methods, the methodology and sources which were used to find out answers on the questions.

1.6 STRUCTURE OF THE REPORT

The structure of the report is as follows:

Chapter 1 introduces the main elements of the research. First, the case study introduction is presented with the background of the research assignment and related topics. The chapter continues with the problem definition where the main problem is elaborated upon the themes (elements of the fishbone diagram) followed by the problem definition, the objective of the research and the objective of this thesis. The research design and the structure of the report are presented next.

Chapter 2 provides the Literature Review by the Deming Cycle (PDCA) which is a quality management tool for the purpose of elaborating the implementation phases of the END in the four countries. The PDCA cycle provided a monitoring structure for analyzing the implementation of the Directive (the END) regarding QUAs.

Chapter 3 presents the Methodology, which emphasizes what is discussed and why. An introduction of the generic BBA/IBMS competencies as specified in the BBA framework is described. Next, the research questions, research strategy and data collection are described.

Chapter 4 provides the analysis of findings and clarifies the findings derived from the QUADMAP questionnaire and interviews.

Chapter 5 presents the conclusions derived from the research. Finally, recommendations will be described, to both present and future EU countries. These recommendations will contribute to learn from each other and to share knowledge based on the research findings.

Chapter 6 presents reflections on the competencies performed during the research, as well as the realized improvement points.

1.7 CHAPTER'S SUMMARY

At the end of this chapter the reader should have a clear idea of the research questions, objectives and the research design. An Ishikawa Diagram was presented, to explain the "backbone", or the issues behind the main research problem. It was defined that the ultimate thesis goal is to produce a set of recommendations for a Good Practices Guide (to be prepared by the QUADMAP Project Beneficiaries) with advices to apply the best practices regarding QUAs.

The research questions were presented, presented via the "backbone" of the fishbone, leading to an answer or description of the main research objectives.

The next chapter consists of the Literature review.

The Quality management concept of the Deming Cycle supporting the investigation will be presented and defended, with reputable sources to give the reader a clearer idea and a broader background of the issues in the implementation process of the END surrounding the main research objectives.

CHAPTER 2: LITERATURE REVIEW

Chapter 2 will present the literature review of this thesis. A specific quality management model will be explained: the Deming Cycle (PDCA[6]) is a quality management tool, used in processes for continual improvement. However, the cycle is used as a tool for monitoring and analyzing the implementation phases of the END regarding QUAs for the purposes of this thesis research.

In the end of this chapter, the reader should have a deeper understanding of the theoretical framework that was used for the implementation of the END, which in turn contributes to the quality of the QUADMAP project for QUAs. In particular, it will be the basis for analyzing the implementation tasks of the END regarding QUAs.

2.1 INTRODUCTION

In this chapter, the Deming Cycle was used as an instrument for applying the concept of monitoring and analyzing the selected countries for this thesis research. Plan-Do-Check-Act phases are applied to the phases of the implementation tasks (Noise mapping, action planning) for the selected countries required by the END.

2.2 THE DEMING CYCLE (PDCA)

“A general method for guaranteeing good results when structuring and implementing work tasks is to apply the Deming Cycle. It is a concept that assures continuous improvement by repeating four fundamental activities: Plan, Do, Check and Act (PDCA)” (Lindstedt, Per, and Jan Burenius, 182). This cycle supports the activities designed to continuously improve a specific process. This concept has a simplistic structure yet it is a useful tool when applied to processes. The PDCA Cycle was originally conceived by Walter Shewhart (1930) and is often referred to as "the Shewhart Cycle".

The model provides a framework for the improvement of a process or system with the four repetitive steps which encourages the development of continuous improvement and learning (Gómez-Gras, J.M, 2005). Therefore, the PDCA cycle includes both continuous improvement and learning during its implementation.

The Deming cycle is illustrated as follows:

[6] Plan-Do-Check-Act

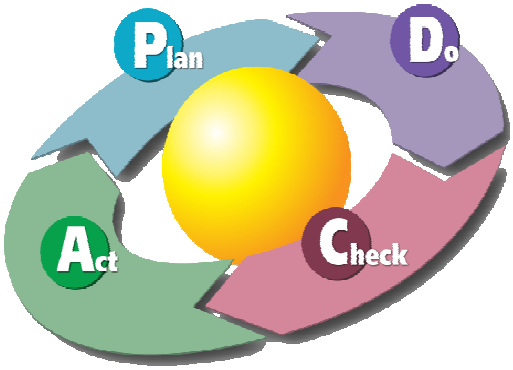


Figure 1: The Deming Cycle

Plan: The plan stage of the Deming Cycle is the beginning of the process. Prior to implementing a change, the nature of the issue or process depending on the use of the model, should be well-known. The book 'The Certified Quality Engineer Handbook' states that 'the objectives of this phase are related to the identification of a problem' (Borror, Connie M, P347) when it is applied for improvement purposes. In this thesis, however, the Deming cycle will be applied and will focus on the experiences of the countries on the implementation process of the END.

The goal is to get an overview of the selected countries' implementation status of the END and the relevant topic of "quiet urban areas". The first step is to find out respective legislation and policies of the four selected countries regarding QUAs such as the implemented END requirements and/or national legislation on quietness.

Do: The book 'The Certified Quality Engineer Handbook' states that in the 'Do' stage, the objective of this phase is to prepare the implementation plan, to obtain approval, and to implement the process improvements (Borror, Connie M, 351). For the purposes of this thesis research, this phase checks and gets an overview of noise mapping process in general, but also particularly whether attention is paid to the subject of QUAs. Outline and ambition of action plans will be analyzed in terms of criteria, approaches or measures to reduce the noise in those QUAs and to prevent, and preserve QUAs too in this phase of the cycle.

Check: The book 'The Certified Quality Engineer Handbook' states that 'the objective of this phase is monitoring and evaluating the change by tracking and studying the effectiveness of the improvement efforts through data collection and review of progress' (Borror, Connie M, 352). In this phase, an assessment will be made whether noise mapping and action plans regarding QUAs, required by the END are taken.

Act: The author of 'The Certified Quality Engineer Handbook' states that "this phase has the objective of achieving improved levels of process performance" (Borror, Connie M, 354). For the purpose of this research, suggestions on which actions would be needed on legislation; noise mapping and action plans will be presented.

As explored previously, the use of the Deming Cycle and its phases can be very beneficial. In this particular case, especially when applying the Deming Cycle. It will be a valuable analysis as to how

the implementation process of the END regarding QUAs has been pursued by the selected countries (the United Kingdom, Norway, the Netherlands and Belgium); this research therefore proves to be extremely advantageous for the QUADMAP Project Beneficiaries.

The main objective is to produce recommendations (Chapter 5, Section 5.2) for a Good Practices Guide, which will be developed with the contribution of all the beneficiaries of the QUADMAP Project at a later stage of this project. The recommendations will aim at sharing knowledge and contributing to learning from each other regarding QUAs, based on the research from the selected countries.

Therefore, the Deming cycle concept applied in the literature review will let the reader grasp the whole situation of the selected countries regarding the implementation of the END, legislations, noise maps and action plans regarding the identification, selection and management procedures of QUAs.

Applying this quality management concept to the legislation and policy documents of the United Kingdom, Norway, the Netherlands and Belgium, will be described next.

THE DEMING CYCLE - PLAN

2.2.1 LEGISLATION

In the first phase of applying the Deming cycle of 'Plan' for the selected countries, legislation and policies regarding QUAs will be reviewed. In this phase, it is important to consider the current policy context in relation to QUAs, to set the scene as to how QUAs and related issues are currently defined and managed by the government of the selected countries and local authorities.

Therefore, the relevant legislation of the selected countries regarding QUAs are identified, and the relevant 'quiet areas' part of the legislation of the United Kingdom, the Netherlands, Norway and Belgium is presented in the booklet provided with the thesis. References to the legislations presented in this booklet will be made when mentioned in the relevant country context.

2.2.1.1 THE UNITED KINGDOM

The first country to be examined is a unitary state; the United Kingdom. The UK consists of four countries; England, Wales, Scotland and Northern Ireland. There are three devolved national administrations, each with varying powers (Youngblood-Coleman, Denise. Country Review: United Kingdom).

The UK is a country which the END was transposed separately by England, Wales, Scotland and Northern Ireland, with different identification requirements in the legislation content, and applied by the central governmental agencies of these countries.

The legislation (the transposed END) in England was amended in 2009, because of the objectives of the paragraphs stated. Legislation 2006 (The Environmental Noise (England) Regulations 2006), highlighted the deadline for identification of quiet areas in agglomerations. The amended legislation (The Environmental Noise (England) (Amendment) Regulations 2009), emphasized the 'quiet areas in agglomerations' for identification in the paragraph, stating this form (writing the Secretary of State must identify) to be more appropriate and to keep this identification under review in addition. England is also the only country that has a specific noise policy statement (England Noise Policy Statement 2010) for quiet areas, which requires "consideration to identifying and implementing measures to protect quiet places and to enhance the environment to deliver health and well-being benefits to society".

Furthermore, there are governmental publications (Natural Environment White Paper, DEFRA[7]), which emphasize the commitment of UK Government to QUAs in cities, by stating that the "Government is committed to delivering the requirement of noise policy statement for England and part of this they will work with local authorities to establish mechanism for formally identifying and protecting QUAs so that people living in cities can benefit access to areas of relative quiet for relaxation."

Based on the interview with Mr. Colin Grimwood, who is the Technical Director and Principal Adviser of Acoustics & Vibration from Bureau Veritas, it is confirmed that in March 2012, the England National Planning Policy Framework published a statement in paragraph 123, regarding QUAs, which emphasized that planning policies and decisions should aim to identify and protect areas of tranquility (quiet) which have remained relatively undisturbed by noise.

The legislation of Wales (The Environmental Noise (Wales) Regulations 2006) described the deadline (30 September 2007 and 30 September 2012) for identifying quiet areas in agglomerations, in which the amended legislation (The Environmental Noise (Wales) (Amendment) Regulations 2009) stated that "quiet areas in agglomerations must be identified in the action plans" differently from all the UK states by highlighting the "identification of action plans".

In addition to the legislation, there also are governmental publications of commitment and policies for protecting QUAs in Wales. The commitment by the Welsh Government[8] (White Paper on Quiet Areas, 2011) states that wellbeing is one of the Welsh Government's five headline indicators for sustainable development. Thus QUAs are playing an important role in helping people gain this

[7] The Department for Environment, Food and Rural Affairs is a government department in the UK.

[8] One Wales: One Planet – The Sustainable Development Scheme of the Welsh Assembly Government, chapters 1 and 8.

wellbeing. Furthermore, the Planning Policy of Wales (Planning Policy Wales – Edition 4, Welsh Assembly Government, July 2011) contains a number of policies on managing and protecting large open spaces, stating that local authorities should adopt policies to prevent an increase in noise in areas that remained relatively quiet.

The legislation of Scotland (The Environmental Noise (Scotland) Regulations 2006), described quiet areas differently than the other states, with identifying noise sources and quiet areas together in the paragraph. The first paragraph of the legislation has specifics that state that maps or plans shall be prepared to show first round agglomerations (where QUAs supposed to be shown), major roads, major railways, major airports and a review will be conducted pursuant to the mentioned in paragraph 1. Scotland is the only state that emphasizes that prepared maps and plans must be showing quiet areas in the agglomerations. ("Shall" is used in the legislation which means a compulsory requirement to fulfil by the authorities)

The difference in the relevant legislation transposed of Northern Ireland in 2006 (The Environmental Noise (Northern Ireland) Regulations 2006) from England and Wales is that the emphasis was on "noise maps identifying quiet areas" stating that 'No later than 30 September 2007 the Department shall prepare maps identifying quiet areas in agglomerations' and 'may be displayed on a website and in such other manner as the Department considers appropriate and this will be 'provided on request, for a reasonable charge'.

2.2.1.2 NORWAY

The END was transposed into the Pollution Control Act of Norway in 2004. The legislation included the definition of quiet areas in Chapter 5 where noise - mapping, action plans and limit values for existing enterprises are presented. The definition of QUAs provides precise details, which differ from the legislation of the other selected countries such as being a delimited area in a built – up area, being suitable for recreational purposes and having a noise level lower than 50 dB L_{den}.

Another relevant legislation is the guideline entitled 'Noise Guideline for Areal Planning T1442' where this definition was repeated for QUAs.

2.2.1.3 THE NETHERLANDS

The Netherlands transposed the END into the Noise Abatement Act (Wet Geluidhinder) in 2004. However, the Netherlands is the only country that differs from the rest of the countries by having a legislation (before the END) in the Environmental Management Act (Wet Milieubeheer) where Article 115 of the Act (Decision Noise (Besluit Omgevinslawaai, Article 115) refers to quiet areas. Furthermore, the identification of quiet areas are stated to be the responsibility of the provinces (Article 4.9) and

provincial environmental plans (Article 1.2), in which are required to indicate areas where the quality of the environment in connection with sound.

The report 'Stille gebieden en gezondheid' published by the Health Council of the Netherlands in 2006 also emphasizes information regarding the names of various plans of the government, such as the fourth National Environmental Policy Plan-4[9], the Fifth Memorandum on Spatial Ordening[10] and the Second Structure Plan for the Rural Area[11] , which form the basis for Memorandum Ruimte[12], in which attention is paid on quiet or quiet areas for protection policies.

In addition to the legislation provided, there is a paragraph in the Spatial Development Strategy Plan 2030, emphasizing that "besides a healthy economy and good housing, high-standard public space is an important condition for creating attractive and popular residential environment, like the ones with a green character, quiet character or a metropolitan character" as one of the preconditions of the Rotterdam Urban Vision.

2.2.1.4 BELGIUM

Belgium is a federal state that is divided into three regions: Flanders, Brussels Capital and Wallonia. Each region has its specific legislation and transposed the END into their relevant legislation as required by the END, which is similar to the States of the UK. The environmental Agency of the Wallonia informs the public that noise mapping is completed and an interactive map viewer for noise mapping is assigned, as this occurs in the States of Northern Ireland and Scotland. From the official website of the agency, noise maps for the Wallonia was viewed, however, QUAs (les zones calmes) are not indicated.

The Flanders Region transposed the END by Decree of 22 July 2005. The relevant part was described in the Chapter 2.2 and 4.5, where a definition of quiet areas in an agglomeration was presented: "quiet areas within an agglomeration that hardly exposed to ambient noise that meets specific criteria set by the Flanders Government determined."

Wallonia also transposed the END into its own legislation on 12 July 2004. In the legislation, the definition of a quiet area in an agglomeration is stated to be "an area which, for example, is not exposed to a value of L_{den} or another appropriate noise indicator greater than a certain value, regardless of the noise source considered". In the legislation there is no further specific information described.

[9] (NMP4- Ministry of HSPE (VROM). National Environmental Policy Plan)
[10] (Ministry of HSPE (VROM). Making space, sharing space, 2001)
[11] (SGR2 – Ministry of ANF (LNV). Second Green Space Structure Plan, 2002)
[12] (Ministry of HSPE (VROM). Memorandum , 2004)

Brussels - the Capital Region has noise legislation (The Ordinance of 17 July 1997 on the fight against noise pollution in an urban environment) since 1997. The END was transposed into this ordinance in 2004. The legislation presents the definition as "quiet areas in Brussels capital are not exposed to noise with a value if L_{den} or of another appropriate noise indicator greater than a government – set value", which is similar to the other two regions, in terms of having a vague and impractical definition.

CONCLUSION OF 'PLAN' PHASE

The relevant legislation, policy, guidelines and commitments by governments are analysed and presented above based on the secondary research of the selected countries.

The UK appears to be the only country where the END is executed on a centralized state level by the competent state departments (England, Wales, Scotland and Northern Ireland all separately). In Belgium this is different, however, because the END is executed on a regional level through the Department of the Ministries and Environmental Agencies.

England and Wales prioritized the 'must identify' quiet areas in agglomerations while in the first version, emphasize was on the date of due for identifying quiet areas in agglomerations. Welsh legislation emphasizes that quiet areas must be identified in "action plans", differently from the other states' legislations. Out of the 4 states in the UK, Scotland stated the legislation for quiet areas with "maps identifying noise sources and quiet areas", and also included roads, railways, and airports in the legislation to be identified next to the agglomerations.

The Netherlands is the only country where the legislation for identifying quiet areas existed even before the END, with the Environmental Management Act (Wet Milieubeheer). Here, the responsibility to identify quiet areas was assigned to the provinces. The Netherlands and Norway are the two countries that executed the relevant legislation on a local level where provinces and municipalities take an important role in the identification process.

On the other hand, Norway is the only country that states the definition of quiet areas very precise, including specific criteria.

THE DEMING CYCLE - DO

In this part of the cycle, first round of noise mapping and noise action plans of the selected countries will be reviewed. Noise maps and action plans regarding QUAs where identification, selection and management procedures of QUAs are supposed to be presented, will be reviewed.

Therefore, the differences in the way of producing noise maps or outlining, and stating the ambitions of the relevant quiet areas section of the action plans will be analyzed.

2.2.2 NOISE MAPS REGARDING QUAs

The definition for noise mapping was originated in relation to the END, where the strategic noise mapping was defined as "a map designed for the global assessment of noise exposure in a given area due to different noise sources."

Member States are required to produce strategic noise maps in agglomerations and agglomerations need to indicate QUAs. In simple terms, a noise map is like a weather map for noise, showing areas which are relatively louder or quieter. For the purposes of this thesis research, a review of noise mapping for QUAs in the agglomerations will be the focus of this section of the "Do" phase.

A brief overview of noise maps for QUAs of the selected countries is described next:

2.2.2.1 THE UNITED KINGDOM

Based on the research from governmental publications of the UK, a progressive way of noise mapping for agglomerations was undertaken in England, Scotland and Wales by fulfilling the requirements of producing noise maps for agglomerations. Regarding the agglomerations, the central governmental agency (DEFRA[13]) informed that 23 agglomerations[14] were mapped in England; however, maps for agglomerations are not available. Instead industry, road and railway noise maps are published and made available to the public by DEFRA.

In Wales, agglomerations that are mapped are Swansea and Cardiff; however, there are no maps of agglomerations available, despite the statement of the authorities.

The Scottish Government produced noise maps regarding candidate QUAs in Glasgow and Edinburg. Candidate QUAs were indicated in green on the map and any other information was not provided. An overview of the maps for Glasgow and Edinburgh agglomerations can be found in Appendixes (See Appendix 2).

Northern Ireland assigned a website for noise mapping. The only agglomeration for noise mapping was Belfast, however, noise maps of the Belfast agglomeration were not included nor QUAs were indicated on the map; instead, a consolidated (cumulative) noise map for the Belfast agglomeration indicated candidate QUAs. Candidate QUAs were shown as the areas below 55 dB L_{den} noise level in the map (See Appendix 3).

2.2.2.2 NORWAY

[13] Department for Environment, Food and Rural Areas

[14] Birkenhead, Blackpool, Bournemouth, Brighton, Bristol, Coventry, Hull, Leicester, Liverpool, London, Manchester, Nottingham, Portsmouth, Preston, Reading, Sheffield, Southampton, Southend, Teesside, The Potteries, Tyneside, West Midlands, West Yorkshire.

The website of Oslo Urban Environment Agency (Støyrapport 2007 – Strategisk kartlegging av støy i Oslo - Bymiljøetaten - Oslo kommune) states that strategic noise mapping for Oslo started in 2006 as "Strategic noise mapping Oslo 2006 project". Based on the background research and the interview conducted with Ms Sofie Yvling, Municipality of the City of Oslo is the first authority in the country for identifying QUAs, based on noise mapping and other methods. Noise maps for quiet areas of the City of Oslo were published on the website of Urban Environment Agency of Oslo, like Scotland and Northern Ireland did. Based on the noise maps of QUAs, 14 QUAs were determined. Noise maps regarding QUAs in Oslo can be viewed by choosing 'stille områder' option from the reference link stated in the footnotes[15] as well as reviewing the maps in Appendixes (See Appendix 4).

2.2.2.3 NETHERLANDS

Quiet areas in the Netherlands were identified through separate noise maps and in addition, the location of QUAs on noise maps were indicated differently compared to the other countries.

The Hague, as one of the six agglomerations in the first round of noise mapping from the Netherlands, published its noise maps (Den Haag - Geluidsoverlast per stadsdeel, 2009). However, The Hague did not produce separate maps for QUAs. Instead of this, QUAs were indicated next to the noise levels on the noise maps for mapped areas (See Appendix 6). Rotterdam authorities produced noise maps for QUAs in the framework of the END. Maps for QAUs were produced separately in contrast to The Hague, and candidate QUAs were easily spotted in the map (See Appendix 7). This mapping style can be applied by other cities as well. Finally, noise mapping regarding QUAs in Amsterdam were also produced and made available. In contrast to the noise maps of QUAs of Rotterdam and the rest of the agglomerations, Amsterdam noise mapping for QUAs does not indicate noise bands on the map. The only emphasis on the map is an indication of QUAs and name of QUAs (See Appendix 8).

2.2.2.4 BELGIUM

Noise maps for agglomerations of Antwerp and Ghent were approved in 2010 by the Flanders Government. When the noise maps for these agglomerations were checked, there weren't any QUAs to identify on the noise maps. The only detail is that noise bands showed noise levels in the agglomerations. Noise maps published by the Brussels Environment Agency (Geluidshinder door het verkeer, Strategische kaart voor het Brussels Hoofdstedelijkgeweest) for the Brussels Region did not indicate QUAs on the noise maps. The Environmental Agency of Wallonia informed the public that noise mapping is completed and an interactive map viewer for noise mapping is assigned, compared to the states of Northern Ireland and Scotland. From the official website of the agency, noise maps for Wallonia are shown; however, QUAs (les zones calmes) did not indicate where noise bands are shown.

[15] Oslo – Quiet Areas interactive view: http://webhotel2.gisline.no/oslokart/

2.2.3 ACTION PLANS

The END states that "action plans shall mean plans designed to manage noise issues and effects, including noise reduction if necessary."

Therefore, it can be concluded that action plans lay out a procedure to manage the effects of noise. For the purposes of this research, sections, where quiet areas are mentioned in the action plans of the selected countries, are reviewed. The focus of "action plans" of the "Do" phase has reviewed whether there is a method or approach that can be applied to identifying QUAs. When this is the case, it needs to be determined which criteria the selected countries used for identifying, selecting and managing QUAs.

2.2.3.1 UNITED KINGDOM

The central governmental agency DEFRA states that 23 action plans for agglomerations are produced in England. When we reviewed these actions plans, we can conclude that there are three main steps regarding quiet areas. These steps were identified as 'Identification of Quiet Areas', 'Management of Quiet Areas' and 'Long Term Strategy for the management of Quiet Areas'. There is a flow chart that shows the whole process of the identification of quiet areas. This chart is added in the Appendixes (Appendix 9).

In the action plans of Cardiff and Vale of Glamorgan for Wales, "Quiet Areas" were discussed in the section 5 of the plan. The sections regarding QUAs included 'Identification of Quiet Areas' 'Candidate Quiet Areas' 'Quiet Areas' and 'Monitoring', which differed from other procedures from England. However, there is also a separate official report published by the Welsh government, titled "Procedure for the designation of quiet areas in agglomerations" which states the whole identification procedure and protection of quiet areas. The procedure for identification of QUAs of Wales is presented in Chapter 4, where research findings are presented. Furthermore, this can be found in the booklet.

The action plan of Edinburg Agglomeration of Scotland describes "Quiet areas" in Article 5, similar to the action plans of Wales. The section presents two main procedures as "Candidate Quiet Areas to Quiet Areas" and "Protection of Quiet Areas". In these processes, a technical guidance for identification purposes for local authorities was mentioned. This guidance provides guidance to stakeholders in determining whether or not an identified candidate quiet area should progress to quiet areas status. The procedure is discussed in detail in chapter 4.

Finally as for Northern Ireland, there is no specific action plan for agglomerations, as a result of the legislation requiring indicating quiet areas in maps.

2.2.3.2 NORWAY

QUAs are included in the action plan of Oslo 2008 – 2013, similar to the other selected countries. Instead of presenting the precise procedure, the action plan mentions the definition, criteria and strategies used in the process of identification. Based on the information from Ms. Sofie Yvling, from the City of Oslo, the goals are described in the action plan of Oslo, regarding QUAs to include protecting and securing areas from an increase in noise and to improve areas with noise reducing measures.

2.2.3.3 THE NETHERLANDS

Based on the context of the action plan of Amsterdam, Rotterdam, Utrecht and Haarlem, the action plans do not state a precise procedure used for identifying QUAs on a national level, because the identification procedures are conducted locally in the Netherlands similar to Norway. In the action plan of Amsterdam (Actieplan Geluid Amsterdam, 2008) where quiet areas are discussed, criteria used for identification of QUAs were mentioned in detail, rather than explaining the conducted procedure. In the action plan of Rotterdam (Actieplan Geluid Rotterdam, 2009), quiet areas are discussed under the strategy section. The article 'Focus on quiet areas' mentions the value of quiet areas to the quality of life and general attributes of QUAs rather than giving specific criteria or a procedure.

In terms of structure and ambition, the noise action plan of Utrecht (Actieplan Geluid Utrecht, 2009) is also similar to Rotterdam and Amsterdam by emphasizing on general information of QUAs in the city and criteria used for identification.

Figure 2: Candidate Quiet Area - Oude Westen in Rotterdam

2.2.3.4 BELGIUM

There is no specific information regarding QUAs in the action plans of Antwerp and Ghent agglomerations of Flanders Region. In the action plan of Brussels (Noise Plan Prevention and Control of Noise and Vibrations in a Urban Environment in the Brussels Capital Region 2008-2013) (Actieplannen in Brussel, 2011) a definition of quiet areas was described under article 1b.

Article 14 of the action plan focuses on quiet areas protection and mentions a brief procedure which is similar to the action plans of the Netherlands in terms of ambition.

THE DEMING CYCLE - CHECK

2.2.4 ASSESSMENT OF THE NOISE MAPPING AND ACTION PLANS

Based on the analysis and review of the selected countries regarding noise maps and action plans, it shows that the requirement of the END drawing action plans were fulfilled by the selected countries except for Wallonia.

An important point to note is that while the UK (England, Wales, Scotland and Northern Ireland) worked on a national level; Belgium authorities work on a regional level; the Netherlands and Norway authorities work on a local level regarding action plans and QUAs identification procedures. This result, therefore, can be related to the country structure and management of the responsible authorities.

In terms of outline and ambition of all the reviewed action plans of the selected countries, the United Kingdom was the only country where the quiet areas identification procedure was described precisely. Norway also indicated its strategy for identification of QUAs in the action plan. In addition to detailed information of criteria, definition and the names of identified QUAs. However, the action plans of the Netherlands, Norway and Belgium (Brussels Region) are relatively more focused on criteria which should be considered in the process of identifying quiet areas. Another fact that from the criteria presented in the action plans of the Netherlands (most of the agglomerations) and Norway, are qualitative criteria (green, water presence, being relatively quiet) for identifying QUAs.

Therefore it can be stressed that the UK action plans differ strongly (even England, Wales, Scotland, Northern Ireland does differ slightly) from the action plans of the Netherlands, Belgium and Norway in terms of the structure, ambition and presenting QUAs. While the UK focuses on describing the procedure, timeline and the available criteria for quiet areas, the action plans of the Netherlands, Norway and Belgium mostly describe an overview and summary of quiet areas and they focus on criteria that were considered in the process of identification.

Based on the analysis and review of the selected countries regarding noise maps and action plans it is seen that the requirement of the END drawing action plans were fulfilled by the selected countries except Wallonia.

CONCLUSION OF 'CHECK' PHASE

Regarding this information, we can conclude that, although the requirement of noise mapping regarding QUAs in the agglomerations are fulfilled by all the selected countries, there are gaps in making noise maps available for agglomerations in England, Wales, Wallonia, Brussels Region of Belgium.

Action plans for agglomerations are drawn up by all the selected countries, except Northern Ireland (Belfast) and Wallonia. The focus on the procedure and planning regarding QUAs in the action plans of the UK is strong compared to Norway, the Netherlands and Belgium. The least attention is paid to QUAs in the action plans of Belgium.

THE DEMING CYCLE - ACT

2.2.5 REVISION OF THE END REGARDING QUAs

The main reason, why the END was adopted in 2002, was the recognition of the potential for the impact of noise on health and quality of life (Green paper on Future Noise Policy, 1996). The END was then adopted to reduce the impact of noise on citizens by managing noise sources and protecting areas that are currently quiet from harmful noise.

In 2008, noise mapping phase was completed by all the selected countries as required by the END. Based on the revision of noise maps regarding QUAs, the Netherlands and Norway were the most successful countries for noise mapping of QUAs, because authorities worked locally and in a precise way. Action plans were produced by all the selected countries except for the Wallonia Region of Belgium. In the implementation framework of the END, the UK was the only country followed by Norway (strategies and criteria) where the QUAs identification procedure was presented in a precise way. In the action plans of the Netherlands and Belgium (Brussels Region), the section where quiet areas were discussed, emphasized more on criteria compared to the procedure for identifying QUAs.

To conclude, the END was successfully transposed into national legislations and with different contexts requiring and emphasizing identifications of QUAs. Legislations strengthened the implementation of the END regarding QUAs, by policies and published official commitments by the governments of the United Kingdom and the Netherlands, in the process of identifying, selecting and managing QUAs. In the implementation process of the END, DEFRA, the central governmental agency in the UK played a major role with local authorities, while the municipalities and environmental agencies played an important role in the Netherlands and Norway.

2.2.6 REVISION OF THE LEGISLATIONS

The END required to identify and protect QUAs in agglomerations after the required transposition date of the END for all the Member States (18 July 2004). The selected countries had noise legislation; however, the Netherlands was the only country where the legislation for quiet areas was found to be existed even before the END.

While the structure of the legislation is the same, the context and requirements differ slightly in the legislation of the United Kingdom. Therefore, this has led to different applications of noise plans,

action plans and procedures presented regarding QUAs. In the Netherlands where the relevant legislation regarding quiet areas already existed before the END make the country experienced with the requirement of the END, however, working on QUAs locally seems to led to disunited processes among the municipalities and provinces mostly focusing on criteria rather than a precise identification procedure used by the all. Norway and Belgium included definitions in the legislation, but Norway included a very precise, criteria-wise definition which led to practical processes in Norway.

CONCLUSION OF 'ACT' PHASE

The review of the implementation progress of the END has so far emphasized the results of noise maps, action plans and legislation transposed by all the selected countries, mentioning that deadlines for fulfilling the tasks of the END were on time. It was also emphasized that, based on the legislation, context and structure of noise maps and action plans showed differences. Finally, the review of legislation shows that legislation has a crucial role in executing the implementation process in the selected countries.

2.3 SUMMARY

In this chapter, the Deming cycle was applied to the implementation process of the selected countries. In these phases, an assessment of the selected countries was completed, regarding transposing the END into national legislations, existence of the relevant legislation for quiet areas, noise mapping and action plans. Furthermore, it showed what kind of approaches the selected countries have taken regarding QUAs in their action plans. Noise mapping was done by all the selected countries and the aim of this phase has been a success as it was finding out areas where noise is high or low. However, identifying quiet areas on the noise maps of agglomerations are not fulfilled by all agglomerations of the selected countries. Regarding QUAs, we found that the selected countries transposed the relevant legislation for quiet areas. In particular, the UK (except Northern Ireland) is the only country that has procedures regarding the identification, protection and management of QUAs.

Action plans differ greatly amongst the selected countries in terms of their outline and ambition. While the ambition of action plans of the UK is to present the process for identifying, protecting and managing QUAs, in the action plans of the Netherlands, Norway and Belgium, the ambition is more towards presenting criteria and legislation for identifying QUAs.

The next chapter refers to the methodologies used to collect data for the purposes of this thesis. A detailed explanation on the methods used to answer each one of the research questions will be provided, as well as the used sources.

CHAPTER 3: METHODOLOGY

As mentioned previously, the topic of this thesis is the identification, selection and management of QUAs. After the research questions were established, several data collection methods were used to gather the necessary information to provide a sound result for this research.

The research methodology included several resources. Secondary as well as primary data using particularly interviews along the QUADMAP Project survey and examination of the selected countries through descriptive and explanatory research proved to be useful when gathering data to answer the research questions. The following pages reveal a clearer insight of the research methods.

3.1 INTRODUCTION

In the beginning of this chapter, the Generic BBA/IBMS Competencies are presented. This is executed because in the end of this thesis, the competencies which are presented at the beginning of the research, will be compared to the competencies at the end of this research. Therefore, a reflection assessment will be described in a later stage. The research questions, methods and strategy will be described through a graph. Furthermore, units of observation will be indicated, in order to indicate main objects or units that were used to collect data during the investigation.

Finally, credibility, planning and execution of this research are described, in order to show the validity of this research. Planning and execution of this thesis are highlighted per chapter in order to present the deviations and causes.

3.2 INTRODUCTION OF THE GENERIC BBA/IBMS COMPETENCIES

As mentioned in Chapter 1, this research is linked to the QUADMAP Project which is a Life+ European Programme. The QUADMAP Project works towards a harmonized method for identifying, selecting and managing QUAs in the framework of the END. This thesis research supports the project by focusing on the four selected countries (the United Kingdom, Norway, the Netherlands and Belgium) through an extensive background research, survey and interviews.

Therefore, this thesis research requires self-directing competencies like taking initiative and acting independently throughout the whole research process. Communication, rational thinking and analysis of information regarding European Union and the selected countries, are required competencies for further success of this thesis. As this is a process, one should be able to design, control and improve the process of the research through communicative and interpersonal competencies. Another competency is to analyze and evaluate data, because of the required extensive

desk research. In terms of self-directing competency, taking initiative and acting independently is crucial, since this thesis is a process where the person who writes it, also orientates it.

3.3 RESEARCH METHODS

The following section presents the methods used to gather the necessary data and to answer each of the research questions:

Exploratory research is "a valuable means of finding out 'what is happening; to seek new insights; to ask questions and to assess phenomena in a new light' (type of research conducted for a problem that has not been clearly defined[16]" (Saunders, Mark, Philip Lewis, and Adrian Thornhill. 2007, 139). There is a reliance on secondary research such as reviewing available literature and/or data, or qualitative approaches such as informal discussions with experts or more formal approaches, through interviews or a structured questionnaire. Reviewing available data regarding QUAs has been performed as one of the research objectives of this thesis. Qualitative approaches of informal discussions, interviews and questionnaires with experts are also conducted for the purposes of this research.

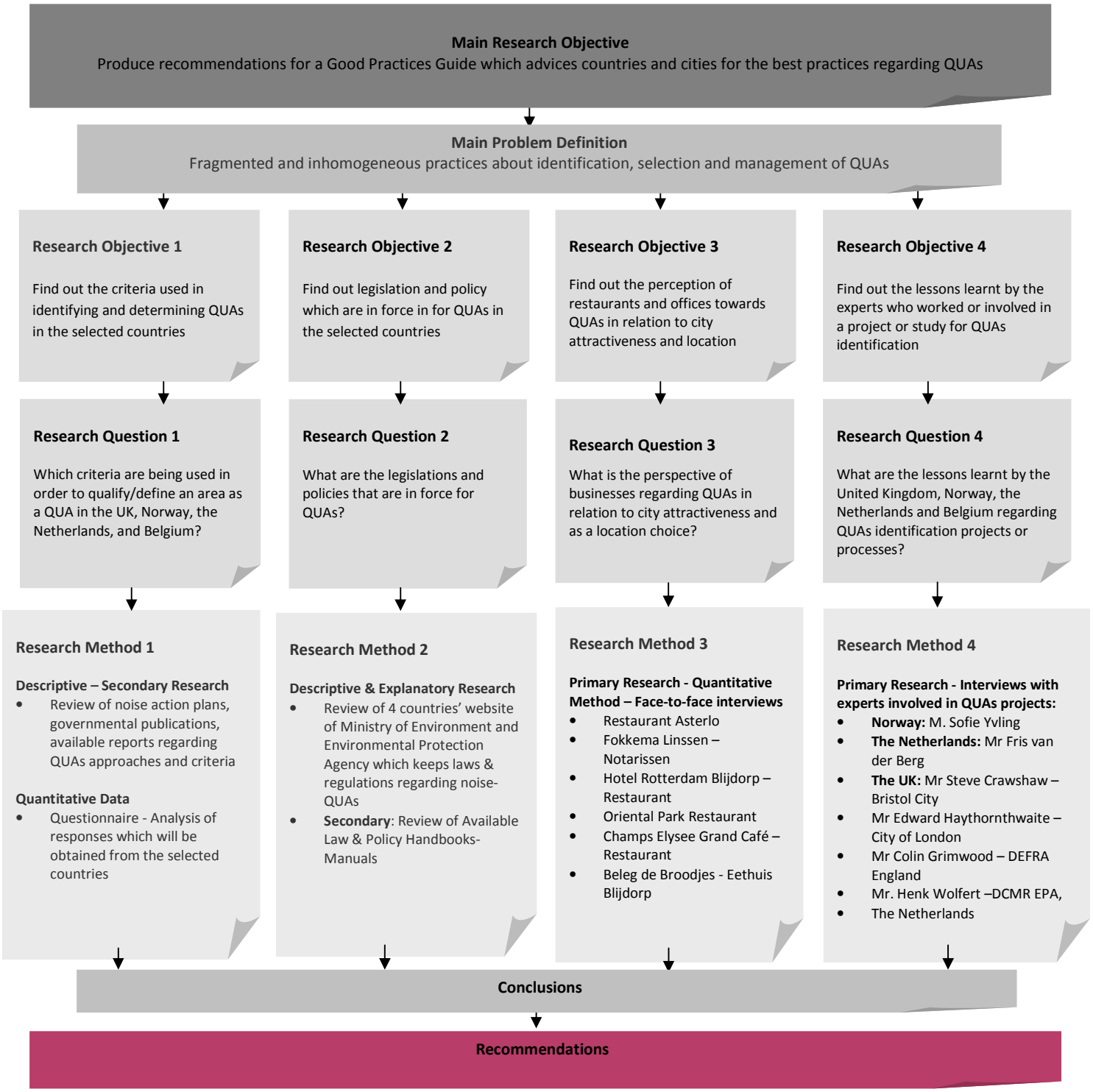
Primary Research - Questionnaire: "A questionnaire is a research instrument consisting of a series of questions people answer" (Thomas, R. Murray, and Dale L. Brubaker. 2000. 154). For the purposes of finding out methods and approaches regarding QUAs, a questionnaire was chosen by all the QUADMAP Beneficiaries (France, Spain, Italy and the Netherlands), and approved by the University of Florence. The results of this questionnaire were used in this thesis and will be used by the beneficiaries in a database.

Primary Research – Interview: A structured interview can be described as a limited set of questions, which are flexible and allow for new questions to be brought up during the interview as a result of what the interviewee says. In this thesis, there will be semi-structured interviews for research question 3 and 4 where perceptions of enterprises for quiet areas will be presented. Interviews through email correspondence (structured interview) and face-to-face were conducted with experts who were involved in projects regarding quiet areas identification.

The graph underneath presents the research objectives, research questions, research methods and sources which were utilized to answer them:

Figure 3: Research Design

[16] (Saunders, Mark, Philip Lewis, and Adrian Thornhill. 2007, 139)



3.4 RESEARCH STRATEGY AND DATA COLLECTION

The main objective of this thesis research is to find out the methods and approaches of the selected countries regarding QUAs. The Objectives of this thesis were backed up and strengthened by the information and data collected from national legislations and policies, governmental publications, research projects, reports, noise maps and action plans of the selected countries. Lessons learnt section by experts is produced through the experiences and knowledge from the individuals who work in the city councils, municipalities and environmental agencies and relevant organizations of the selected countries. The research strategy evolved around descriptive, exploratory and primary (survey, interviews) research.

Units of observation are provinces, municipalities, environmental agencies, experts who are involved in the QUAs projects and studies and business entities (restaurants and offices) that are connected and have a relation with greenery and quietness. The sample size for the questionnaire is around ten. Respondents are people who work on QUAs in the provinces, municipalities or environmental agencies in the four countries. The choice for approaching potential respondents for the questionnaire is started by analyzing the first question. The first question looks for methods and approaches of the four countries regarding QUAs. Therefore, a sample of people was chosen based on the publications, reports and contacts given on the governmental websites.

In order to learn from the selected countries, interviews are crucial. A couple of face-to-face interviews in Amsterdam with experts, who came to EUROCITIES Working Group Noise Amsterdam Meetings, were conducted. The rest of the interviews were conducted through email correspondence (structured interviews) with experts who could not be present at this meeting. Regarding the method for research question 4, face-to-face interviews were conducted with the restaurants and offices around the identified QUAs in Rotterdam.

3.5 ASSURING CREDIBILITY OF THE RESEARCH

"Scientific Methodology needs to be seen for what it truly is, a way of preventing me from deceiving myself in regard to my creatively formed subjective hunches which have developed out of the relationship between me and my material."

Carl Rogers (Saunders, Mark, Philip Lewis, and Adrian Thornhill, 2007)

Reliability refers to the extent on which data collection techniques or analysis procedures will yield constant findings. It can be assessed posing the following three questions:

- Will the measures yield the same results on other occasions?
- Will similar observations be reached by other observers?
- Is there transparency in how sense was made from the raw data?

For the purpose of this research, measures were taken to make sure the results yielded from the investigation were as reliable as possible. Answering the five research questions posed in the lines above, one can say that validity of the results was achieved.

After conducting many interviews with business entities and experts from the selected countries, and taking a closer look at other primary and secondary sources, the same results were obtained time and time again. Respondents yielded the same answers, and governmental publications and published articles by reliable sources of experts backed up their opinions and points of view.

While reading this, one can only expect the reader to agree with the observations reached by the author of the same. The only measure taken in this respect was to share the findings of the research with others before publication, in order to measure the author's objectivity.

Transparency in how sense was made of the data came from analyzing raw data provided by environmental departments of ministries, environmental agencies, environmental and policy departments of provinces and municipalities, health organizations of cities of the selected countries, studies and governmental publications (noise maps, action plans) by the selected country governments to include in the research not only qualitative data, but also quantitative data which provides more opportunities to be measured.

Furthermore, other measures were used to prove the validity of the sources. Only persons of interest were interviewed, and the interviews were recorded to be analyzed even after the questionnaire was conducted. Summaries of interviews are included in the Appendixes (See Appendix 11-12). Literary sources were only obtained from reputable sources and the authors' opinions were analyzed, to ensure no biased data was included in the thesis.

Finally, quantitative data (The QUADMAP Project questionnaire and interviews) was analyzed and included in the report, only after proving it came from secure sources and it was recent enough to be relevant for this thesis research.

3.6 SUMMARY

By the end of this chapter the reader should have a clear idea of how this research was conducted, in order to achieve the results presented in this paper. It is explained what kind of primary and secondary sources are used in order to answer each of the research questions. Furthermore, data collection methods which were the most helpful to gather the information are discussed. A short description of the methods utilized to collect information is presented.

Finally, the measures taken to prove the reliability of the investigation was described, hoping to provide the reader with answers regarding the research methodology in this thesis.

The next chapter deals with "Research Findings".

An answer to each one of the research questions will be given. The concept utilized in the Literature Review will be used and the methods and sources described in the previous lines will provide means of support to the research's findings.

CHAPTER 4: RESEARCH FINDINGS

Chapter 4 presents the results derived from the research for this thesis. The Deming cycle concept, descriptive research, explanatory research and primary research (The QUADMAP survey and interviews) are used as the basis for answering each of the research questions. Here, the purpose was to present an assessment of the END implementation process regarding identification, selection and management of QUAs in the selected countries. In particular, methods and procedures, criteria used in the procedures of QUAs and legislation are described out and reviewed as they are the objectives of this thesis to be found out.

The results are expected to be helpful and supportive to the QUADMAP Project Beneficiaries, who are currently working on a database and aim to create a Good Practises Guide for a harmonized method of QUAs identification, selection and management across the European Union at a later stage of the project.

An extensive desk study was conducted and an insight into the projects and procedures for QUAs of the selected countries was obtained. In this chapter, a clear view of methods, procedures, experiences and knowledge of QUAs as well as criteria and legislation used by the UK, Norway, the Netherlands and Belgium will be provided. Finally, a "lessons learned" section is presented with the perceptions of restaurants and offices towards QUAs, which have locations around identified QUAs in Rotterdam.

Next, answers to the research questions are described. The following answers come as a result of the research performed to achieve a deeper understanding of the subject at hand.

PART1. SECONDARY RESEARCH FINDINGS

4.1 PROCEDURES FOR IDENTIFYING QUAs

"Which methods or approaches in identifying, protecting and managing quiet areas are being used in the United Kingdom, Norway, the Netherlands and Belgium?"

The main question of this thesis research covers the methods and approaches used in identifying, protecting and managing 'QUAs' in the selected countries. First, approaches regarding QUAs identification, selection and management described in the action plans of the countries will be described, as well as findings derived from the survey that was conducted in the four countries. This is followed by a description of studies, research and projects undertaken for the identification of QUAs, which include responses from the questionnaire and interviews regarding this question.

4.1 THE UNITED KINGDOM

4.1.1 ENGLAND

In chapter 2, action plans regarding QUAs for England were reviewed. It appears that England has a specific process of 'identification' and 'management' regarding quiet areas. In addition to this process, a "long term strategy for the management of quiet areas" was added in these action plans. The flow chart of this process for England can be seen in the Appendixes (See Appendix 9). The process of the first section 'Identification of QUAs' pays attention to consultation with local authorities and results of noise maps. In the 'Management' section of QUAs, adopting policies by local authorities for managing noise level and cooperation with local authorities in the process of policy adaptation are described. The section of 'Long term strategy for the management of QUAs' informs the future agenda of the competent authorities for the identification process.

This process can be found in the booklet provided with the thesis.

4.1.2 WALES

Compared to the England, Wales has 4 sections in its procedure of identifying QUAs. These sections include 'Nomination of Candidate Quiet Areas' and a "Site Specific Tranquility Assessment" as part of the first section. This assessment is being conducted with local authorities for criteria purposes before applying for formal identification of a QUA. This document can be found in the Appendixes (See Appendix 10). Third step is 'Formal Identification of Candidate Quiet Areas' in which the local authorities are invited to submit the assessment forms. After checking the assessment forms for the required criteria, candidate quiet areas can be nominated and identified as quiet areas. The final section is 'Protection of Quiet Areas in Welsh Planning Policy'. This section emphasizes the fact that this formal identification process complements the existing Planning Policy – Edition 4, where the policy aims to support quiet areas and protects them.

The whole procedure can be found in the booklet which is provided with the thesis.

4.1.3 SCOTLAND

Scotland has two sections in its identification procedure, compared to the States of England and Wales; this procedure is practical in terms of applying. The first section is 'Identification of Candidate Quiet Areas to Quiet Areas' and the second section is 'Protection of Quiet Areas'. The first section includes a review process of candidate quiet areas, based on a dataset comprises of historic parks and gardens, which were compiled prior to the consultations with the local authorities. Next, this dataset is being subjected to a filter of specifications of noise level <55 dB L_{den} and a minimum area criteria of 9 hectares which falls in 55 dB L_{den}. Just before being promoted to a quiet area status, the list of

candidate quiet areas will be subject to detailed scrutiny with the questions prepared by the competent authorities.

This procedure of Scotland can also be found in the booklet which is provided with the thesis.

4.1.4 NORTHERN IRELAND

There is no specific action plan (therefore no available section for quiet areas) prepared for the Belfast agglomeration, however, instead of a similar procedure to England, Wales and Scotland, Northern Ireland has a different planning for now, which includes a rough identification process of quiet areas based on noise maps and protecting quiet areas in “the action plan for industry” of the Belfast. There are several actions determined in the action plan of industry for the Belfast, which the competent authorities intend to take in the next five years, including plans regarding measures to protect quiet areas. However, the planning was summarized and was not detailed in the action plan for the industry of the Belfast. This identification planning can be found in the booklet provided with the thesis for further information.

4.2 NORWAY

Norway does not have a specific, detailed procedure as the United Kingdom has. Norway informed the public of what they used as procedure and what kind of strategies were used in the process. Consultation with the local authorities, review of candidate quiet areas and noise mapping forms their identification procedure. Strategies are used for differentiating the candidate quiet areas, as these areas are chosen from the main waterways, big recreational green areas and quiet areas in the city center. This strategy can also be found in the booklet provided with the thesis.

4.3 THE NETHERLANDS

The Netherland does not have a specific procedure for QUAs identification either. Quiet areas were identified mostly based on noise mapping, noise measurements, and qualitative indicators which are determined through the public consultations (field surveys).

4.4 BELGIUM

In Flanders Region, there is not a method or approach regarding the identification, selection and management of QUAs. The Brussels Region, however, informed that this process will be based on noise mapping results, and the definition of quiet areas in the action plan (which is the definition presented in the legislation of Brussels Region), and therefore this identification and protection process will be conducted by the competent authorities.

4.5 INDIVIDUAL APPROACHES FOR IDENTIFYING QUAs

Apart from the approaches provided by the authorities of the selected countries, there are several studies and projects, which were executed by individuals and organizations. One of the studies was executed by IAIA (International Association for Impact Assessment) and commissioned by DEFRA. This study states the similar combined approaches consisting of "quantitative methods" and "subjective methods", with "noise levels" as part of the quantitative method, and "users' perception of QUAs" and "acoustical features, natural sounds" as part of the subjective method. In addition to these methods, three tests are presented as part of the method.

The method and the mentioned tests can be found in the booklet provided with the thesis.

Another project for the identification of QUAs was conducted by the Bristol City Council, where the approach of 'public consultation' using Bristol street maps and a website to ask people to state their chosen quiet areas, which is quite different from all the approaches until now.

The final individual approach for identification of QUAs is 'Multi criteria Approach' proposed by Mr. Dick Botteldooren and Mr. Bert De Coensel from Ghent University, where criteria for physical measurements, observations by a trained listener, the appreciation by visitors and non – acoustic criteria are suggested to be used. Further information for this approach can be found in the booklet provided with the thesis.

4.2 CRITERIA FOR IDENTIFYING QUAs

Which criteria are being used in order to qualify/define an area as a quiet urban area in the United Kingdom, Norway, the Netherlands, and Belgium?

Action plans where QUAs identification approaches were presented, were the first sources to gather information regarding criteria for QUAs. The questionnaire that was used by all the selected countries was another reliable source for criteria provided by the competent authorities. The findings regarding criteria are presented below:

4.2.1 THE UNITED KINGDOM

4.2.1.1 ENGLAND

In the identification procedure of England, criteria presented are the key attributes of the planning for open space, sport and recreation guideline. The emphasis of those criteria in this guideline is on functionality and visual qualities of QUAs. Detailed criteria can be found in the booklet where criteria per country are presented.

4.2.1.2 WALES

In the guideline published by the Welsh government, they used five 'pillars' of quietness indicators in urban areas prior to formal identification of quiet areas. It was stated that an open space, where all these five attributes are found, may be considered quiet by urban standards.

Next, these five 'pillars' of urban tranquility are described:

After having these features, local authorities were asked to fill in a form entitled "Site-specific tranquility assessment" (See Appendix 10), which provides a qualitative view of the area which is not directly related to quiet but related to health and well-being benefits. However, this assessment was not affected the eligibility of the area, it was stated to be for helping the Welsh Government to develop policies regarding the protection of quiet urban areas. The Welsh government also made a distinction between criteria: criteria directly related to perceived quiet and criteria not directly relating to perceived quiet. "Soundscape", "presence of nature", and "visual or aesthetic pillar" belong to this set of criteria while "culture and freedom of the place" and "sense of personal safety" are not directly related to criteria for perceived quietness. In case that the criterion that is directly related to perceived quiet, cannot be found in the areas, it means a disqualification for these areas. In addition to criteria which are not directly related to perceived quiet, there are two more criteria which were asked to local authorities only for additional information purposes, not as a reason for disqualification. These criteria were whether the area is "poor of air quality" and "disabled access", which is generally open to the public during the daytime and does not require payment of a fee to enter.

For the noise value, it was stated that the L_{day} noise indicator has to be lower than "65 dB L_{day}", both for road and for railway noise around the mentioned quiet urban area.

4.2.1.3 SCOTLAND

According to the technical guidance for the identification of QUAs, the first step before applying criteria to candidate quiet areas was forming a dataset including historic parks and gardens, or other open spaces prior to the public consultations with local authorities. After this dataset was formed, criteria that Scotland used are: a "noise limit of 55 dB L_{day}" and "land minimum area of quiet filter", which 9 hectares must fall within the noise limit of 55 dB L_{day}.

4.2.2 NORWAY

Based on the data from the noise action plan of the City of Oslo, the criteria used are "local areas, good accessibility, suitable for all age groups, noise level <50 dB L_{den}".

4.2.3 THE NETHERLANDS

For Amsterdam, the used criteria were mentioned in the action plan. These criteria are "public accessibility, social accessibility, noise level <50 dB L_{den}" However, it was also mentioned that areas with a noise level higher than 50 dB $L_{den,}$ may be a candidate QUAs, because of other non-acoustic factors, yet pleasant to stay reasons. Utrecht also gives insight in the visual qualitative attributes of the area. The used criteria are "being clean, safety, the presence of green and/or water". In contrast to Amsterdam and Utrecht, Rotterdam has criteria based on the field survey, which was conducted for the identification of QUAs. They are "safe appearance, clean, green/nature, water presence and having other people without having contact them".

4.2.4 BELGIUM

Being a "green space" and having "the noise level required by the authorities" are the only criteria for identifying QUAs presented in the action plan of the Brussels Region.

4.2.5 CHARACTERISTICS OF QUAS – A SURVEY CONDUCTED BY FRITS VAN DEN BERG

According to the survey of Mr H Booi and Mr F van den Berg (H. Booi, F. van den Berg, 2012) regarding quietness and what characterizes quietness (See Appendix 11), over 75% of the respondents indicated that the "presence of green or water present, quiet/ tranquil and well-kept/clean" were significant characteristics of quiet areas. Furthermore, 50 % indicated that "nice colours, no noise, spacious, nice sounds and nice odours" were significant too. One of the relevant results of this survey was that people can perceive an area as quiet up to 60 dB L_{day}, however, the most preferable level for respondents is areas between 45 dB and 55 dB $L_{day.}$

In addition to this relevant information, Mr Frits van den Berg mentioned his opinion regarding the quality of quiet areas in the paper for the Euronoise 2012 Meeting: "On the definitions of quiet facades and quiet urban areas" (van den Berg, F, 2012). He concludes that all results show that the perceived quality of a quiet area cannot be assessed by an acoustic indicator value only. L_{den} could be an indicator; however, other acoustical and non-acoustical aspects may be inevitable for an accurate assessment. Other individual studies which were conducted on criteria of QUAs can be found in the booklet.

4.3 LEGISLATION AND POLICIES

What are the legislations and policies that are in force for QUAs?

The following table shows that all the selected countries had noise legislation before the END was adopted. However, the Netherlands was the only country where the legislation regarding quiet areas was established with 'Ramsar Convention' and 'Environmental Management Act' where identifying quiet areas was the responsibility of provinces.

After the transposition of the END, all the selected countries fulfilled the requirements of the END regarding quiet areas. However, the level of fulfilling the legislation differs among the countries as mentioned earlier in chapter 2. In comparison to the Netherlands, Norway and Belgium, the UK executives the legislation on a national level with only one authority, Central Government Agency – DEFRA managing the whole process which leads the overall implementation to be consistent and systematic. The Netherlands and Norway are two countries where local authorities take the whole process regarding quiet areas identification process. In terms of existing policy, strengthening the legislation regarding quiet areas, the UK and the Netherlands are two countries supporting the relevant legislation the most in comparison to the Norway and Belgium with existing policies and governmental commitments.

	Legislation – Regarding Noise and QUAs
The UK	• Noise Abatement Act 1996 • The END – 18 July 2004 • The Environmental Noise Regulations 2006 (2009 – Amendment year) England, Wales, Scotland, Northern Ireland
NO	• The Pollution Control Act 2004 (Amended with the END) • Noise guide line for areal planning, T-1442
NL	• Noise Abatement Act (Wet Geluidhinder) • Ramsar Convention (only for quiet areas outside urban areas according to legislation) • Environmental Management Act
BE	• Decree of the Flanders Council concerning Environmental Licenses (1985) Flanders Regulation on Environmental Licenses VLAREM I (1991) & II (1992 and 1995) • Decree of the Government of Wallonia of 04 July 2002 fixing the general conditions for exploitation of visible establishments by the decree of 11 March 1999 relative to environmental permits (Industry) • Ordinance of the Brussels Capital Council concerning the fight against noise (1997, modified in 2004)
	Policy
The UK	• Noise Policy Statement for England (NPSE) published by the DEFRA • England national Planning Policy Framework • England Natural Environment White Paper/ Government Commitment • Planning Policy Wales Edition 4 (2011) • Wales Government White Paper on Quiet Areas" (2011). • Wales - Planning Policy Edicition -4
NO	N/A

NL	• National Environmental Policy Plan – 4 • Future Agenda Environment (Quality of Life/Local Noise Approach) • Rotterdam Urban Vision 2030 • Utrecht Provincial Environmental Regulation 1995 (Chapter 5, Section 3 of the PER)
BE	N/A

4.4 PERCEPTIONS OF BUSINESSES REGARDING QUAs

What is the perspective of businesses (offices and restaurants) regarding QUAs in relation to city attractiveness to locate their offices and restaurants?

In order to describe perceptions and mindset of businesses, particularly offices and restaurants regarding QUAs, face-to-face interviews were conducted around Zuiderpark, the park by the Euromast and Vroesenpark. In addition, results from the research 'The Big Greenery Study' (Het Grote Groenonderzoek, 2009) regarding the perception of businesses towards quiet green/urban areas in the city center of Amsterdam was used as a supporting statement to the interviews conducted with the businesses in Rotterdam. Interview questions and summary of replies can be found in the Appendixes. (See Appendix 11)

Next, the results of the Big Greenery Study and a summary of replies derived from the interviews are presented:

The Big Greenery Study is the first structured investigation on the use of Amsterdam's parks by the city's residents. The study first was conducted in 1996 and the same study was repeated in 2009 in order to see whether the current city's residents concur this.

The study reveals that the number of visits to parks in Amsterdam redoubled in comparison to the study conducted in 1996. Regarding the most relevant result of this research, the study reveals that people from Amsterdam also work in the park of the city these days, mostly in the Westerpark (10%) and the Vondelpark (6%). The significance of this 'new' quiet urban park activity is explained by the study that more highly educated respondents, who run their own companies (46%), indicated that the presence of a park in the neighbourhood was an important reason to locate their business in a certain area.

A summary of comments from the interviews with businesses (restaurants and offices) located in Rotterdam are now described:

- QUAs are nice and add value to the environment,
- People come to QUAs and they want to have food. Therefore, this is good for restaurants,

- Customers of restaurants like QUAs because it is nice to have greenery, water and quietness while having a meal,
- If QUAs are too far away from restaurants, then it does not affect them too much, their perceptions towards QUAs are still positive,
- QUAs are seen as an asset by restaurants for city attractiveness, because QUAs attract people to come and enjoy the city and the area,
- Offices' perceptions are also positive towards QUAs, because of the relative importance of quietness around an office.

4.5 LESSONS LEARNED BY EXPERTS

What are the lessons learned by the United Kingdom, Norway, the Netherlands and Belgium regarding projects and studies about QUAs?

In order to obtain the necessary information to conduct this research, interviews were performed with the experts in the selected countries. All the interviews with the experts, including the information of cities and project names can be found in Appendixes (See Appendix 12).

A summary of main comments given by experts to the lessons learned, are presented below:

- Be prepared for the identification project with information brochures for QUAs,
- There is a need for having a budget for better results, the support and the involvement of politicians in the process of QUAs identification,
- Consultation with local residents would be beneficial in the process of identification of QUAs, to find out what citizens are looking for as attributes of QUAs,
- Full and better consultation with the relevant officers, starting earlier, trying and coordinating with other consultation exercises, would support the process a lot,
- A multidisciplinary approach to the identification of quiet areas (i.e. not just noise levels, but also taking account of wider issues e.g. soundscape[17], presence of nature, visual and aesthetic qualities, sense of safety, culture of the place etc.) would be better in the process of QUAs identification,
- There is a need for having pre-project meetings with senior responsible officials and local representatives in the process of projects, for a greater clarity in national and local policies on the quiet areas topic and this would be a great help to the process,
- The surveys are an excellent tool to teach authorities about people's attitudes to noise in the city, as well as to help them understand that people value quiet areas,
- It would help a lot if a project team designs the survey questions differently, to allow them to more easily compare results,
- Communication with the public is important, as it allows authorities to get to know more about what people think of QUAs,

[17] Soundscape: An atmosphere or environment created by or with sound

- As a remark for scheduling the project, it would be better if surveys for public consultation purposes would be conducted in the summer, because people are more often outside their home.
- Cultural differences in perceiving noise should be taken into account in different areas of cities.

PART2. THE QUADMAP PROJECT SURVEY FINDINGS

4.6 RESULTS FROM SURVEY

Findings that are derived from the questionnaire are presented in a table. This table, which presents the full replies to descriptions, can be found in the appendices section of the booklet which is provided with this thesis. The results from this survey are discussed below:

The questionnaire results presented below, are based on three countries (the UK, Norway and the Netherlands), because there we haven't received a response from Belgium so far. The competent authorities of the Flanders Region stated that they do not work on the 'quiet urban areas' concept, therefore the questionnaire was not filled in. Full definitions regarding QUAs are received from the three countries' authorities (See the Appendix of the Booklet for full responses of the authorities). The difference is that Norway's definition is made up from criteria while England emphasizes the quietness and functionality of QUAs.

Northern Ireland stated that the authorities were in the process of developing a policy and criteria for QUAs. Limburg Province of the Netherlands stated the attributes of the quiet areas such as "greenery" and "noise level of 40 dB (A)[18] with visitors"; however, the authority also stated that these quiet areas were outside of urban areas.

The first question of the questionnaire "Has any environmental noise assessment been performed under your current competence regarding national/local regulations?" was replied as "yes" by all the authorities (7 out of 8) (87.5 %) from 3 countries. The second question, asking whether this assessment is according to the 2002/49/EC Directive or not, was replied as "yes" by 7 authorities out of 8 from 3 countries (87.5%).

Regarding assessment methodologies, 'calculations' are indicated mostly by 6 out of 8 authorities, (75%), followed by 'based on noise maps' which is indicated by 5 out of 8 authorities (62, 5 %) and 'other' was indicated by 3 authorities out of 8 (37,5%). 'Measurements and Calculations' together was indicated once (12.5 %). The Scottish Government authorities stated to be applied calculations and noise maps and directed the technical guidance for other assessments (Assessment of the technical guidance is also given in the Scotland section of research findings of main research

[18] A single A-weighted value describing the sound; the units are written as dB(A). A-weighting originally intended only for the measurement of low-level sounds, is now used for the measurement of environmental noise.

question). Northern Ireland authority stated that calculations were the only assessments they have applied so far. The City of Oslo used different assessments compared to all the authorities, stating questionnaires were applied.

To the question whether a qualitative analysis of perceived sound reported by citizens was performed or not, 3 out of 8 authorities (37, 5%) from the 3 countries answered with "Yes". Following this, the questions on whether these analyses were dealt with quiet areas was replied as 'Yes', by again 3 authorities out of 8 (37,5%) from the 3 countries.

The quiet areas definition, according to respondents were filled in by 6 out of 8 authorities (75 %) from 3 countries while, 2 out of 8 did not (Northern Ireland and Scotland) fill in this section. Following this question, similar questions asking the definition of quiet areas according to the assessments conducted, was filled in again by 6 authorities out of 8 (75%), while 2 authorities did not indicated a definition (Northern Ireland states they do not have a concept yet, Scotland).

While 'other' indicators were chosen by 6 out of 8 (75%) respondents, the indicator 'functionality' was chosen by 4 out of 8 (50%) and 'natural sounds' was chosen by 3 out of 8 (37.5%) respondents, followed by the other option. England stated those natural sounds (birds, trees), function (park, natural area, etc.) and other. 'Low noise level' 2 out of 8 (25%) and 'no influence of human induced noise' is indicated once (12, 5%). England added that identification of a quiet area is not based on the sound level being below an absolute value; instead it is related to other attributes of the area and its relative quietness. Northern Ireland authority stated that criteria have not been established yet. Regarding physical indicators, 'visual aspects' 'accessibility' and 'other', these are indicated by 3 authorities out of 8 (37, 5%) while 'fit for purpose' followed by 2 authorities out of 8 (25 %). Frequency visits, reasons, time of the day were not indicated at all by the authorities.

Regarding the questions whether any field surveys were conducted on the perception of the acoustic environment of QUAs, 'yes' was answered by 3 authorities out of 8 (37, 5%) from 3 countries.

The question whether an action plan is provided for quiet areas, was replied as 'yes' by 7 authorities out of 8 (87.5%) from 3 countries, while Northern Ireland did not do so, due to the fact that its legislation is not requiring to produce one. Following this, the questions whether interventions were included in the action plan is replied as 'yes' by only 1 out of 8 (12.5%) (Limburg Province).

The questions regarding an associated budget item was replied as 'yes' by 1 authority out of 8 (12, 5%) (Limburg Province) while 7 out of 8 (87, 5%) indicated as 'no'. Limburg Province stated it as "yes", but added that the province authorities decided to put low noise asphalt on roads by/through quiet areas and by houses with higher 63 dB L_{den}, adding that the province did this during the 'normal' maintenance. Therefore they do not have a separate budget for QUAs.

Regarding a procedure for monitoring the degree of compliance of the policy objectives, the question was replied as 'yes' by 1 authorities out of 8 (12,5%). The City of Oslo states that they have 2 indicators that they update every 5 year (Noise level <55 dB L_{den} and inhabitants living within 500 m to QUAs).

The development of new quiet areas comprised in the municipal proposal and/or in the development of new areas was indicated as 'yes' by 2 out of 8 (25%) authorities. The City of Utrecht states that every new house must have a quiet façade[19] and they promote building of enclosed courtyards and quiet areas in new parks while the City of London mentioned that the noise strategy action of the city will ensure that quiet areas are considered in environmental enhancement projects.

The questions whether there any coordination protocols or methodology among the different Departments or Stakeholders involved in the management of quiet areas was indicated as 'no' by 8 out of 8 (England stated it "to be developed" and this is also considered as 'no').

Each respondent from the selected countries mentioned policies on which the municipal goal for QUAs is based on. 'Noise policy' and 'Quality of Life' policy were the most indicated as 'yes' by 4 authorities out of 8 (50%). 'Spatial Policy' followed them by 3 authorities out of 8 (37, 5%). "Health Policy" and "Nature Policy" were indicated by 2 authorities out of 8 (50%). Northern Ireland stated that presented policies have not yet been established.

Another question asking which department(s) within or outside of their organization is/are responsible for quiet areas (Environmental, Spatial, Infrastructure, Public Green, NGO, Citizens organization/volunteers) and 'Environmental department' is mostly indicated one by 7 out of 8 (87.5%), followed by this 'Spatial' and 'Public Green' departments that were indicated the most by 3 out of 8 authorities (37.5%).

4.7 CHAPTER SUMMARY

By the end of this chapter, the reader is expected to have an understanding of the answers of the research questions. A deeper look into the approaches regarding identification, selection and management of QUAs in the selected countries was described, after using the Deming cycle concept applied in Chapter 2. Furthermore, a summary of the perception of businesses regarding QUAs in relation to both city attractiveness and advantages to their own businesses was presented. As a

[19] The face of a building, especially the principal face.

valuable contribution to this thesis and to the QUADMAP beneficiaries, lessons learnt were summarized as a result of structured and face-to-face interviews conducted with the experts who are involved in the process of identification of QUAs and who have knowledge and experience in this field.

Finally, one can say the previous lines' purpose is to present all the approaches, methods and criteria used regarding QUAs, as well as providing the perception of businesses and experts' suggestions for future projects for QUAs identification. Therefore, recommendations can be described for users of the Good Practices Guide at the end of the QUADMAP project, regarding to apply best practices in the process of identification of QUAs.

The next chapter presents the "Conclusions" and "Recommendations" derived from this research.

CHAPTER 5: CONCLUSIONS & RECOMMENDATIONS

The purpose of this chapter is to present the conclusions to the reader. The conclusions are derived from the research performed for this thesis, based on the application of the concept presented in Chapter 2 and the answers to the research questions in Chapter 4. A summary of the state of the selected countries' legislation regarding QUAs (Section 5.1.3) with a summary of perceptions of

businesses towards QUAs (Section 5.1.4) based on the research performed and interviews will be presented. Finally, a summary of lessons learnt from experts regarding QUAs identification projects in the selected research countries will be presented (Section 5.1.5). Based on the presented facts, conclusions will be presented and recommendations will be given to the QUADMAP Project for a Good Practices Guide regarding the application of best practices for QUAs.

By the end of this chapter the reader should understand the current state of the countries legislation and policies regarding QUAs, and also consider the recommendations based on the gathered information. Conclusions are per research theme as follows:

5.1 CONCLUSIONS

Based on the research findings for this thesis, the selected countries (the UK, Norway, the Netherlands and Belgium) fulfilled the requirements of the END regarding QUAs. Next, the conclusions derived for each country studied in this research will be presented:

5.1.1 PROCEDURES FOR IDENTIFYING QUAs

5.1.1.1 THE UNITED KINGDOM

Based on the results, the UK is a country where precise procedures for identifying QUAs exist in the action plans as required by national legislation, except for Northern Ireland. These procedures (England, Wales and Scotland) all have sections in common, that are being executed by the competent authorities and in consultation with the local authorities, although there are centralized governmental agencies that have the right to execute the procedures. Wales has a slightly different approach by conducting a "site tranquillity assessment'' with local authorities for further protection and management policy development purposes. This assessment is being conducted by the Welsh Government in the identification process. Local authorities are being requested to fill this form in. Therefore, local authorities are guided throughout the entire identification process of QUAs and this precise procedure makes the UK, specifically Wales an ideal state to follow and consult for further recommendations regarding identification of QUAs due to their different approach of regarding tranquillity assessment.

5.1.1.2 NORWAY

Norway used a combination of procedures with three strategies. Discussion with local authorities, review of green and meeting places in Oslo and noise maps were used in the process. Strategies[20] used

[20] Sofie Yvling, Quiet Areas in Oslo, 2011

by the competent authority (The City of Oslo) in the identification process (See the Booklet, Section 2 for Procedures) reveal that green corridors, large green city parks and small delimited areas in the city were the main areas of interest as indicated in consultation with local authorities (The City of Oslo is the one and only municipality that worked on QUAs in Norway[21]) and noise maps. Formal public meetings as part of the process are also held by the City of Oslo and they proved to be useful according to Ms Sofie Yvling. Subsequently candidate quiet areas were identified. Although there is no a formal procedure that Norway enacted, it is clear that the way the City of Oslo handled the process similar to the UK. This combined procedure of Norway includes the purpose of the procedures used in UK regarding strong involvement of local authorities and then identifying candidate quiet areas.

5.1.1.3 THE NETHERLANDS

The Netherlands does not have a formal procedure for QUAs either. However, the Netherlands (e.g. the cities of Amsterdam and Utrecht, and the Province of Limburg) rely on criteria for selecting QUAs, rather than using a "formal procedure" to follow as presented in the Booklet, Section 2 for Procedures. In the Netherlands along with Norway, another important conclusion is that "visual attributes" and "functionality" of QUAs are highly appreciated by the public. Field surveys conducted in Amsterdam and Rotterdam support this statement.

Rotterdam, in contrast to Amsterdam and Utrecht, used a multi-criteria (E.g. physical measurements, observations, criteria based on appreciation by visitors, non-visual qualities) approach in the process of identifying QUAs. Although, this approach includes some of the criteria Amsterdam and Utrecht used, the identification process of Rotterdam explicitly mentions the use of this approach. Conducting local identification processes locally (E.g. Cities of Amsterdam, Rotterdam, Utrecht) shows that local authorities work individually and there is not collaboration with local authorities on a common procedure in The Netherlands.

5.1.1.4 BELGIUM

Belgium is the only country where information regarding QUAs was not made available by the consulted regional government representatives, in addition to a lack of information stated in the action plan. The only information that is available, is from the Brussels Region that QUAs are identified based on the result of noise mapping and the definition presented in the action plan (which is the same definition presented in the legislation). Furthermore, the identification and protection process stated to be executed in consultation with local authorities in the action plan. This shows that the region has a

[21] (Cities that are going to start consulting with the City of Oslo in 2012 regarding QUAs are: Bergen, Stavanger, Sandnes, Randaberg, Trondheim,Fredrikstad and Sarspborg.
Reference: Ms. Sofie Yvling, Senior Executive Officer, Agency for Outdoor Recreation and Nature Management, Dept. of Environment and Planning

focus[22] regarding the identification process, but the region lacks of research and informing the public about the process in terms of publishing relevant and detailed information for QUAs.

As a final remark on the procedures applied by the selected countries; those procedures vary both in terms of being enacted in their own procedures and in terms of the focus on criteria. The UK (England, Wales, and Scotland) has procedures that are enacted, compared to Norway and the Netherlands that have informal procedures. The procedures include crucial steps stating official requirements and assessments which make procedures reliable by the authorities (The UK). Norway and the Netherlands have procedures, however, not in a document and not as specific as UK's procedure. It was noticed that UK does not have gaps in its procedures as the country managed to specify steps and tools applied for identifying QUAs as part of the procedures except Northern Ireland.

5.1.1.6 REPORTS REGARDING QUAs PROCEDURES

Furthermore, there are reports concluded from projects which were conducted regarding QUAs identification procedures. 'The Economic Value of Quiet Areas' (URS Scott Wilson Ltd[23], 2011) (and 'Multi criteria approach' (Botteldoorn, D. De Coensel, 2006) proposes different approaches regarding the identification of QUAs including objective (quantitative), subjective (qualitative), and noise measurements research (noise level and audibility of acoustic features, natural sounds). These methods show that approaches of the selected countries include similar criteria as proposed by these studies, and these very few reliable sources regarding QUAs identification criteria, have been considered in the processes of identification of QUAs by the competent authorities, where there are no precise approaches produced yet.

A different approach of the public consultation, developing a website, was undertaken by the City Council of Bristol, Amsterdam regarding QUAs. This shows that a website can also be part of the identification approach because almost everyone from all age groups are internet users and the participation rate of the public would be very high when using a website in the process.

5.1.2 CRITERIA FOR IDENTIFYING QUAs

5.1.2.1 THE UNITED KINGDOM

The UK is a rich country in terms of criteria for the identification process of QUAs, because competent authorities paid close attention to policies and approaches suggested by reports for the identification of QUAs. The first criterion that was emphasized by all states, relates to relative quietness.

[22] Marie Poupe, Senior Policy Advisor from the Brussels Institute for Environment, has confirmed that Brussels Region is still working on 'Quiet Areas Strategy' when requested to fill in the QUADMAP Project Survey.

[23] This report was prepared for, and funded by, the Department for Environment, Food and Rural Affairs (DEFRA) by the URS Scott Wilson Ltd

England pays attention to the general principles of a good practice guide for open space planning. These criteria were presented in Chapter 4 and in the booklet, and are mostly focused on "functionality" and "visual, qualitative features" of QUAs. These criteria are usually not easy to find within all the quiet areas, therefore it can be concluded that England focuses on qualitative and enhancing attributes of quiet areas more than only on a noise level. Wales also identified five pillars of quietness in which the focus is on the qualitative, health and practical attributes of quiet areas, rather than pure noise level identification. Surprisingly, Wales looks for a noise level criterion lower than 65 dB $L_{den,}$ which is quite high compared to Norway and The Netherlands, where noise levels are defined below 55 and 50 dB L_{day} respectively. This shows that the noise level is masked by qualitative attributes (E.g. presence of nature, safety, public accessibility, visual attributes) (See the Booklet, Section 3 for Criteria) of QUAs and the public still appreciates it.

Scotland differs from the other states of the UK by forming a dataset of possible quiet areas, first consisting of historical parks and open spaces and then applying the criteria of the noise level filter of 55 dB L_{day} and a minimum area of 9 hectares within the noise level of 55 dB L_{day}. This approach assumes that areas in the dataset already have qualitative attributes. Therefore, one can conclude that this approach is practical, applicable and time-saving compared to the rest of the studied countries' approaches.

5.1.2.2 NORWAY

Norway is also a country that focuses more on qualitative attributes of quiet areas, rather than focusing on the noise level (50 dB L_{den}). Differently from the selected countries' criteria, Norway added "being suitable for all age groups" which was explained as meeting the demands of all age groups' perception towards recreation and quietness. This shows that Norway is interested in providing quiet areas to the use for the whole population in daily life, rather than only identifying QUAs as a requirement by the legislation. Therefore, this makes the criteria to be considered by other selected countries.

5.1.2.3 THE NETHERLANDS

The Netherlands is the country where the noise level criterion is the lowest (<50dB L_{den}) and the focus on "greenery, water presence, cleanliness and safety" are most highly emphasized by the local authorities. This proves that "visual" and "functional" attributes of QUAs are much more appreciated by the citizens than only a low noise level. The field surveys conducted in NL (and other countries) suggest that other criteria, in addition to noise level, are important explanatory factors for the overall appreciation of QUAs. Examples are visual, nature and cleanliness factors.

5.1.2.4 BELGIUM

The Brussels Region of Belgium put its priority on only green areas and areas that possess the required noise level criterion (A certain level is not given in the action plan; the only emphasis was made as 'the required noise level by the competent authorities'). The only focus on these two criteria shows that urban parks and green spaces will be possibly identified as QUAs in the Region if the competent authorities do not add other criteria. The Wallonia and Flanders Region do not provide information regarding QUAs. Therefore, there is no additional information to draw conclusions for these regions.

Below a SWOT Matrix is designed to analysis the criteria of the selected countries:

SWOT MATRIX – CRITERIA ANALYSIS FOR QUAS

Strengths • The UK (England, Wales, Scotland) considers all aspects for a QUA • Norway's criteria stimulate daily use best (user perspective instead of legal perspective) • Criteria in the NL are strong on visual quality, safety and functionality	*Weaknesses* • The UK's criteria allow relatively high noise levels (55, 65 dB L_{day}) • Norway's criteria are weak on safety and maintenance • Belgium's criteria are relatively less than normal and weak to identify a QUA
Opportunities • All 4 countries can add criteria from each other • Authorities can take a more user centered approach by surveys and public consultations	*Threats/Risks* • The UK: risk of not finding enough QUA for many quality demands • Norway: risk of having discontent from different user groups as demands and perceptions are different • Belgium: risk of identifying unqualified QUAs

An expansion of the aspects from the SWOT analysis can be found in the Appendixes (See Appendix 13).

5.1.3 LEGISLATION AND POLICIES

5.1.3.1 THE UNITED KINGDOM

The UK is a country where the legislation regarding QUAs is transposed at state level similar to Belgium. However, the UK differed from Belgium regarding the content and requirements. England is also the only state of the UK that has a specific noise policy statement (England Noise Policy Statement 2010) for quiet areas, which requires identification of quiet areas and implementation of measures to protect these quiet places. While Wales and England have similar approaches in the context of the legislation for identifying quiet areas, Scotland and Northern Ireland required quiet areas identification in maps with the identification of noise sources. When looking at the result of this legislation after noise mapping and action plans, it can be concluded that England, Wales and Scotland have been successful

in the identification process because they required this to be fulfilled according to their national legislation. However, Northern Ireland is still in the process of creating an identification procedure regarding quiet areas, therefore the State lacks a precise procedure. Conclusion is that this is a result of the legislation of Northern Ireland where identifying quiet areas in agglomerations is only required through noise maps and not in the action plans.

5.1.3.2 NORWAY

Instead of describing a statement of order to identify quiet areas in the relevant Act of Norway (the Pollution Control Act, Chapter 5) like the UK did, Norway stated a very precise definition of quiet areas with criteria (A delimited area in a built-up area (park, forest, cemetery, etc.) suitable for recreational purposes, where the noise level is lower than 50 dB L_{den}) in its legislation compared to the other countries. Therefore, this allowed authorities to easily choose QUAs in the City of Oslo, after narrowing down the possibilities of areas with the provided criteria in the legislation.

5.1.3.3 THE NETHERLANDS

The legislation in the Netherlands regarding quiet areas existed before the END. Specific criteria regarding QUAs are determined by local authorities. Noise level is mostly defined below 50 dB L_{den} in the studied cities (e.g. Amsterdam, Rotterdam and Utrecht[24]) and the noise levels of the Provinces (E.g. Province of Limburg, North Holland have been informed as 40 dB (A) by the local authorities through the survey conducted. Each agglomeration has its own specific criteria for quiet areas; however, there is no specific, formal procedure for identifying QUAs. This works well, but still for a sustainable approach, municipalities and provinces can meet periodically for applicable, identification procedure meetings.

5.1.3.4 BELGIUM

Three regions of Belgium have a similar approach to Norway in its legislation statement, only presenting the definition of quiet areas in agglomerations, however, without any criteria. Therefore, this has so far only resulted in the Brussels Region to determine its own criteria of being a green area in the action plan. It can be concluded that Belgium is not proceeding much in implementing the legislation regarding QUAs compared to the other selected countries.

5.1.4 PERCEPTIONS OF BUSINESSES REGARDING QUAs

[24] City of Utrecht noise level: 40 dB (A), the Department of Environment and Sustainability

The perception of businesses towards QUAs is good because workers like green QUAs for lunch, walking and working these days. Based on the interviews in Rotterdam and a survey in Amsterdam (Het Grote Groenonderzoek, 2009), businesses agree on the fact that the presence of a QUA, which is usually a green quiet park, is an important reason to locate their businesses in a certain area. Restaurant owners also like to have QUAs around their businesses, because people come for recreational purposes mostly and therefore they want to have their lunch or dinner in the restaurant nearby green and quiet areas. On the other hand, customers of restaurants enjoy QUAs while having their meals. These QUAs relax people when they are nearby a restaurant, therefore the location of a restaurant nearby a QUA is a factor that influences decisions whether to invest in the city or not. As part of the city attractiveness, QUAs add value to the city due to their qualitative and quantitative attributes. People take effort to go to QUAs in cities with their friends and families to have a quality time.

Based on the overall results, one might conclude that the perception of restaurants and office employers and employees in general is positive for QUAs as part of the city attractiveness and to locate their businesses around QUAs. This leads to another conclusion that QUAs add value to both the cities they belong to and to businesses nearby because QUAs possess qualities which people look for in daily life and in their environment.

5.1.5 LESSONS LEARNED BY EXPERTS

We conducted interviews with experts who have been involved in the identification process of QUAs. Conclusions are drawn based on the shared experiences of experts in the following:

The identification process of QUAs is both a long term and team project where the competent authorities, local authorities, advisors, noise experts and most importantly the public should be involved. Therefore, preparing for the process beforehand would help to save time for each stakeholder. Basic preparations, such as preparing brochures and booklets for the public, pre-designing surveys, having trial tests with this survey and re-adjusting them, having pre-meetings with involved parties will strengthen the success of the process.

Furthermore, identification projects do not always have large budgets. There is a need for substantial budgets and support from politicians. This shows that the whole process of identifying and delimiting QUAs is not only a requirement of the END, but concerns long term processes in which high participation of society is needed. The identification process of QUAs would be more successful if politicians acknowledge the importance of QUAs.

Consultation of the public through “field surveys” and, as a less known used tool by the selected countries for identification process of QUAs, “websites”, would help the process because high participation and communication would lead to more successful identification processes. Authorities will have a better idea of what people think of characteristics of QUAs or what their perception, and

specific demands are. For the process of public consultation, the right timing of field surveys would support identification projects. (E.g. in summer people are outside of their home much more than they are in winter or autumn) While it is important to consult to the public, it is more important to have full consultations with the relevant officers by starting earlier in coordinating exercises (E.g. survey, criteria, survey spots, making a website, brochures for informing the public). These preparations will lead to time-saving results.

A multidisciplinary approach is favorable for identifying QUAs (E.g. not just noise levels, but also taking account of wider issues, e.g. presence of nature, visual and aesthetic qualities, sense of safety etc.). This is because this approach helps to pay attention to all aspects of QUAs, including cultural aspects of cities. Another emphasis is on having trial surveys and designing survey questions differently (importance or yes- no questions) because results can easily be compared in the project.

The final conclusion is that cultural differences in perceiving noise in different areas of the cities or in different countries should be considered. (E.g. people who live in slum areas are careless about the high noise levels while people who live in the centre of cities are sensitive to high noise levels.)

5.2 RECOMMENDATIONS

Based on the conclusions aforementioned, the next section provides advices in the form of practical solutions for the QUADMAP Beneficiaries, hoping to produce a Good Practices Guide regarding QUAs in the later stages of the project.

The following recommendations are made from the research conducted for this thesis:

Quiet areas should be discussed in action plans of the competent authorities seriously, and should not be treated as an add-on to be addressed. It is found that there is much room for improvement.

National (transposed or amended) legislations should force the competent authorities to pay attention to quiet areas, emphasizing how to identify quiet areas, how to preserve and manage them in action plans. This then eliminates the reason of why some countries do not have a procedure and criteria for identifying QUAs yet.

A precise – communication based procedure regarding QUAs identification, protection and management should be produced in collaboration[25] with the local authorities and other relevant authorities or stakeholders. This procedure could also contain a periodic consultation with those authorities or stakeholders involved regarding the management and progress of maintenance or

[25] Depends on the level of competence, this could be local, regional or national

measures that have been planned. A precise protection and management approach should at least sustain the quietness and other attributes of QUAs. The procedure then should be enacted by countries and eliminates different interpretations amongst authorities (state, regional and local).

An assessment form (criteria focused) or Decision Support System for identifying QUAs should be provided by the competent or local authorities in countries as a practical and time-saving tool as part of the identification processes for QUAs.

Instead of using long lasting identification processes, currently available datasets including national parks, gardens and green/quiet open spaces in urban areas should be formed and used in the identification process in order to save time and having a successful approach. Hereafter, one should collect and store the datasets on a public accessible database.

It is recommended to introduce a (noise level) threshold which can be applied as a filter to avoid or cope with questions about whether these areas can still be quiet in the future (checking alternate uses of local plans, developments nearby the areas, significant changes nearby the area e.g. traffic) in the final step as a practical and functional part of the process as Scotland does.

QUAs should be an integral part of local policies on environment, mobility, urban planning, public health, public green, economy, etc. as other environmental issues should as well. The procedures to be provided by the competent authorities should take this into account.

Policy developments where QUAs and well-being of the public are being highlighted should be supported by politicians in collaboration with local, traffic, health management and spatial planning authorities (or with other relevant authorities involved in QUAs) as part of the protection and management procedure of QUAs.

Politicians should be informed about the appreciation that business owners of restaurants and offices have for QUAs settling enterprises nearby and investing in the city. Therefore QUAs should be supported through policies and commitments of governments and politicians should be involved in creating awareness for protecting and managing QUAs.

As part of the identification procedures, a website should be developed as a practical, cost effective part of the process by the competent authorities for the public consultation purposes. As a consequence, high participation rate of the public can be achieved.

` A multi-criteria approach should be part of the identification process of QUAs, because a multi criteria approach addresses all senses (e.g. hearing (quietness), seeing (visual attributes –green, clean, well-kept), smelling (nice odors), feeling (cleanliness) and functionality), thus this approach could guarantee a high percentage of success and appreciation of the public.

Although a multi-criteria approach should be always considered by the competent authorities when identifying QUAs, "The relative quietness of the area" and "Visual attributes" should be taken into account as the most important first two criteria.

As approaches to follow, attention should be paid to England, Wales and Scotland's procedures. However, a lot of embedded steps of these procedures should be made flexible and leaner (brief, leaving the details of steps to discretion of countries). The approaches should be, for instance, divided into three pillars. They are "Identification", "Protection" and "Management". These three pillars should consist of 3 levels of "must be fulfilled", "should be fulfilled" or "nice to fulfill". Regarding the details as to how they are going to be fulfilled should be decided by countries themselves.

Methods to be followed in the process of nominating candidate quiet areas should include firstly noise maps for QUAs, secondly available current database of existing parks, open green spaces (with details), thirdly flexible approaches (e.g. consultations with stakeholders as well as taking into account of local opinion and perceptions). Finally, nominated candidate quiet areas should be subject to an assessment form (criteria focused and created individually by countries) by the competent authorities.

5.3 CHAPTER SUMMARY

This chapter provides the reader with the general conclusions gathered from the research and gives recommendations to the QUADMAP Beneficiaries based on the research conducted in the selected four countries regarding QUAs identification, selection and management. Force of national (transposed or amended) legislations for the competent authorities to pay attention to quiet areas, emphasizing how to identify quiet areas, how to preserve and manage them in action plans to eliminate not having a procedure is one of them. As part of the identification procedures, considering a multi-criteria approach, proving an assessment form (criteria focused) by the competent authorities also part of the recommendations.

Finally, informing politicians about the appreciation of businesses regarding QUAs and supporting policy developments where QUAs and well-being of the public are highlighted included in the recommendations section.

The next chapter concerns with "Reflection on the Competencies", "Lessons learned" and "Improvement Points" as a final reflection on the mentioned topics during five months of this thesis research.

CHAPTER 6: REFLECTION

A reflection of competencies performed during this thesis research, including lessons learnt will be discussed in this chapter. Improvement points which have been realized during the five months of this research will be described as well. An explanation of why I am eligible for a BBA Degree will be presented at the end of the chapter.

6.1 REFLECTION ON THE COMPETENCIES (GENERIC + PROFESSIONAL)

In chapter 3, an introduction to the needed competencies for this thesis research was presented. As was mentioned in the needed competencies, this research has been a self-directing process by taking initiative in structuring the process into time blocks and tasks; therefore, it has been directed without problems with the parties involved in the process. Taking initiative and acting independently were competencies that I have shown in the process of finding and communicating with experts for interviews. Having good interpersonal communication skills with supervisors as well as colleagues in the organization have also proved to be useful and supportive at the end of this thesis.

Analyzing and evaluating data which requires rationale thinking has been shown throughout the research process as this research is based on secondary and primary research.

6.2 LESSONS LEARNED THROUGHOUT THE PROCESS

Throughout the research process, there are important lessons I learned.

These lessons are as follows:

- Be selective in what information is useful and what information is not useful when analyzing the data,
- Details are in the rough information are vital, this is why I have learnt to analyze the data carefully for crucial details. They provided me with the most important points to be addressed for recommendations.
- Keep things (data, contacts) organized
- Switching from business language to legal language (noise directive, legislations and terms used in noise field) brought many difficulties to grasp the whole topic in the beginning, thus studying the terms used in the noise field and reading a lot about the topic is important.
- Consulting often to school supervisors and organization supervisors is crucial for the desired end result. Their insights with their constructive comments on my thesis drafts and further scrutinizing and reviewing the thesis throughout the research process was crucial and contributed a lot to the thesis.

6.3 IMPROVEMENT POINTS

- Analyzing data for relevant and useful information needs to be improved and,
- Attention should be paid to details in the information. Considering this as an improvement point would help me a lot in the future.

6.4 ELIGIBILITY BBA DEGREE

As an international business student of the IBMS programme, I was selected as an eligible student for writing a thesis. When I read my thesis assignment, I liked the idea of QUAs and worked on it during five months. In these five months, I was able to show my leadership skills by arranging the processes, research questions and objectives in consultation and cooperation with both my school supervisors and my company supervisors, who were all involved in this process. Therefore, I showed and utilized my business communication skills throughout the process. Furthermore, the research is conducted with care for pursuing it in accordance with the thesis guideline.

Finally, I have learned lessons as to how to work on the data, present it in a leaner way and what is important for me to focus with the specific information. Therefore, I have been eligible for the BBA Degree by improving myself a lot in terms of knowledge, communication skills, research, analyzing data, adapting to new environments and people, acquiring competencies in this process. Finally I completed this long process of graduation internship successfully at DCMR Milieudienst Rijnmond.

6.5 CHAPTER SUMMARY

In this chapter a reflection on the competencies which I presented in Chapter 3 is described. As a self-directing competency, acting independently and taking initiatives for reaching to the necessary data for the research is achieved with interpersonal and communicative skills throughout the process. Lessons learned in this thesis research are also reflected as they made me realize that, while I improved myself, there are still competencies, skills that need to be improved. Furthermore, self-developments are needed on the way towards perfection.

Finally why I am eligible for a BBA degree is explained emphasizing the fact that I showed my professional and personal competencies with my professional attitude throughout the process, by conducting the research in accordance with the thesis guidance and in cooperation with my supervisors.

This concludes this thesis, which means to provide an analysis of the selected research countries (the United Kingdom, Norway, the Netherlands and Belgium) and recommendations for a Good Practices Guide which the QUADMAP Beneficiaries are working on producing in the later stages of the project. By means of relying on the Deming Cycle, a closer look at the implementation process of the END regarding legislation, policies, noise mapping, action plans and 2nd round noise mapping are examined. As a result of this implementation analysis, QUAs identification procedures, approaches and criteria used by the different countries are found described. As a valuable contribution to this thesis, perspectives of businesses (restaurant and offices in the Netherlands) towards QUAs in relation to the city attractiveness and locating businesses with lessons learnt by experts from QUAs identification projects, are added to this research as well. The research performed for the purpose of this thesis included several sources, such as secondary research, questionnaire, personal interviews and the review of several literary and electronic sources. In the end, answers to the research questions are presented. To finalize everything, the conclusions, as well as the recommendations gathered from this study are published. A very special thanks goes to everyone who made the publication of this thesis possible.

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APPENDICES

APPENDIX 1 : THE QUADMAP PROJECT QUESTIONNAIRE APPROVED BY THE UNIVERSITY OF FLORENCE

	QUESTIONNAIRE	QUADMAP QUIET AREAS DEFINITION AND MANAGEMENT IN ACTION PLANS LIFE10 ENV/IT/407

QUESTIONNAIRE FOR THE LIFE+ QUADMAP PROJECT
QUADMAP: QUIET **A**REAS **D**EFINITION AND **M**ANAGEMENT IN **A**CTION **P**LANS

Introduction

QUADMAP is a LIFE+ Programme project, co-financed by the European Commission, of which the main objective is to develop a harmonized methodology on a European level for the selection, assessment (combining qualitative and quantitative parameters) and management of quiet areas (acoustic pollution mitigation and increased use and satisfaction of areas on behalf of users) taking, as a general reference framework, Noise Action Plans.

As a starting point for the development of the project, a series of tasks, focusing on the analysis of the state of the question concerning the different agents directly or indirectly involved in the selection, assessment and/or management of quiet areas are under development. To that end, we have identified your organization/department as a target stakeholder for the collection of data concerning quiet areas, so we would appreciate your collaboration in the transmission of information for the QUADMAP project through the completion of the following questionnaire.

Please feel free to provide any additional documentation or information considered of interest. Thanking you in advance for your valuable collaboration. We invite you to visit the project website (www.quadmap.eu) and contact us for any query or comment regarding QUADMAP using the e-mail address at www.quadmap.eu.

Regarding the structure of the questionnaire, we propose to start with 'general, environmental noise' questions, and subsequently focus/narrow down to quiet urban areas.

General Data

Organization:
Department:
Position:
Name:
Telephone:
Postal address:
E-mail address:

Concerning Environmental Noise Assessment

1. Has any environmental noise assessment been performed under your current competence regarding national/local regulations?

☐ Yes
☐ No

2. And according to the 2002/49/EC Directive?

☐ Yes
☐ No

3. In case you have, which assessment methodology has been applied?

☐ Measurements
☐ Calculations
☐ Measurements and calculations
☐ Based on noise map
☐ Noise was measured at the same time??
☐ Other, please describe below

Description:

4. Regarding the assessment, did you perform a qualitative analysis of perceived sound reported by citizens?

☐ Yes
☐ No

5. Did these analyses deal with any question concerning quiet areas?

☐ Yes
☐ No

Concerning Identification and Characterization of Quiet Areas:

6. What is the definition of a quiet area according to you? Please describe:

Description (What is a “quiet area”? What are its characteristics? How important are the “quiet areas” for the population and for the environment? Are they visited? What are they used for?)

7. What is the definition of a quiet area according to the assessment conducted? Please describe:

Description

☐ Low noise levels (below 35 dB L_{DEN})
☐ No influence of human induced noise
☐ Natural sounds (birds, trees, …)
☐ Function (park, natural area, etc)
☐ Other, please describe below

Description (together with a brief description, please provide the indication of reference publication for details about methods and indicators)

9. Which were/are the indicators for the (physical) characterization of a quiet area?

☐ frequency visits
☐ reasons
☐ time of the day
☐ fit for purpose
☐ visual aspects (openness, green)
☐ accessibility
☐ other

Description (together with a brief description, please provide the indication of reference publication for details about methods and indicators)

10. Which were/are the indicators for the (acoustic environment) characterization of a quiet area?

- ☐ Sound sources
- ☐ Sound levels
- ☐ Quality of soundscape (e.g. pleasantness)
- ☐ Soundscape description (e.g. monotonous, annoying, calm)
- ☐ Other

Description (together with a brief description, please provide the indication of reference publication for details about methods and indicators)

11. Did you conduct field surveys on the perception of the (acoustic environment of) quiet urban area?

- ☐ Yes
- ☐ No

12. If yes, which method did you apply?

- ☐ Questionnaires with closed questions
- ☐ Questionnaires / interviews with open questions
- ☐ Observations
- ☐ Other

13. Are the questionnaires as meant above, public?

- ☐ Yes
- ☐ No

Public questionnaire can be found at:

14. According to the questionnaire results, the number and characteristics of present “quiet areas” satisfy the request of the populations? Please describe:

Description:

Concerning Action Plan and Quiet Areas

15. Do you provide (an) Action Plan(s) regarding Quiet Areas?

- ☐ Yes
- ☐ No

16. If yes, are the interventions included in the Action Plan, prioritized.

- ☐ Yes
- ☐ No

17. What kind of measures are planned in the action plans?

- ☐ technical measures
- ☐ psychosocial measures
- ☐ physical measures
- ☐ logistic measures
- ☐ other, please describe below

Description

18. Do they have an associated budget item?

- ☐ yes
- ☐ no

19. Which is the amount and percentage with respect to the total budget of the plan?

€……

Concerning Management of Quiet Areas

20. What is the municipal policy goal (target) with respect to the designation, improvement and/or preservation of quiet areas? On which policy is it based?

- ☐ noise policy
- ☐ spatial policy
- ☐ health policy
- ☐ quality of life policy
- ☐ nature policy
- ☐ other (describe)

Could you specify more in detail the goals or targets?

21. Is there a procedure for monitoring the degree of compliance of the policy objectives?

- ☐ yes
- ☐ No

22. Is the development of new quiet areas comprised in the municipal proposal and /or in the development of new areas?

- ☐ yes
- ☐ No

23. How? Please provide some examples:

Description

Concerning Stakeholders Involved in the Management of Quiet Areas

24. Which department(s) within or outside your organization is/are responsible for Quiet Areas?

- ☐ Environmental dept.
- ☐ Infrastructure dept.
- ☐ Public green dept.
- ☐ Spatial dept.
- ☐ NGO
- ☐ Citizens organization/volunteers
- ☐ Other (please describe)

25. Which departments, organizations, citizens or group of citizens, etc. are involved in the management (designation, delineation, sanitation and preservation) of quiet areas? Whenever possible, please provide contact names and details.

- ☐ Environmental dept.
- ☐ Infrastructure dept.
- ☐ Public green dept.
- ☐ Spatial dept.
- ☐ NGO
- ☐ Citizens organization/volunteers
- ☐ Other (describe)
- ☐ Ecological education

Contact data:

26. Is there any coordination protocol or methodology among the different Departments or Stakeholders involved in the management of quiet areas?

- ☐ Yes
- ☐ No

27. If yes, please describe briefly below:

Description:

28. Are there any research or statistics that provides data regarding perspectives or the increase of businesses in relation to locating their offices around quiet areas?

- ☐ Yes
- ☐ No

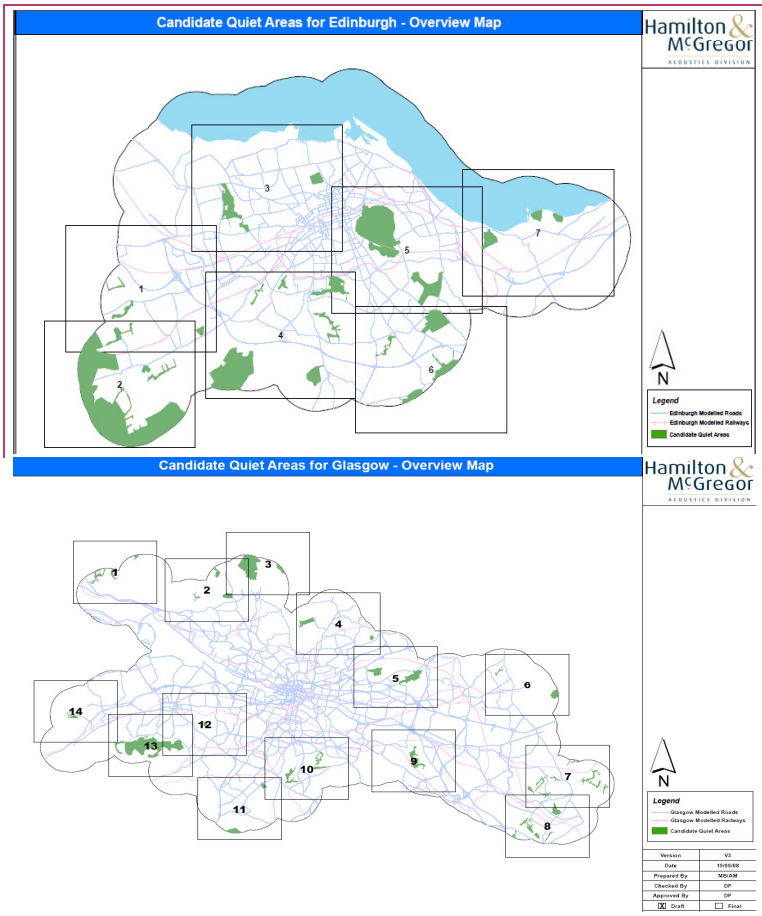
29. If yes, please indicate the link to the data or the source of the report/publication below:

Research/Statistics can be found at:

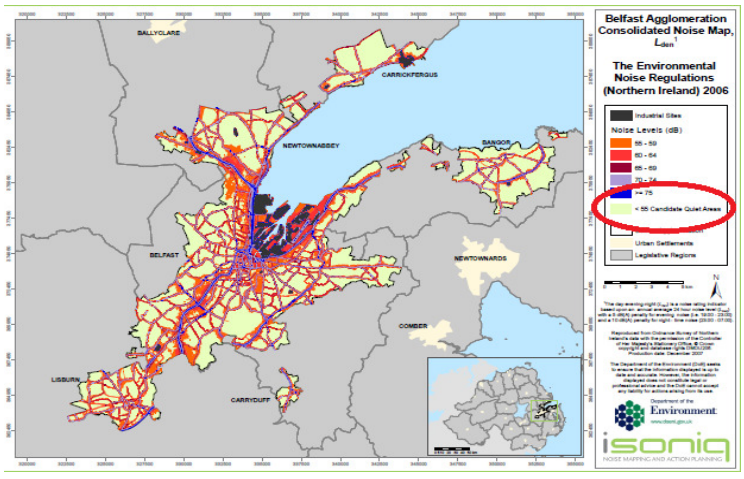
30. Could you please provide some of the business names around quiet urban areas and their contact information in order for us to contact them for an interview for this project?

Business Name: Email: T:

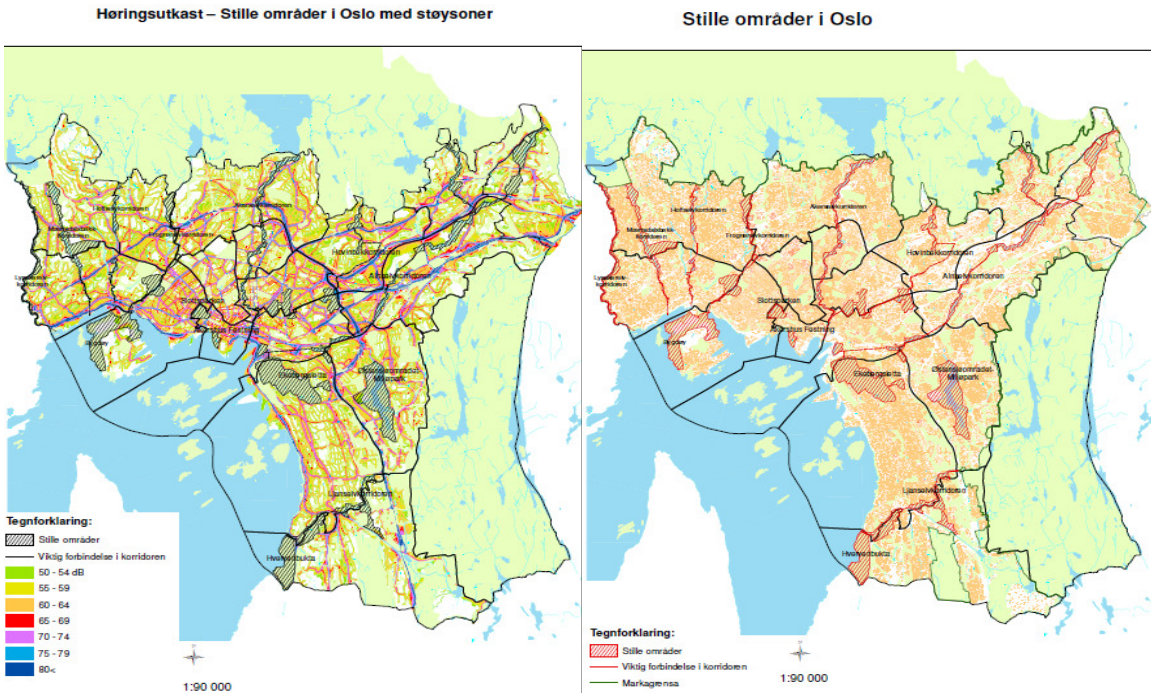
APPENDIX 2: CANDIDATE QUIET AREAS FOR EDINBURGH AND GLASGOW - SCOTLAND



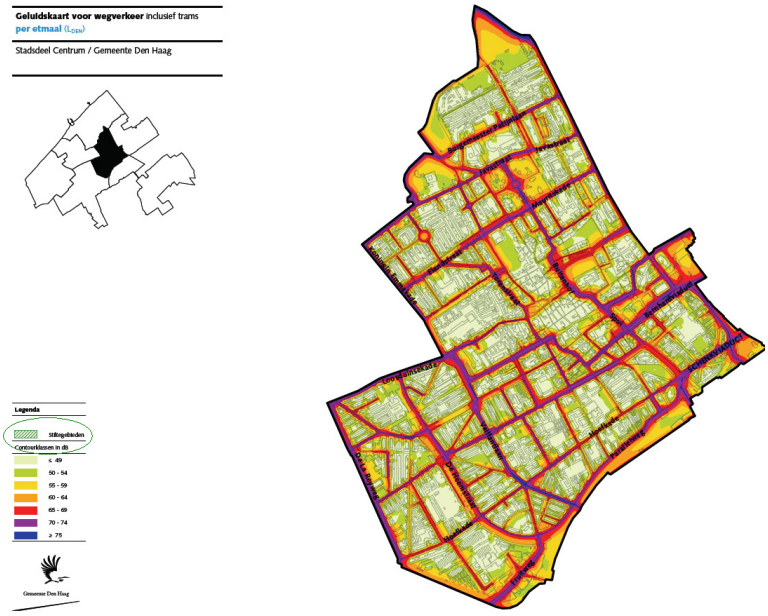
APPENDIX 3: CONSOLIDATED (CUMULATIVE) NOISE MAP FOR THE BELFAST AGGLOMERATION



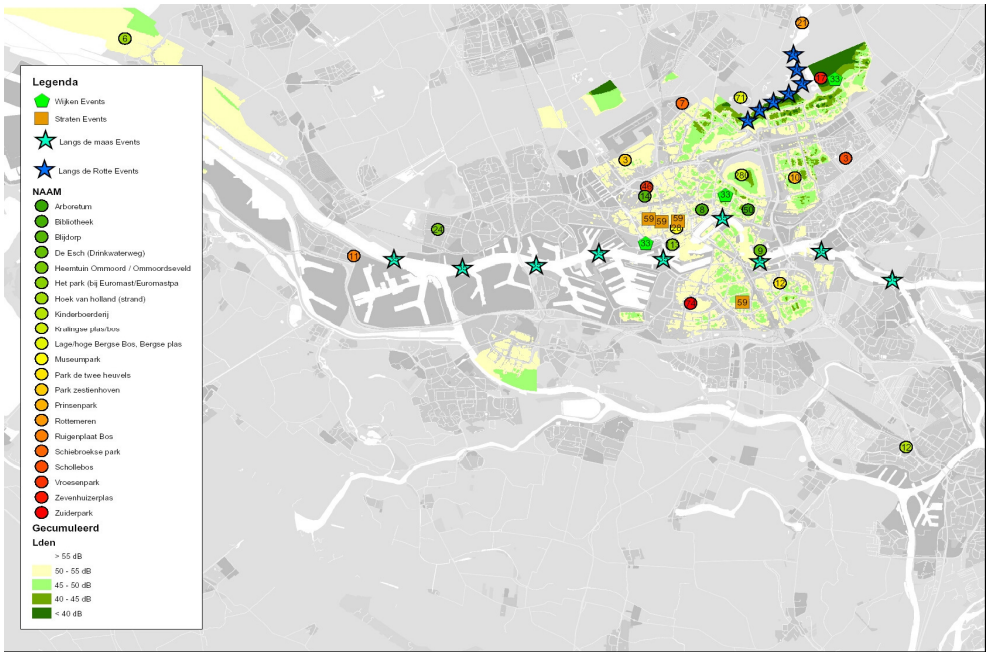
APPENDIX 4: QUEIT AREA IN OSLO AND QUIET AREAS IN OSLO WITH NOISE ZONES



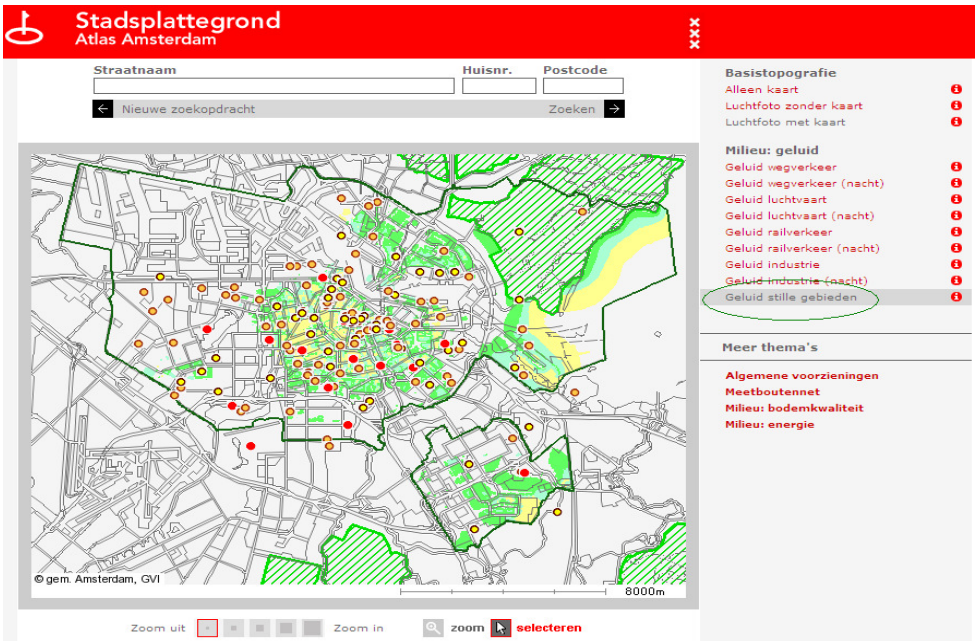
APPENDIX 5: DISTRICT CENTER NOISE MAPPING – MUNICIPALITY THE HAGUE



APPENDIX 6: QUAS MAP OF ROTTERDAM



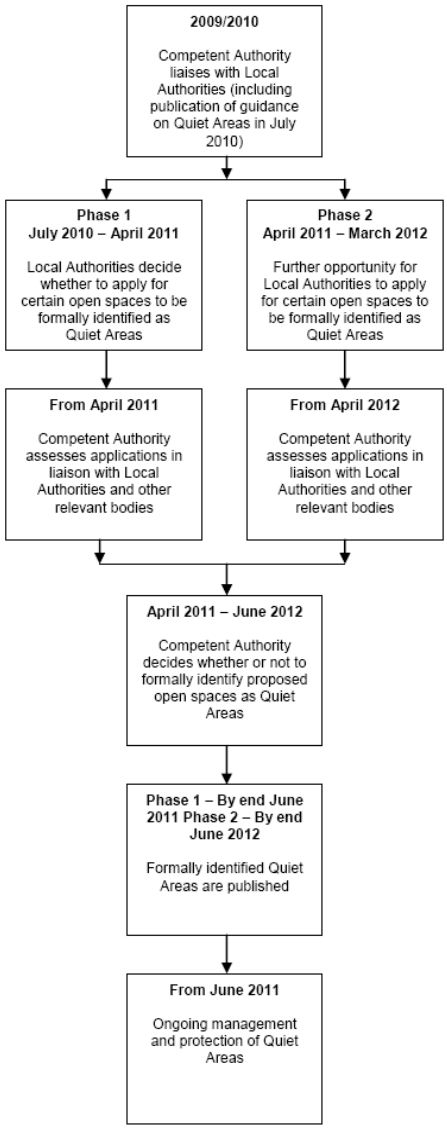
APPENDIX 7: QUAS MAPS OF AMSTERDAM



APPENDIX 8: FLOW DIAGRAM OF THE ACTION PLANNING PROCESS FOR QUIET AREAS - ENGLAND

APPENDIX 9: SUBJECTIVE ASSESSMENT OF URBAN TRANQUILITY

Flow Diagram of the Action Planning Process for Quiet Areas



Subjective assessment of urban tranquillity (for use by local authorities)

Name of area being assessed

Local authority in which area is located

General description of area (including its approximate size in hectares and primary land use)

Note: The boundary of the candidate quiet area should be clearly marked on an accompanying map.

Criteria directly relating to perceived quiet

A substantially positive report in these three categories and a screening test to identify excessively noisy areas on the strategic noise maps are the essential criteria for formal quiet area designation.

Soundscape

Presence of nature

Visual or aesthetic qualities

Supplementary criteria contributing to overall tranquillity and wellbeing

These are optional for formal quiet area designation purposes but affect the level of actual benefit conferred on local residents by an area being perceived as quiet.

Sense of personal safety

Culture and freedom of the place

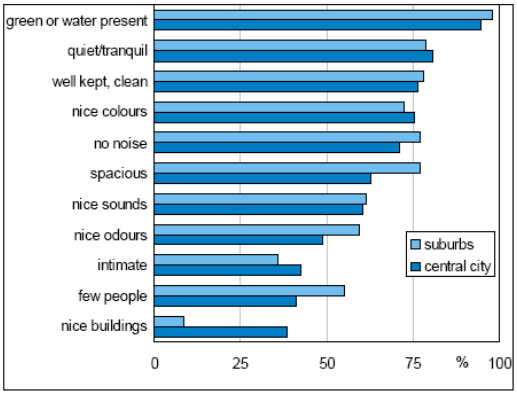
Opening hours

Disabled access (y/n) Fee to enter (y/n) Poor air quality (y/n)

Name, position and contact details of person completing checklist Date

APPENDIX 10: GIVEN CHARACTERISTICS APPLY TO A QUA IN AMSTERDAM

Percentage of respondents who think the given characteristic applies to a quiet area.



APPENDIX 11: INTERVIEW QUESTIONS AND SUMMARIES REGARDING PERCEPTIONS OF BUSINESSES

1- What is your perception, view of Zuider Park/Euromast Park (the park by Euromast)/Vrosenpark as a business/office located nearby the park (QUA) ?
2- Have you influenced by the idea of having a location for the restaurant nearby a quiet urban area – Zuider Park before setting up this business here?
3- Is there any good influence of Zuiderpark/Euromast Park/Vrosenpark to your business in terms of quietness, greenery? Because many people in this area are coming to these QUAs to relax, enjoy and eat?
4- What do you think about Zuiderpark as part of the city attractiveness and for your business?
5- Location wise and part of the city attractiveness, do you think it was a good decision to locate your office here?
6- What are the advantages of this quiet area to your restaurant? Does it help you attract more customers?
7- Do you know if there has been an influence by the idea of having a location for the restaurant nearby a quiet urban area – Euromast Park before setting up this business here?
8- But after mentioning all these points, is there any disadvantage of the area for the business, or as a location in the park?

INTERVIEW SUMMARY 1

Champs Elysee Grand Café/ Mrs Andrea Reek

Restaurant Champs Elysee Grand Cafe nearby Zuiderpark stated its perception of Zuiderpark as "nice to have it here in this part of the city, because the environment is well-kept, clean, and quiet and lots of greenery". She added how Zuiderpark affects them in a good way because of having a terrace outside of the restaurant; their customers enjoy the relaxing atmosphere and having a good time.

INTERVIEW SUMMARY 2

Restaurant Asterlo/ Mrs Mukaddes Altintas

Restaurant Asterlo located around Zuiderpark but not as close as Champs Elysee Grand Café, stated that it was nice to have the park in the neighbourhood and showed a positive perception towards Zuiderpark in terms of contributing to city attractiveness. However, she stated that Zuiderpark did not affect her in setting up a restaurant around it because it affects positively. She claims that even now Zuiderpark does not affect the business in a positive or in a negative way due to the houses between and therefore distance.

INTERVIEW SUMMARY 3

Former Name (Restaurant Meerzicht)/ Oriental Park Restaurant/ Mr Wim Visseren

Restaurant Meerzicht is located in Zuiderpark differently from other restaurants interviewed. During the interview, I learnt that they took over the restaurant one month ago and it was because of the location and their positive perception towards Zuiderpark. The restaurant is being located in Zuiderpark and Zuiderpark is located in Rotterdam is an asset, profit to Rotterdam in terms of city attractiveness.

INTERVIEW SUMMARY 4

Vrosen Park/ Fokkema Linssen Notarissen/ Mrs Monique Otte

Business office stated that having the park around her office is indeed nice and good because of quietness and greenery as well as stating this as part of the city attractiveness. Location-wise, she stated it to be a good decision to locate her office nearby the park.

INTERVIEW SUMMARY 5

Hotel Rotterdam Blijdorp – Restaurant/ Mr Raymond Partowitzono

Hotel Rotterdam Restaurant stated that it was good to have Vroesenpark in Blijdorp and around their restaurant and hotel. Since the restaurant was part of a big hotel located just nearby the Vroesenpark, he added that this was good for their customers and employees because it was quiet, calm and green especially because they have a terrace for their restaurant to enjoy the view when the weather is good. He mentioned further how it is affecting positively them to have the park around the hotel and the restaurant in terms of customer, atmosphere & image of the hotel and mood of the customers and employees' because of quietness and greenery there. As an important point, he emphasized that the attributes of the park are what customers' of a hotel look for, therefore the park itself and its location adds value to their business.

INTERVIEW SUMMARY 6

Beleg de Broodjes - Blijdorp / Mrs Yvonne

Restaurant Beleg de Broodjes (not exactly a restaurant but a business entity similar to a restaurant) stated that they were happy because they had the park as a quiet area nearby their business. They also said that having a quiet area with greenery in the neighbourhood is something to be happy about. People usually come to the park to relax and play with their children and this is affecting them positively because people are also buying food from them to eat there.

INTERVIEW SUMMARY 7

Euromast Park - Restaurant Parkheuvel/ Mr Eric

Restaurant Parkheuvel is located in the heart of the park nearby Euromast. When asked how their perception as a business entity to the park, he stated that it is good because the park relaxes people even before they are coming to the restaurant because they are already busy with business in the city. He stated that the park helps attracting customers and that the location of the restaurant influenced their manager to buy the place. He mentioned that the spot itself was very important and was part of the business strategy that the restaurant is located in a quiet urban park.

APPENDIX 12: INTERVIEW QUESTIONS AND INTERVIEW SUMMARIES FOR LESSONS LEARNED

1. What was learnt about what went well during this project?
2. What was learnt about what could be improved (Potential Improvement Recommendation)?
3. What was missed?
4. What unexpected events have led to deviations (changes /inconsistencies)?
5. How would you do things differently next time to avoid this frustration?
6. Which methods, techniques, resources and tools are used in the process of selection indicators for quiet areas?
7. What communications, organization, structural problems in general were encountered, and how could you have done better in these areas?
8. Which of methods or processes worked particularly well?
9. What was the most gratifying or professionally satisfying part of these projects?
10. Did you have the right people assigned to all project roles?
11. (Consider subject matter expertise, technical contributions, management, review and approval, and other key roles) If no, how can you make sure that you get the right people next time?
12. Describe any early warning signs of problems that occurred later in the project?
13. How should you have reacted to these signs? How can you be sure to notice these early warning signs next time?
14. Knowing what you know now, how would you do the scheduling/estimating process differently next time to avoid any problems noted above?
15. Feel free to add any other comments.

INTERVIEW SUMMARY 1

Interview: Ms Sofie Yvling - Oslo, Norway
Project: Quiet Areas Selection, Protection and Management in Oslo - Stille områder i Oslo
Ms. Yvling emphasizes that meeting with the public went very well and they could have done more of this. Information brochures for QUAs took a long time for them therefore she suggests preparing them earlier. A need for budget is also mentioned and suggested to start to the process with a budget and interest of politicians for creating awareness. Discussion with key persons who have the knowledge of potential areas also worked according to them before the process. Noise maps for QUAs worked very well and have been useful in the process as well. Having trial projects and keeping the focus on a few areas is better as a final suggestion from the City of Oslo was given.

INTERVIEW SUMMARY 2

Interview: Steve Crawshaw - Bristol, England
Project: Bristol Noise: Quiet Areas Pilot Study
Mr Crawshaw emphasizes that neighbouring local authorities can work together on potential quiet areas identification
And more consultations with local authorities can work to make these decisions. He also mentions that due to the UK's centralized approach, little control is given to local authorities; however, empowering local authorities would run faster the identification processes. Full and better consultation with relevant officers for the process can improve the success rate of the processes as well according to him. As for more lessons learnt, he adds to start working earlier on the project and coordinating with other consultation exercises.

INTERVIEW SUMMARY 3

Interview: Mr Colin Grimwood, Technical Director, Bureau Veritas, England
(Also an adviser on acoustics to DEFRA – Department for Environment, Food and Rural Areas, England)
Project: Quiet Areas in Agglomerations in England -Proposed Process, DEFRA research – Identification of Quiet Areas
The Technical Director from England involved in projects gave his honest replies regarding lessons learnt by him. As a recommendation for QUAs identification procedures, he suggested a multidisciplinary approach to the identification of quiet areas (i.e. not just noise levels, but also taking account of wider issues e.g. soundscape, presence of nature, visual and aesthetic qualities, sense of safety, culture of the place etc.). He also emphasized the need of having pre-project meetings with senior responsible officials and local representatives in the process of projects for a greater clarity in national and local policies on quiet areas topic.

INTERVIEW SUMMARY 4

Interview: Edward Haythornthwaite, Technical Officer, Department of Markets & Consumer Protection, City of London (previously Department of Environmental Services)
Project: (The Quiet City Project) Study considering options for the development of the concept of Quiet Zones
A technical officer from the Department of Markets & Consumer Protection (previously was at the Department of Environmental Services) from the City of London, involved in the Quiet City Project which considered options for the development of the concept of quiet zones replied questions for lessons learnt from this project. He mentioned that the surveys were an excellent tool teaching them a lot about people's attitudes to noise in the city as well as helping them to understand that people value quiet areas, and that there is a strong justification for protecting quiet areas in the city. He also states that he could use trial surveys for survey design next time. As for improvements to the study, he stated that they would have designed the survey questions differently, to allow them to more easily compare results to other datasets (such as census data).

INTERVIEW SUMMARY 5

Interview: Mr. Frits van den Berg, Advisor in the Department of Environment and Health at GGD Amsterdam (Geneeskundige en Gezondheidsdienst Amsterdam)
Project: Quiet Areas and the Neediness for Quiet in Amsterdam and Qside Project (QSIDE is a recently started European LIFE+ project, aimed at researching the positive effects of quiet façades and quiet urban areas on traffic noise annoyance and sleep disturbance)

Mr. Frits van den Berg, an advisor at the Department of Environment and Health at GGD Amsterdam was interviewed for lessons learnt from the project he involved regarding quiet areas characterization in Amsterdam City. He said what they learnt by communicating with the public that people liked the idea of quiet urban areas because their reaction was positive. Local people also liked it that it was easy to make papers enthusiastic to publish articles about quiet urban areas.

Therefore, the process and communication of the survey went well due to the interest of everyone to quiet urban areas. Regarding the whole study, when asked to what could have been done better when thought of it now, he said that it was the questionnaire itself, further stating that they wanted to make an inventory of what people thought of quiet urban areas then and now they know what people think about it. As a remark for scheduling of the project, he stated that it could have been better if they did the survey in summer because people are outside of their home much often than they are in other seasons. Regarding the interaction between partners of the project, he stated that even though there have been small issues due to the replacement of people, because the project team was enthusiastic, were motivated by the results and by quiet areas topic that everything went well in the end. Mr. van den Berg also added his remarks regarding the indicators of QUAs for criteria, stating that all quiet areas in Amsterdam are natural areas; therefore nature, greenery and water are indicators that go together with quietness. He stated that as a golden rate preference 40 dB noise levels is good for QUAs but it is not often in a city. As public health service, they want quiet areas to be everywhere; even in the city center therefore they can also support 60 dB as a noise level, because 40 or 45 dB is not often to find in the city center.

Mr. Frits van den Berg finally mentioned that quiet and green areas are an asset to business enterprises. Emphasizing that there are workers not only like greenery and quiet but the diversity including green areas. He emphasized the example that small modern businesses like to come together in cafes or in parks in the city. Therefore quiet urban areas could be an attractive place for them to come together, especially for a coffee or for a gathering for business purposes.

INTERVIEW SUMMARY 6

Interview: Mr. Henk Wolfert - European Policy Officer at DCMR Milieudienst Rijnmond, Chair of Working Group Noise at Eurocities

The final interview was conducted with Mr. Henk Wolfert. During the interview, several questions were asked excluding questions for lessons learnt for QUAs identification projects because Mr. Wolfert was not directly involved in the project which was undertaken in Rotterdam, however, he presented a paper at INTERNOISE Lisbon on Quiet Areas and this was based on a desk study. (Wolfert, Henk, 2010)

When asked whether he knows there are cultural differences in noise perception which could be important for QUAs, he stated that there are differences based on his personal observations views of other experts. It could be elucidated by the so called Maslow pyramid. When they have other worries for life, they do not care about quiet urban areas silent or noise, greenery or not, they are more careless about the areas. Southern European people are mostly living outside of their home and lively and northern Europe population is mostly living in the inside.

The most relevant criteria according to him is already what is most expected from QUAs; low noise level. Another one, following this could be the cleanliness. Mr. Wolfert also states that criteria should be multi-sensorial, maybe in order of appealing for all the six senses (hearing, seeing, smelling, and feeling) for QUAs. E.g. applying to QUAs: low noise (quietness) , greenery (anything that is beautiful to look at), nice odours and cleanliness.

Regarding how the sound quality can be improved, he stated that there could be three ways to improve the quality or all these three ways can be combined. These are reducing the noise, adding noise (which is the one he does not favour and thinks of it as an artificial solution of adding noise with loud speakers) and masking the noise with natural, child noise or bird cages. And finally the final solution could be combining these three ways. He concludes his answer stating that compensation for public could be good as well by making the entrance fee free, adding facilities and adding green to QUAs.

Regarding the question of how to make people more aware of QUAs, he starts with an interesting example of meeting room. He states that QUAs are like meeting rooms for people. If there is a fan in the room people does not notice it until the room is completely quiet. People should notice the positive effects of quiet area for their health and these effects should be emphasized seriously to people to make them aware of how important these areas in cities.

As a European Policy Advisor, he suggests that based on the research and project, it should be told to politicians that people appreciate QUAs and these areas add value for better living conditions. Furthermore it should be explained to politicians that QUAs beneficial for climate change by increasing biodiversity which is something that makes cities attractive.

Regarding enterprises and QUAS, he thinks that enterprises are appreciating QUAs especially areas include greenery and open nearby a park. Enterprises are moving their offices next to or around QUAs so during lunch time, workers enjoy the area with acoustic climate. Mr Wolfert gives an example of how offices are locating their offices in Randstad area and settling down there rather than locating in the Port (Schiedam) area. The reason according to him that port is where mostly production firms are located is dusty, has a lot of traffic jam and has an environmental pollution problem.

For the final question regarding policy and the action plan of Rotterdam for QUAs, Mr Wolfert stated that there was not a policy for QUAs in Rotterdam and nor could they have focused much on the actions for QUAs in the action plan of Rotterdam.

APPENDIX 13: SWOT MATRIX – CRITERIA ANALYSIS

Strengths	• Criteria used by the UK (England, Wales, Scotland) considers every quality aspect of QUAs for people such as functionality, safety, accessibility for all kinds of exercises for even disabled people, greenery and having attributes of nature (birds, tree) • Norway's criteria are ideal as they emphasize the main attributes of QUA such as greenery, large areas accessibility and suitable for all age groups. Meaning that criteria used can strengthen the objective of identifying and opening QUAs daily use of public rather than having them identified by legislation. • Criteria used in the Netherlands are strong and detailed - in terms of visual qualities (green, water presence, clean), safety and functionality of QUAs. These qualities can make QUAs popular places for spending quality time in weekends for families and visitors. Noise levels can sustain the main reason of QUAs by being very quiet (40dB) in the city.
Weaknesses	• The UK (England, Wales, Scotland) considers all quality aspects of QUAs, except cleanliness and maintenance of QUA. Also noise level is relatively high for a QUA, (55 dB, 65dB) • Norway's criteria are weak in terms of not having different aspects like safety, well maintenance and relatively a low noise level • Belgium lacks of a variety of criteria for different qualities of QUAs. Being a green area and having a low noise level does not make an area usable and preferable to visit enough.
Opportunities	• All the selected countries (The UK, Norway, The Netherlands and Belgium) can add criteria by analyzing the criteria of the selected countries. • Field surveys, local authority discussions, public consultations can inspire authorities in terms of criteria people demand from QUAs.
Threats/Risks	• As the UK has criteria for every aspect of QUAs, the risk is that many QUAs cannot be identified and found due to not having all the qualities criteria demand. • Norway's criteria of suitable for all age groups has the risk of having dissatisfactions from QUAs identified because, elderly, youth and children have different demands and quietness perception is relatively different. • Belgium (Brussels Region) has the risk of identifying too many unqualified areas in cities as there are only 2 criteria presented.

APPENDIX 14: LIST OF INDIVIDUALS THAT ARE CONTACTED FOR THE SURVEY AND INTERVIEWS

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