HUMAN HEALTH IMPACTS AND ENVIRONMENTAL IMPACT ASSESSMENT

By

María de la Luz Astudillo Hernández

Thesis presented in part-fulfilment of the degree of Master of Science in accordance with the regulations of the University of East Anglia

School of Environmental Sciences
University of East Anglia
University Plain
Norwich
NR4 7TJ August 2007

© 2007 María de la Luz Astudillo Hernández
This copy of the dissertation has been supplied on condition that anyone who consults it is understood to recognise that its copyright rests with the author and that no quotation from the dissertation, nor any information derived therefrom, may be published without the author’s prior written consent. Moreover, it is supplied on the understanding that it represents an internal University document and that neither the University nor the author are responsible for the factual or interpretative correctness of the dissertation.
ABSTRACT

Though the consideration of human health is not a legal required in the Environmental Assessment (EIA) Directive in the EU, the interest on integrating it in the Environmental Impact Statements has been growing through time, plus now, the pressure is increasing from other legal instruments such as the Strategic Environmental Assessment (SEA) Directive that specifically requires Human Health to be included in the assessments. This study was concerned with examining the quality of coverage of human health impacts in the Environmental Impacts Statements in the UK between the years 2003 and 2005, as it has been found by previous studies that the coverage of human health in EIA in the past hasn’t been satisfactory (BMA 1998).

Environment Impact Statements were evaluated using a technique developed by the British Medical Association and an Environmental Impact Statement review procedure was developed for the purpose of this study to examine the consideration of health impacts in twenty Environmental Impacts Statements in the UK between 2003 and 2005.

The results of this study shows that even the consideration of though human health in EISs has improved in the recent years; there is still a big percentage of statements that are unsatisfactory in this respect. This shows that there is still a lot to do to improve the consideration of health impacts in the EIS and to increase the participation of health professionals in the process.
CONTENTS

Abstract ................................................................................................................................. i

Contents ............................................................................................................................... ii

List of figures/tables .............................................................................................................. iv

Acknowledgements ............................................................................................................... v

CHAPTER 1: INTRODUCTION ............................................................................................. 1

1.1 Objectives and specific aims ............................................................................................ 2

CHAPTER 2: ENVIRONMENTAL IMPACT ASSESSMENT (EIA), ENVIRONMENTAL IMPACT STATEMENT (EIS) AND HEALTH .... 3

2.1 Environmental Impact Assessment (EIA) and Environmental Impact Statement (EIS) ......................................................................................................................... 3

2.2 Definitions of Health Impact Assessment (HIA) and the difference between HIA and the integration of health impact in EIA ................................................. 4

2.3 Health Impact Assessment and Human Health within EIA ........................................... 7

2.4 Reasons for considering Environmental Health .............................................................. 10

2.5 The development of environment health ........................................................................ 10

2.6 Important points for the integration of Health Impacts within EIA ................................ 11

CHAPTER 3: METHODOLOGY .......................................................................................... 13

3.1 Purpose and Objectives ................................................................................................. 13

3.2 Approach ........................................................................................................................ 13

3.3 BMA criteria .................................................................................................................. 14

3.4 Proposed Criteria ......................................................................................................... 14

3.4 Choice of rating system ............................................................................................... 25

3.5 Sample selection .......................................................................................................... 25

3.6 Limitations of the sample ............................................................................................. 28
LIST OF FIGURES

Fig. 1 Ten-step EIS Review Process .................................................................24
Table 3. EISs sample selection ..................................................................26
Table 4. The overall performance of the EISs ..............................................30
Fig. 2 The overall performance of the EIS within BMA methodology ..........32
Fig. 3 Performance by sector in Question 1 in the BMA criteria .................34
Fig. 4 Performance by sector in Question 2 in the BMA criteria ................35
Fig. 5 Performance by sector in Question 3 in the BMA criteria .................37
Fig. 6 Performance by sector in Question 6 in the BMA criteria .................39
Fig. 7 The overall performance of the EIS with the proposed methodology ....40
Fig. 8 Performance by sector in Question “a” in the proposed criteria ........41
Fig. 9 Performance by sectoral in Question “a” in the proposed criteria .......42

LIST OF TABLES

Table 1. Definitions of Health Impact Assessment (HIA) ..........................5
Table 2. Final checklist ............................................................................16
ACKNOWLEDGMENTS

Thanks to my supervisor and in some many ways my sensei Alan Bond, for all the greatest patience he prove to have all this year, specially in the time of this dissertation, thank you for all the advices and knowledge you share with me, and specially thank you for help me to go through all this process and help me and give me your support every time I needed, and for believe in me in moments that I didn’t do it. Thanks a lot Alan, for everything you teach me in this year.

Thanks to Dick, for all the patience and help he gave me through all this year. Thanks to Matthew Cashmore and Tracey Nitz for all the knowledge they share with us. Thanks to Alan O for cheer me up every time I went to the InteReam room.

Thank to James for all the support and especially for all the patience and love he has given me all this time.

And finally but not less important, thanks to my family for all the love and support they gave me all this time, thanks to my father and mother, because without them I wouldn’t be here studying what I love and supporting me in every way, thanks for believe in me and for help me to make true all the dreams I have had.
CHAPTER 1: INTRODUCTION

1.1 Introduction

EIAs contain a range of disciplines which have evolved to deal with different types of human activity and different categories of environment impacts, one of them is “Health impact assessment” (British Medical Association, 1998).

But even though in most of the literature reviewed human health is considered as one of the components which should be covered in Environmental Impact Statements (EIS), in most cases, the EISs in the UK have no reference to this impact, or on the other hand the ones that do consider this impact, do so badly or don’t have the sufficient information (Lee and Colley, 1999).

The lack of legal requirements in UK regulations to integrate human health impacts in the EISs, can be considered one of the causes of the poor coverage in that developers or consultants don’t see it as a priority. Legal requirements are usually a big incentive to the developers, as developers usually try to complain the law, avoiding problems with the authority or a bad adverse publicity (Steinemann, 2000). As Demidova and Cherp (2005, p. 413) that “even all the legal requirements, human health is rarely treated equally with environmental impacts of concern even in the EIA of projects that can cause significant health effects” and usually health impacts ending having a poor treatment within EIA.

There is an urgent need to revise the requirements for the inclusion and level of consideration of Health Impacts in the EIA process, and for the development of an appropriate methodology for conducting health impact assessments (BMA, 1998).

The development of a new review criteria is one of the objectives of this study, the development of new criteria to assess the way human health is considered in the EISs in comparison to past years, but the objectives of this study will be explained in below.
1.2 Objectives and specific aims

The overall objective is to examine the consideration of health impacts in Environmental Impact Statements (EIS) in the UK through three specific aims:

1. **Determine whether the consideration of health impacts has improved or not over time.** The study carried out by the British Medical Association (BMA) showed that in the years 1988 to 1994, the consideration of health impacts was unsatisfactory, so, a few years later from that study, this study looks to determine whether the health impacts in EISs continue to be unsatisfactory in the way the proponents assess human health or whether it has improved.

2. **To develop a new set of criteria for the examination of the level of health impacts in EIS.** The British Medical Association in 1998, develop criteria for the examination of the level of health impacts in EIS, but one of the aims of this study is to develop new criteria that will better measure the consideration of health in EISs in recent years and in a greater detail, considering issues that in 1998 were not consider important or been relevant.

3. **Determine whether there are sectoral differences in the quality of coverage of health impacts in the EIS.** It is almost impossible to make a comparison between different types of developments, but through the proposed criteria for the BMA, this study looks to find using the BMA criteria and the new criteria to find if exists any difference in the quality of coverage depending of the type of developments or if it is irrelevant.
CHAPTER 2: ENVIRONMENTAL IMPACT ASSESSMENT (EIA), ENVIRONMENTAL IMPACT STATEMENT (EIS) AND HEALTH

2.1 Environmental Impact Assessment (EIA) and Environmental Impact Statement (EIS)

The necessity to protect the environment from different factors has increased in the last three decades (Glasson, 2005). One of the tools that legislation has used in different countries to ensure the protection of the environment from the development of projects has been Environmental Impact Assessment (EIA) (Barker and Wood, 1999).

EIA was first required in USA by the National Environmental Policy Act (NEPA) in 1969 (Wood 2003, Jay 2007, Barker and Wood 1999) and then introduced in Europe with the EU Directive 85/337/EEC in 1985 and then amended by Directive 97/11/EC (Barker and Wood 1999) and amended again in 2003 by Directive 2003/35/EC. In the UK the Directive was implemented through over 40 different secondary regulations under section 2(2) of the European Communities Act 1972. But in England and Wales, most of the developments listed in Annexes I and II of the Directive fall under the remit of the planning system, and are thus covered by the Town and Country Planning (Environmental Impact Assessment) Regulations 1999 which replaced the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988 (Glasson, 2005).

The importance of Environmental Impact Assessment (EIA) worldwide has grown in recent years, and now is practiced required in more than 100 countries (Jay 2007, Barker and Wood 1999); and since its introduction in 1988 in UK legislation, the number of EIA in UK has grown from 20 per year to 600 (Glasson, 2005). EIAs is known as a process that governments use as a tool to protect the environment and in a certain way, to know more about the impacts a development is going to create in advance.

“The term ‘environmental assessment’ describes a technique and a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the planning authority in forming their judgements on whether the development should go ahead.” (Glasson 2005, p. 3)

Then, the report of the process in Environment Assessment is the Environmental Impact Statement (EIS), that is defined for Glasson 2005 as:
“The EIS documents the information and estimates of impacts derived from the various steps in the process.” (Glasson 2005, p.6)

The information contained in the ESs at least is the “statutory minimum requirements” set out in the UK regulations in schedule 4. As a tool that provides information to the decision makers, the Environmental Statements needs to exhibit such qualities as veracity, completeness and understandability; making the review of the statements easy and clear for the planning authorities (Jay 2007).

That the quality of the Environmental Statements has the same importance as the quality of the EIAs has been show by the results of research as this is the document that is going to influence the final decision of the decision makers; as Jay (2007, p. 291) said in his article, “planning officers concerned generally felt that the ESs helped them to make their recommendations about the planning applications in hand, and gave them confidence that their consideration of the proposals was well informed”. That is one of the reasons why in recent years the review of the quality of the EISs has increased around the world and including the UK (Lee and Colley, 1999).

But EISs have different elements to be considered, a “range of disciplines which have evolved to deal with different types of human activities and different categories of environmental impacts” as the BMA (1998) defined, one of these disciplines is human health. The problem with the inclusion of human health in the EISs (if its included) is that in most of the cases the assessment is not done with sufficient quality that is why, one of the objectives of this study is to assess if the element of human health is included in EISs and if it is done with an acceptable quality (BMA 1998, Environment Department The World Bank 1997)

2.2 Definitions of Health Impact Assessment (HIA) and the difference between HIA and the integration of health impact in EIA

Health is defined by the World Health Organization in 1946 as “a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity (Bond and Cave 2004, p.2). And together with this definition, the definition of “health impacts” has to be included to complete the complete picture of this area; as Glasson (2005, p.330) defined, “health impact refers
to a change in the existing health status of a population within a defined geographical area over a specified period of time”.

HIA, like Morrison et al (2001, p.219) described “is the offspring of Environmental Impact Assessment and has inherited its major features. It usually begins with a screening process to exclude interventions with no significant health effects. Where health impacts might occur, the process of scoping identifies the kinds of information that need to be gathered. This allows terms of reference to be agreed, and forms the basis for assembling and appraising information on health impacts. Emphasis is given to non-quantitative information, of which community consultation is a prominent component. The resulting information about potential health impacts is then presented to decision makers to help them decide how best to mitigate harm and augment benefit to health”

Table 1. Definitions of Health Impact Assessment (HIA)

<table>
<thead>
<tr>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Impact Assessment is defined as a methodology which enables the identification, prediction and evaluation of the likely changes in health risk, both positive and negative, (single or collective), of a policy, programme, plan or development action on a defined population (BMA 1999, p.39)</td>
<td></td>
</tr>
<tr>
<td>The definition of Human Health from the UK government is “those aspects of human health, including quality of life, that are determined by physical, biological, social and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling and preventing those factors in the environment that can potentially affect adversely the health of present and future generations” (Department of the Environment and the Department of Health, 1996)</td>
<td></td>
</tr>
<tr>
<td>HIA is “Combination of procedures, methods and tools by which a policy, programme or project may be judge as to its potential effects on the health of population and the distribution of those effects within the population and the distribution of those effects within the population” (Kemm 2000, p.1)</td>
<td></td>
</tr>
<tr>
<td>Health Impact Assessment is “a systematic assessment of potential health impacts of proposed public policies, programs, and projects, offers a means to advance population health by bring in public health research to bear on questions of public policy” (Cole et al 2005, p. 382).</td>
<td></td>
</tr>
</tbody>
</table>
HIA as a developing process that uses a range of methods and approaches to help identify and consider the potential –or actual- health and equity impacts of a proposal on a given population (Taylor et al 2002, p. 3)

HIA is to “assess the likely positive and negative impacts of the proposals on inequalities in health, and the determinants of health” (Taylor et al, 2003)

HIA is “a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population” (Parry et al 2005, p.1123)

HIA, is a process to identify, predict and evaluate the human health impacts of a proposed policy, plan, program or project (Steinemann 2000, p.631).

Health Impact Assessment (HIA) is “a methodology which enables the identification, prediction and evaluation of the likely changes in health risk, both positive and negative, (single or collective), of a policy, programme plan or development action on a defined population. These changes may be direct and immediate or indirect and delayed” (Kemm et al 2000, p.1)

So, after the definitions of Health Impact assessment in table 1, it is necessary to explain that HIA and human health as elements in EIA are totally different.

HIA, as was explained above, is a complete assessment on how human health is going to be affected by diverse factors at different levels such as policies, programs and projects while Human Health as part of EIA is just one of the considered elements, and how Human Health is going to be affected for the change or affected environment in the project stage.

The goal of an EIA is the protection of the environment in the development of a project while the aim of HIA is the protection or improvement of human health in different stages as public policies, programs and projects to increase the level of cooperation between health and other sectors.

But in conclusion, human health can not been separated from the environment, as Steinemann (2000, p.627) said “humans affect the environment, and the environment affects humans”. That is why most of the organizations, governments and public in general around the world encourage the
consideration of human health impacts in EIA; and that is why human health has to be considered as an important element in EIA, as the EIA has sought to promote more environmentally sound and informed decisions for the sake of human welfare.

2.3 Health Impact Assessment and Human Health within EIA

National and international pressure is growing for public policies and programmes to be prospectively evaluated to determine what their impacts will be on public health. This is evident from statements from bodies including the WHO, the European Union, and the British Medical Association. Consequently, healthy public policy has been a main goal of health development and also a driver for the development of Health Impact Assessment in many countries, including the UK (Bond and Cave 2004).

As a response to this pressure and in consideration that human health is a required element in the Strategic Environmental Assessment (SEA) Directive in the European Union, WHO responded by publishing guidance on integrating health into SEA (Bond and Cave 2004).

Unfortunately, as can be seen below, the legislation in the EU and in the UK don’t consider human health as a part of the EIS, or don’t require the inclusion of human health as a part of the realisation of the EIS.

Article 3 of the Environmental Assessment Directive (EC, 1985) describes all the issues that an EIS must cover. This Article states that the direct and indirect effects of a project on the following are to be identified, described and assessed:

- Human beings;
- Soil, water, air, climate and the landscape;
- The interaction of the above factors;
- Material assets and cultural heritage

More recently, the environmental components listed in Annex IV of Directive 97/11/EC and Schedule 4 of the UK regulations for an EIS are:
Population;
Landscape;
Material assets, including the architectural and archaeological heritage;
Air, climatic factors;
Soil;
Water;
Fauna and flora

The inclusion of health considerations within an EIS would, consequently, appear to be valid in appropriate situations. But as can be seen, human health is not considered specifically in the components that should appear in the ES, so, the inclusion of this component depends more on those responsible for preparing the ES than on a legal requirement for the governments (Therivel 2000, Steinemann 2000). This as a result contributes to the lack of incentive to conduct these analyses.

This factor brings as a consequence that there is no requirement for quality in the human health component or any guidance for the realisation of this component to help the people that are interested in including it in the ES.

Nevertheless, it is expected than in a not far too distant future, health impacts would be considered a compulsory element in EIA as a result that nowadays in the European Union (EU), the Strategic Environmental Assessment (SEA) Directive requires the consideration of “the likely significant effects on the environment, including on issues such as…, human health...” (Bond and Cave, 2004), specially because this Directive is been apply now in the UK regulations. The point is that SEA has to be applied to all plans, programs and projects which set the scene for EIA, and if plans are force to consider health, this will force to projects to include health to be able to comply with the law.

It was found that although the existing legislation for EIA in the UK provides scope for controlling the effects of proposed new developments on human health, its potential has not been realised. This has been clearly illustrated through a review commissioned by the BMA to examine the coverage of impacts on human health in 39 environmental impact statements. The review examined a range of environment impact statements for the level of coverage of human health issues. It was estimated that potential health effects had received adequate coverage in approximately 28% of the statements studied. Although legislation gives scope for coverage of human environmental health issues, this
was clearly not seen as a priority by developers or consultants. More importantly, the statements examined failed to provide the information necessary to assess the likely implications of new developments for human health, and the populations likely to be affected by developments were rarely identified.

This study of 39 Statements showed the follow results:

- 72% had no reference to human health in tables of contents
- 49% had no analysis of potential impacts on human health at all
- 67% did not contain enough information to estimate the size of the population affected
- Human health impacts adequately assessed in 28% of the sample

(British Medical Association, 1998)

In addition to this, the report done by Russell, S.C and E. Gallagher, concluded similar results than the results obtained in the British Medical Association review (Bond, 2006).

But this lack of attention to human health impacts is not exclusive the UK; a study realized in the U.S.A. found that one-third of the 39 EIS used a risk assessment methodology to assess health impacts and one–third assessed human impacts in a cursory way and one-third did not assess them at all (Barker and Wood 1999), and another study of 42 EIS found that more than half contained no mention of health impacts at all and in the rest, health impacts were analysed narrowly. And finally in an international study of 13 EISs found that only one EIS contained a section on health impacts (Steinemann, 2000).

The results of these studies show that there is an urgent need to revise the requirements for the inclusion of health in the EIA process, and for the development of an appropriate methodology that helps to examine the consideration of health impacts in Environmental Impact Statements.

Then, with the development of a methodology for the examination of the consideration of health in EIS, as this study have as principal aim, it would be easier to define where an EIS has included properly health impacts and if it was well done.
2.4 Reasons for considering Environmental Health

Although the European Commission has been slow to follow up its statement that Article 129 of the European Union Treaty “requires the Commission to check that proposals for policies, and implementing measures and instruments, do not have an adverse impact on health, or create conditions which undermine the promotion of health”, it has now begun to commission research directed toward this objective (Scott-Samuel, 1998).

Other developed countries such as Canada and Sweden are working on this subject too and endeavouring to include it in their government policy, programs and legislation (Scott-Samuel 1998).

In the UK, the inclusion of health into the government policies and law is growing as the pressure from the EU is growing too. One example is the legal requirement to consider the implications of plans and programmes on health in the SEA Directive; in response of this, some institutions and universities are developing systematic methods for Health Impact Assessment, such as, the Liverpool University’s Public Health Observatory. This shows the importance that in recent years the inclusion of Human Health has been obtaining (Scott-Samuel, 1998).

The importance of health is doubtless and government and other groups now know it; but even though these have been big steps, there is still lots of things to do; because despite the existence of legal frameworks for EIA in many countries that already include health impacts as a compulsory element, the literature show that in practice this is often poorly done (Banken 2003, Steinemann 2000).

2.5 The development of environment health

Since the Lalonde Report in 1974 on “health beyond health care” in Canada, awareness of non-health sector determinants of health has been increasing (Banken, 2003).

Nowadays it is common that most EA systems around the world require the integration or consideration of human health, but, this is recent in terms of EISs story, because it was not until 1987 when a report from a World Health Organization on the health and safety components of
project EIAs, that health concerns started to receive international attention in EA practice (Noble and Bronson 2006).

Then, as Kemm (2005) said, this current interest in HIA in the UK is more recently and can be considered to have started with Scott Samuels in 1996 when he published his paper “Health Impact Assessment; an idea whose time has come”. But the UK has not been the only country that has shown interest in human health and to increase the inclusion of human health in its EIAs or other studies; this interest has grown all over the world.

This was shown when the World Health Report 2000 proposed population health as a central objective of health care systems but unfortunately there are few signs of the concrete mechanisms for intersectoral action that this requires (Banken 2003).

And as it was said in the Fifth Global Conference for Health “high-sounding, general calls to improve social responsibility for health are not sufficient to stimulate action”. As a result, one of the proposals was that HIA should be the device to force the government and other parties involved to take action in favour of healthy public policies; in that way, health would be considered from policies, programs to the development of projects (Banken 2003, p.389).

HIA is a tool that provides health information about the negative and positive consequences of proposed policies, programmes and projects. That is why many academic groups, organizations and parties worry about how the developments and policies affect health, support the idea that health should become a part of HIA; in this way, health would be a legal requirement and part of the rules and procedures normally followed by the different decision-making bodies involved. As a result, this will ensure that health would be considered in consequences of a new development, policy or program, and the measures to mitigate or even to avoid health impacts will be considered and taken (Banken 2003).

2.6 Important points for the integration of Health Impacts within EIA

The integration of human health impacts within EIA will help in:


3. Indicates the necessity for further studies in the health area or to carry on a separate Health Impact Assessment if it is necessary (Environment Department the World Bank 1997).

4. Demonstrating cost effectiveness.

5. Informing and enhancing equitable, health-aware decision-making at all levels (Taylor et al 2002).

6. Helping organisations ensure that their proposals do not inadvertently damage health or reinforce inequalities (Taylor et al 2002).

7. Realising health gain as an outcome (Taylor et al 2002).

8. Assisting organisations in responding to national policies and priorities (Taylor et al 2002).

9. Helping to demonstrate the potential health gain of a given proposal (Taylor et al 2002).

10. Informing the decision-making process about health impacts from the project (Taylor et al 2002).


12. Provide a framework for mitigation activities outside the project (e.g. resources in the health sector to be able to mitigate the results of impacts in human health) (Environment Department the World Bank 1997).

13. Preventing of adverse health impacts as a consequence of development (Environment Department the World Bank 1997).

14. The maximization of opportunities to safeguard and enhance human health (Environment Department the World Bank 1997).


16. Supporting the concept of sustainable component.

17. Avoiding duplication of information in different assessments.
CHAPTER 3: METHODOLOGY

This chapter explains the two different sets of criteria used in the review of 20 EISs to examine the health considerations between 2003 and 2005.

3.1 Purpose and Objectives

The realisation of this study have as a final objective the comparison between this study and the study carried out by the British Medical Association in 1998, using the same criteria to examine the consideration of health impacts in EIS after several years of difference.

The second stage of this research is the realisation of proposed criteria for the examination of the level of inclusion of health impacts in EIS in the recent years in parallel with the BMA criteria.

In a final stage, the purpose of this study was to find if even after a range of years of difference, the coverage of impacts on human health have improved in the EISs in the UK or if the coverage of impacts on human health continues to be unsatisfactory and insufficient over time, as was shown in the past.

3.2 Approach

The empirical research undertaken fell into two main stages:

- The selection and general review of the grade of integration of health in 20 EISs using two sets of criteria, BMA criteria and the new criteria developed for this study.
- The review of the integration of human health by sectoral with both criteria.

In this dissertation, the methodology that was used consists of two sets of criteria. The first criteria to be used is the BMA set, that consists of 6 general questions; and the proposed new set of criteria developed by this study that will be explain in the section 3.4.
3.3 BMA criteria

The use of the BMA criteria is to facilitate the comparison between the results observed in this study and in the results observed in the BMA study in 1998.

As the British Medical Association review says, the magnitude and severity of the potential impacts on human beings and their health in the EIS varies depending on the type of the project or developments. With this background, the British Medical Association found that it would be unrealistic to expect uniform coverage of health issues in the EISs, for that reasons, it is not possible to make any direct comparisons between the EISs. But one of the objectives of this study is to compare between sectors in the EISs.

With this background, the BMA (1998) developed a set of criteria to examine the level of coverage of health issues following a set of common criteria that are explained below:

- Contained specific sections on issues of human health;
- Referred to impacts on human health in non-technical summaries;
- Assessed impacts on human health;
- Included a characterisation of the ‘receiving population’;
- Referred to the relevance of health considerations in site selection and project design;
- Referred to consultation on health issues, particularly with health professionals; and
- Adequately covered relevant issues of human health.

3.4 Proposed Criteria

The proposed criteria were developed based on issues identified in relevant published literature. This second set of criteria has been prepared to assist this study in assessing the grade of inclusion of human health of 20 environmental statements submitted in response to UK planning regulations and follows a similar format to the ES review package developed by Lee and Colley (1999), where the criteria are arranged in an hierarchical structure comprising in this study just 2 levels of review. These levels are:

- Assessment of review areas
• Assessment of review categories

This hierarchical structure was used to review the EISs in the checklist of the proposed criteria that contain four main areas, where each area has a different number of categories. The four main areas are presented below:

1. Scoping
2. Identification of health impacts and methodology
3. Quality of data
4. Determinants of health

Each category was reviewed and scored, producing individual scores; with these results, the reviewer produced an overall score for the main area. These are the results that are presented in the results and discussion chapter.

The criteria checklist was developed based on issues identified in relevant published literature. The final checklist used to review and score the 20 EISs contains both sets of criteria.

The final checklist used to review and collect all the necessary information of the 20 EISs is presented in Table 2.
### Table 2. Final checklist

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>JUSTIFICATION</th>
<th>EVALUATION CRITERION</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Assessed impacts on Human health</td>
<td>British Medical Association (BMA), 1998</td>
<td>A: Satisfied if in the statement included/explained how the impact is going to affect human health. B: Partially satisfied. C: Not satisfied.</td>
</tr>
<tr>
<td>• Included a characterisation of the “receiving population”</td>
<td>British Medical Association (BMA) 1998, Environmental Department the World Bank (1997)</td>
<td>A: Satisfied, if an estimation of the size of the population is made and the boundaries in time and geographical space are included. B: Partially satisfied if it was</td>
</tr>
<tr>
<td>NEW METHODOLOGY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>SCOPING</td>
<td>Are the actual health status or health problems of the affected population described?</td>
<td>Joffe and Mindell (2005), United Nations Economic Commission for Europe and Regional Environmental Centre for Central and Eastern Europe (2007), Noble and Bronson (2006), Morrison et al (2001)</td>
</tr>
<tr>
<td>A: Satisfied</td>
<td>B: Partially satisfied</td>
<td>C: Not satisfied</td>
</tr>
</tbody>
</table>

- Referred to the relevance of health considerations in site selection and project design

British Medical Association (BMA), 1998

A: Satisfied
B: Partially satisfied
C: Not satisfied

- Referred to consultation in all the stages of the project, especially in early stages on health issues, particularly with health professionals/experts and the community to be affected


A: Satisfied if the professionals and community are consulted specifically on health.
B: Partially satisfied
C: Not satisfied
B: Partially satisfied if the statement contemplated some of the factors  
C: Not satisfied |
|---|---|---|
B: Partially satisfied  
C: Not satisfied |
| **Are the health protection agencies identified and are the capacity and capability of these agencies to safeguard the communities to be affected analysed?** | BMA (1998), Environment Department The World Bank (1997), Parry et al (2005) | A: Satisfied  
B: Partially satisfied  
C: Not satisfied |

**IDENTIFICATION OF HEALTH IMPACTS AND METHODOLOGY**

| **Were the potential negative/positive health impacts identified through a well explained process?** | BMA (1998), Environment Department The World Bank (1997), Parry et al (2005), Mindell et al (2004), Joffe and Mindell (2005), Noble and Bronson (2006), Glasson et al | A: Satisfied if the impacts were identified and explanation given of how they affect health in an early stage and the methods used such as specific checklist, matrices, |
B: Partially satisfied if not all positive/negative effects related to health are considered in all the stages of the project  
C: Not satisfied, if the impacts were not considered at all in any stage of the project |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Were appropriate national and international quality standards taken into account, where available, for assessing the significance of health impacts?</td>
<td>Lee et al (1999)</td>
<td>A: Satisfied, if the standards are specific for health B: Partially satisfied C: Not satisfied</td>
</tr>
</tbody>
</table>

**QUALITY OF DATA**

<p>| Is quantitative data (estimations of morbidity, mortality or of risk factors, such as noise or accidents) and qualitative data (policy analyses, interviews with key informants) used and the assumptions involved in | Environment Department The World Bank (1997), Taylor, (2003), Scott-Samuel (1998), Morrison et al (2001), Cole et al (2005), Taylor et at (2002), Parry et al (2005), Mindell et al (2004), Quigley and Taylor (2003), Mindell et al (2003), | A: Satisfied, if they contain morbidity, mortality, risk factors, policy analyses, interviews, etc. B: Partially satisfied C: Not satisfied |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Source</th>
<th>Satisfied/Partially satisfied/Not satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessing the health impacts explained?</td>
<td>Joffe and Mindell (2005)</td>
<td></td>
</tr>
</tbody>
</table>
B: Partially satisfied  
C: Not satisfied |
B: Partially satisfied  
C: Not satisfied |

**DETERMINANTS**
Were the health determinants or their interaction depending which are applicable to each project, considered and measured or quantified (in terms of life expectancy, mortality, morbidity or quality of life)?


A: Satisfied, if the applicable determinants depending on the project were assessed along with how their change is going to affect health using terms of life, expectancy, mortality, morbidity or quality of life in the adequate health determinants below:

- Noise
- Air quality (indoor and outdoor)
- Water quality and sanitation
- Water resources management
- Dust
- Odour
- Negative social impact (e.g. urbanizations)
- Work environment
- Working conditions
- Traffic
- Chemicals or hazards
- Vibration
- Positive social impacts (e.g. reduce of unemployment)
- Disruption of contaminated ground (e.g. release of toxic dust)

B: Partially satisfied
C: Not satisfied

Are the economic costs of the Environment Department The A: Satisfied
| **potential health impacts assessed (including in the health sector)?** | World Bank (1997), Glasson et al (1997) | B: Partially satisfied  
C: Not satisfied |
|---|---|---|
| **Was a plan proposed for monitoring and supervision of health?** | Environment Department  
B: Partially satisfied  
C: Not satisfied |

The review process for each EIS was conducted in a ten-step ES review process produced by Cooper and Canter (1997) and adapted and used in other studies such as Edwards (2005). This model was adapted for the purpose of this study to review the human health component of each of the 20 EISs. This procedure is shown below in fig. 1
**Fig. 1 Ten-step EIS Review Process**

<table>
<thead>
<tr>
<th>General information</th>
<th>Human Health information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1:</strong> Record name of proposed development</td>
<td><strong>Step 5:</strong> Review non-technical summary and table of contents for mention of health impacts</td>
</tr>
<tr>
<td><strong>Step 2:</strong> Record project type, location and Date of ES</td>
<td><strong>Step 6:</strong> Briefly scan in the consultation, methodology and scoping sections for health impacts</td>
</tr>
<tr>
<td><strong>Step 3:</strong> Record name of the agency/organization responsible for the EISs</td>
<td><strong>Step 7:</strong> Review environmental impacts section for health impacts, baseline and human health chapter where one exists</td>
</tr>
<tr>
<td><strong>Step 4:</strong> Record schedule and briefly describe</td>
<td><strong>Step 8:</strong> Briefly scan alternatives for health impacts</td>
</tr>
<tr>
<td></td>
<td><strong>Step 9:</strong> Briefly scan all other sections of EIS for human health impacts</td>
</tr>
<tr>
<td></td>
<td><strong>Step 10:</strong> Based on the EIS review the criteria were answered and a brief summary of each review was documented</td>
</tr>
</tbody>
</table>

Modified from Cooper and Canter (1997) and Edwards (2005)
3.4 Choice of rating system

The rating system used was the marking scale used in the evaluation criteria in Woods (2003), with the difference that instead of using numbers or another type of symbol, in this study the use of letters was the chosen symbol to mark the different areas and categories. The decision to use letters was made following the recommendation made by Lee and Colley (1990, p.10) that said, “Letters rather than numbers are used as symbols to discourage reviewers from crude aggregation to obtain assessments at the higher levels in the pyramid”.

The rating system is listed below:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Satisfied</td>
</tr>
<tr>
<td>B</td>
<td>Partially satisfied</td>
</tr>
<tr>
<td>C</td>
<td>Not satisfied</td>
</tr>
</tbody>
</table>

3.5 Sample selection

20 Environmental impact statements (EIS) for proposed developments in the UK were selected depending the year when the EIS was produced and depending of the project type. All the EISs were provided from a collection held by the School of Environmental Science in the University of East Anglia, and systematically reviewed using both criteria.

The 20 EISs were all produced between 2003 and 2005 as this study try to investigate if human health has improve in recent years, having this on mind, this years were the latest in the InterREAM Resources room collection, with enough number of EISs to be study. The EISs cover all the range of types used in the study done for the British Medical Association in 1998. The 20 EISs fell in the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, as one of the objectives of this study was to find if health has have a better integration in recent years and these is the most recent T&CP (EIA)(England and Wales) Regulations; where 5 of the projects fell within Schedule 1 and 15 within Schedule 2.
The EISs were selected according the 4 main criteria:

- The same types of proposed developments used in the BMA study were used in this study
- Schedule 1 and Schedule 2 development types were reviewed
- All the projects assessed were submitted between 2003 and 2005
- The EISs were divided into 6 project types or sectors: Power stations, Landfill sites, Quarries and open-cast mining, Agricultural units, Sewage treatment and road improvements and bypasses

All the categories used in the BMA study are represented in this review sample. Table 3 presents data on the 20 selected EISs submitted to the InteREAM Resources Room in the University of East Anglia between 2003 and 2005.

### Table 3. EISs sample selection

<table>
<thead>
<tr>
<th>EIS</th>
<th>Description of Development</th>
<th>Date of ES</th>
<th>Schedule Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Installations designed for nuclear waste “Bradwell Nuclear Power Station, Bradwell Waterside”</td>
<td>March 2004</td>
<td>1.3 (b)</td>
</tr>
<tr>
<td>2</td>
<td>Industrial installations for the production of electricity, steam and hot water “Winkleigh Biomass Electricity Generator, Winkleigh”</td>
<td>October 2004</td>
<td>2.3 (a)</td>
</tr>
<tr>
<td>3</td>
<td>Quarries and open-cast mining where the surface of the site exceeds 25 Ha “Shortwood Quarry, near Pucklechurch”</td>
<td>May 2003</td>
<td>1.19</td>
</tr>
<tr>
<td>4</td>
<td>Installations for the disposal of waste “Heathfield Waste Management Facility, Kingsteingnton”</td>
<td>February 2004</td>
<td>2.11 (b)</td>
</tr>
<tr>
<td>5</td>
<td>Installations for the disposal of waste “Seghill Landfill Site, north of Seghill”</td>
<td>May 2004</td>
<td>2.11 (b)</td>
</tr>
<tr>
<td>6</td>
<td>Waste disposal installations for the incineration, chemical treatment, or landfill of hazardous waste</td>
<td>July 2004</td>
<td>1.9</td>
</tr>
<tr>
<td>No.</td>
<td>Activity Description</td>
<td>Date</td>
<td>Planning Permission Reference</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------------------------------------</td>
<td>------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>7</td>
<td>Quarries and open-cast mining where the surface of the site exceeds 25 Ha</td>
<td>March 2003</td>
<td>1.19</td>
</tr>
<tr>
<td></td>
<td>“Hope Shale &amp; Limestone Quarries, Hope, near Castleton”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Quarries and open-cast mining where the surface of the site exceeds 25 Ha</td>
<td>September 2003</td>
<td>1.19</td>
</tr>
<tr>
<td></td>
<td>“Doveholes Quarry, Doveholes, north of Buxton adjacent Peak National Park”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Quarries, open-cast mining and peat extraction</td>
<td>May 2004</td>
<td>2.2(a)</td>
</tr>
<tr>
<td></td>
<td>“General's Farm, Boreham”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Quarries, open-cast mining and peat extraction</td>
<td>December 2004</td>
<td>2.2(a)</td>
</tr>
<tr>
<td></td>
<td>“Roan Edge Quarry, New Hutton”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Agriculture and aquaculture - Intensive livestock installations</td>
<td>February 2003</td>
<td>2.1 (c)</td>
</tr>
<tr>
<td></td>
<td>“Larden Grange, Brockton, Much wenlock”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Agriculture and aquaculture - Intensive livestock installations</td>
<td>October 2003</td>
<td>2.1 (c)</td>
</tr>
<tr>
<td></td>
<td>“Kits Coty Farm, Salisbury Road, near Aylesford”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Waste-water treatment plants</td>
<td>March 2003</td>
<td>2.11 (c)</td>
</tr>
<tr>
<td></td>
<td>North Northumberland Coastal Programme - Boulmer Sewage Treatment Works on land north of RAF Boulmer and land at NWL pumping station, Boulmer Village</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Waste-water treatment plants</td>
<td>October 2003</td>
<td>2.11 (c)</td>
</tr>
<tr>
<td></td>
<td>Shotley Sewage Treatment Works, Land Adjoining the B1456</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Waste-water treatment plants</td>
<td>February 2004</td>
<td>2.11 (c)</td>
</tr>
<tr>
<td></td>
<td>Portscatho &amp; Gerrans Sewage Treatment Scheme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Waste-water treatment plants</td>
<td>May 2005</td>
<td>2.11 (c)</td>
</tr>
<tr>
<td></td>
<td>“Clovelly Sewage Treatment Scheme”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Construction of roads</td>
<td>January 2003</td>
<td>2.10 (f)</td>
</tr>
<tr>
<td>No.</td>
<td>Description</td>
<td>Date</td>
<td>Page</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------------------------------------</td>
<td>------------</td>
<td>------</td>
</tr>
<tr>
<td>18</td>
<td>Construction of roads “Southern Development Link Road, Northampton”</td>
<td>April 2004</td>
<td>2.10 (f)</td>
</tr>
<tr>
<td>19</td>
<td>Construction of roads “Camelford Distributor Road, Camelford, A39 Wadebridge - Bude road</td>
<td>May 2004</td>
<td>2.10 (f)</td>
</tr>
<tr>
<td>20</td>
<td>Construction of roads Kingskerswell Bypass, A380 between Penn Inn and the Torbay Ring Road at Kerswell Gardens</td>
<td>November 2004</td>
<td>2.10 (f)</td>
</tr>
</tbody>
</table>

3.6 Limitations of the sample

The main limitation of the sample is the relatively small number of EISs reviewed. As it indicated by Edwards (2005), this limitation is due to the number of EISs reviewed for each development type being intended to represent a constant proportion of the overall total for each category of project type.

Although the intention for this sample was to represent a constant proportion, in some project types this was not possible, due to the limited numbers of EISs available in the InteREAM collection. These project types were Agricultural Units and Power Stations, where the numbers of EISs available in the InteREAM collection and reviewed by each of these categories were two.

This lack of EISs in these two categories, affected the number chosen for the other 4 categories of project types. Trying as it was said before, to represent a constant proportion in each category, the number of EISs reviewed for each project type was four where possible.

Due to the small sample for these two project types, the results and conclusions from Agricultural Units and Power stations must be treated with caution.
CHAPTER 4: RESULTS AND DISCUSSION

The overall results from the review of the 20 statements with the 2 different criteria are presented in the table 4. All the results and figures presented in this chapter are taken from table 4, where the results of each criterion are presented with the performance of the EISs for each question. The scoring goes from A to C where A is satisfied, B is partially satisfied and C is not satisfied.
Table 4. The overall performance of the EISs

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Criterion met within statements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20</td>
</tr>
<tr>
<td><strong>BMA CRITERIA</strong></td>
<td></td>
</tr>
<tr>
<td>1. Contained specific sections on issues of human health</td>
<td>C  A  C  C  C  A  C  C  C  C  C  C  C  A  C  C  C  B  C</td>
</tr>
<tr>
<td>2. Referred to impacts on human health in non-technical summaries</td>
<td>C  A  C  B  C  B  C  C  C  C  C  C  C  C  C  C  C  C  C</td>
</tr>
<tr>
<td>3. Assessed Impacts on human health</td>
<td>C  B  B  B  C  B  C  C  C  C  C  C  B  C  B  C  C  A  B  C</td>
</tr>
<tr>
<td>4. Included a characterisation of the “receiving population”</td>
<td>B  B  B  B  B  B  B  B  C  C  B  C  A  C  B  C  C  A  B  B</td>
</tr>
<tr>
<td>5. Referred to the relevance of health considerations in site selection and project design</td>
<td>C  B  C  C  C  B  C  C  C  C  C  B  C  C  C  C  B  C  C</td>
</tr>
<tr>
<td>6. Referred to consultation on health issues, particularly with health professionals</td>
<td>C  C  C  B  C  B  C  C  C  C  C  C  B  C  C  C  B  A  C</td>
</tr>
<tr>
<td><strong>PROPOSED CRITERIA</strong></td>
<td></td>
</tr>
<tr>
<td>a) Scoping</td>
<td></td>
</tr>
<tr>
<td>• Are the actual health status or health problems of the affected population described?</td>
<td>C  C  C  C  C  C  C  C  C  C  C  C  C  C  C  C  C  C  C</td>
</tr>
<tr>
<td>• Are the different groups of the community or population to be affected by the project identified and the methods for determining their vulnerability explained</td>
<td>C  B  C  B  C  B  C  C  C  C  C  B  C  C  C  C  B  B  B</td>
</tr>
<tr>
<td>• Are the potential health hazards and exposure routes identified and the methods used explained?</td>
<td>C  B  B  C  C  B  C  C  C  C  C  B  C  B  C  C  A  B  C</td>
</tr>
<tr>
<td>• Are the health protection agencies identified and are the capacity and capability of these agencies to safeguard the communities to be affected analysed?</td>
<td>C  C  C  C  C  C  C  C  C  C  C  C  C  C  C  C  C  B  C</td>
</tr>
<tr>
<td>b) Identification of health impacts and methodology used</td>
<td></td>
</tr>
<tr>
<td>• Were the potential negative/positive health impacts identified through a well explained process?</td>
<td>C  B  C  B  C  B  C  C  C  C  C  C  B  C  B  C  A  B  C</td>
</tr>
<tr>
<td>• Are the positive/negative direct health effects considered and described in all the stages of the project?</td>
<td>C  B  B  C  C  B  C  C  C  C  C  B  C  B  C  C  B  B  C</td>
</tr>
<tr>
<td></td>
<td>Question</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Are the positive/negative indirect health effects considered and described in all the stages of the project?</td>
</tr>
<tr>
<td></td>
<td>Were the significance and the likelihood of the negative/positive health impacts considered using justified methods?</td>
</tr>
<tr>
<td></td>
<td>Were appropriate national and international quality standards taken into account, where available, for assessing the significance of health impacts?</td>
</tr>
<tr>
<td>c)</td>
<td>Quality of data</td>
</tr>
<tr>
<td></td>
<td>Is quantitative data (estimations of morbidity, mortality or of risk factors, such as noise or accidents) and qualitative data (policy analyses, interviews with key informants) used and the assumptions involved in assessing the health impacts explained?</td>
</tr>
<tr>
<td></td>
<td>Are the data sources identified?</td>
</tr>
<tr>
<td></td>
<td>Are recommendations to improve health or avoid impacts made and explained?</td>
</tr>
<tr>
<td>d)</td>
<td>Determinants</td>
</tr>
<tr>
<td></td>
<td>Were the health determinants or their interaction depending which are applicable to each project, considered and measured or quantified (in terms of life expectancy, mortality, morbidity or quality of life)?</td>
</tr>
<tr>
<td></td>
<td>Are the economic costs of the potential health impacts assessed (including in the health sector)?</td>
</tr>
<tr>
<td></td>
<td>Was a plan proposed for monitoring and supervision of health?</td>
</tr>
</tbody>
</table>

A: Satisfied  B: Partially satisfied  C: Not satisfied
4.1 Overall performance of the EISs and performance by project types using the BMA criteria

Fig. 2 is the results of the overall performance of the EIS using the BMA methodology. The results of this study are compared with the results from the BMA study carried result in 1998 to determine whether the consideration of health impacts has improved or not over time.

Then, the sectoral performance will be assessed by each question within the BMA criteria. The results will show if sectoral differences in the coverage of health impacts exist in the EISs or if health impacts are treated in the same way in all types of project.

Fig. 2 The overall performance of the EIS within BMA methodology

![Overall performance of EIS](image)

Just some of the relevant questions of both criteria will be explained in this chapter, this will provide a representative idea of the overall criteria results.
Question 1: Did the EIS contain specific sections on issues of human health?

Overall performance

The majority of the 20 EISs (80%) in this study didn’t contain any specific sections on issues of human health in their tables of contents sections, compared to 72% of the EISs in the BMA study carry on in 1998.

5% of the EIS (1) fell into the category of “partially satisfied” with sections related to humans issues as “hazards”, “leisure, tourism and socio-economic effects”.

And finally, 15 % of the EIS (3) were “satisfied” because they contained specific sections of human health or sections with a direct reference to human health such as “sustainability” and “health” in comparison with one EIS that made a direct reference to human health in a chapter in the BMA study.

As the BMA criteria just marked the questions as “yes” or “not” it was make the assumption that “satisfied and partially satisfied” would be consider as “yes”, then, as result, 20% of the statements contain in some way specific sections on issues of human health or related to health, while in the BMA study 28% of the EISs in the BMA study listed sections directly relevant to the assessment of impacts on human health.

As the overall results show, there has been a slightly decreased in the proportion of EISs that don’t contain specific sections on issues of human health on the recent years in comparison with the results presented by the BMA study made a few years ago, and a slightly increase in the number of EISs that included specific sections on human health in comparison with the study mention before.
Types of project

Fig. 3 Performance by sector in Question 1 in the BMA criteria

The results in fig. 3 show that the type of project with more percentage of EISs that fell into the category of “satisfied” was Power stations. These results are congruent with the results in other studies, like the study carry out by Barker and Wood (1999), where they concluded that “in Britain the more controversial projects generally were supported by better-quality EIA reports”. Better-quality in the reports means a better assessment in all the elements to be considered in the EISs.

The project type with the worst performance was Quarries and open cast mines together with Agricultural Units, with 100% of “not satisfied”. This behaviour can be explained by the fact that usually these types of project are far from communities that can be affected, as result, the developers don’t consider it necessary or are not pressured to including human health in the EIAs.

The majority of the EISs felt in the category of “not satisfied”, where the main sections were Water, Dust, Air quality, Noise, Odour and transport.
Question 2: Are impacts on human health referred in non-technical summaries?

Overall performance

This question had the worse performance of all the BMA criteria, where more than half (85%) of the non-technical summaries fell in the “not satisfied” category. 10% fell in the category of “partially satisfied” and only 5% of the statements referred to impacts on human health in the non-technical summaries. In the study carried out by the BMA (1998) 8% of the statements made a direct reference to impacts on human health in non-technical summaries while in this study the result was of 15% making the same assumption explained in question 1. This indicates that it was a slightly fell in this area according to the results of this study and the BMA study.

Types of project

Fig. 4 Performance by sector in Question 2 in the BMA criteria

In common with the results for the overall performance, the results by project type in question number 2 are the worst results of all the questions in the BMA criteria.

This area was not so well performed, with only 50% of the EISs of the Power station projects that have “satisfied” scores (being the only sector in get this score), while the other 50% of the EISs of
the same project type fell into the category “not satisfied”. The reasons finding are likely to be those indicated for this by Baker and Wood (1999) and explained in the last question.

The only project type that felt in the category of “partially satisfied” (being the only sector in getting a score) was Landfill sites, with 50% of its EISs in this category and the other 50% of its EISs that fell in “not satisfied”.

The remaining types of projects fell in the category of “not satisfied” with 100% of the EISs not including any impacts on human health in the non-technical summary.

None previous studies that were similar to this were found to be able to compare the results found in this study.

Question 3: Are the impacts assessed on Human Health?

60% of the EISs fell in the category of “not satisfied”, which means that health impacts weren’t mentioned at all, compared with the 49% of the EIS that made no specific references whatever to human health in the BMA study.

35% of the EISs in this question fell in the category of “partially satisfied” where health impacts were mentioned, but inadequately supported by analysis. Sentences like “have a potential health impact”, “concern with respect to human health” or “the project is not expected to have adverse health impacts” were used in some of the EISs in this category. None of the EISs provide supporting analyses, or an explanation about how the impact was going to affect human health, and this can be seen in Table 4. And finally 5% of the EISs studied in this dissertation, felt into the “satisfied” category, where the statement explained how the impacts were going to affect human health.

Making the same assumption mention in question 1, 40% of the statements assessed human health in some way in comparison of 51 % of the EISs studied in the BMA study that made a reference to, or included some analysis of impacts with potential health implications

As in the study carry out by Steinemann (2000), the results of this study demonstrate that, health impacts receive little if any attention in EISs. Some of the reasons emerging from these results can
be: first, to try to analyze health impacts can be difficult and, most important, really costly for the developer; second, there are not enough or comprehensible methods for conducting a human health impact assessment, then, without a proper methodology it is understandable that try to quantify health impacts could resource intensive; third, there is no legal mandate for human health impact assessment, this contributes to the lack of incentives to conduct these analyses; and the fourth and last reason is that, usually; developers tend to separate environment and human health from the EIA process, most of the time, environmental issues receive a clear priority over health ones (Cherp, 2002).

In conclusion, it was surprising to see that the percentage of “not satisfied” in the assessment of impacts on human health were higher in recent EISs than the percentage in the study carried out in 1998. But in the same way, this shows similar results with the findings of previous studies related to health impacts (see, for example, Steinemann 2000). This clearly shows a decrease of performance in this area of the process in the recent years instead of showing an improvement as it was expected in the beginning of this study.

Types of project

Fig. 5 Performance by sector in Question 3 in the BMA criteria
Road improvements and bypasses was the only project type with 25% of EISs that were assessed “satisfied” for the consideration of impacts on human health while 25% of the EISs fell in a “partially satisfied” band, where health-related impacts were identified as air and noise in the specific case of this project type. And finally 50% of the EISs fell in the “not satisfied” category of assessing impacts on human health.

Quarries and open cast together with Agricultural units were the project types with the worst results in these questions, both get 100% of the EISs that fell into the “not satisfied” category.

Road improvements and bypasses had a better performance due to the lack that, usually, these projects are close to communities, so the number of people to be affected is generally bigger than the number of people that would be affected by projects such as Quarries and open cast or Agricultural units.

Question 6: Referred to consultation in all the stages of the project, especially in early stages on health issues, and particularly with health professionals/experts and the community to be affected.

Again, as shown in previous studies (see Noble and Bronson 2006 or Steinemann 2000), this was one of the not so well performed areas, with 75% of the EISs being judged to have “not satisfied” scores. Similar results were show in the BMA study, were 62% of the EISs didn’t provide any evidence of any consultation in relation to human health with the community to be affected, any health professionals or any health agencies.

20% of the EISs obtained a “partially satisfied” and just 5% of the EISs were considered to be “satisfactory”, due to the fact that health agencies were consulted and advice required about health.

25% of the overall EISs in this study provided evidence of some type of consultation in all the stages of the project in comparison with 38% of the EISs that indicated that consultation with health professionals or health agencies had taken place.

In conclusion, in comparison with the study realized by BMA, the results of this study shows that there has been a clear decrease in the number of EISs that consult health agencies or have in their team professionals of health. This influences all the process of EIA as the lack of expertise in the
area or the lack of consultation with the people that are going to be affected, plays a direct role in the identification of health impacts, ending with an inadequate procedure to evaluate human health.

Types of project

Fig. 6 Performance by sector in Question 6 in the BMA criteria

Road improvements and bypasses was the project type that showed the best performance in consulting professionals and community specifically for health with 25\% of the EISs that fell into the category of “satisfied”, where, the developer consulted agencies related to health to obtain data for the assessment of health. 25\% of the EISs in the same type project were judged to be “partially satisfied” and the remain 50\% felt in the category of “not satisfactory.

The project types that had the worst performance were Power Stations, Quarries and open Cast and Agricultural Units with 100\% “not satisfied”.

The review of the EISs gave two possible reasons for this performance, first, the scale of the project affects the depth of the study, due to small proposals or small businesses usually not having the necessary economic resources to be able to apply for a deep and usually expensive consultancy team. The second reason is due to the proximity of possible receptors or communities that can be affected.
4.2 Overall performance of the EISs and performance by project types using the new criteria

Fig. 7 presents the results of the overall performance of the EIS using the new criteria. The results of this study will give a more accurate view of the current status of integration of health in EISs.

Then, the sectoral performance will be assessed by each question within the proposed criteria. The results will show if sectoral differences in the coverage of health impacts exist in the EISs or if health impacts are treated in the same way in all types of project.

Fig. 7 The overall performance of the EIS with the proposed methodology

<table>
<thead>
<tr>
<th>Question “a”: Scoping</th>
</tr>
</thead>
<tbody>
<tr>
<td>This area was not so well performed, with only 20% of the EISs falling in the category of “partially satisfied”, where the scoping for the actual health status was never considered in none of the EISs reviewed, and the different vulnerable groups to be affected by the project were not identified. All the projects just identified as a vulnerable group the nearby residents and in some case the workers of the facilities.</td>
</tr>
</tbody>
</table>
The rest of the statements (60%) fell in the category of “not satisfied”, where any scoping for the actual health status of the population was done and the vulnerable groups to be affected weren’t identified.

The major problem with scoping health impacts as Cherp (2002) said, was in drawing correctly all the boundaries of the proposal and identifying relevant stakeholders. None of the EISs described adequately the distribution of impacts between different groups. This characteristic, unfortunately is a common problem as it was indicated by Kemm (2005) and Cherp (2002).

Types of project

Fig. 8 Performance by sector in Question “a” in the proposed criteria

All the different sectors in question “a” had in general a poor performance in scoping health in the EISs. The project types with the “best” performance were Power stations and Road improvements and bypasses with a 50% of their statements that fell in the category of “partially satisfied”. Where just in one of the statements was explained the exposure routes but not the methods used to know that information.

The project types with the worst performance were Landfill sites, Quarries and open cast and Agricultural units with 100% of their EISs that fell in the category of “not satisfied”
Question “d”: Determinants

As can be seen in fig. 7, this question is the worst performed area in the new criteria and in the BMA criteria. None of the EISs (100%) measured or quantified any of the changes of the determinants of health in terms of life expectancy, mortality, morbidity or quality of life in the moment of the determinants were assessed or provided a supporting analysis were these measures were used. This result is common in the findings of previous studies (see Steinemman, 2000)

It was just in one EIS that the term of “quality of life” was used and it was explained how this was not going to be affected, but this was not used to measure one of the determinants of health, it was just a general term to explain that the development was not going to affect the quality of life in general.

Types of projects

Fig. 9 Performance by sectoral in Question “a” in the proposed criteria

After seeing the overall results of question d in the fig. 8, it was not surprising to see that all the types of projects and their EISs (100%) fell in the category of “not satisfied”.

This is a main area in the moment of assess human health impacts, and surprisingly, it is the area that had the worst performance in both criteria. This results highlighted the urgent necessity of improved this area.
CHAPTER 5: CONCLUSION

5.1 Conclusion

The overall objective of this study was covered in its totality, where the consideration of health impacts in EISs in the UK was examined. The aims of determine whether the consideration of health impacts has improved or not over time, to develop a new set of criteria for the examination of the level of health impacts in EIS and to determine whether there are sectoral differences in the quality of coverage of health impacts in the EISs were also met. The results of this aims are explain below:

The result of the first aim was that human health has not improve over time, in fact, the results of this study shown that the consideration of human health in EISs has decreased in comparison with the past, giving an opposite result of what was expected in the beginning of this study.

The second aim was fully completed due to a new set of criteria was successfully develop to help in the examination of the level of health impacts in EISs in this study.

And finally, it was determined that it does exist sectoral differences in the quality of coverage of health impacts in the EISs, as it was expected in the beginning of this study. The main reason of this difference was due to the proximity of the project to communities or people to be affected together with how much controversial the nature of the project was.

Generally health impacts were consistently overlooked or superficially address in the EISs, the main findings are discussed below:

Health impacts generally were not mentioned in the EISs reviewed and the analyses related to get health information were rarely provided. In contrast, description of health-related aspects of the biophysical environment was generally well attempted with explicit focus on air, water quality, traffic, noise issues, etc. Human health was rarely treated equally with environmental impacts in all the EISs studied.
Lack of methods to include health discourages the developers to include health in their studies without the proper guidelines.

The present lack of legislation affects to the motivation or necessity of create human health guidelines to assist to the developer or consultees to undertaking the inclusion of human health in the EISs. This lack of legislation that force the planers to consider health could be consider as one of the principal reasons that human health in most of the case is not included in the EISs and in case that is consider, it is not assess with the enough quality or in a proper way.

More data related to human health, with a deeper scoping where the determinants of human health were consider and in what way the change of them is going to affect health was absent in all the EISs reviewed.

The identification of all the different groups affected and their vulnerability, due that the identification of potentially affected receptors was insufficient due to lack of adequate data and in all the EISs, the only group that was identified as “the group affected” was because they were the closest group to the projects and not because the age, the social status, etc.

More public participation related to human health. Individuals or the community that is going to be affected is a valuable source of expertise and experience, and this information is of invaluable importance in EIAs.

A final conclusion of this study is that there is more need to more systematically integrate health and safety concerns into EISs. This has seemed to be a difficult objective to be reached, as it could see for the results obtain in this study. But the future seems to be more positive, due to the integration of health as a legal requirement in regulations as SEA that will force developers to included health to complying with the minimum requirements. The creation of more guidelines to included human health and agencies that could give recommendations to help the developers, are of big importance too, together with more legal requirements to encourage developers to carry on EISs with a better inclusion of health.

It is important to included in a clear and comprehensive way health in the EISs to give a efficient tool to the decision-makers, because in the end, they will be the responsible people in give the final
decision, a decision that is going to affect the well being of the people living, working or being close to the project, and not just them, this decision can affect them and their future generations.

5.2 Recommendations

It is recommend to do further studies using new criteria proposed in this study with a larger number of samples, to compare if further studies conclude with similar results in health integration or to conclude that has been improvement in this area.

It is recommended to include more types of projects in further studies to clarify if other sectors have the same performance including health or have a better performance considering human health in their projects.

It is recommend the creation and publication of more systematic guidelines, to provided the people interested in conduct an EIAs and include health in it, to have the proper tools to be able to do it.
REFERENCES


Barton H and Grant M (2006). A health map for the local human habitat. The journal of the Royal Society for the promotion of health, 126(252), Sage Publications


Environment Department The World Bank (1997). Health Aspects of Environmental Assessment. Environmental Assessment Sourcebook UPDATE, Number 18 chapter 3


