



Sixth Framework Programme
Specific Targeted Research or Innovation Project

(IMP)3

Health Aspects in EIA

D 2.2 Report WP 2

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IMProving the **IM**plementation of Environmental **IM**pact Assessment

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FOREWORD

The project (IMP)3 – IMProving the IMPlimentation of Environmental IMPact Assessment is carried out within the 6th framework programme investigating the application of the environmental impact assessment (EIA) in Europe. It ties in with the results of the report from the Commission to the European Parliament and the Council that revealed that there are still weaknesses as well as considerable variability in the Member States' implementation of the EIA-Directive.

(IMP)3 focuses on the improvement of the EIA-application concerning human health, risk assessment and project types subject to EIA. It was accompanied by an effective communication-process with DG Research and DG Environment. We would like to thank Marialuisa Tamborra, Laura Tabellini and David Aspinwall for their support.

The results of (IMP)3 are based on an investigation of the actual application of EIA in the European Member States surveyed by a questionnaire spread across European EIA-stakeholders and interviews in ten European countries. We would like to thank the 183 EIA-experts who returned the questionnaire and the 53 interviewees in Europe, USA and Canada for their support. Their valuable input forms the empirical data basis of our research.

(IMP)3 shall provide decision support to the policy making process on Community level and contribute to an improved knowledge basis on EIA application such as stimulate discussions within the European EIA community.

This report more specifically presents the results from the research field “human health and EIA” (= work package 2 – WP2) in (IMP)3. WP2 focusses the current practice in the EU member states regarding how human health perspectives are dealt with in the context of EIA and how the current situation can be improved. The work in the WP2 team has been conducted in close co-operation between the team members regarding both the gathering of the empirical material as the analysis and writing of the report. In addition to the (IMP)3 meetings in Brussels 2 December 2004, 15-16 February 2005 in Bratislava, 15-16 September in Porto and 21-22 November in Vienna, three specific WP2 meetings took place in 2005: in London 19 January, in Cardiff 11-12 July and a video conference 19 October.

The WP2 team included Tuija Hilding-Rydevik (project leader), Åsa Pettersson and Arto Ruotsalainen (Nordregio); Nicola Pearce, Lynnette Thomas and Salim Vohra (Wales Centre for Health); and Maria Hrnčarová, Zuzana Lieskovská and Katarína Paluchová (Slovak Environmental Agency, SAZP). Ceri Breeze (Welsh Assembly Government) and John Kemm (West Midlands Public Health Observatory) were connected to the project as health experts.

1 CONTEXT OF THE STUDY

The development of projects, as e.g. the construction of main roads and railway-lines, the development of industrial plants, shopping centres and theme parks, etc. can cause adverse effects to the environment. Therefore the European Union has enacted the EIA-Directive (Directive 85/337/EEC) to perform an assessment of the environmental effects of those projects which are likely to have significant effects on the environment (environmental impact assessment – EIA).

The EIA Directive has been in place for almost 20 years. A report of the Commission to the European Parliament and the Council evaluated its application and effectiveness and revealed that there are still weaknesses as well as considerable variability in the Member States' implementation.¹ As a result the Commission aimed for a deeper evaluation of problematic aspects of the EIA Directive and launched a project within the 6th framework programme.

The project IMProving the IMPlimentation of Environmental IMPact Assessment – (IMP)3 is based on the results of the report from the Commission to the European Parliament and the Council on the application and effectiveness of the EIA Directive. Concentrating on some of the weak points the report outlined, (IMP)3 focuses on three main objectives:

- Objective A: a better incorporation of human health aspects into EIA;
- Objective B: a better integration and more consistency of risk assessments, regarding various sources of risks (natural hazards, accidents, sabotage); and
- Objective C: a survey of project types subject to EIA particularly focusing on various screening methods, different sets of project types and threshold values/criteria applied.

This report focuses on human health in EIA. The aim is to:

- Identify the strengths and weaknesses of current EIA policy and practice in the 25 Member States with regards to the assessment of human health impacts
- Identify the advantages and disadvantages of integrating health aspects within EIA versus undertaking separate and autonomous HIAs
- Identify, where possible, good practice guidelines and case studies on how human health aspects can be integrated into EIA
- Present policy options for the EU Commission on improving the implementation of EIA in terms of impacts on human health

The study of (IMP)3 was carried out by an international and interdisciplinary team, consisting of members from the following institutions:

- ÖIR – Österreichisches Institut für Raumplanung (Austrian Institute for Regional Studies and Spatial Planning); Austria
- UBA – Umweltbundesamt (Federal Environment Agency); Austria

¹ Report from the Commission to the European Parliament and the Council on the application and effectiveness of the EIA Directive (Directive 85/337/EEC as amended by Directive 97/11/EC). How successful are the Member States in implementing the EIA Directive.

- WCH – Wales Centre for Health; United Kingdom
- Nordregio – Nordic Centre for Spatial Development; Sweden
- CITTA – Research Centre for Territory, Transports and Environment at the Faculdade de Engenharia da Universidade do Porto; Portugal
- SZAP – Slovakia Slovenská Agentúra Životného Prostredia (Slovak Environmental Agency)

(IMP)3 shall provide an important input to the process of improving the application of EIA, also considering potential amendments to the EIA Directive and aims to stimulate discussions within the European EIA community. The suggestions for potential steps to be taken are primarily addressed to the European Commission.

1.1 Human health and EIA

The negative health and environmental impacts of development projects ranging from nuclear power stations and landfills to large housing estates and mobile phone base stations have generated growing public concern across the European Union (EU). Policy and decision-makers at EU, national and local levels are facing increasing pressure and protest against the siting of such projects near existing communities. This pressure and protest has fed into three strands of work. Firstly, it has led to research and evaluation that has highlighted the weaknesses of current environmental impact assessment (EIA) legislation and practice to deal adequately with the human health impacts of projects. Secondly, it has led to the use and development of quantitative health risk assessment either within or alongside EIA. Lastly, it has led to the growth of health impact assessment (HIA) as a separate and distinct form of impact assessment theory and practice; albeit one with roots in EIA.

It is at the intersection of these three strands of thinking that the differences and tensions about health and EIA come to the fore. Among the questions at the heart of this debate are: should health be integrated into EIA or should it be dealt with separately?; if health should be integrated then what form should that integration take, in terms of the process and content of EIAs?; what methodologies and methods are needed to adequately assess health impacts?; in particular, should these health impacts be assessed in largely quantitative or qualitative, or both, ways?; finally, should community experiences and knowledge be incorporated into impact assessments and if they should be then how should this be done?

Although national and EU policies in the past few decades have led to steady improvement in the quality of the environment in Member States (MS) much remains to be done since pressures on the environment, and in turn on human health, are continuing to increase. Consequently, there is a demand to better integrate environmental and health matters into planning and decision-making on every issue and in every sector. There are calls for a more holistic and comprehensive approach to environment and health with the precaution and prevention of risk being more central to environment and health policy and decision-making.

The European Commission's (1997) Directive "On the assessment of the effects of certain public and private projects on the environment" was adopted in 1985 and amended in 1997. While the EIA Directive does not specifically require human health to be examined as part of the assessment

process, in Article 3, it does say that the assessment should identify, describe and assess the direct and indirect effects on, amongst other things, human beings.

This is in contrast to other more recent policy pronouncements where human health and the assessment of human health impacts is defined and described more explicitly. The Sixth EU Environment Action Programme, Environment 2010: Our Future, Our Choice (Commission of the European Communities 2001a) stresses that a clean and healthy environment is vital to the quality of life, both for present and future generations. Here health is defined as a state of complete physical, mental, and social well-being and not merely the absence of disease. This Programme specifies four areas where more action is needed: tackling climate change, protecting nature and wildlife, addressing environment and health issues, and preserving and managing natural resources and waste. With regard to addressing environment and health issues, the Programme objective is to achieve a quality of environment where the levels of man-made contaminants do not give rise to significant impacts on, or risks to, human health. The Programme also calls for instruments and measures that can help to influence decision-making and to improve environmental quality. This includes putting legislation into practice and monitoring how European laws are implemented in the Member States. The Community Action Programme in the field of Public Health 2003-2008 (European Parliament 2002) also embodies an integrated approach towards protecting and improving health in the EU and names health impact assessment (HIA) as a tool to ensure the consistency of the Community Health Strategy (Commission of the European Communities 2000).

1.2 Methodology

1.2.1 The “triangle-approach” of (IMP)3

Research on the improvement of the application of the environmental impact assessment needs a sound literature review, including especially existing evaluation reports and different types of national legislation as well as a sufficient communication with EIA-stakeholders and applicants in Europe and with EIA-experts at the European level.

Even if the investigation of the three core fields of research conducted in (IMP)3 (human health, risk assessment and projects subject to EIA) requires the analysis of rather different sources in order to meet the needs of the feature of each thematic field, all three are dealing with the application of EIAs in Europe.

Consequently for gathering the data required from various sources, a kind of “triangle-approach” was developed. Thereby, the literature review forms the basis of the “research triangle”, whereas both sides cover the communication-tools with the EIA-applicants in Europe: on one side a questionnaire was distributed to about 970 EIA-stakeholders and on the other side interviews have been conducted with 64 selected EIA-experts.

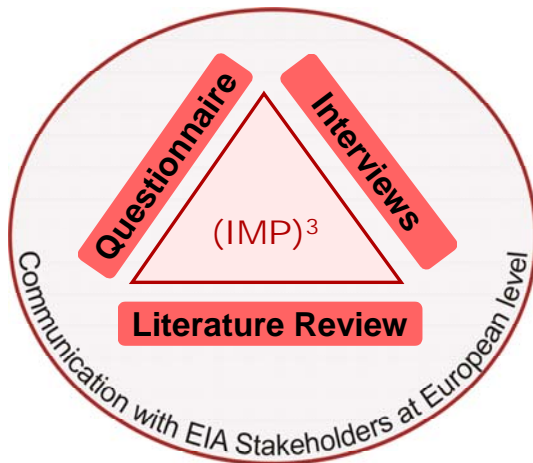


Figure 1: (IMP)3 “triangle-approach” for gathering and analysing data

Consequently, (IMP)3 deals with three different types of data available:

- qualitative data concerning the legal basis and the relevant discussions in the scientific world of EIA policy and application as laid down in the **literature**;
- quantitative data about the actual application of EIA in the EU Member States deriving from the analysis of the **questionnaire**; and
- qualitative data about the estimation of the strong and weak points of EIA-application in selected European countries gained from the analysis of the **interviews** conducted.

In addition to the analysis of the relevant sources and data, a communication-strategy with relevant stakeholders on EU-level was set up (see chapter 1.2.4).

1.2.1.1 Literature review

The literature review covers the existing relevant literature including the main documents at European level and selected national laws concerning the application of EIA. The following directives/papers, in particular, have been taken into consideration:

- EIA Directive (Directive 85/337/EEC as amended by Directive 97/11/EC) (European Commission 1997)
- Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment (European Parliament 2001)
- selected national laws about EIA
- The European Environment & Health Action Plan 2004-2010 (Commission of the European Communities 2004a)
- Sixth Environment Action Programme of the European Community Environment 2010: Our future, Our choice (Commission of the European Communities 2001a)
- The “Sustainable development strategy” as launched at the meeting of the European Council in Gothenburg 2001 and elaborated on its external dimension in 2002 in Barcelona. (cf. (Commission of the European Communities 2001b)

Desk research concerning human health in EIA

The desk study research concerning human health in EIA (= work package 2 – WP2 of (IMP)3) included:

- A literature review covering guidance and guidelines of how to treat human health in EIA or in the form of HIA and of evaluation studies concerning how human health issues are being dealt with in the context of EIA and
- An overview of a number of countries concerning how human health issues are included or not included in the current EIA legislation

The aim was not to get a country-to-country overview but a more general one. The key search terms used for the literature review in Czech, English, Finnish, French, Portuguese, Slovak, Spanish and Swedish languages were:

- [health] + [EIA]
- [health] + [Environmental Impact Assessment]
- [EIA] + [country]

The countries selected for the legislation overview were restricted to EU countries where we had access to English versions of the EIA legislation and to legislation in languages that could be covered by members in the (IMP)3 team. Canada and the United States were also included as references. In relation to the aim of the overview this was an acceptable approach and in total 13 countries were covered.

All WP2 partners were asked to search for publications that either outline good practice for inclusion of health aspects in EIA, have evaluated the actual practice of inclusion of human health in EIA, describe different approaches to HIA or evaluate the implementation of different models of HIA. The focus was to find guidelines or evaluations of inclusion of human health aspects in EIA. A country-by-country review was not conducted due to language and time restraints. Desk research tracked down examples of the treatment of health aspects within EIA at EU level, national level (Czech Republic, Finland, Germany, Slovakia, Sweden, Australia, New Zealand and Canada) as well as remarks from other international studies, academic research and information from relevant internet sites. The search was also conducted in French, Portuguese and Spanish with the assistance of national experts.

1.2.1.2 Questionnaire

Types of EIA-stakeholders

The questionnaire and the interviews aimed to provide an overview of the experience of the actual EIA-applicants in Europe in terms of human health, risk assessment and EIA project types. Therefore (IMP)3 not only addressed the administrative staff at the national level who is dealing with EIAs. Moreover, it addressed the very basis of the EIA-applications including consultants and NGOs. So it was necessary to involve a broad spectrum of representatives of different types of stakeholders. The different EIA-stakeholder-groups addressed are:

- representatives of national governments,

- regional bodies with competence in EIA-issues,
- NGO's,
- representatives of the private sector as e.g. consultants,
- others as e.g. researchers.

Database: stakeholder list

A list of EIA-stakeholders in the European Member States served as a database for the distribution of the questionnaire and the selection of the interview-partners. The list was established by the use of the expert-network of the (IMP)3-team members with the support of members of the EIA/SEA expert group.

All in all, 970 EIA-stakeholders have been selected representing the different types of stakeholders. However, in statistical terms they do not represent a random sample of all actors being involved in EIA issues throughout Europe, moreover it is a list of experts directly dealing with the application of EIAs.

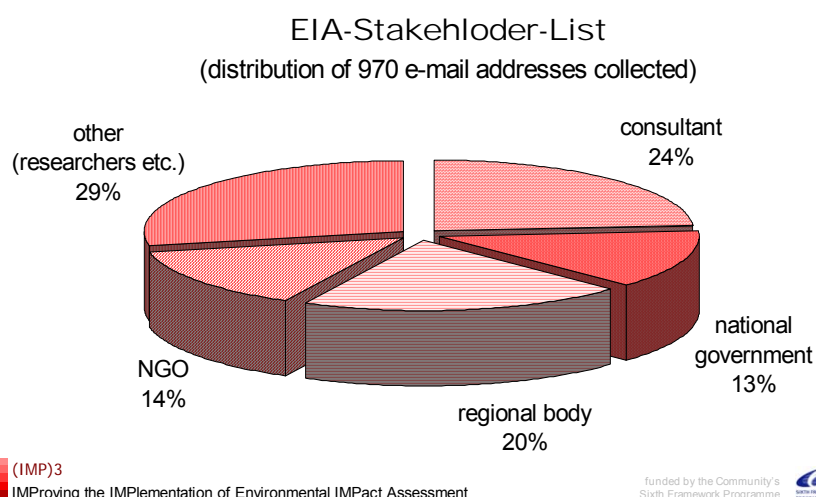


Figure 2: Types of EIA-stakeholders covered by the stakeholder list

As most of the stakeholders are practitioners, their answers reflect mainly the situation they are confronted with day by day while doing their job. Consequently, they mirror the way of the application of the EIA Directive that is implemented in national and regional legislation throughout the EU Member States.

Thus the empirical results derived from this data source are based on personal perceptions of the EIA-stakeholders and are mainly valid for the empirical sample of (IMP)3. They give indications to actual EIA practices and cannot be generalized. Nevertheless, the different approaches of the various stakeholder groups show a picture that does not only reflect the administrative point of view, but also the views of practical experience.

Development and distribution of the questionnaire

As the aim of the questionnaire was to get a broad view of the situation in Europe and due to the limited time of practitioners to complete the questionnaire, it had to be kept short and simple. So it focused mainly on multiple choice answers, usually combined with one additional open question at the end. The questionnaire was developed by an interactive process between all partners of the (IMP)3-team in close collaboration with representatives of DG Environment.

Based on the list of EIA-stakeholders, the questionnaire was disseminated via e-mail to 970 addresses. The questionnaire was attached to a covering letter prepared in eleven languages (English, Czech, Finnish, French, German, Hungarian, Polish, Portuguese, Slovak, Spanish and Swedish).

Return rates

Within the first two weeks after distributing the questionnaire, 106 completed questionnaires have been returned. After a second reminder another 77 were transmitted. So, all in all, the analysis of (IMP)3 is based on 183 completed questionnaires, bringing the return rate to 19%.

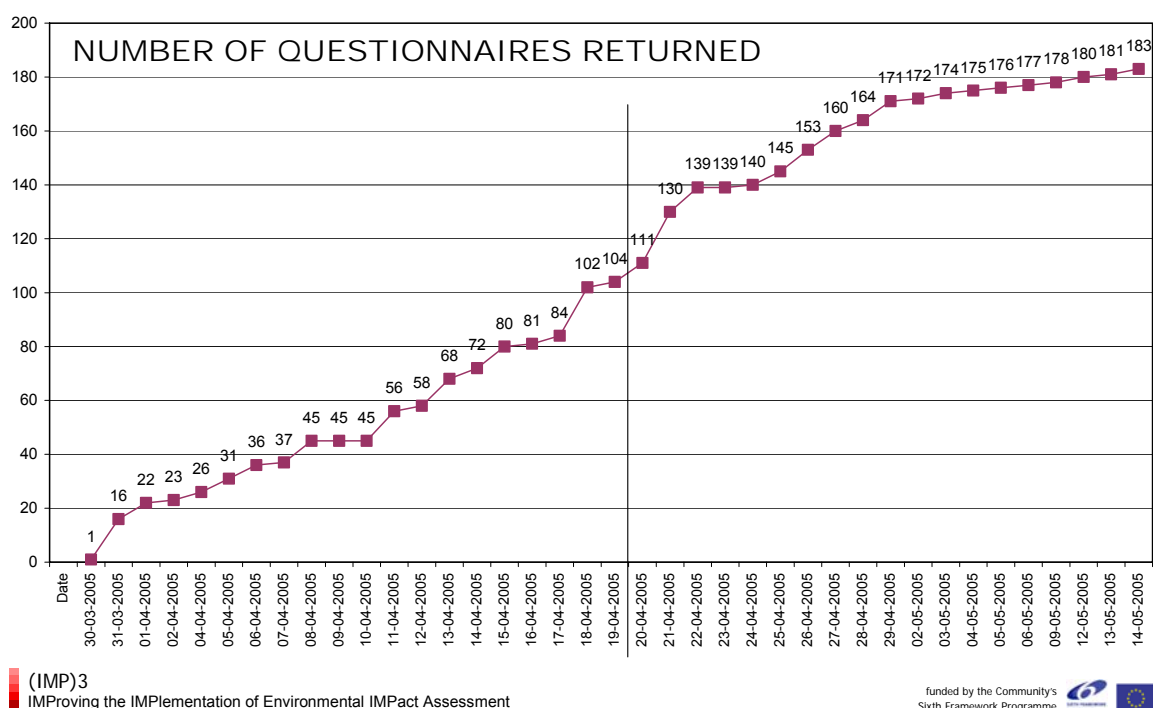


Figure 3: Time response of questionnaires returned

Represented countries

According to the response rate, the numbers of respondents from each Member State vary largely. Most questionnaires were returned from Slovakia (33 respondents), the UK (22), followed by Germany (12) Austria (11) and Sweden (11). So 30% of respondents come from just two countries (18% from Slovakia and 12% from the UK).

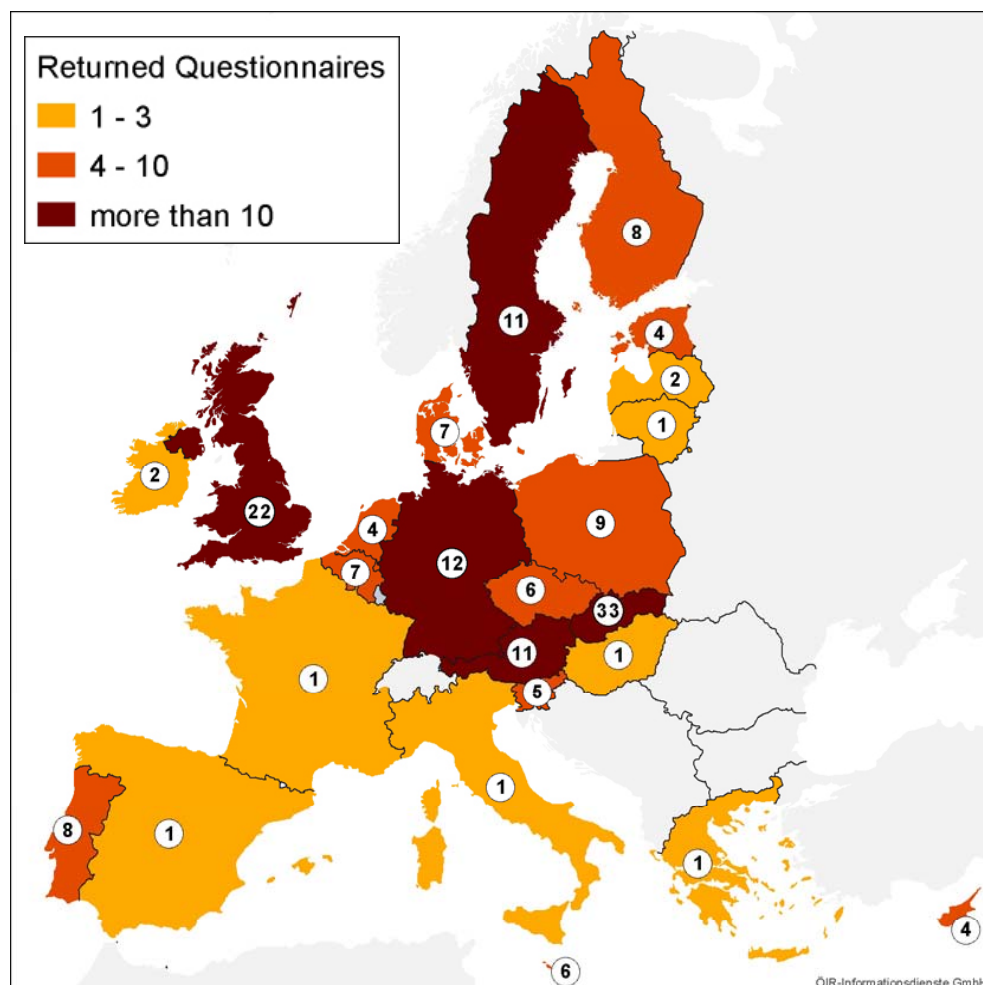


Figure 4: Geographical distribution of questionnaires returned

From some Member States just one completed questionnaire has been returned (Estonia, France, Greece, Hungary, Italy, Lithuania) and there was no response from Luxembourg. So Slovakia and the UK are four and three times 'over-represented' in terms of respondents while Estonia, France, Greece, Hungary, Italy, Lithuania, Ireland, Luxembourg and Latvia are 'under-represented' by a similar factor.

Statistical analysis – response rates per country

Total no. of questionnaire respondents	183
Mean no. of respondents per country	7
Median no. of respondents per country	6
Mode	1
Range	min=0 max=33

Figure 5: Statistical analysis – response rates per country

Consequently, the feedback cannot be interpreted as a representative random sample of stakeholders across the EU. Furthermore, a country-by-country analysis is not possible especially for the under-represented Member States. Therefore no calculation of any numerical results beyond the analysis of frequencies and percentages is made, and verbal descriptions are mainly used. No further statistical processing of empirical data such as average values is done. However,

the database gives an impression of the view of stakeholders, that are pro-actively interested in contributing to the development of the EIA-legislation.

QUESTIONNAIRES DISSEMINATED + RETURNED

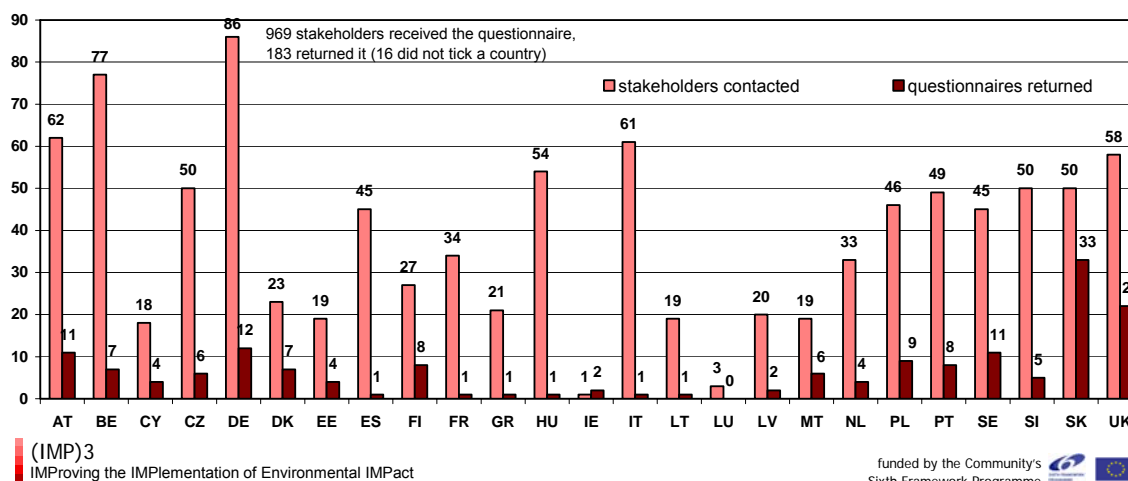


Figure 6: Questionnaires disseminated and returned

Represented stakeholder groups

The questionnaires returned covered answers of all different stakeholder groups. The smallest group amongst the respondents are NGO's (12 respondents/6.6%), whereas the largest group are the consultants (68 respondents/37.2%). The administrative view on EIA-application (representatives from regional governments resp. national governments) is covered by 58 respondents (31.6%).

Statistical analysis – response rates per stakeholder group	
Total no. of questionnaire respondents	183
Mean no. of respondents per stakeholder group	26
Median no. of respondents per stakeholder group	26
Mode	29
Range	min=1 Max.=68

Figure 7: Statistical analysis – response rates per country

The comparison of the frequency distribution of the stakeholders contacted with the frequency distribution of the stakeholders who answered, the business sector (consultants) is over-represented whereas the NGO's are under-represented. However, as the database was not a random sample of EIA stakeholders across the EU, statistical analysis and interpretations going beyond a calculation of frequencies and percentages were avoided.

 stakeholders contacted via questionnaires and stakeholders who answered

stakeholder type	stakeholders contacted		stakeholders answered	
	number	percent	number	percent
National government	128	13.2%	29	15.8%
Regional government	200	20.6%	29	15.8%
NGO	144	14.8%	12	6.6%
consultants	226	23.3%	68	37.2%
scientists and other proponents	272	28.0%	45	24.6%
Total	970	100.0%	183	100.0%

Figure 8: Stakeholders contacted via questionnaires and stakeholders who answered

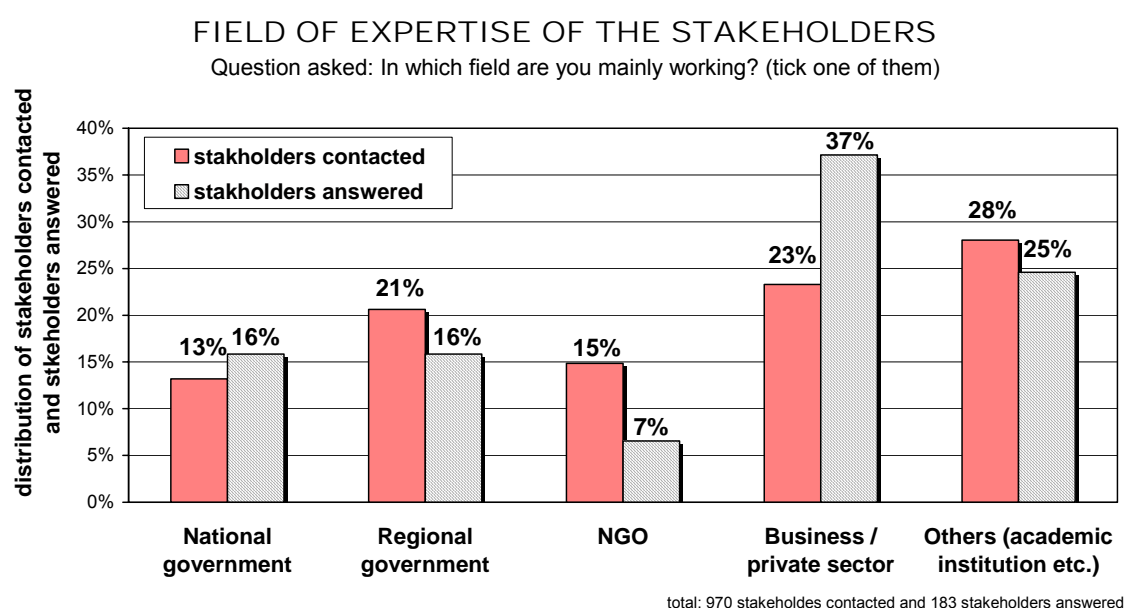


Figure 9: Field of expertise of the stakeholders

Role of the stakeholders in the EIA-process

The stakeholders responding to the questionnaire are involved in the EIA-process from very different sides²: 75 respondents are writing or preparing environmental impact statements (EIS) for the developer and another 16 are involved in the development of projects, both groups mirroring their experience with EIAs mainly from the proponents' side.

59 persons are reviewing submitted EISs and providing expert opinions/comments on EIS, additionally 37 ticked the category "dealing with EIA as regulatory authority". Both groups represent the views from the administrative side.

² As one person can be involved in the EIA-process in different roles, more than one answer was allowed. So the sum of the options ticked (278) outweighs the number of questionnaires returned (183).

Nine respondents to the questionnaire were involved in EIAs representing the position of a NGO. 36 are concerned with EIA from a scientific side (e.g. researcher, scientist, academic teacher).

ROLE OF THE STAKEHOLDERS IN EIA-PROCESS

Question asked: What role do you generally play in the EIA process ?

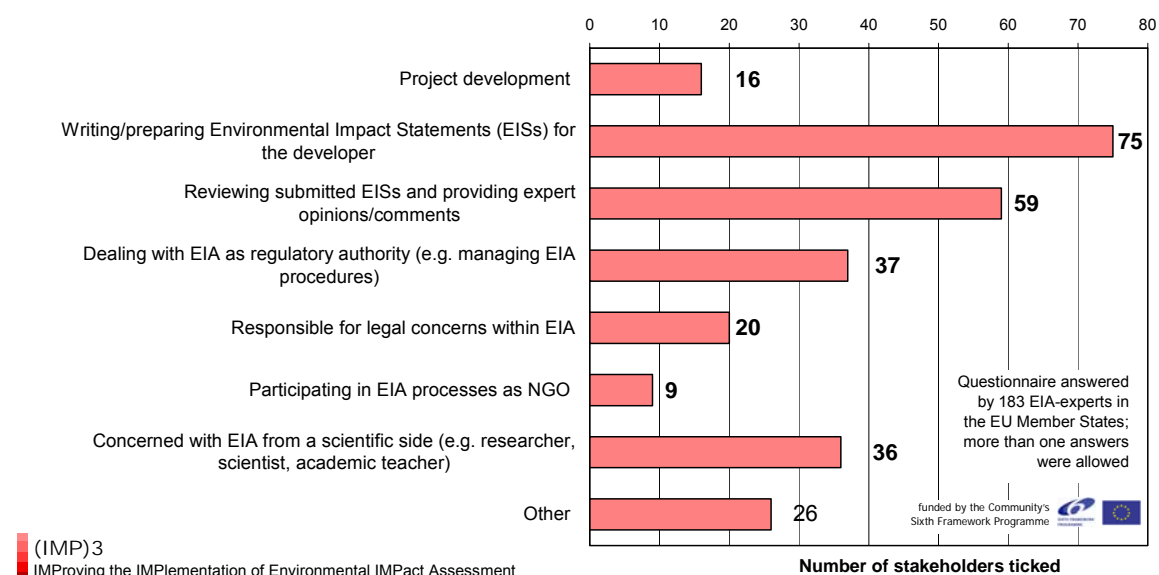


Figure 10: Role of the stakeholders in the EIA-process

Statistical analysis – "Role of the stakeholders in EIA-process"	
Total no. of questionnaire respondents	183
Total no. of answers ticked	278
Mean no. of respondents per stakeholder group	35
Median no. of respondents per stakeholder group	31
Range	min=9 Max.=75

Figure 11: Statistical analysis – Role of the stakeholders in EIA-process

1.2.1.3 Interviews

In order to get a more detailed image of the application of EIA, interviews with selected EIA-stakeholders were conducted. This approach leads to more profound insights into the actual day-to-day difficulties in EIA implementation and a more thorough picture of which methods are in use and the pros and cons of different methods, especially because the interviewees can provide information going beyond the information gained by the very formal structure of the questionnaire. The selection of the interviewees followed two different sets of criteria: a geographical one and a stakeholder-oriented one.

Geographical criteria for the selection of the interviewees

As the results of the interviews should reflect the European situation the following criteria were taken into account:

- interviewees from new European Member States and old European Member States
- interviewees from large MS and small MS
- interviewees from MS from the southern, the northern, the eastern and the western part of the EU

Regarding these criteria, interviewees from the following ten European MS were selected:

- Austria (old MS, small country, Central Europe);
- Czech Republic (new MS, small country, Central Europe);
- France (old MS, large country, Western Europe);
- Germany (old MS, large country, Central Europe);
- Latvia (new MS, small country, Eastern Europe);
- Poland (new MS, large country, Eastern Europe);
- Portugal (old MS, small country, Southern Europe);
- Slovakia (new MS, small country, Eastern Europe);
- Sweden (old MS, small country, Northern Europe); and
- United Kingdom (old MS, large country, North Western Europe).

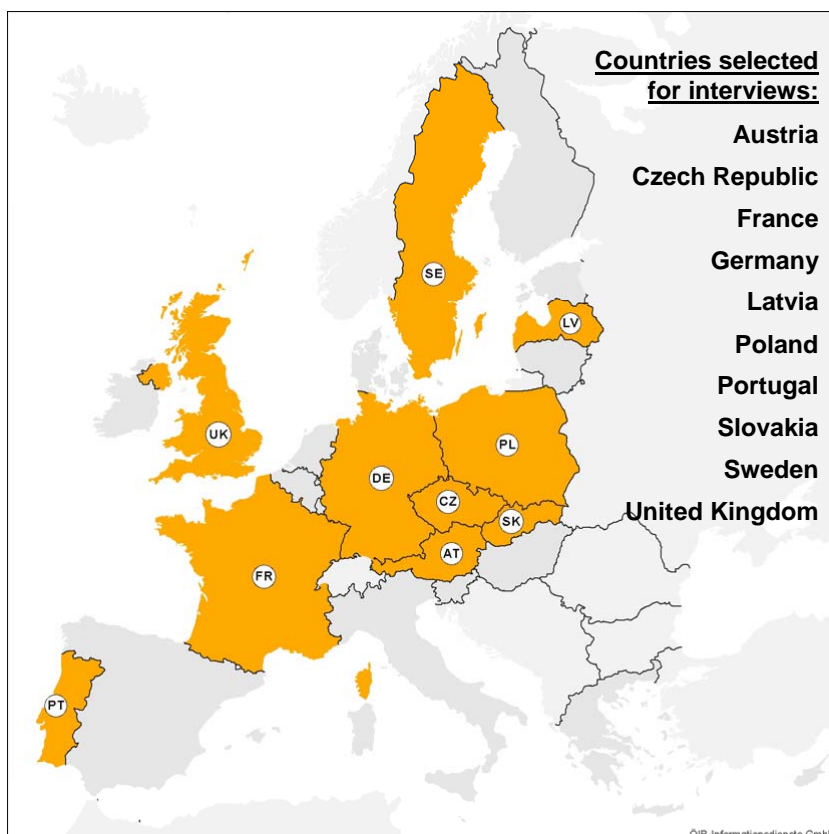


Figure 12: Geographic distribution of the countries selected for interviews

In order to compare the EIA application in Europe with the way countries outside Europe apply EIAs, two non-EU foreign countries were also chosen for a more detailed investigation of their application of EIA. The two selected countries are USA and Canada because of their similar conditions as highly industrialised countries and their long experience with EIA. (The National Environmental Policy Act of 1969 enacted by the Congress of the United States of America in 1969 was worldwide the first law coming up with the term “environmental impact assessment” on a legal basis.) In addition, one expert interview was carried out in Ireland. Furthermore, in WP2 additional interviews included Denmark, Finland and the World Health Organization.

Stakeholder-oriented criteria for the selection of the interviewees

The EIA-experts interviewed should form a comprehensive picture of the EIA-application in each of the countries selected. Thus the views of experts at national and regional level being mainly involved in the transformation of the EU-Directive into national or regional legislation should be taken into account as well as the views of persons actually dealing with projects subject to EIAs, as e.g. consultants, NGOs or representatives from the administrative side. Thus, the following EIA-stakeholder-groups have been taken into account for selection:

- representatives of national governments,
- regional bodies with competence in EIA-issues,
- NGO's,
- representatives of the private sector as e.g. consultants,
- others as e.g. researchers.

In order to get the human health perspective in the WP2, national and international human health experts were also included in the interviewee list.

Interview guide and protocols

In order to prepare the interviews, an interview-guide has been developed by the (IMP)3 consortium and discussed with representatives of DG Environment. In total 50 interviews with 64 interviewees have been conducted (33 interviews in European countries and an additional 17 in USA and Canada). Each of the interviews was minuted in order to gain a well-structured basis for the analysis.

Within WP2 an added amount 11 of senior health expert interviews were conducted in the countries of Slovakia (4), Czech Republic (1), Denmark (1), Finland (1), Sweden (2), United Kingdom (1), WHO (1).

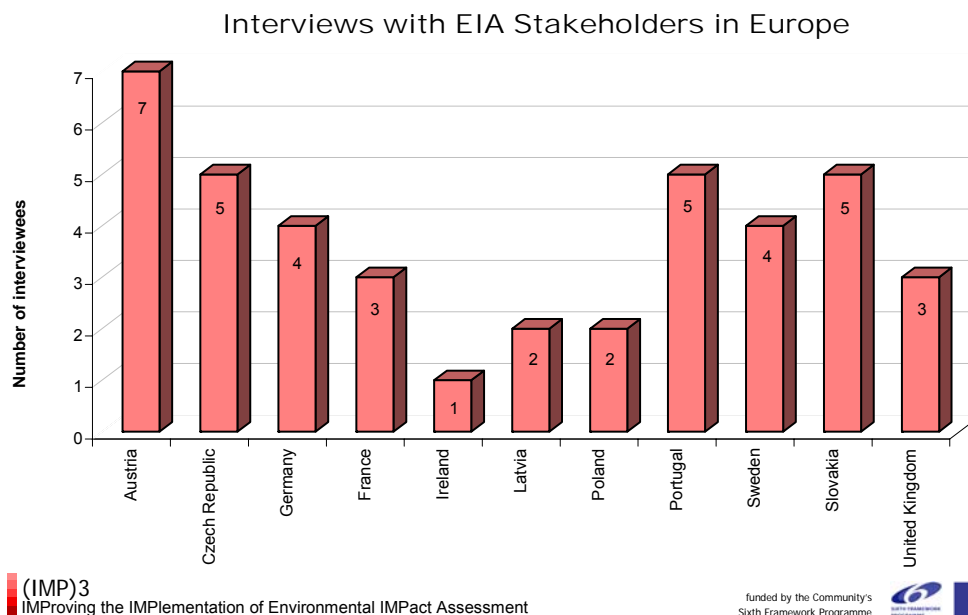


Figure 13: Number of EIA stakeholders interviewed

EIA-stakeholders interviewed						
Country	Stakeholder type					total
	national government	regional government	NGO	consultant	others (scientist etc.)	
Austria	1	4	0	2	0	7
Czech Republic	2		1	2		5
Germany		2		1	1	4
France	1			1	1	3
Latvia	2					2
Poland	2					2
Portugal	1	1	1	1	1	5
Sweden	1	1	1	1		4
Slovakia	1		1	1	1	4
United Kingdom		1		1		2
Canada	2	2		3	1	8
USA	13	3	2			18
total	26	14	6	13	5	64

Table 1: Number of interviewees per country and stakeholder type

1.2.2 Policy options and SWOT-Analysis

Based on the findings within the three main themes of (IMP)3 (human health, risk assessment and projects subject to EIA) resulting from the literature review, the analysis of the questionnaire and the interviews a series of policy options are elaborated to increase the consistency of the application of EIA across the European Union.

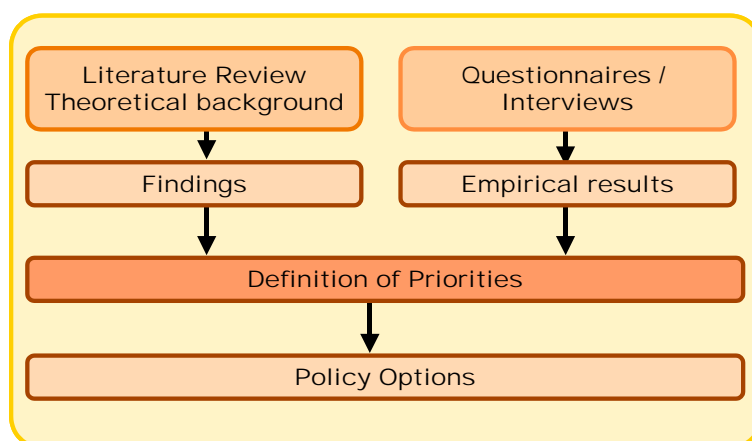


Figure 14: Deduction of policy options from the results of the analysis conducted

The policy options aim at tackling the identified weaknesses of the current European EIA practice overcoming the most important barriers on the way forward. They also attempt to build on and advance the strengths that partly exist.

The policy options represent a range of different courses of actions that the European Commission could take to better exploit the full potential of EIA to act as an effective instrument of preventive and precautionary environmental protection. The variety of the options comprise the whole range of

potential measures that could be taken into account at the European level. This includes both “soft” and legislative courses of action. They are designed to operate mainly along three major axes:

- guidance
- supportive measures
- regulatory or legislative measures

The development of such a range of policy options, as opposed to a simple list of recommendations, is a more robust approach as it recognizes that different levels of action are possible and that each has advantages and disadvantages.

The policy options presented in the report are addressed to the European Commission. Yet, eventually they are targeted at Member States and EIA stakeholders and are intended to influence actual implementation and application of EIA on national and regional level. Their main functions are to provide decision support to the policy making process on Community level, to assist informed decision-making on possible future amendments to European legislation, and to contribute to improvement of guidance on EIA application, but also to stimulate discussions within the European EIA community.

For each policy option, a SWOT-Analysis has been conducted, which provides indicative lists of strengths and weaknesses, opportunities and threats. This form of a SWOT-Analysis is a simple, yet flexible and robust tool for decision-support that is meant as a basis for discussion outlining potential pros and cons of a decision. However, it can not substitute a more rigid cost-benefit-risk analysis to be done on part of the Commission.

SWOT-Analysis Policy Option N	
Strengths	Weaknesses
▪	▪
Opportunities	Threats
▪	▪

Figure 15: Template table of a SWOT-Analysis

1.2.3 Communication process at EU level

As the results of (IMP)3 shall serve for a more harmonized application of the EIA-Directive and take into account various policy options possibly being taken at European level, a close communication with relevant stakeholders at EU-level was required. Therefore, a communication process with representatives of DG Environment and the EIA/SEA expert group and DG Research was established, in order to feed back the research approach and the intermediate results with relevant stakeholders at EU-level.

SEA/EIA Expert Group

The national experts on SEA and EIA on governmental level (= SEA/EIA Expert Group) meet twice a year in order to discuss relevant issues about EIA and SEA on the European level. The meeting is chaired by a member of DG Environment.

This group of experts was informed at the start of the project about the research focus and their remarks on the research topic were taken into account at the elaboration of the details of the research of (IMP)3. Moreover, some of the group-members supported the (IMP)3-team in order to find relevant EIA-stakeholders at the national level. Intermediate results of the data-analysis were presented to the SEA/EIA Expert Group and the final results will be presented and discussed at upcoming meetings.

(IMP)3 communication process

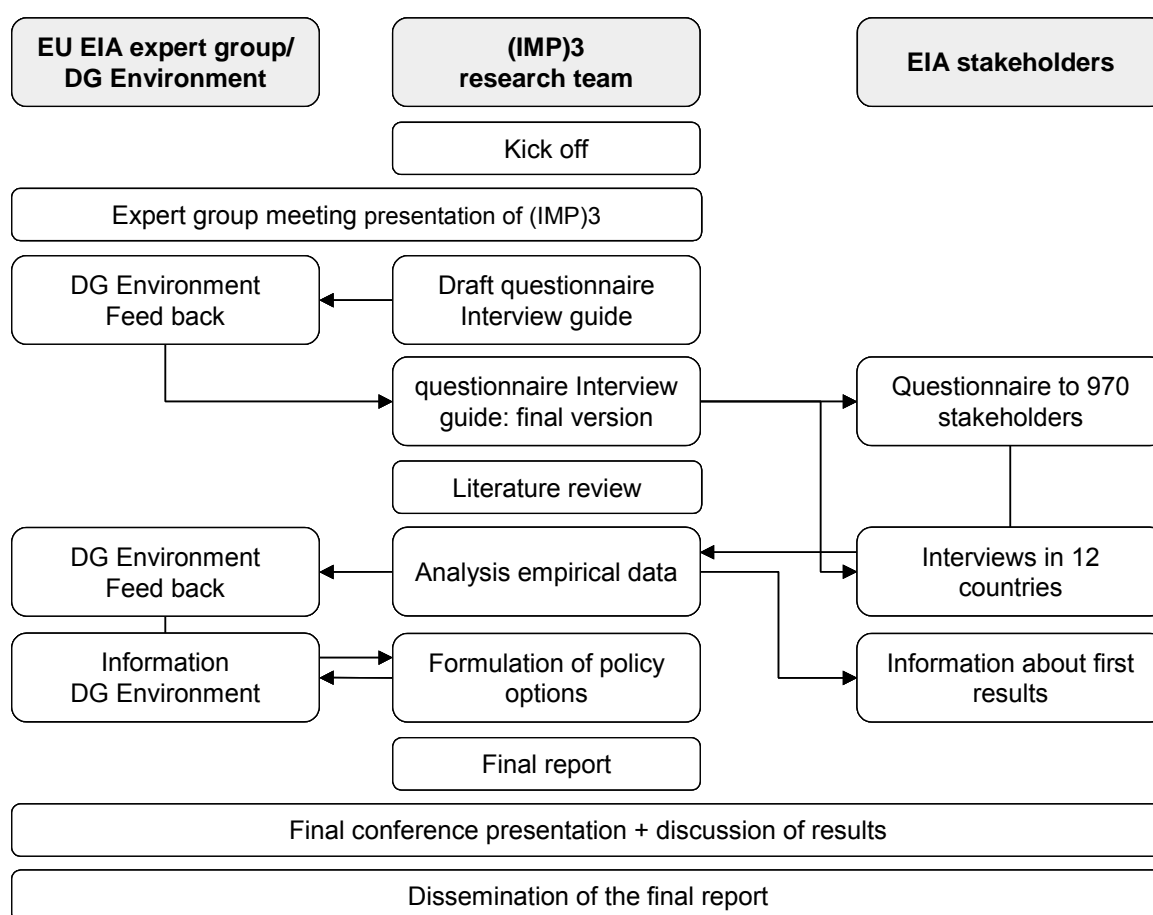


Figure 16: (IMP)3 communication process with EIA-stakeholders at EU-level

DG Environment

In order to ensure the usability of the results of (IMP)3, serving as input for the policy making process on the European level, members of DG Environment were informed about the work plan and the progress of the project and their feed-back was incorporated into the next steps of (IMP)3. The following formal contacts were established:

- 1st co-ordination meeting at the start of (IMP)3: general information about the project and fine-tuning of the research focus of (IMP)3;
- 2nd co-ordination meeting: presentation of the draft questionnaire and the draft interview guide;
- 3rd co-ordination meeting: presentation of first results of the analysis of the empirical data coming from the questionnaire and the interviews, agreement about the form of the results of (IMP)3 (elaboration of several policy options including a SWOT-Analysis for each option); and
- pre-information about the policy options proposed by (IMP)3.

The close contact with DG Environment aimed to ensure that the results of (IMP)3 are a useful contribution to the policy making process of DG Environment concerning the improvement of EIA-application.

1.2.4 Organising the work and reporting

Based on the main issues of (IMP)3, human health, risk assessment and projects subject to EIA the work of (IMP)3 is organised along five work-packages (WPs):

- WP1 concentrates on the gathering of empirical data about the application of EIA in Europe and abroad, including the dissemination of a questionnaire to EIA-stakeholders in all 25 Member States and interviews with EIA-stakeholders;
- WP2 “Human health” focuses on Objective A: a better incorporation of human health aspects into EIA;
- WP3 “Risk assessment” concentrates on Objective B: a better integration and more consistency of risk assessments, regarding various sources of risks (natural hazards, accidents, sabotage);
- WP4 “Projects subject to EIA” focuses on Objective C: a survey of project types subject to EIA; and
- In WP5, the results of WP1 to WP4 are merged into a final report and a conference has been organised in order to discuss the issues raised at a broader level.

Within these work packages, research is taken into account at international and national levels such as the activities of the World Health Organization on Health Impact Assessment, studies at European level and national studies related to the specific themes. This report concentrates on human health.

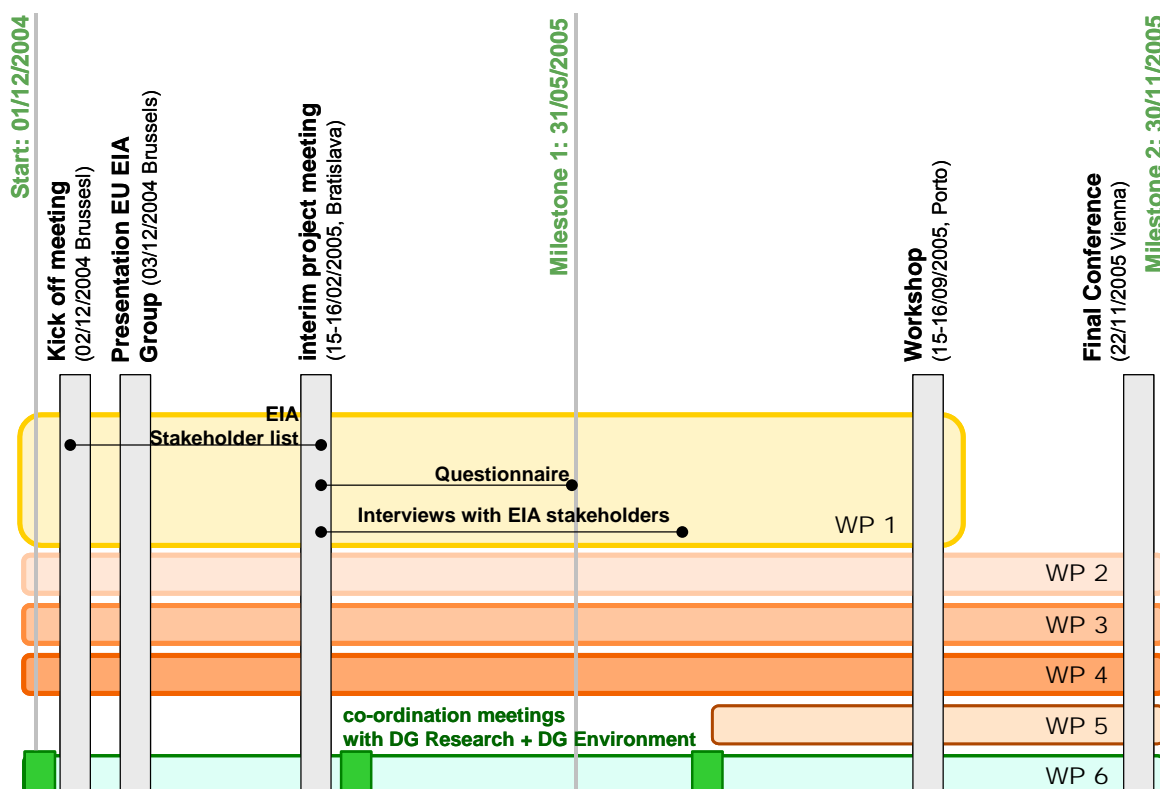


Figure 17: Timetable (IMP)3

Reporting

The results of (IMP)3 are laid down within four reports:

- Report Human Health (results of work package 2)
- Report Risk Assessment (results of work package 3)
- Report Projects Subject to EIA (results of work package 4)
- Final Report

The three work package reports comprise all relevant information about the results within each main theme of (IMP)3 (human health, risk assessment and projects subject to EIA). Each of them includes the relevant information so that it can be read and understood without reading the other reports.

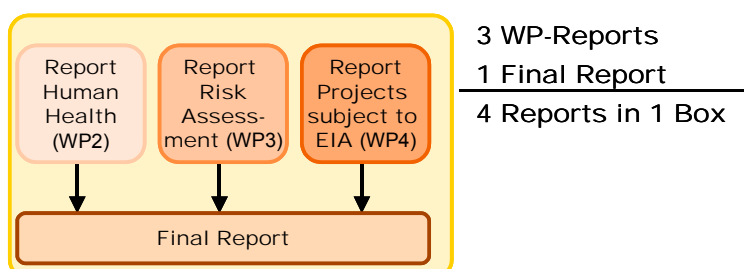


Figure 18: Structure of the reports of (IMP)3

The final report sums up the most important results of the work package reports. In particular it presents an overview of the SWOT-Analysis of the policy options.

1.3 Contribution to policy developments

(IMP)3 goes in line with the European policy to establish a sustainable development, which is laid down e.g. in the Sixth Environment Action Programme of the European Community *"Environment 2010: Our future, Our choice"* (Commission of the European Communities 2001a) and the European Spatial Development Perspective (ESDP).

The main goal of (IMP)3 to contribute to the process of a more harmonized application of EIAs directly meets the scientific and technological needs of the policies of the Community related to the application of the EIA Directive (97/11/EC). In detail (IMP)3:

- provides a better understanding of "impacts" and clarifies different interpretations of environment, health, vulnerability, risks, ... within EU 25;
- provides a better understanding of EIA applications;
- analyses the improvement of the coherence of EIA with different assessment tools (health impact assessment etc.); and
- gives proposals for the better integration of health aspects into EIA, how to come to a risk characterisation and suggestions for improving the coverage of projects types likely to have adverse effects on the environment.

Setting up policy options in the three core fields of the research human health, risk assessment and project types, (IMP)3 contributes directly to the scientific and technological needs of the policies of the Community in terms of the improvement of the application of the EIA.

1.4 Theoretical background for WP2

1.4.1 General concepts

This section will discuss key concepts that are relevant to the discussion of human health and EIA. These include health, the determinants of health, health inequalities, health impact assessment and health risk assessment.

Health

Health is not easy to define and ways of thinking about health have evolved over time. However, we have identified three key models of health: the **"medical model"**, the **"holistic model"** and the **"wellness or social model"** (University of Ottawa 2005). In its basic form, the "medical model" views the body as a machine that can be fixed when it does not work. Its focus is on diagnosing and treating specific physical conditions (diseases), and therefore embodies a reactive approach to dealing with health problems i.e. dealing with them as they occur rather than attempting to prevent them occurring in the first place. In this model health is defined as the absence of disease and the presence of high levels of normal physical functioning.

The **holistic model** of health is exemplified by the 1947 WHO definition, "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". This model uses a broader definition of what health is by incorporating the idea of the positive aspects of health through the concept of well-being. This WHO definition is seen by some as vague, difficult to measure and subjective, as well-being can only be measured by asking a person to tell us how they feel.

The **social model** was developed through the WHO's health promotion initiatives. The definition argues that "[Health is] the extent to which an individual or group is able to realise aspirations and satisfy needs, and to change or cope with the environment. Health is therefore a resource for everyday life, not the objective of living; it is a positive concept, emphasizing social and personal resources, as well as physical capacities" (WHO 1984). This model is even more difficult to measure and operationalise than the holistic model. Rarely is there a single cause but situations arise as a result of multiple, complex and interrelated factors.

Finally, other less well-known definitions see health in terms of resilience, e.g. "...the capability of individuals, families, groups and communities to cope successfully in the face of significant adversity or risk" (Vingilis and Sarkella 1997) and in ecological terms, as "a state in which humans, and other living creatures with which they interact, can coexist indefinitely" (Last 1995). The advantage of the medical model is that disease states tend to be relatively easily diagnosed and measured. But this approach is narrow, seeing health as simply about physical disease, its symptoms and consequences. The holistic and wellness models incorporate broader ideas of well-being that take into account an individual's subjective feelings of healthiness and wellness. They recognise the consequences of wider social aspects such as the quality and diversity of social interactions and its influence on health and well-being. They also allow for people with stable impairments to be seen as healthy, e.g. a deaf or blind person or someone who needs the aid of a wheelchair. The models also imply that health is not simply an outcome but also a resource i.e. that healthiness tends to lead to greater healthiness as it allows and enables individuals and groups to take up more opportunities. However, the holistic and wellness models give a very broad and, arguably, vague conceptualisation of health in particular because it is difficult to distinguish causality between a given health status and the determinants of health. For example, has a person's unemployment led to their ill-health or has their ill-health, acting imperceptibly over time, led to their unemployment (University of Ottawa 2003).

Finally, these general conceptualisations of health have helped develop definitions and conceptualisations of environmental health. **Environmental health** includes both the direct pathological effects of chemicals, radiation, biological agents on health and well-being, and the effects often indirect of the broader physical, psychological, social and aesthetic environment, which includes housing, urban development, land use and transportation (WHO 1989). WHO identifies five basic environmental conditions for a healthy environment: clean air, safe and sufficient amounts of drinking water, safe and nutritionally well-balanced food, secure and peaceful settlements, and stable ecosystems in which people live and lead good-quality lives.

Determinants of health

Health is affected by a range of factors, from what we eat and drink, to where we live and work as well as the social relationships and connections we have with other people and organisations. These directly and indirectly acting factors are termed the determinants of health. Figure 19 and

Table 2 show the links between projects, programmes and policies and their health impacts via their influence on the determinants of health.

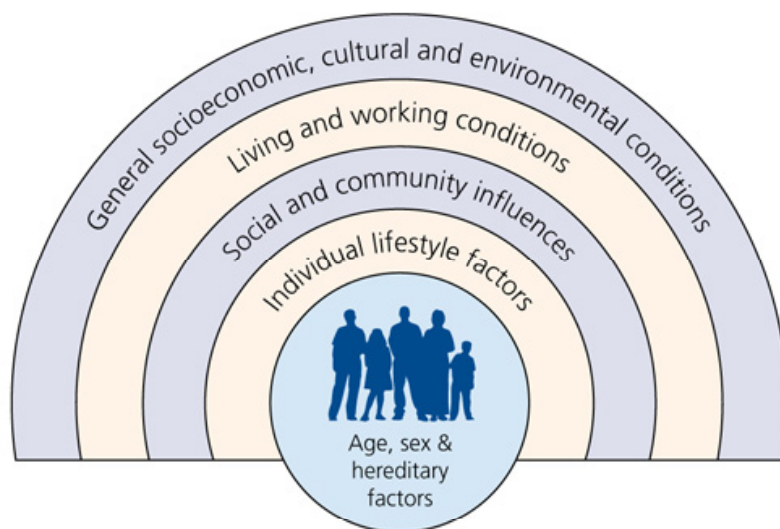


Figure 19: Model of health (Dahlgren & Whitehead 1991)

Figure 19 shows the Dahlgren and Whitehead 'Model of health' (Dahlgren & Whitehead 1991). This model highlights the importance of social, cultural and community factors in affecting individual, family and community health and well-being; alongside genetic, lifestyle and personal factors on health and well-being.

Table 2 highlights some key health impacts, the determinants of health through which these health impacts occur and the types of policies, programmes and projects that can produce them.

Health Impact	Known positive/negative determinants of health	Examples of initiatives that can affect these determinants
Cardiovascular disease	Smoking Exercise Nutrition Being over-weight Air pollution	Local transport plans Healthy living centres Land use and land planning Smoking cessation programmes Access to affordable fresh foods Access to affordable physical recreation
Cancers	Smoking Nutrition Exercise Chemical exposures Health screening for early detection	Land use and land planning Access to affordable fresh foods Healthy school meals Smoking cessation programmes Access to screening programmes
Accidents	Transport Workplace Home Environment	Local transport and waterway plans Housing policies, programmes and projects Safety equipment loan schemes Occupational health

Health Impact	Known positive/negative determinants of health	Examples of initiatives that can affect these determinants
Mental Health	Self esteem Social networks Social pressures Fear of crime Noise	Education policies, programmes and services Job design and neighbourhood design Crime prevention initiatives Sustainable communities Transport & housing policies and programmes
Health Inequalities	Poverty Housing Access to services Education Work	Economic regeneration initiatives Initiatives to improve education, employment and health for those in most need. Welfare reform Housing, transport and planning policies Access to retail services and other amenities

Table 2: Examples of health impacts, their determinants of health and initiatives that can produce them (after Department of Health and the Neighbourhood Renewal Unit 2002)

In Table 2 the direct links between concrete health impacts – health determinants – initiatives that affect these health determinants are shown. It is possible to categorize health determinants in three principle categories: individual/family, environmental and institutional (Breeze & Lock 2001). In Table 3 is given some more specific examples of these in relation to policy sectors.

Sectors	Determinants of health			
	Individual/family	Physical environment	Social environment	Public services
Transport	Fear of assault, physical activity choice	Air pollution, collisions	Social severance, exclusion	Speed regulation, casualty units
Agriculture	Food safety and availability, Food choice	Irrigation water quality, Pesticide residues	Rural livelihoods e.g. farmers	Regulation of food safety and food price
Housing	Shelter, comfort, dignity	Damp, cold, indoor air pollution	Crime rates in some deprived areas; safety	Land use designation and planning, Building codes
Energy	Energy poverty	Gas and particulate emissions		Power station siting, energy pricing policy
Industry	Occupational health and safety	Chemical safety	Employment opportunities	Environmental monitoring institutions
Mining	Migration	Dust and explosion, Water Pollution	Crowded housing	Regulation of working environments
Water resources	Hygiene behaviour	Chemical and microbiological contaminants	Conflict over water scarcity	Water treatment, protection of sources

Table 3: Examples of the association between policy sectors and the determinants of health (after Breeze and Lock 2001)

Health impact assessment

There are a number of definitions of health impact assessment (HIA). The key one developed by WHO (1999), in order to create a common understanding of HIA, is known as the Gothenburg consensus paper. The main conclusions of the Gothenburg consensus paper were that:

- Health impacts are the overall effects, direct or indirect, of a policy, strategy, programme or project on the health of a population.
- 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.

Furthermore, HIA should include the following elements:

- consideration of evidence about the anticipated relationships between a policy, programme or project and the health of a population;
- consideration of the opinions, experience and expectations of those who may be affected by the proposed policy, programme or project;
- provision of more informed understanding by decision makers and the public regarding the effects of the policy, programme or project on health; and
- proposals for adjustments and options to maximize the positive and minimize the negative health impacts.

HIA has roots within EIA, and hence follows a similar process to it, and to the healthy public policy movement of the 1970's. It is currently established and practiced in a range of EU and non-EU countries that includes Australia, Canada, the Netherlands, New Zealand and the US.

Health risk assessment

Health risk assessment is the quantitative evaluation of the environmental health risks resulting from exposure to a chemical or physical agent (pollutant); it combines exposure and toxicity assessment findings to estimate risk. The four steps of risk assessment are: (1) Hazard identification (could this substance damage health?), (2) Dose-response assessment (what exposure causes what effect?), (3) Exposure assessment (how and how much do people come into contact with it?), and (4) Risk characterization (combining the other three steps to estimate the risk on individuals and communities) (Beagleholde, Bonita & Kjellstrom 1993).

Health risk assessment is therefore a more specific and narrower form of health assessment than HIA. This is because HIA can include qualitative as well as quantitative information and evidence. Therefore, health risk assessment can be a part of a wider HIA but HIA cannot form a part of health risk assessment.

1.4.2 Health in the context of Environmental Impact Assessment

The focus of WP2 is on how human health issues currently are and could be handled in the context of EIA. The EIA EU Directive (European Commission 1997) and its national implementation is mainly targeted towards the impacts of development projects as opposed to impact assessment of plans, programmes and policies. The latter is regulated through the Directive On the assessment of the effects of certain plans and programmes on the environment (European Parliament 2001). When the concept of “project” is used in this report, it refers to the scope and focus of the development projects referred to in the EIA Directive and in other national EIA legislations.

There is considerable variation in the form of EIA legislation and in EIA practice across the EU. This is in part due to the freedom Member States have to implement EU Directives in a form that is appropriate to their legislative and political context; however, it may also be due to ambiguity within the Directive about the place of human health within EIA. Environmental considerations have, so far, outweighed health and wider social considerations. This would be appropriate if the impact on human health did not in turn have impacts on the wider environment, i.e. if environmental impacts were completely separate from human health impacts both in cause and effect, or if there were other mechanisms by which health and wider social impacts of projects were assessed. However, environmental and health impacts are connected because human beings are part of the environment and a number of environmental factors constitute human health determinants. Environmental impacts do have direct and indirect impacts on health determinants.

2 RELEVANT LEGISLATION, GUIDANCE AND EXISTING EVALUATION STUDIES

This chapter reports the results of a desk study on:

- Whether, and in what ways, human health issues are incorporated into EIA legislation. The aim is to get indicative results concerning if and how human health is treated in EIA legislation by reviewing a selected number of EU and non-EU countries
- Supporting guidance for human health in EIA. The aim is to review to what extent guidance exists and to include examples of the proposed procedures and approaches
- Key evaluation studies and research on the human health aspects in EIA. The aim was to review the current state of the art concerning studies and views as regards how human health is being treated as part of EIA. Also, the views concerning possibilities and obstacles to improve European and national EIA legislation in relation to human health

A prerequisite for the existence and development of good practice in relation to including human health issues in EIA practice is that health issues are perceived as an important and natural part of EIA and project assessment. One important starting point for this good practice to develop is the existence of legislation that clearly defines human health, emphasises the importance of assessing human health impacts and explicitly asks for its assessment within EIA.

Table 4 provides a summary of the key findings among fifteen Member States, the international comparator countries and the EU in relation to EIA legislation and health. In summary the results show that a majority of the 12 countries studied, have in their EIA legislation, some kind of reference to impacts on humans or on human health (or related concepts). This is done either separately or as part of defining the concept “environmental impact” (e.g. Canada and Latvia) and as part of defining the scope of the assessment (e.g. the Czech Republic). There are, however, a variety of concepts used in the legislation, though the concept of human health dominates. Besides human health, the following concepts have been used in the legislative texts: impacts on health, public health, affected population, humans or impacts on human beings and impacts on the health of the inhabitants. In some of the national EIA legislation human health is more closely defined and in some not at all. In most legislation human health refers to the environmental risks to health, e.g. the health impacts coming from noise, vibration, pollution, odours, etc. Examples of legislation that includes a broader definition of human health including also economic or social impacts is that in the US, Canada, Slovakia and Czech Republic.

Country	Reference to human health in EIA legislation and/or supporting legislation **	Reference to physico-chemical (exposure to pollutants) health impacts	Reference to wider determinants of health and/or socio-economic impacts	Reference to precaution and/or precautionary principle	Linkage of environment and human health*
EU	✓				
Austria (AT)	✓	✓			
Czech Republic (CZ)	✓		✓		
France (FR)	✓			✓	
Germany (DE)					
Ireland (IE)	✓	✓			✓
Latvia (LV)	✓	✓			✓
Poland (PL)	✓	✓			
Portugal (PT)	✓				
Slovakia (SK)	✓	✓	✓		
Sweden (SE)	✓	✓			✓
United Kingdom (UK)	✓	✓			✓
Canada (CA)	✓		✓	✓	✓
USA (US)	✓		✓		✓

Table 4: EIA legislation and supporting guidance analysis

* a statement to the effect that a project has environmental effects which affect human health as well as flora and fauna as opposed to one which states that a project has effects on health and effects on the environment i.e. that human beings are part of the environment and that human health and the environment are connected and interlinked.

** besides human health a number of different concepts are used in the legislations, e.g.: health, public health, impact on affected population, effects on humans, impacts on human beings and impacts on the health of the inhabitants.

2.1 European and National legislation

2.1.1 European legislation

As stated previously, Article 3 of the EU EIA Directive (European Commission 1997) includes human beings in the list of items to be protected:

“The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case and in accordance with Articles 4 to 11, the direct and indirect effects of a project on the following factors:

- *Human beings, fauna and flora*
- *Soil, water, air, climate and the landscape*
- *Material assets and the cultural heritage*
- *The interaction between the factors mentioned in the first, second and third indents”*

Though the need to assess impacts on “human beings” and the interaction between different environmental effects is stressed there is no explicit requirement in the Directive to examine human health as part of the assessment process. However, the supporting guidance for the Directive does

refer explicitly to human health and does provide an explicit list of questions that should be used to consider the human health impacts of projects (described in more detail in Section 2.2.1).

2.1.2 National legislation

The EIA legislation of the Member States is varied with some specifically citing human health explicitly and others leaving it implicit within the wording of their legislation (see Table 4 for a summary of key findings).

Austria

The main EIA legislation reviewed in Austria was the:

- Federal Act on Environmental Impact Assessment (Environmental Impact Assessment Act 2000) BGBl. (Federal Law Gazette) No. 697/1993 as amended by BGBl. No. 773/1996, BGBl. I No. 89/2000, BGBl. I No. 108/2001, BGBl. I No. 151/2001, BGBl. I No. 50/2002, BGBl. I No. 153/2004 and BGBl. I No. 14/2005

This Act takes its starting point from the EIA Directive and uses very similar wording to the EU EIA Directive. Article 1 states that:

“...The purpose of an environmental impact assessment (EIA) shall be, with public participation and on a basis of expertise,

1. to identify, describe and assess the direct and indirect effects that a project will or may have on
 - a) human beings, fauna, flora and their habitats,
 - b) on soil, water, air, and climate,
 - c) on the landscape, and
 - d) material assets and the cultural heritage,
 including interactions of several effects,...”

Effects on 'human beings' are not only mentioned in Article 1, but according to Article 6 (1) effects on human beings also have to be identified, described and assessed in the EIS.

Human health is mentioned in Articles 17 and 24h. In Article 17 and 24h, threat to human health is given prominence by being listed before damage to the environment. However, health is linked specifically to exposure to pollutants and to the need to reduce the concentrations of pollutants in the ambient environment if they are a threat to human health. In Article 17 (2) obligatory requirements are defined that the competent authority has to consider in its development consent decision. The basic purpose of this paragraph is to avert serious threats to human health or lives (a), to the environment (b), and to rights of neighbours (persons directly affected by the project) with regard to unacceptable nuisances. Below is an extract from Article 17:

“...(2) Unless already included in applicable administrative provisions, the following additional requirements shall be met with regard to effective precautions to protect the environment:

2. The burden on protectable assets due to the concentration of pollutants in the ambient environment shall be kept as low as possible; such exposure shall be prevented at any rate if it
 - a) constitutes a threat to human health or lives or to the property or other rights in terms of neighbours,
 - b) causes a significant burden on the environment by sustained effects, i.e. at any rate such effects capable of causing permanent harm to soil, air, plant or animal stocks or the status of waters, or
 - c) results into unacceptable nuisances to neighbours under the terms of Article 77 (2) Gewerbeordnung 1994 (Trade and Industry Act).

Article 24h has basically the same content and purpose, but it refers to federal highways and railroads (Austria has special EIA provisions for federal roads and high ranking railroads, as well as for projects relevant to water management).

Sectoral regulations concerning health and safety of employees have to be applied within EIA procedures. EIA procedures are materially integrated with all other required consent procedures under sectoral laws. Thus, assessment of effects of 'human beings' (as required by article 1) should include occupational health and workplace safety. Also, mitigation measures to be proposed in the EIS statement of the authority shall take into account workplace safety of employees (article 12 (4)).

So, while the Act does mention health and does make 'nuisance to neighbours' a consideration in giving planning permission it does not explicitly define health nor does it refer explicitly to the wider social determinants of health and wellbeing. However, health is referred more explicitly in EIA guidelines such as in the guidance on case-by-case examinations, the guidance on EIA for trade and leisure facilities, industrial and business parks, the circular on the application of the federal EIA act, the guidance on EIS and the checklist for EIS.

Czech Republic

The main EIA legislation reviewed in the Czech Republic was the:

- Act No. 100/2001 on Environmental Impact Assessment
- Act No 100/2001 Coll. on environmental impact assessment and on the amendment of some related act and as amended by Act No. 93/2004 Coll.
- Decree 353/2004 Coll. laying down detailed conditions of certificates of professional qualification for EIA, the procedure for verification thereof and the procedure for granting and withdrawing authorization

The Act No.100/2001 Coll. On environmental impact assessment and on the amendment of some related acts in and as amended by the Act No. 93/2004 Coll. (hereinafter only "Act") includes:

- in the sense of § 2 the scope of assessment has been defined as follows: assessment shall be carried out of the impacts on public health and the impacts on the environment

- in accordance with Annex 3 of the Act – Requisites of the Notification – in the part D. Information on impacts of the project on public health and the environment it is necessary to state:
 1. Characteristics of potential impacts and estimation of their magnitude and importance
 2. Extent of impacts in relation to the affected territory and population.

In accordance with Annex 4 of the Act Requisites of the Documentation – in the part D. Complex characteristics and evaluation of the impacts of the project on public health and the environment it is necessary to state:

- Impacts on the population, including socio-economic impacts.

In accordance with Annex 2 to the Act, which sets principles for the fact-finding procedure, following criteria have been defined as relevant for public health: the parameters of the project must be considered particularly in relation to

- pollution of the environment and impacts on public health.

In accordance with § 19 Authorization to Prepare a Documentation and an Expert Report

- for the projects set forth in Annex No. 1, Category I and also for other projects, if so laid down in the conclusion of the fact-finding procedure, the part of the documentation concerning the assessment of impacts on public health has to be prepared by a person, who is holder of a certificate of professional qualification for the field of assessment of impacts on public health. The certificate of professional qualification for the field of assessment of impacts on public health shall be granted and withdrawn by the Ministry of Health.

Decree 353/2004 Coll. laying down detailed conditions of certificates of professional qualification for EIA, the procedure for verification thereof and the procedure for granting and withdrawing authorization – In accordance with §19 par. 13 of the Act the Ministry of Health in agreement with the Ministry of the Environment lays down:

- conditions of professional qualification for the field of assessment of impacts on public health
- the procedure for verification of professional qualification
- the procedure for granting the certificate of professional qualification
- the procedure for withdrawing the certificate of professional qualification.

France

The main EIA legislation reviewed in France was the:

- Loi 76-629 Law on the protection of nature [relative à la protection de la nature]
- Loi 96-1236 Law on air and the rational use of energy [sur l'air et l'utilisation rationnelle de l'énergie]

Article 2 of loi 76-629 lists topics that should be covered by an EIA including an analysis of the effects of the project, direct and indirect, temporary and permanent on the environment and in particular on the fauna and flora, the area and landscape, the soil water, air and climate, the natural environment and biological balance, protection of property and cultural heritage and, if need be, the amenity of the neighbourhood (noise, vibration, odours, light emission) or on hygiene, health and public safety (l'hygiène, la santé, et la salubrité publique). It further requires the presentation of measures intended to suppress or reduce and if possible compensate for the harmful effects of the project on the environment and health.

Article 19 of loi 96-1236 makes clear that the EIA must consider the totality of problems that a project may cause for health and not be restricted just to health problems resulting from air pollution. The requirements of an EIA should always be proportional to the importance and its potential effect on the environment. In considering health effects the EIA should always take into account the populations exposed. Where the effects of certain pollutants on health are not established and the EIA cannot go beyond identifying the pollutants and the potential risks to the exposed populations, in these cases, the precautionary principle should be applied.

Health does not appear to be defined in legislation or any of the documents analysed. All documents refer to the effects of emissions and noise thus implying a concentration on the environmental risks to health. Topics such as employment, health behaviours, community coherence and mental health are not mentioned. This suggests that the term health is understood in a fairly narrow way as avoiding the recognised effects of air, water, soil and noise pollution.

Germany

The main EIA legislation reviewed in Germany was the:

- The Environmental Impact Assessment Act of 5 September 2001 (BGBl I p.2350)
- Environmental Impact assessment Act (BGBl. I 2005 p. 1757)

This Act, like Austria's Act, also takes its starting point from the EIA Directive and uses very similar wording to the EU EIA Directive.

"Article 2 Definitions

(1) The environmental impact assessment represents an integral part of procedures applied by authorities when deciding upon the approval of projects. Environmental impact assessment comprises identification, description and assessment of a project's effects on

1. human beings, animals and plants, soil, water, air, climate and landscape, including the individual interaction that may occur,
2. cultural goods and other material assets."

EIA is not an independent procedure, but an integral part of other sectoral procedures applied by authorities when deciding upon the admissibility of projects. EIA regulations are subsidiary to relevant sectoral laws, mostly pertaining to environmental planning and environmental protection. EIA regulations are applied in particular when they go beyond consent requirements of other laws (article 2, 4). Decision making is to a large extent determined by consent requirements of sectoral laws (article 12).

The Act makes no explicit mention of health except in the context of occupational health and safety (Article 21, paragraph 1, item 4). It also does not refer to the wider social determinants of health and wellbeing. Human health is also included in the general administrative guidelines on the execution for the EIA act and the decree on accidents. In general, the focus of German EIA system is on environmental effects. Broader issues of human health are generally not well covered in EIA legislation, except under sectoral laws.

In November 2005, the Act was amended and does now include human health:

"Article 2 Definition of terms

(1) The environmental impact assessment represents an integral part of the procedures applied by authorities when deciding upon the admissibility of projects. The environmental impact assessment comprises the identification, description and assessment of a project's direct and indirect effects on

1. human beings, including human health, animals, plants and biological diversity,
2. soil, water, air, climate and landscape,
3. cultural heritage and other material assets, and
4. the interactions between the foregoing protected assets.

Environmental impact assessments shall be conducted with the involvement of the public. If decisions regarding a project's admissibility are taken in more than one procedure, the individual assessments made in these procedures shall be combined to provide an overall assessment of all environmental impacts."

Ireland

The main legislation reviewed in Ireland was:

- European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. No. 349 of 1989)

This regulation is very similar to those for the United Kingdom. An extract from the Second Schedule is given below:

"INFORMATION TO BE CONTAINED IN AN ENVIRONMENTAL IMPACT STATEMENT

2. The specified information is—

...

(c) a description of the likely significant effects, direct and indirect, on the environment of the development, explained by reference to its possible impact on—

- *human beings;*
- *flora;*
- *fauna;*
- *soil;*
- *water;*
- *air;*
- *climate;*

- *the landscape;*
- *the inter-action between any of the foregoing;*
- *material assets;*
- *the cultural heritage;*

...

(e) the likely significant direct and indirect effects on the environment of the development proposed which may result from—

(i) the use of natural resources;

(ii) the emission of pollutants, the creation of nuisances, and the elimination of waste;”

These regulations use very similar wording to the Directive. Health is not referred to explicitly instead the regulations refer to the affects on ‘population’ or ‘humans’. There is a strong focus on the health impacts due to the environmental risks to health. There is a mention of the need to consider nuisance but there is no explicit definition of health nor is there reference to the wider social determinants of health and well-being.

Latvia

The main EIA legislation reviewed in Latvia was the:

- Law on Environmental Impact Assessment of October 14, 1998 as amended in 2001, 2003, 2004

The EIA legislation in Latvia starts with a definition of terms and defines environmental impact in Article 1, Paragraph 1 as:

“Environmental Impact – direct or indirect changes to the environment caused by a Proposed Development, the results of which affect or may affect human health and safety, biological diversity, soil, air, water, climate, landscape, material assets, cultural and natural heritage values, as well as the interaction of these aforementioned areas;”

Consequently, health issues are embedded in the term “environmental impact” thereby making explicit that humans are part of the environment and changes to the environment lead to impacts on the health and well-being of humans, flora and fauna. However, there is no definition of health and no mention of mental, social or well-being impacts.

Poland

The main EIA legislation reviewed in Poland was the:

- Environmental Protection Law (2001), Amendment 10 May 2005

The Law partly follows the wording of the EU’s EIA Directive but incorporates human health and the quality of human life as aspects which need to be assessed within an EIA.

According to Article 47 Part VI (The environmental impact assessment procedure) in the Chapter 1:

"The environmental impact assessment procedure relating to the implementation effects of plans and programmes describes that in the environmental impact assessment procedure, the following shall be identified, analysed and assessed:

- 1) *the direct and indirect effects of a given project on:*
 - a) *the environment, human health and the quality of human life,*
 - b) *material assets,*
 - c) *cultural heritage,*
 - d) *the interaction between the factors referred to in indents a) – c),*
 - e) *access to mineral deposits; ..."*

While the Polish legislation does explicitly refer to human health and the quality of human life it does not define human health or quality of human life nor does it refer specifically to the wider social determinants of health and well-being.

Portugal

The EIA legislation reviewed in Portugal was the:

- EIA legislation – Decree-Law 69/2000 amended by Decree-Law 197/2005
- Portaria No.330/2001
- Environment Framework Act Law No. 11/87

In Article 4 of the Environmental Framework Act on 'Objectives and measures' states that:

"The existence of a propitious environment to the health and well-being of the people and to the social and cultural development of the communities, as well as to the improvement of quality of life, requires the adoption of measures..."

In Article 5 of the Environmental Framework Act on 'Concepts and definitions' states that:

- "1) the quality of life is the result of the interactions of multiple factors in the functioning of the human societies and is expressed by their physical, mental and social welfare and their cultural satisfaction and affirmation, as well as by authentic relations between the individual and the community, and depends on the influence of a set of interrelated factors, viz:*
- a) *the load capacity of the territory and their resources;*
 - b) *nutrition, housing, health, education, access to transportation and recreation;*
 - c) *a social system that assures the welfare of all the population and the consequent benefits of the Social Security;*
 - d) *the integration of urban-industrial expansion in the landscape, resulting in its valuation instead of its degradation.*
- ...

2a) *Environment is the set of the physical, chemical, biological systems and its relations and of the economic, social and cultural factors with short or long term and direct or indirect effects, on the living things and the quality of life of humans;"*

The EIA legislation, Decree-Law 69/2000, makes no explicit mention to human health though it was explicit in the introduction to the previous version of the EIA Decree Law. However, in the Environment Framework Act – Law No. 11/87, which already foresaw EIA as an assessment and decision support tool before the enactment of the current EIA legislation human health is mentioned several times in the context of environmental protection. Though there is no explicit definition of health the legislation does refer to mental and social welfare and cultural affirmation as important aspects of quality of life and as aspects of its definition of the environment.

The new EIA legislation, Decree-Law 197/2005, slightly changes the screening procedure allowed: according to article 1, case-by-case assessments may more easily be asked for by the licensing or competent authority for the project approval (number 4) or competent governmental authorities (number 5), and has therefore a new set of annexes listing the screening criteria to account for in such cases (not listed in the inclusive lists).

Decree-law 197/2005 defines *Environmental Impact* as "*set of changes, favourable and unfavourable, occurred in environmental and social parameters, in a given period of time and a given location, as a result of the project, when compared with the conditions corresponding to no project at all, for the same area and time period*". As regards human health, the references are still only implicit (for population), however with more references in this Decree-Law, especially in:

Annex III [Minimum Content of the EIS]:

" **3.** Description of the local conditions and of those factors that may be affected by the project, such as the **population**, animals,..."

Annex IV [Elements to be Provided by the Project's Proponent]

Description of the project's site / location

[paragraph 4] Description of the environment elements that may be affected by the proposed project, such as the **population**, ...

Impacts' Identification and Assessment

(...)

[paragraph 2] Indication of the nature (...), magnitude (...), extension (geographic and affected population) and ...

Annex V [Screening Criteria]

"**3** – characteristics of the potential impact: the potential significant (relevant) impacts of the proposed project should be considered on the basis of the criteria described in the previous paragraphs (1[projects characteristics] and 2 [project's location]), having in mind particularly

the extension of the impact (geographic area and size of the affected population)transboundary nature of the impact

...

Slovakia

The main EIA legislation reviewed in Slovakia was the:

- Act No. 127/1994 of the National Council of the Slovak republic on EIA
- Act No. 391/2000 Coll. Amend. the above Act
- Regulation No. 52/1995 on List of Professionally Qualified Persons for EIA: According to Article 9 (Fields of Activities and Areas of Activities) in part 2: The fields of activities is particularly health protection.

Health is mentioned at several places within the Act. In Annex 2 of the Act 'The Requirements of a Preliminary Environmental Study' asks for the

"... assessment of the effects on the health of the local population."

Furthermore in Annex 2a of the Act the 'Criteria for Screening' the list includes the "assessment of the probability of impacts on human health" and the "effects on serenity (quality) of life".

Finally Annex 3 on the structure of the environmental impact statement states:

"III. Evaluation of the presumed impacts of the activity on the environment and estimation of their importance..."

1. Impacts on the local population.

1.1. Number of inhabitants affected by the consequences of the activity in the affected municipalities.

1.2. Health risks, social and economic consequences and associated factors.

1.3. Disturbance of the fair weather and quality of life.

1.4. Acceptability of the activity for the affected municipalities (e.g. according to the standpoints and comments of the affected municipalities and sociological surveys among the inhabitants of the affected municipalities).

1.5. Other impacts.

The EIA Act in Slovakia though it does not give a specific definition of health does explicitly mention human health as well as the wider social determinants of health as aspects to be considered within an EIA.

Sweden

The main EIA legislation reviewed in Sweden was the:

- The Environmental Code (1998:808)
- The Ordinance on Environmental Impact Statements (1998:905)

Chapter 1, Section 1 of the Environmental Code states that:

"The Environmental Code shall be applied in such a way as to ensure that:

1. *human health and the environment are protected against damage and detriment, whether caused by pollutants or other impacts...*

Chapter 6, Section 3 of the Code which describes EIA states that:

"The purpose of an environmental impact assessment is to establish and describe the direct and indirect impact of a planned activity or measure on people, animals, plants, land, water, air, the climate, the landscape and the cultural environment, on the management of land, water and the physical environment in general, and on other management of materials, raw materials and energy. Another purpose is to enable an overall assessment to be made of this impact on human health and the environment." (Chapter 6, section 3, first paragraph)

Finally, in Chapter 6, Section 7 in which the contents of the environmental impact statement is described:

"An environmental impact statement relating to an activity or measure that is likely to have a significant environmental impact shall contain the information that is needed for the purpose referred to in section 3, including:

3. *the information that is needed to establish and assess the main impact on human health, the environment and management of land, water and other resources that the activity or measure is likely to have;"*

The Swedish EIA legislation explicitly mentions human health, however it does not define human health and nor does it refer specifically to the wider social determinants of health and well-being.

United Kingdom

The main EIA legislation reviewed in the UK was the:

- Town and Country Planning EIA (England and Wales) Regulations 1999 (SI No. 293)
- Town and Country Planning EIA (England and Wales) (Amendment) Regulations 2000
- Environment Impact Assessment (Scotland) Regulations 1999 (No. Endnotes SSI 1)
- Planning (Environmental Impact Assessment) Regulations (N. Ireland) 1999 S. Rule No. 73

In Part 1 of Schedule 4 of the Regulations (paragraphs 81-85 and 91).

- "1. Description of the development, including in particular*
 - a. a description of the physical characteristics of the whole development and the land use requirements during the construction and operational phases;*
 - b. a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;*
 - c. an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.*
- 2. An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.*

3. *A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.*
4. *A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the development, resulting from:*
 - a. *the existence of the development;*
 - b. *the use of natural resources;*
 - c. *the emission of pollutants, the creation of nuisances and the elimination of waste, and the description by the applicant of the forecasting methods used to assess the effects on the environment.”*

These regulations use very similar wording to the Directive. Health is not referred to explicitly instead the regulations refer to the affects on ‘population’ or ‘humans’. There is a strong focus on the health impacts due to the environmental risks to health. Though there is a mention of the need to consider nuisance there is no explicit definition of health nor is there reference to the wider social determinants of health and well-being.

Canada

The main EIA legislation reviewed in Canada was the:

- Canadian Environmental Assessment Act (1992, C.37)

In the Canadian Environmental Assessment Act (CEAA) health issues are included in the definition of “environmental effect”:

“environmental effect” means, in respect of a project,

- (a) *any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the Species at Risk Act,*
- (b) *any effect of any change referred to in paragraph (a) on*
 - (i) *health and socio-economic conditions...” (Sec.2 (1))*

Health is also included in the purposes of the CEAA, section 4 paragraphs 1(b), 1(b) and 2 “

- “4. (1) *The purposes of this Act are ...*
 - (b) *to encourage responsible authorities to take actions that promote sustainable development and thereby achieve or maintain a healthy environment and a healthy economy;...”*
- (2) *In the administration of this Act, the Government of Canada, the Minister, the Agency and all bodies subject to the provisions of this Act, including federal authorities and*

responsible authorities, shall exercise their powers in a manner that protects the environment and human health and applies the precautionary principle.”

Canadian Environmental Assessment Act mentions human health and specifically links health to both the environment and the economy. It also states that assessments and actions should be based on the precautionary principle. Hence, health protection and the assessment of human health issues are an integral part of EIA. However, while there is mention of socio-economic conditions there is no mention of mental, social or well-being impacts.

United States of America

The main EIA legislation reviewed in the US was the:

- National Environmental Policy Act (NEPA)
- Council on Environmental Quality's (CEQ's) regulation for implementing NEPA: Code for Federal Regulations (CFR) title 40: Protection of the environment

Health issues are included in the US EIA legislation in the preamble of the NEPA:

“To declare a national policy which will encourage productive and enjoyable harmony between man and his environment: to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation...”

However, the main EIA legislation document in the US is the Code for Federal Regulation, Title 40 (40 CFR). In this code health issues are directly referred in the code in part 1508 where a list of terminologies is provided. Health issues are included in the context of “effects” in Section 1508.8 and Section 1508.40.

“§1508.8 Effects.

Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.”

“§ 1508.14 Human environment.

Human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. (See the definition of “effects” (§1508.8).) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.”

The EIA legislation explicitly mentions ‘the health and welfare for man’ but does not define health, welfare or social impacts within EIA.

2.2 EIA Guidance

Existing legislation is an important base for practice in relation to the way that human health is considered in projects, as was stated in the section 2.1. Another important prerequisite is provided by the existence of guidance of how to include human health in EIA or of how to conduct HIA separately or as part of EIA. A range of guidance exists at EU level, at the national level and also other international guidances. However, looking only at the national level among the EU countries, the results are daunting. It appears that only a few countries have national guidelines on how to assess health and social impacts within EIA. Taking all guidances into consideration and looking at the scope and definition of health in this guidance, there is a variety going from risk assessment to the broader HIA approaches. In certain instances they focus on checklists and in others also on procedural issues, some are developed for a special sector or even for a certain type of development projects and the approach can be both qualitative and quantitative.

2.2.1 European Union guidance

The European Commission provides three pieces of guidance on EIA: EIA – Guidance on Screening (European Commission 2001a), EIA – Guidance on Scoping (European Commission 2001b), EIA Review Checklist (EIS Review) and Guidelines on the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Commission 1999b). All make explicit reference to human health impacts. Human health is included in the checklists of information needed for screening, scoping and review. One example to illustrate how health is described and should be treated is given in the screening checklist:

“Will the Project involve use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?”

The checklists also mention human health in the context of the risk of accidents and indirectly in terms of assessing the impacts to access to recreational and other facilities and changes to existing ways of life.

In the EIA Review Checklist (European Commission 1999b), guidance on the description of the likely significant effects of the project states that it should include the prediction of effects on human health:

“Are primary and secondary effects on human health and welfare described and where appropriate quantified? (e.g. health effects caused by release of toxic substances to the environment, health risks arising from major hazards associated with the project, effects caused by changes in disease vectors caused by the project, changes in living conditions, effects on vulnerable groups)”

It also goes on to ask the question:

“Is the project likely to affect human or community health and welfare?” including

- The quality or toxicity of air, water, foodstuffs and other products consumed by humans
- Morbidity or mortality of individuals, communities or populations by exposure to pollution
- Occurrence or distribution of disease vectors including insects
- Vulnerability of individuals, communities or populations to disease

- Individuals' sense of personal security
- Community cohesion and identity
- Cultural identity and associations
- Minority rights
- Housing conditions
- Employment and quality of employment
- Economic conditions
- Social institutions

(European Commission 1999b)

Human health is highlighted in the Commission's guidance documents on EIA and key questions on human health are provided to assist EIA practitioners to incorporate human health into EIA.

2.2.2 National guidance in EU countries

There are only a few national or regional EIA guidelines or evaluation reports that have a clear human health dimension since most of the identified HIA guidelines are focussing on policy level or on separate HIA procedures.

The results so far are rather daunting as it appears that only few countries have national guidelines on how to assess health and social impacts within EIA. (NB: HIA has been a widely addressed subject in England where the Department of Health has prepared a resource for Health Impact Assessment. This resource book has however a minor focus on health in EIA. Also the Health Development Agency has been actively developing HIA.)

Czech Republic

One section of the general Guidelines on Environmental Impact Assessment in the Czech Republic (Schrader 2004) focusses on the assessment of public health impact. This manual however does not provide any detailed procedure on how to undertake this health assessment. However, methodical procedures for health risk assessment have been developed and adopted. These procedures have been used in EIA. The approach uses a four-step epidemiological and toxicological approach to risk assessment. The four steps are: risk identification, assessment of the dose-effect relationship, exposure assessment and risk characterisation.

Finland

A guidance report was published in 1999 (Finnish Ministry of Social Affairs and Health). The National Research and Development Centre for Welfare and Health has also produced a handbook on human impact assessment (2005) and a report (Savolainen-Mäntyjärvi & Kauppinen 2000) on perceived health impacts within EIA.

The guidelines from the Ministry of Social Affairs and Health (1999) outline a rationale for guidance, the use of the social and health sectors' expertise in EIAs, HIA, social impact assessment, general grounds for HIA and presents examples for assessing the significance of health impacts. The

report provides general guidelines for the assessment of impacts on human health, living conditions and amenity. These guidelines are primarily targeted to the makers of EIA statements as well as to municipal and state government authorities. Although the guidelines do not have a specific definition of health, the report devotes one chapter to HIA, including general grounds and guidance for the identification of health impacts and health hazards.

According to the guidelines, the EIA procedure should aim at identifying significant health impacts caused by the project. These include changes in human health or in changes in living environment and their health consequences. Changes can be:

- Direct or indirect
- Cumulative
- Temporary or long term impacts
- Positive or negative
- Permanent or reversible
- Severe or less detrimental

The report presents a checklist for assessing the significance of health impacts within an EIA procedure (see Table 5 below). The approach is close to health risk assessment.

Grounds for the assessment of the significance of health impacts									
Factors causing health impacts	Health impact (death, injury, illness, symptom, living conditions)	Exposed population	Exposed vulnerable groups	Dwellings	Place of work	Intensity of the impact (large, moderate, small)	Duration of the impact	Fluctuation of the impact	Other significant arguments for the significance of the health impact
1. Risks of accidents and disasters									
2. Air pollution (dispersion modelling and reference values)									
3. Noise (dispersion modelling and reference values)									
4. Water for household consumption									
5. Food supplies									
6. Radiation									
7. Others									

Table 5: Grounds for the assessment of the significance of health impacts (Ministry of Social Affairs and Health, Finland, 1999)

The guidelines recognise that health impacts also can evolve as a result of anxiety and worry over the possible occurrence and existence of health impacts – called perceived health – which have close linkages to social and psychological factors.

Slovakia

To support health assessment in Slovakia, several methodical manuals have been published. These include EIA guidance for: chemical technology, landfills and waste installations, settling pits and incineration.

The EIA guidance advises that human risk assessment should be used to assess the human health impacts of the various projects. Specifically, the four-step risk assessment approach of risk identification, dose-effect analysis, exposure assessment and risk characterisation. However, they tend to focus on air pollution and chemical substances impacts and do not provide detailed guidance on the technical procedure that should be used to assess health impacts.

Sweden

The Swedish National Board of Health and Welfare (2001) suggests a three-step model for assessing health impacts in EIAs according to the Environmental Code:

- Describe the activities with focus on human health
- Describe the environment
- Describe the influence on human health

The model does not, however, consider the wider determinants of health. The Swedish County Administrations, which usually put together an EIA group for auditing the assessment, lack own expertise and should therefore consult the unit for environmental medicine at the County Council – preferably at an early stage of the process.

United Kingdom

Guidance is available on EIA, including the:

- ODPM Circular 02/99 (HMSO 1999)
- Welsh Office Circular 11/99 (1999)
- Scottish Executive Development Department Circular 15/1999 (The Scottish Executive. August 1999)

Several Good Practice Guides are also available such as,

- The Preparation of Environmental Statements for Planning Projects that require Environmental Assessment (HMSO 1995) and
- Evaluation of Environmental Information for Planning Projects (HMSO 1994)

As in the UK legislation human health is not defined in this guidance, which refers to affects on 'population'.

2.2.3 National guidance in non-EU countries

There are also some examples of integration of health aspects within EIA outside the EU, viz from Canada, Australia and New Zealand.

Australian HIA differs to some extent from most European models. In Australia both the state and Commonwealth governments conduct HIA as part of EIA. HIA can be defined as a process of estimating the potential impact of a chemical, biological, physical, or social agent on a specified human population under a specific set of conditions and for a certain time frame. Wright (2004) distinguishes Australian HIA from European models by four key respects:

- HIA is legislated from the paradigm of environmental health
- HIA shares the role of EIA and exists as a decision-support system rather than a decision-making tool in its own right
- National regulations for HIA have been published in order to standardise the practice throughout the country
- The practice of EIA/HIA is typically quantitative and scientific and environmentally dependent.

National HIA Guidelines (Commonwealth Department of Health and Aged Care 2001) incorporate HIA into the existing EIA process rather than launching it as an autonomous evaluation process. The guidelines do not clearly point out how HIA should be carried out. The guidelines describe the HIA/EIA process as a largely risk-based exercise and outline what the impact statement might include. General responsibilities are allocated to certain parties, e.g. the developer, the health authority and the decision-making body. The guidelines do not specify the types of issues that the developer must include in the assessment but provides assistance on issues that might be relevant (see Figure 20 below).

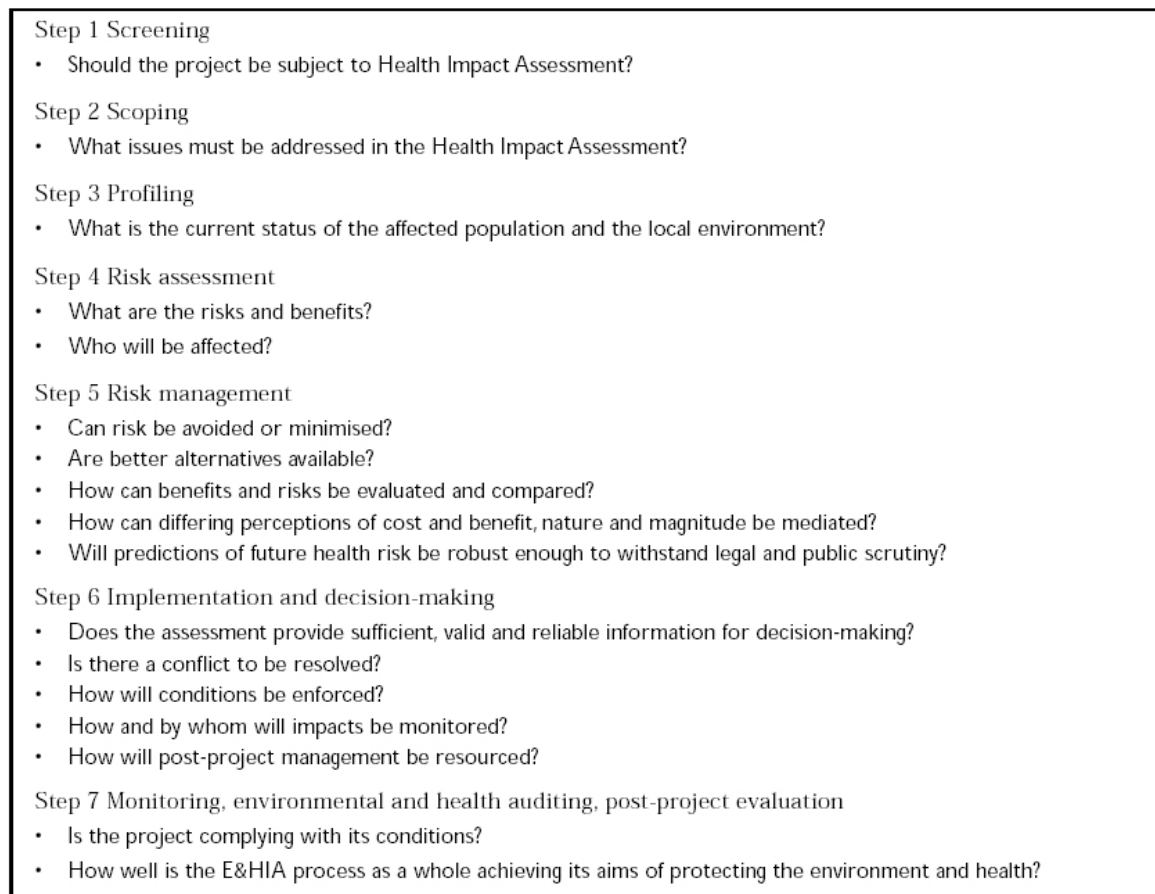


Figure 20: Proposed framework for HIA (Commonwealth Department of Health and Aged Care 2001)

The purpose of the *New Zealand* guide to HIA (New Zealand Public Health Commission 1998) is to focus on the health component of impact assessments and to provide a framework and guide for those who have responsibilities or an interest in resource management issues, which have the potential to influence the health of communities and individuals. It sets out a number of priorities and a systematic approach for HIA and risk analysis within the context of the Resource Management Act, which is the principle vehicle for EIA in New Zealand integrating EIA and SEA in the planning system.

The aims of the guide are to facilitate and encourage the integration of HIA into the “assessment of effects on the environment”, to assist those involved in the preparation and assessment of health impacts, to promote a better understanding of the links between environmental quality and health and to improve decision-making on resource management issues which may affect the environment and health.

In order to effectively integrate health considerations into the assessment of environmental effects process, it is important to encourage collaboration amongst the various agencies who have responsibilities for looking after specific aspects of the public interest. A collaborative working relationship between regional councils, territorial authorities, Crown health enterprises and other agencies enables the best use to be made of available resources and skills to achieve the best environmental and health outcomes.

Initially, developers must take responsibility for ensuring that, when carrying out an assessment of effects on the environment of a proposal, any actual or potential impacts on the health of individuals or the community are properly addressed. This can be achieved in two ways:

- early consultation with the consenting authority and public health agencies to obtain background information on environmental quality, environmental and health standards, and, where it is available, information on the health status of the community likely to be affected by the proposal, and
- where appropriate, submitting an assessment of effects on the environment, incorporating an assessment of any health impacts, with their proposals. This assessment provides the information necessary to enable decision makers and their advisors, as well as affected parties, to assess and estimate the risks, and to make decisions without unnecessary delays.

Canada was one of the first countries in the world to develop a standardised national approach to HIA (Kwiatkowski 2004). Since the mid-1990's the scope of EIA process has broadened to include cumulative effects, follow-up monitoring and related health and other social considerations. A task force on HIA was established in 1995 in order to better address health aspects within an EIA: increase awareness about HIA and EIA, and the linkages between human health and the environment; and to provide a more systematic approach for HIA.

- There are several arguments for incorporating human health in the EIA process. First, integration of health into EIA provides better possibilities to address public concerns of the development project as the public's main concern about projects is often related to health, well-being and the quality of life. EIA has the capacity to address public concerns (and therefore health-related concerns), particularly during the public consultation process. In addition, EIAs monitoring phase is designed to ensure that negative impacts on the environment and human health are minimised. Second, by integrating health assessment in EIA, the decision-makers are concurrently provided with information on economic, social and health issues, instead of performing time-consuming and costly assessments separately. Third, including human health considerations in EIA is more cost-effective than the possible costs on society for curative and treatment services in the case that health effects have not been foreseen and assessed properly. When negative effects on human health are identified before the project implementation, these impacts can be mitigated as much as possible. Fourth, addressing health concerns together with other social, environmental and economic issues supports the concept of sustainable development (Health Canada 1999).

The key guidance provided in Canada is the:

- Canadian handbook on health impact assessment (Health Canada 1999)

The aim of this handbook is to help health and social science professionals to participate in the environmental assessment process. The handbook provides the answers to some commonly asked questions concerning health in EA including What is meant by the term "health" and what are the principle determinants of health? Why do we need Environmental Assessment (EA)? Why should health be incorporated in the EA process? How do you carry out an EA? And what types of indicators should be used to assess potential health effects?

2.2.4 Other International guidances

A report by Davies & Sadler (1997), prepared for the international study of EA Effectiveness, reviewed key perspectives and approaches to including health considerations as an integral part of the EA process. The report draws on Canadian and international experience and provides tools for undertaking Environmental Health Impact Assessment (EHIA). The authors argue that beyond general requirements for the potential health effects to be considered as a part of EA, there is relatively little guidance material available. Nevertheless the report represents the WHO Regional Office for Europe's nine-step process (see Figure 21) for integrating health into EA, with the steps to be taken and a summary of limits and constraints on their application.

Steps to be Taken	Tools to be Used	Limits and Constraints on Application
Step 1 Assessment of primary impacts on environmental parameters	Regular EA process (modified where necessary to include health relevant methods and procedures)	1. Complex nature of environmental health impacts e.g., • impact often non-specific or probabilistic • many indirect effects • interaction among factors
Step 2 Assessment of secondary or tertiary impacts on environmental parameters resulting from primary ones	Regular EA process	
Step 3 Screening of impacted environmental parameters of recognized health significance (environmental health factors)	Epidemiological knowledge	2. Limits of scientific knowledge and methodology, e.g. level of • understanding of chemical toxicity and environmental disease • difficulties of "control" of exposure pathways and risk groups
Step 4 Assessment of the magnitude of exposed population for each group of environmental health factors	Census, land use planning	
Step 5 Assessment of the magnitude or risk groups included in each group of exposed population	Census, other population data	3. Biological variation in response • affects both epidemiological and experimental approaches • e.g. extrapolating dose-response relationships to susceptible sub-groups
Step 6 Computation of health impacts in terms of morbidity and mortality	Results from risk assessment studies	
Step 7 Definition of acceptable risks (or of significant health impacts)	Assessment of trade-offs between human and economic requirements	4. Resource constituents, e.g. related to: • baseline data assembly and comparability • specialized training • communication of risk
Step 8 Identification of efficient mitigation measures to reduce significant health impacts	Abatement of environmental health factors' magnitude, reduction of exposure, reduction of exposed populations, protection of risk groups	
Step 9 Final decision	Significant criteria, mitigability of impacts	

Figure 21: WHO Regional Office for Europe's nine-step process for integrating health into EA (Davies & Sadler 1997)

Furthermore, features of health that should be considered in EA as well as methods for assessing health impacts are illustrated (see figures below).

Feature	Characteristics
Hazardous agents	Microbiological virus-bacteria Chemical – heavy metals and organic chemicals Physical – noise, dust, radiation, vibration
Environmental factors	Changes in the quality or availability of water, food, air, land and soil Waste management practices Physical safety and security Disease vectors
Exposure conditions	Human exposure pathways – food, air, water, etc. Public exposure Occupational exposure Identification of high-risk groups
Effects on physical health	Mortality Morbidity – communicable and non-communicable diseases, acute and chronic effects Injuries and accidents Effects on future generations Effects on high-risk groups Exacerbation of existing health conditions e.g., asthma Cumulative effects
Effects on health care services	Incremental health care needs Displacement of traditional health care services
Other effects on health	Effects on income, socio-economic status and employment Effects on municipal revenues and local industries Migration and re-settlement Effects on social and community health including effects on culture and way of life Effects on services e.g., education, social support networks, etc. Effects on psychological well-being e.g., stress, anxiety, nuisance, discomfort Beneficial effects on health

Figure 22: Features of health considered in EA (Davies & Sadler 1997)

Types of Method	Characteristics	Strengths	Weaknesses
Matrices	Rows usually correspond to different project activities and stages, and columns correspond to different aspects of health	<ul style="list-style-type: none"> Simple Can be adapted to different types of projects and effects Can be modified to include weighting or ranking systems 	<ul style="list-style-type: none"> Do not represent spatial or temporal considerations well Tend to oversimplify interactions Do not address the magnitude of the effects unless weighting or ranking systems are included Can be cumbersome if there are many rows and columns
Mapping (including GIS)	Can be used to assess changes in the spatial distribution and extent of effects using point or polygon data. Map overlays can assess the relationships between the project and health risk areas. GISs permit more sophisticated analyses.	<ul style="list-style-type: none"> Represents spatial considerations well Can be adapted to temporal considerations by doing a time series analysis Can incorporate effects from single or multiple sources 	<ul style="list-style-type: none"> Does not identify cause and effect relationships well Requires a lot of spatial data Can be expensive in terms of time and resources to generate useful information
Risk Assessment	Predicts the quantitative risk of health effects, most often cancer, associated with exposure to individual hazardous agents. Risk assessment methods are used extensively in industrialized countries.	<ul style="list-style-type: none"> Good at relating causes and effects and determining probability functions Scientifically accepted 	<ul style="list-style-type: none"> Does not represent spatial considerations Only possible for some health effects, chemicals and ionizing radiation Difficult to validate

Figure 23: Methods for assessing health impacts (Davies & Sadler 1997)

Types of Method	Characteristics	Strengths	Weaknesses
Surveys and Questionnaires	Usually consist of standardized questions administered by telephone, mail or in person to a selected sample. Results are statistically analyzed.	<ul style="list-style-type: none"> Useful for obtaining baseline health information Can be used to collect information on public concerns Can involve potentially affected people 	<ul style="list-style-type: none"> Can be expensive in terms of time and resources Large, random samples are needed for representative results Investigators can bias the results Response rate is important Control groups may be needed
Network Analysis and Flow Diagrams	Used to construct illustrative figures relating project activities and stages to primary, secondary and tertiary effects.	<ul style="list-style-type: none"> Simple and inexpensive Good at relating causes and effects 	<ul style="list-style-type: none"> Does not represent spatial or temporal considerations well Do not address the magnitude of the effects well Can become very complicated and cumbersome
Group Methods	Groups of selected people discuss particular issues or questions. Questions are usually more open-ended than survey questions. Focus groups are a frequently used method.	<ul style="list-style-type: none"> Can be used to determine baseline conditions or predict effects Can involve potentially affected people Can lead to consensus and balance out opposing views 	<ul style="list-style-type: none"> Can require considerable time commitment from participants May not be representative of the population at large Investigators can easily bias the results
Expert Methods	Relies on the use of experts, either individually or in groups. Examples include Delphi and nominal group techniques.	<ul style="list-style-type: none"> Uses professional knowledge and experience Can be effective when time or resources are limited Can lead to consensus and balance out opposing views 	<ul style="list-style-type: none"> Results depending on the experts selected

Figure 24: Methods for assessing health impacts (Davies & Sadler 1997)

In relation to international guidances concerning HIA the guidance provided at the WHO website should be mentioned. The guidance provides a comprehensive overview of the aim, methods, procedural issues, links to other websites, etc., in relation to HIA. They also provide a list of some national short guides to take the beginner through the HIA process.

2.3 Results from previous evaluation studies

2.3.1 EIA evaluation studies

EU level

The five-year report from the Commission (Commission of the European Communities 2003), 'On the Application and Effectiveness of the EIA Directive', states that:

"The assessment of health impacts is not a particularly strong feature of current practice. There is considerable variation in coverage from a narrow to a broad interpretation of health effects. There is evidence to suggest that health impacts are considered to be less relevant to EIA, and/or to a certain extent covered by other legislation. There is some evidence to suggest that health impacts are considered under other headings such as pollution or risk."

The report goes on to say that respondents, in 2002, indicated that while...

"... in theory health effects should be given consideration in an EIA as part of the assessment of impacts upon human beings, in practice the level of detail is limited and often it is not as detailed as that provided for biophysical impacts."

Furthermore, the most common health impacts assessed were physical ones such as noise and air quality where quantitative standards and thresholds, and their monitoring, are in place at national level. It goes on to say that there is considerable variation in the coverage of health with a range of interpretations and definitions being used as to what constitutes health. At one end is a narrow interpretation and definition of health where the health impacts of noise, air vibration and so on are assessed. At the other is a wider interpretation and definition where well-being and socioeconomic effects are included in the assessment of health impacts. They state that approximately one third of the Member States adopted a wider interpretation and approach while the remainder adopted a narrower interpretation and approach. Few respondents could at the time provide examples of good practice although some referred to WHO guidance or national guidance. Finally, some advocated a health risk assessment approach to analysing health impacts (e.g. Ireland) while some others, recognising the need for a quantitative risk assessment approach, also saw the need for qualitative aspects of health and well-being to be assessed, e.g. the Netherlands.

The report recommends that there needs to be a more systematic approach to assessing health impacts and that this could be achieved by building a consensus on the scope of environmental health and by increasing the awareness about the linkages between human health and the environment.

Country level

The *Finnish* National Research and Development Centre for Welfare and Health (Savolainen-Mäntyjärvi & Kauppinen 2000) has studied the role of perceived health in EIA. From the Finnish point of view, perceived health and perceived health impacts belong to a type of impact that does not have an established definition or place in the field of EIA. In planning, health is usually viewed from a scientific perspective with the aim of classifying hazards to human health and demonstrating their presence or absence through quantitative measures of microbes, chemicals and physiological changes in human beings. In current EIA practice the notion of health used forgets the social and psychological dimensions of health. The report questions the distinction between perceived health impacts and health impacts in general. The study argues that perceived health impact, health impacts and social impacts should be put under one term, human impacts. This approach would direct attention to humans and human impacts in a comprehensive way, along with other physical environmental impacts, and thereby widen the concept of environmental impact.

The inclusion of perceived health impacts in EIA was considered important but challenging by the report because perceived health impacts are neither measurable nor easy to define accurately. Furthermore, in most EIAs health has been defined using a narrow definition, stressing biological and medical aspects and EIA practitioners tend to have educational backgrounds in the engineering or natural sciences. The report considers this one of the main reasons why human impacts have been left outside of EIA. The study presents several recommendations to facilitate the inclusion of health impacts in the assessment process.

These recommendations were:

- To increase cross-sectoral co-operation within civic organisations (municipalities, regions, etc.)
- To consider EIA as a co-operation platform where different professions and disciplines work together with a common language. Experts from social and health sectors should be included in EIA
- Local authorities should ensure that attention is paid to "silent" groups within a population
- Citizens should actively bring out their views, concerns and expectations
- Need to implement a broader and more comprehensive definition of environmental impact
- To improve the awareness as regards the linkages between human and environment interaction through education and pilot projects
- To explain local conditions and circumstances within an EIA
- To use lay and non-technical language and avoid professional jargon. Undertake more open communication
- To utilise local expertise, i.e. local health and social welfare professionals. They should help incorporate long term and cumulative impacts into the EIA process. Local residents should provide information of direct and short term impacts
- To consider human impacts equal to other types of impact within an EIA

The Finnish Road Administration defines health as “physical, social and mental viability, where the human being is in positive interaction with his/her living environment. A Finnish evaluation report (Tielaitos 2000) of the Road Administration’s environmental impact statements reveal that health impacts have been well addressed in terms of physical well-being. However, if health impacts are considered on the grounds of the WHO’s wider definition of health, psychological and social well-being are often inadequately observed and there is a weak link between well-being and human health.

According to an analysis of the current HIA situation, the coverage of health aspects in EIA documents tends to be highly incomplete in *Germany* (Fehr et al 2004). The screening stage was found to have limited or missing coverage of human health aspects and there was a lack of a systematic approach to health throughout the EIA. Possible reasons identified for the inadequate handling of health issues in EIA were:

- Insufficient provision of specific methods, tools and instruments to assess health impacts.
- Inadequate access to reliable and current baseline health data
- Lack of systematic evaluations of existing HIA practice
- Public health authorities were not participating in the EIA process, especially in the initial scoping phase

A research and development project for HIA, also known as the Bielefeld project, was conducted between 1992 and 1996 with the aim of improving the coverage of human health in the EIA process. The research project analysed over fifty German EIA documents and found limited or missing coverage of human health aspects within most documents. Due to highly incomplete treatment of human health issues in the context of EIA there was a need for practical guidance. As a result, a concept of environmental health impact assessment (EHIA) was developed and a ten-step model was designed (Figure 25).

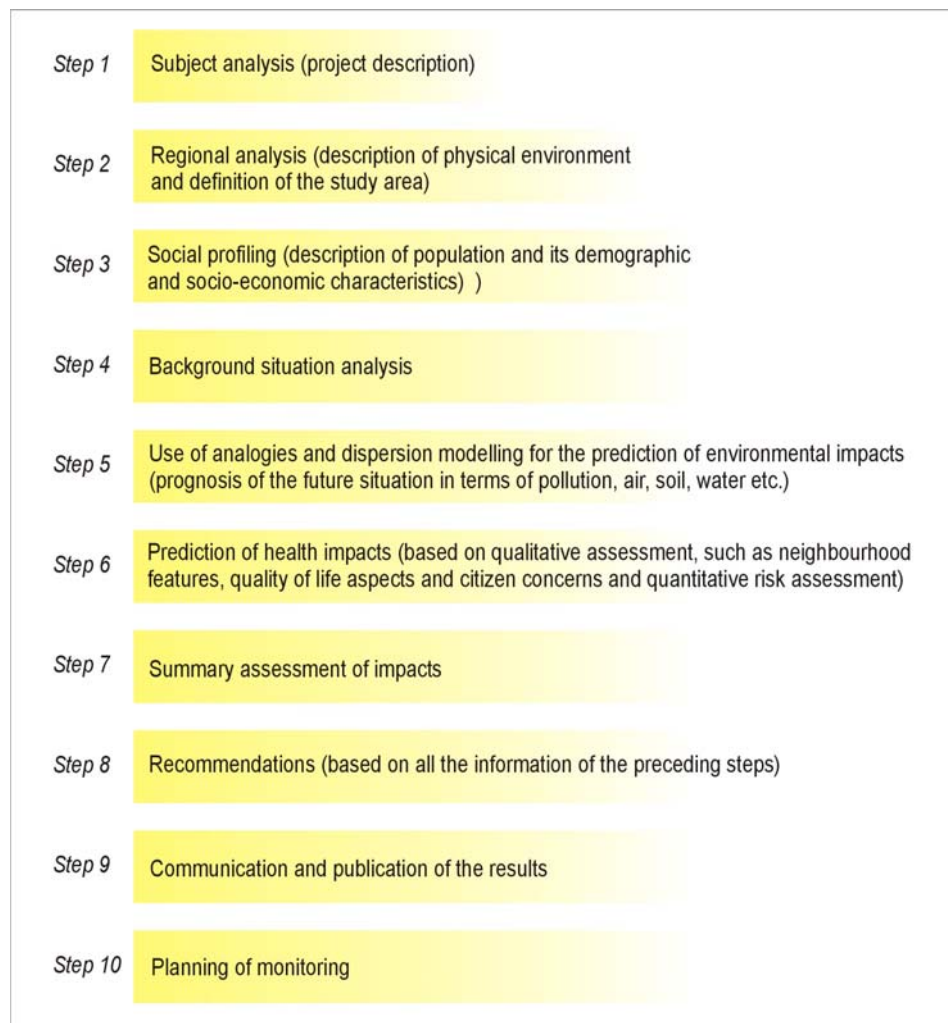


Figure 25: A ten-step model for EHIA (after Fehr 2004)

In Sweden noise, radon, allergy, risk for accidents, worry, and the quality of air and land are health-related effects that are usually (somewhat) assessed in an EIA (Swedish National Board of Health and Welfare (2001). The barriers are assumed to be e.g. a lack of 'health competence' (both at the authorities commissioning an EIA and the consultants doing it). Another Swedish study (Alenius 2001) was carried out to evaluate how health issues were presented in EIAs for roads. The conclusions were:

- Health experts were involved in only a few EIAs
- There was usually little reference to health in the identification or scoping phase
- The majority of the EIAs studied did not describe the population affected by the project, its composition or the presence of sensitive groups
- The health impacts of the project were to a large extent compared to current national standards, guidance and limit values rather than to the zero option of no such development taking place
- The EIA authors assumed that levels below national standards and threshold levels did not have any effects on human health and hence they did not have to quantify the changes in exposure and their potential health effects

- Only a few of the EIAs stated how the project complied with the provisions of the national Environmental Code
- Despite the fact that many of the studied documents described relevant national health goals, most did not state how the projects complied with these goals
- The cumulative effects of a number of similar projects in the area were not discussed

International level

A report by Davies and Sadler (1997), prepared for the International Study of Environmental Assessment Effectiveness, reviewed key perspectives and approaches to including health considerations as an integral part of the EA process. The report draws on Canadian and international experience. The authors argue that beyond general requirements for the potential health effects to be considered as a part of EIA, there is relatively little guidance material available. Nevertheless the report represents the WHO Regional Office for Europe's nine-step process for integrating health into EIA, with the steps to be taken and a summary of limits and constraints on their application (presented in section 2.2.4).

2.3.2 EIA and health literature

The majority of the literature reviewed for this study clearly acknowledged the need to integrate human health into EIA. Despite the clear need, only a few examples of how health could be integrated into EIA were identified as most of the literature referred to the obstacles and challenges to including human health aspects of EIA.

The benefits from including health impacts within EIA vary depending on the subject of the assessment and its physical and institutional setting. Not all EIAs need or ought to encompass health effects, but there is a strong argument that all initial scoping procedures should examine the possibility that the project under review might have an impact on health (Turnbull 1992).

The following list provides some of the key reasons for the inadequate treatment of human health aspects in EIA (Utzinger et al (2005); Dora (2004); Alenius (2001); Fehr et al (2004), Turnbull (1992); Franssen et al (2002), Kemm (2004), Cherp (2002), Lieskovská & Palúchová (2004)):

- Analytical complexity: health impacts are often indirect or cumulative, i.e. secondary consequences of other environmental effects which makes the prediction of health impacts extremely difficult. This generates inherent uncertainties about interpreting the accuracy and precision estimated and quantified health impacts.
- Lack of standardised, readily available and agreed-upon methods
- Inadequate access to reliable and current health data
- Lack of systematic evaluations of applications of HIA
- Missing legal requirements for assessing health impacts within the current EIA framework. EIA legislation does not specify how health should be assessed.
- Traditional separation of environmental and health issues. EIA is often conducted with little input from the health sector. Organisational boundaries have made cross-sectoral co-operation for public good difficult. Public health authorities are not participating in EIA

processes, especially in the initial scoping phase. When they do participate health authorities are not having the influence they would like.

- Health experts were involved in only a few EIAs
- There is usually little reference to health in the identification or scoping phase
- There is a fear that the EIA documents will become even longer, more complicated and more expensive
- Only those health issues, for which there is a legal limit, are considered in many cases. Consequently, health is interpreted using a narrow definition and other relevant health aspects are excluded.
- Population groups affected by the proposal have no or limited opportunities to participate in the assessment process
- The health impacts of the project were to a large extent compared to current national standards, guidance and limit values rather than to the zero option of no such development taking place
- The EIA authors assumed that levels below national standards and threshold levels did not have any effects on human health and hence they did not have to quantify the changes in exposure and their potential health effects

There are several arguments for incorporating human health in the EIA process (Health Canada 1999):

- Integration of health into EIA provides better possibilities to address public concerns of the development project as the public's main concern about projects is frequently related to health, well-being and the quality of life
- Integrating health assessment into EIA ensures that decision-makers obtain concurrent information on economic, social and health issues, instead of waiting for a set of consecutive assessments on the various aspects of a project which would be both time-consuming and costly
- Including human health considerations in EIA is more cost-effective than the eventual costs on society for provision of curative and treatment services because health effects were not foreseen and assessed adequately. Early identification of negative impacts on human health, before a project is implemented, allows for these impacts to be eliminated or mitigated through changes to the design of the project.
- Addressing health concerns together with other social, environmental and economic issues supports the concept of sustainable development

A number of benefits of having a separate HIA process have also been highlighted: these include being able to undertake a thorough and full assessment, not being bound by the restrictive legislative framework for EIA and being able to build on and expand on the issues already identified in the EIA.

2.4 Key findings desk study

Key findings of the desk study are that:

- The overview of the EIA legislation and the treatment of human health show that a majority of the 12 countries studied, have in their EIA legislation, some kind of reference to impacts on humans or on human health (or related concepts). There is however a variety of concepts and approaches. To what extent this variation is a result of the broader legislation picture in relation to health is still an open question. By this we mean that information concerning e.g. a narrow health definition and a focus on risk assessment, as opposed to a broad health definition and a broad HIA approach in the EIA legislation, does not in itself give the full picture of how human health issues are regulated and treated in project planning and approval in a specific country.
- At present, health issues within EIA legislation and guidelines tend to be related to air, water, soil and noise pollution and their biophysical effects. These are areas for which quantitative assessment methods are available and threshold levels have been set. There is an acknowledged need for a more systematic approach to human health that would improve the consideration of health impacts within EIA.
- The definition of human health in legislation and guidelines varies and tends to be quite unspecific and vague.
- The overall picture is that there are a number of guidance documents in relation to human health and EIA and HIA, taking the international, EU and national picture into consideration. However, at the national and regional level there are few EIA guidelines that have a clear human health dimension. Instead, most EIA guidelines focus either on how to assess policies or on how to conduct separate and autonomous HIAs.
- There are potential improvement and learning points on ameliorating the consideration of human health aspects within EIA both from individual Member States and from international policy and practice.
- The majority of the current literature focusses on barriers and challenges to incorporating human health into EIA with few suggesting a way forward.
- The range of barriers identified covers a wide field of factors ranging from factors concerning crucial and basic implementation issues in the practical day-to-day professional practice to issues relating to legal requirements.

Those that suggest a way forward to enhance the integration of health aspects in EIA argue for:

- A clearer reference to human health within EIA legislation and guidance
- A consideration of the whole range of health determinants, the coverage of positive and negative health impacts and the differential impacts on population subgroups
- To build systems with existing health systems so that they can provide detailed baseline health data for local populations
- Raising the awareness of environment and health institutions and professionals about the links between environmental impact and health impacts and the wider determinants of health. There also needs to be a greater awareness of EIA and HIA in both sectors.

- Methodologies and tools that can provide accurate and precise measures of health impacts need to be developed (Dora 2004, Commission of the European Communities 2003, Cole et al 2004)
- To co-ordinate and conduct EIA processes (who, when, how) from the point of view that human health information and professionals are adequately included

3 APPLICATION OF EIA

Introduction

This chapter will present the findings from the questionnaires sent to stakeholders in all 25 Member States and the interviews undertaken with selected stakeholders in eleven Member States and two international comparator countries.

Key themes emerging from the questionnaires and the interviews were that:

- Human health impacts, within EIA, are understood in a narrow way as the environmental risk to health and less as complete physical, mental and social well-being
- Health outcomes such as mental illness and anxiety and worry are less adequately considered than death and serious physical illness
- Health determinants such as educational opportunities, social capital and cohesion, and the widening of health inequalities are seldom considered compared to effects on the local economy, employment and recreational areas, which are often or always considered
- Finally, there are a significant number of barriers to improving the assessment of health impact within EIA and these include: time and cost, lack of HIA capacity, lack of baseline health data, lack of knowledge, lack of institutional and professional co-ordination and co-operation, lack of public involvement and inadequate EIA frameworks at EU and Member State levels

An analysis of the questionnaire data by stakeholder type was undertaken to identify whether and in what areas there were similarities and differences in perspectives between the various stakeholder groups. This was important because significant differences between one or other of the stakeholder groups especially when compared to the overall findings at the European level could have meant that either the overall findings were biased and in some way unrepresentative of EIA stakeholders across Europe as whole or that there were factors at work that were causing a significant divergence between stakeholder groups that would need further data collection and analysis. The results by stakeholder type showed that the range of views expressed by each stakeholder group were similar and consistent both across the EU as a whole and, where data allowed for analysis, between stakeholder groups within Member States.

3.1 Results questionnaire

3.1.1 How is human health generally understood in EIAs

Of the 183 respondents, 68% stated that human health, within EIA in their countries, was generally understood as the environmental risks to health, such as air pollution and noise. 8% stated that human health was understood as a complete state of physical, mental and social well-being; 7% stated that it was understood as the absence of illness and disease; and 10% stated that it was seen as both of the above. Finally, 4% and 3% of respondents ticked the 'Other' and 'I don't know' categories respectively (see Figure 26). Of those who ticked 'Other' the majority also ticked one or other of the earlier items in the question.

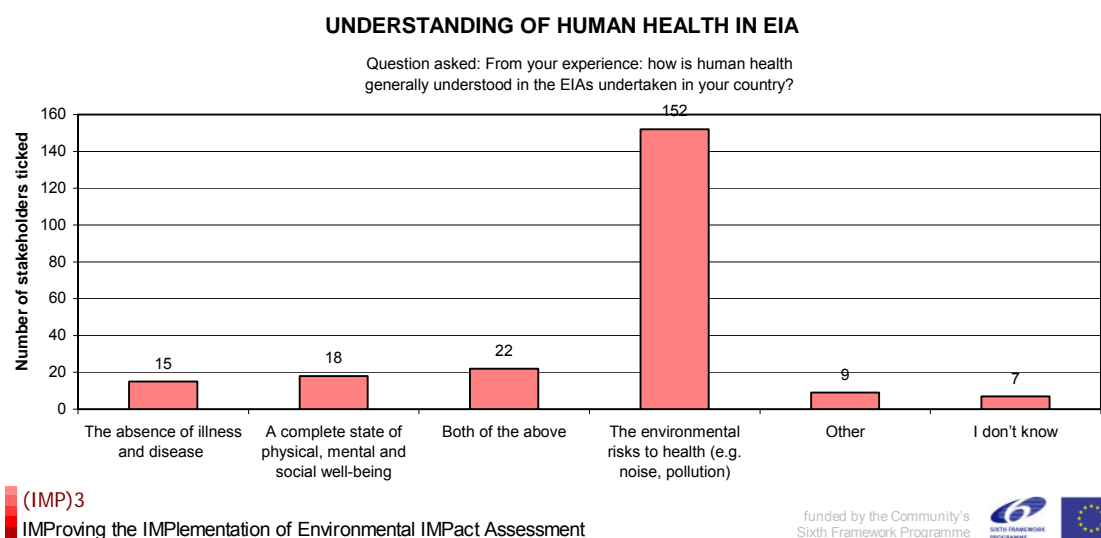
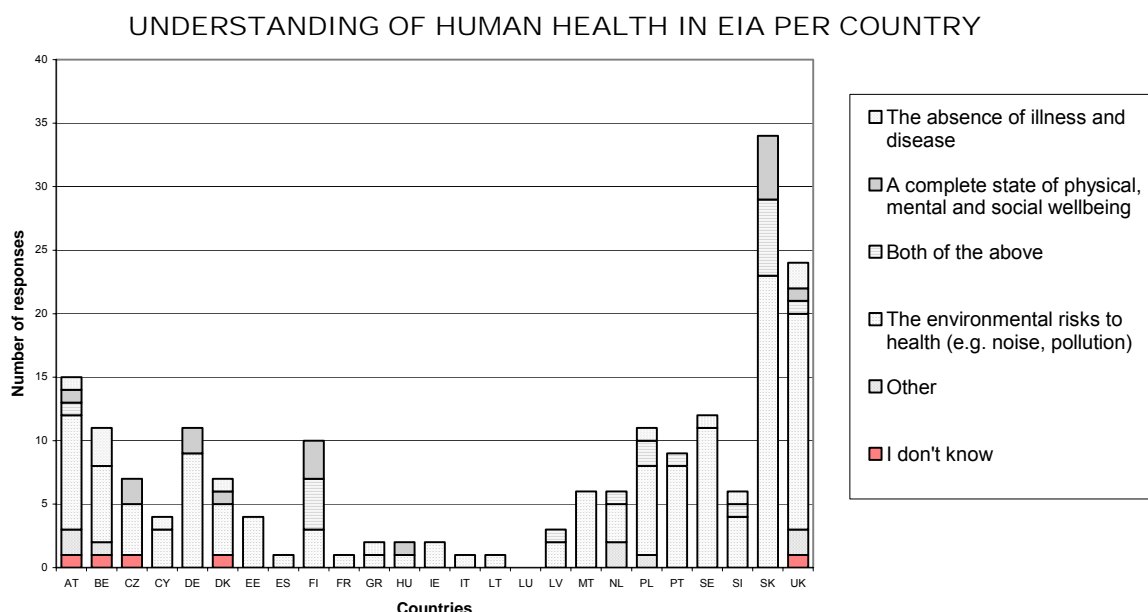


Figure 26: How is human health generally understood in EIAs in the EU

Two quotes from the comments given in this context exemplify how human health is perceived within EIA practice in the EU.

“Whether and how health is addressed in EIA strongly depends on the project. Where health-related limit values for air/soil/water pollutants are (almost) exceeded, these health-related environmental aspects are considered to be an important (=relevant) issue for the EIS. In filling in the next table, with ‘always’ we do not mean to say the aspect is always considered; we do mean to say that this aspect is always considered when relevant.”

“Potential health impacts (positive & negative) during project development and operation phases, or project activities altering determinants of health. These impacts may include direct effects on the health of the members of the population and more indirect effects through intermediate factors that influence the determinants of the health of the population. Such impacts may be felt immediately, in the short term, or after a longer period.”



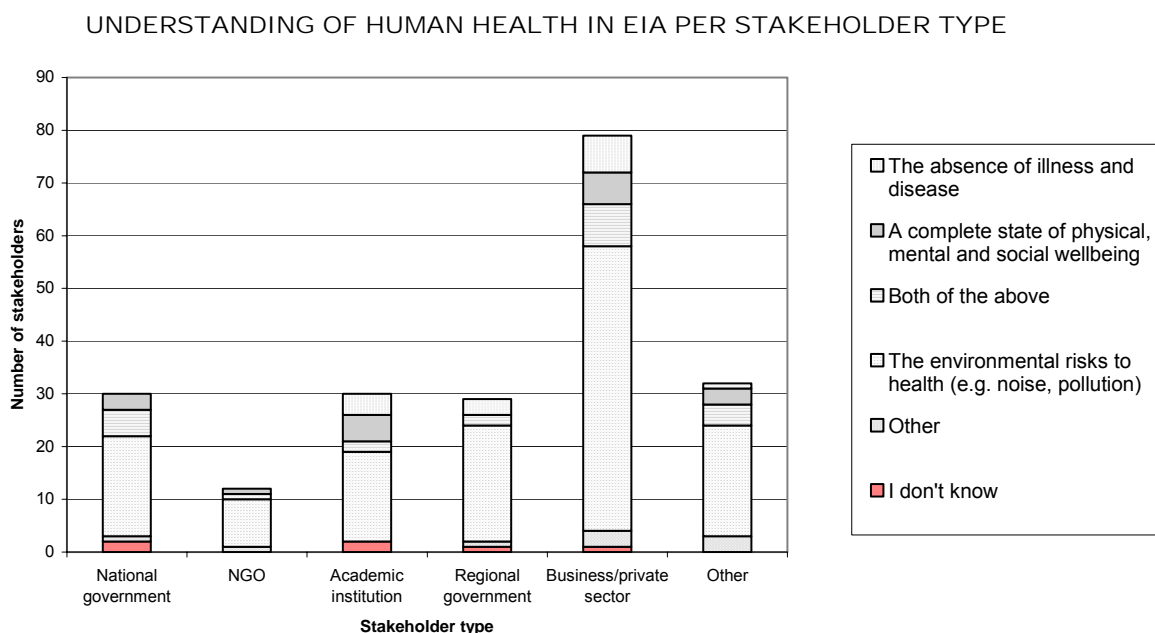
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Sixth Framework Programme



Figure 27: How human health is generally understood in EIA in the Member States

Figure 27 above shows that the findings at EU level are broadly replicated within the majority of Member States. Human health as the environmental risks to health is predominant across the whole of the EU and between old and new member states. In a majority of countries there were a significant minority of respondents who reported that human health, within EIA, is being seen as a state of complete physical, mental and social well-being.



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Figure 28: Understanding of human health within EIA by stakeholder type

Figure 28 above shows that all stakeholder types across the EU feel that human health, in EIA, is seen as the environmental risks to health. More interestingly, a significant minority within all stakeholder types feel that human health is also being seen as a state of complete physical, mental and social well-being.

3.1.2 Health aspects considered within EIAs

In terms of health outcomes, 37% stated that death was always or often considered while 47% thought that it was seldom or not at all considered (see Figure 29). 37% stated that serious physical illness was always or often considered compared to 49% who thought that it was seldom or not at all considered. 28% stated that sensory or physical incapacity was always or often considered but 55% thought that it was seldom or not at all considered. 32% stated that low grade ill health was always or often considered compared to 50% who thought it was seldom or not at all considered. 7% stated that mental illness was always or often considered compared to 70% who thought that it was seldom or not at all considered. Finally, 22% stated that anxiety and worry were always or often considered compared to 59% who thought that it was seldom or not at all considered. Approximately 15% of respondents ticked the 'don't know' item for each sub-category. The results show considerable variation and disagreement among respondents, but overall, health outcomes across the EU are inadequately covered within EIA with psychosocial health impacts being more poorly assessed than death and serious physical illness.

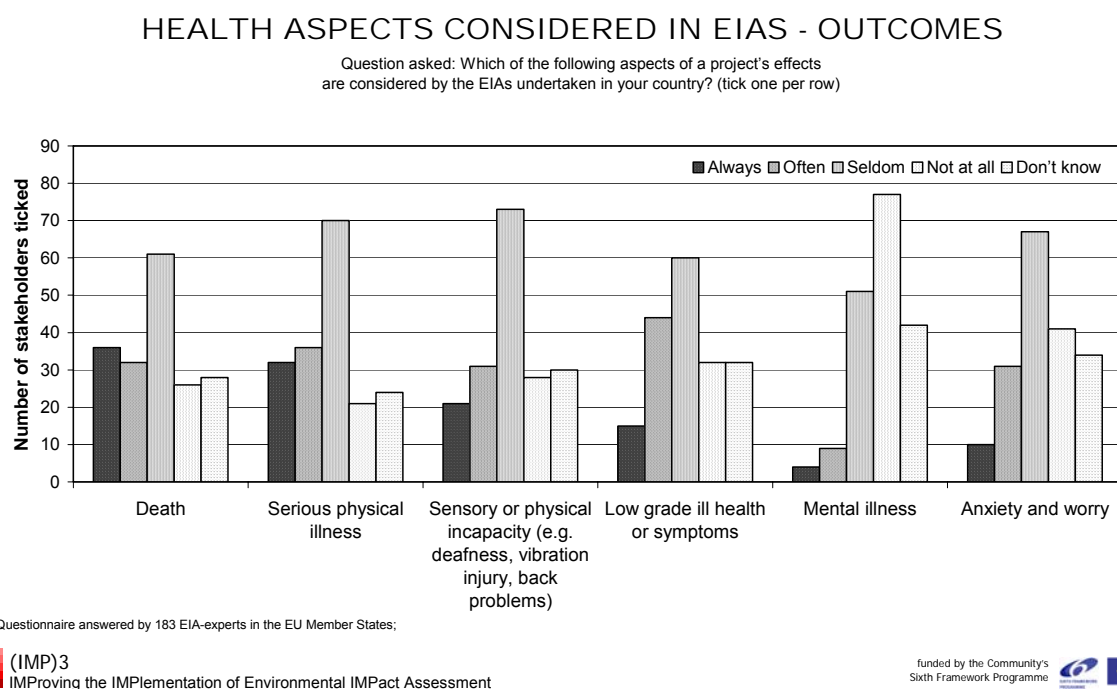


Figure 29: Health outcomes considered in EIA

In terms of causal pathways of effect, 93% stated that pollutants of air, water and soil were always or often considered compared to 2% who thought that they were seldom or not at all considered. 93% stated that noise was always or often considered compared to 3% who thought that they were seldom or not at all considered. 71% stated that accidents were always or often considered compared to 20% who thought that they were seldom or not at all considered. Lastly, 75% stated

that impact on visual amenity was considered compared to 18% who thought that it was seldom or not at all considered. Approximately 6% of respondents ticked the 'don't know' item. Overall, the results show that it is the health impacts of pollutant emissions and the pathways by which they act that are most fully considered within EIA with slightly less consideration given to visual amenity and accidents.

In terms of the influences on health, 51% stated that the availability of recreation areas was always or often considered compared to 39% who thought that it was seldom or not at all considered (see Figure 30). 52% stated that employment opportunities and unemployment were always or often considered compared to 40% who thought that they were seldom or not at all considered. 49% stated that the effect on the local economy and incomes was always or often considered compared to 43% who thought that they were seldom or not at all considered. 13% stated that education opportunities and level of education were always and often considered compared to 73% who thought that they were seldom or not at all considered. 18% stated that access to medical care, shops and amenities were always and often considered compared to 69% who thought that they were seldom or not at all considered. 12% stated that trust, friendship and cohesion within a community were always and often considered compared to 72% who thought that it was seldom or not at all considered. 21% stated that health inequalities and the distribution of impacts was considered always and often compared to 68% who thought that it was seldom or not at all considered. Lastly, approximately 11% of respondents ticked the 'don't know' item. Here again there is considerable variation and disagreement among respondents. Overall, the results show that while recreational areas, employment opportunities and effects on the local economy are considered within EIA impacts on educational opportunities, social capital and cohesion, and the widening of health inequalities are seldom considered.

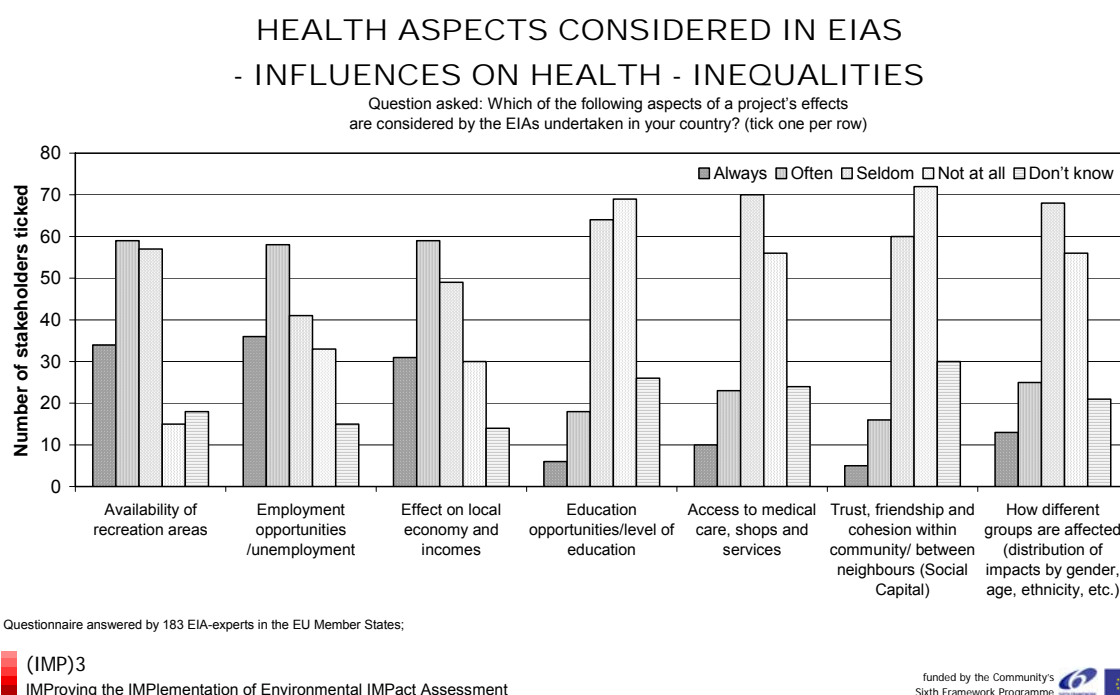


Figure 30: Health influences and health inequalities considered in EIA

The EU level health outcome findings are replicated at the country level (see Table 6), with death and serious physical illness considered more often than sensory or physical incapacity and low

grade ill health or symptoms. While mental illness and anxiety and worry were seldom or not at all considered. However, there is considerable variation between countries. The respondents from the Czech Republic, Germany, Denmark and Finland did consider that mental illness and anxiety and worry were assessed in EIA though to a lesser degree than death and serious illness. While respondents from Sweden felt that while mental illness was not considered, anxiety and worry were. In contrast, respondents from Portugal considered that, apart from sensory or physical incapacity, all aspects from death to anxiety and worry were seldom considered. While for the Netherlands, respondents considered that sensory or physical incapacity and low grade ill health or symptoms as well as mental illness and anxiety and worry were seldom considered.

In terms of causal paths, respondents considered that their respective countries did assess pollutant emissions, noise, accidents and impact on visual amenity with pollutants first in the order of priority, then noise, then visual amenity and finally, accidents. This is similar to the findings presented earlier for the EU as a whole.

The pattern for influences on health at country level (see Table 7), was the most mixed. Most respondents thought that employment opportunities, the effect on the local economy and incomes, and the availability of recreation areas were being taken into account within EIAs in their respective countries. Respondents in less than half of Member States felt that education opportunities and access to services were considered. While, respondents in only a few Member States thought that social capital and health inequalities were considered. However, respondents from Finland, Slovenia and Slovakia thought, though with less unanimity amongst respondents, that social capital and health inequalities were considered alongside employment and economic aspects.

Country	Death	Serious physical illness	Sensory or physical incapacity (e.g. deafness, vibration injury, back problems)	Low grade ill health or symptoms	Mental illness	Anxiety and worry
AT	✓✓	✓✓	✓✓	✓✓	×	×
BE	✓	✓	×	✓✓	×××	×
CZ	✓✓	✓✓	✓✓	✓	×	✓
CY	✓✓	✓✓	✓	✓	×	✓
DE	✓✓	✓✓	✓✓	✓✓	✓	✓
DK	✓	✓	✓	✓	✓	✓
FI	✓✓	✓✓	✓	✓	✓	✓✓✓
MT	✓✓	✓✓	✓	✓	✓	×××
NL	✓	✓	××	×	×××	××
PL	✓	✓	✓	✓	××	×
PT	×	×	✓	×	×	×
SE	✓✓	✓✓	✓	✓	×	✓✓
SI	✓	✓	✓	✓	×××	××
SK	✓	✓	✓✓	✓	××	×
UK	✓✓	✓✓	✓	✓	×	×

Table 6: Health impacts considered in EIAs by country, based on the answers to the (IMP)3 questionnaire

✓ Degree to which stakeholders think that these health outcomes are considered in EIA in their countries

× Degree to which stakeholders think that these health outcomes are NOT considered in EIA in their countries

Countries in BLACK were the ones where stakeholders were interviewed.

Countries in GREY were the ones where stakeholders were NOT interviewed.

Country	Availability of recreation areas	Employment opportunities/unemployment	Effect on local economy and incomes	Education opportunities/level of education	Access to medical care, shops and services	Trust, friendship and cohesion within community/between neighbours (Social Capital)	How different groups are affected (distribution of impacts by gender, age, ethnicity, etc.)
AT	✓✓	✓	✓	×	×	×	×
BE	✓✓	✓	✓✓	×	×	✓	×
CZ	✓✓	✓	✓	×	×	×	×
CY	✓	✓✓	✓✓✓	✓	✓	×	×
DE	✓✓	×	×	×	×	×	×
DK	✓	✓	✓✓	×	×	×	×
FI	✓✓✓	✓	✓✓	×	✓	✓	✓✓
MT	✓	✓✓✓	✓✓✓	✓	×	✓	×
NL	✓	✓	×	×	✓	✓	✓
PL	✓	✓	✓	×	×	×	×
PT	✓	✓✓✓	✓✓✓	✓	✓	✓	✓
SE	✓✓✓	×	×	×	✓	×	×
SI	✓	✓✓	✓✓	✓	✓	✓	✓
SK	✓✓	✓✓	✓✓	✓	✓	✓	✓
UK	✓✓	✓✓✓	✓✓✓	✓	✓	×	×

Table 7: Influences on health considered in EIAs by country, based on the answers to the (IMP)3 questionnaire

✓ Degree to which stakeholders think that these health influences are considered in EIA in their countries

× Degree to which stakeholders think that these health influences are NOT considered in EIA in their countries

Countries in BLACK were the ones where stakeholders were interviewed.

Countries in GREY were the ones where stakeholders were NOT interviewed.

3.1.3 Barriers to the coverage of human health in EIAs

The barriers to the coverage of health identified by respondents were varied. The top seven barriers to the coverage of human health within EIA were that (percentages are out of a total of 183 respondents, multiple responses mean that they add up to more than 100%):

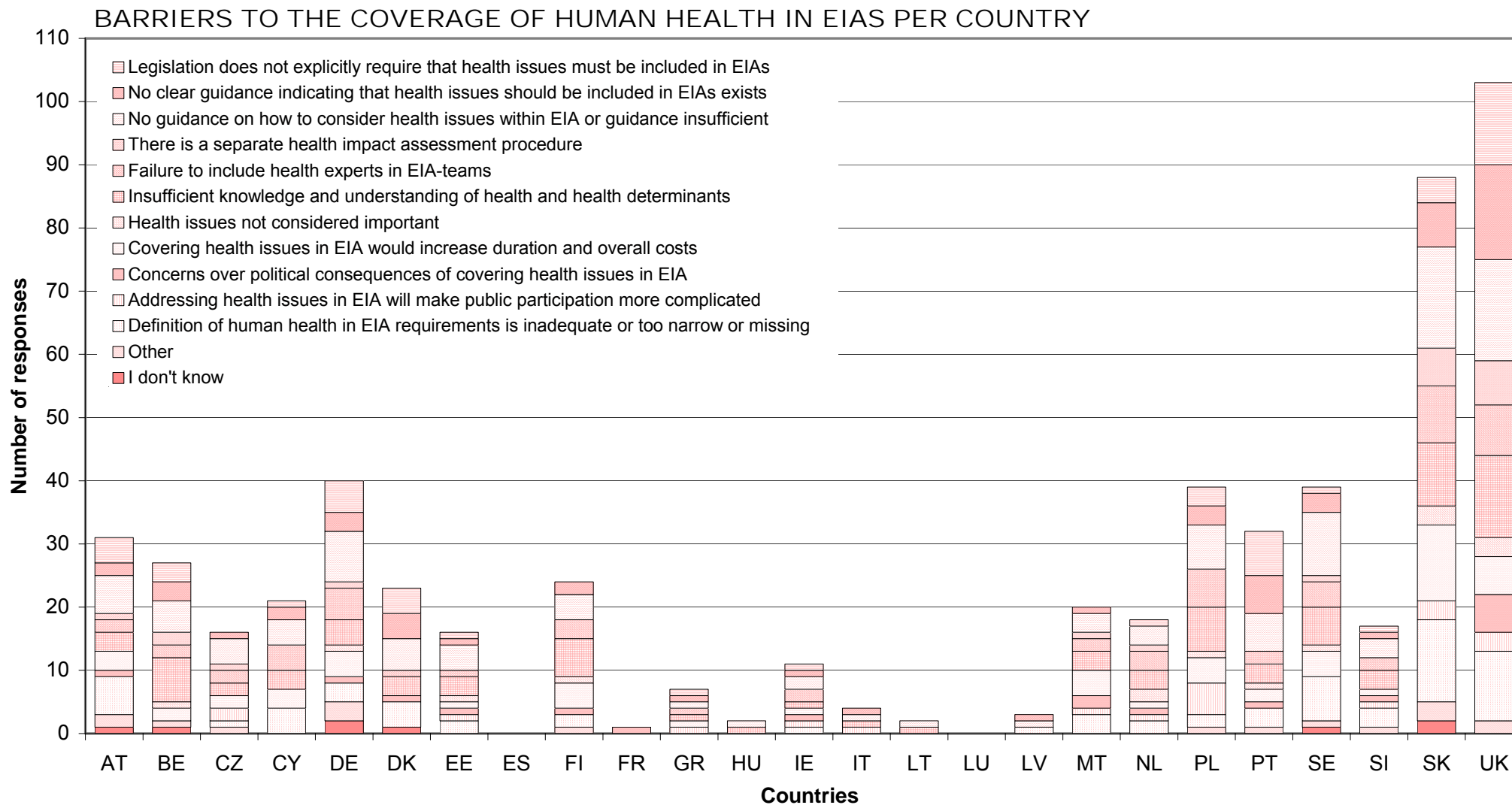
- There was no or insufficient guidance on how to consider health issues in EIA (65%)
- There was insufficient knowledge and understanding of health and health determinants (49%)
- The definition of human health in EIA requirements is inadequate or too narrow or missing (40%)
- There was a failure to include health experts in EIA teams (34%)
- There was no clear guidance indicating that health issues should be included in EIAs (33%)
- Covering health issues would increase the duration and cost of EIA (31%)
- Legislation does not explicitly require that health issues must be included in EIAs (30%)

The remaining barriers mentioned were evenly divided (each making up approximately 9-12% of responses) into those who stated that: there was a separate HIA process; addressing health issues in EIA would make public participation more complicated; there were concerns over the political

consequences of covering health issues within EIA; and that health issues were not considered important. Other barriers mentioned by respondents included:

- The absence of practical indicators on health impacts and also the belief that health impacts cannot be predicted well enough for projects
- Lack of communication between environmental and health professionals with human health experts not knowing about EIA
- Institutional barriers such as lack of involvement by the Ministry of Health in EIA

Figure 31 (below) shows the distribution of responses about barriers to incorporating human health into EIA by Member State. The graph shows that the range of barriers mentioned is fairly similar across each of the Member States and that there are no major differences discernable in terms of the types of barriers faced and their significance. The key barriers identified at country level were a lack of, or insufficient, guidance on how to consider health issues within EIA; insufficient knowledge and understanding of health and health determinants; a lack of clear guidance indicating that health issues should be included in EIAs; the definition of human health in EIA requirements was inadequate, too narrow or missing; and covering human health within EIAs would increase its duration and cost.



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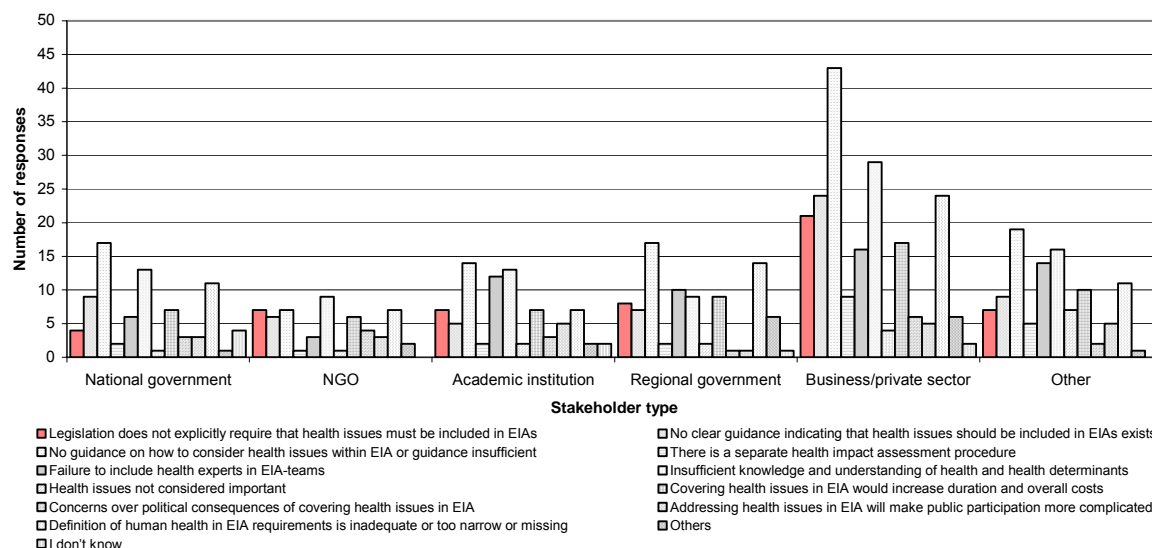
Figure 31: Barriers to the coverage of human health within EIA by country

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Figure 32 shows the barriers to covering human health in EIA by stakeholder type. The graph shows a number of interesting things. It shows that across all stakeholder groups lack of, or insufficient, guidance on how to consider health issues within EIA is perceived as the key barrier. This is followed by insufficient knowledge and understanding of health and health determinants; a lack of clear guidance indicating that health issues should be included in EIAs; and the lack of legislation that explicitly requires health issues to be included in EIAs.

BARRIERS TO COVERING HEALTH IN EIA PER STAKEHOLDER TYPE



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Figure 32: Barriers to the coverage of human health within EIA by stakeholder type

Finally, the quote below exemplifies the issues and tensions that arise when considering human health with the EIA framework:

"EIA is a sectoral instrument confined to effects on the environment. Health effects are at least partly a different thing, same as social effects, effects on education, religion or gender aspects. There is good reason to split complex planning decisions into manageable parts – as environment, social, health, labour or economy to promote a fair appreciation of values. As there is legal necessity to assess and consider all relevant impacts of large projects, though not within the EIA but within the entire decision process, your question is misleading. Problems arise, if health effects are not considered at all, problems arise as well, if the EIA is burdened with non environmental questions, obviously there is no problem in dealing with health on a second string."

3.1.4 Measures being taken to increase the awareness of the relation between health impacts and environmental impacts

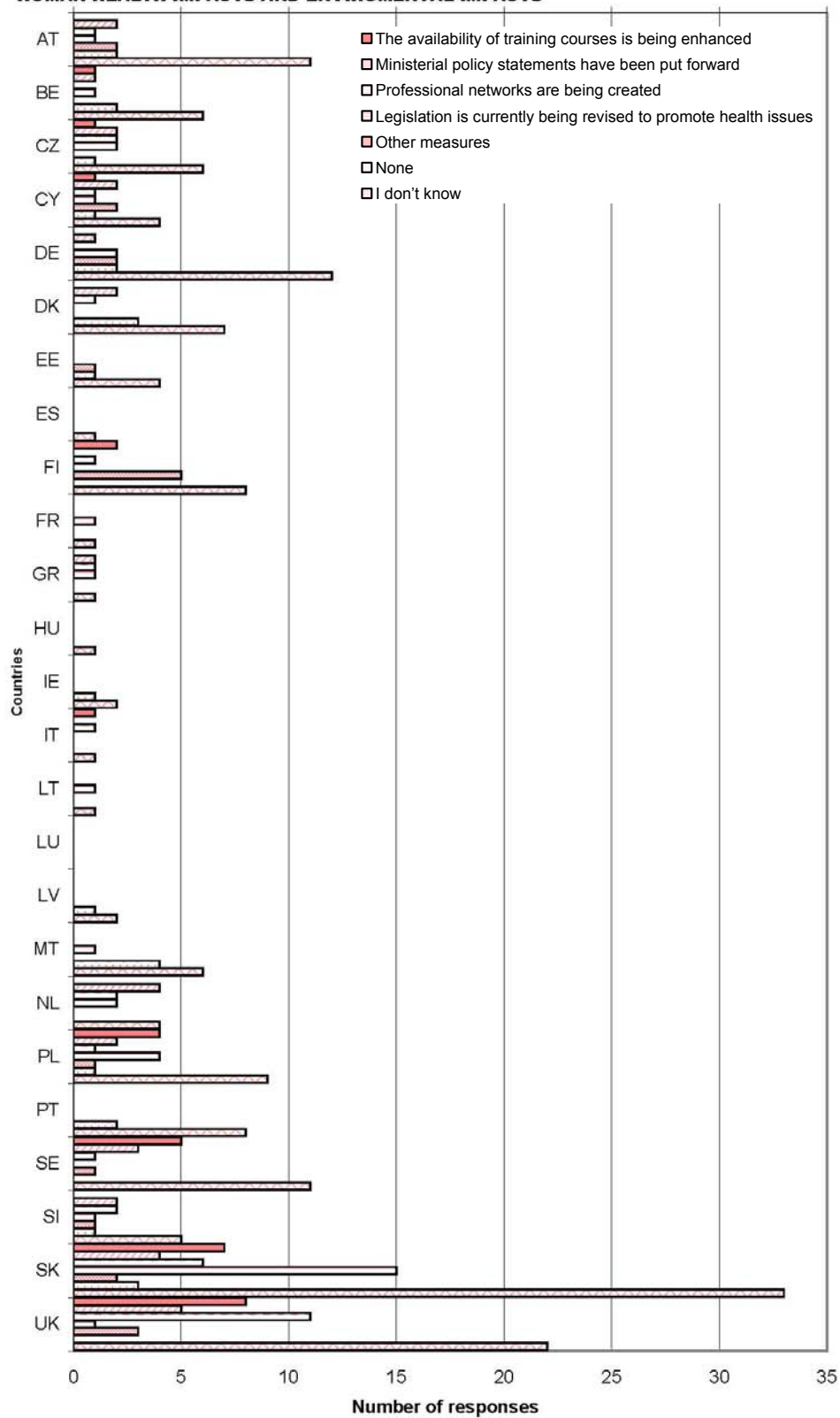
Overall, just under 32% of respondents did not know what measures were being taken to raise awareness and a further 11% said that no measures were being taken in their respective countries. Approximately, 20% of respondents stated that legislation was currently being revised to promote health issues, 19% stated that professional networks were being created, another 19% that access to training courses was being enhanced; 13% that ministerial policy statements had been put

forward; and 10% that other measures were being taken. The other measures mentioned by respondents included:

- Development of guidance handbooks and guidelines
- Research-based and Healthy City initiatives
- Establishment of a national committee

Figure 33 shows the measures to increase awareness of the relationship between health impacts and environmental impacts by Member State. This graph shows that the number of respondents being unaware of measures, and to a lesser degree those who stated that no awareness raising measures were being taken, are spread evenly across all the Member States. Legislative measures are being considered in a number of the old and new Member States but not all and the same mixed pattern is seen for the creation of professional networks.

MEASURES TO INCREASE AWARENESS OF THE RELATION BETWEEN HUMAN HEALTH IMPACTS AND ENVIRONMENTAL IMPACTS



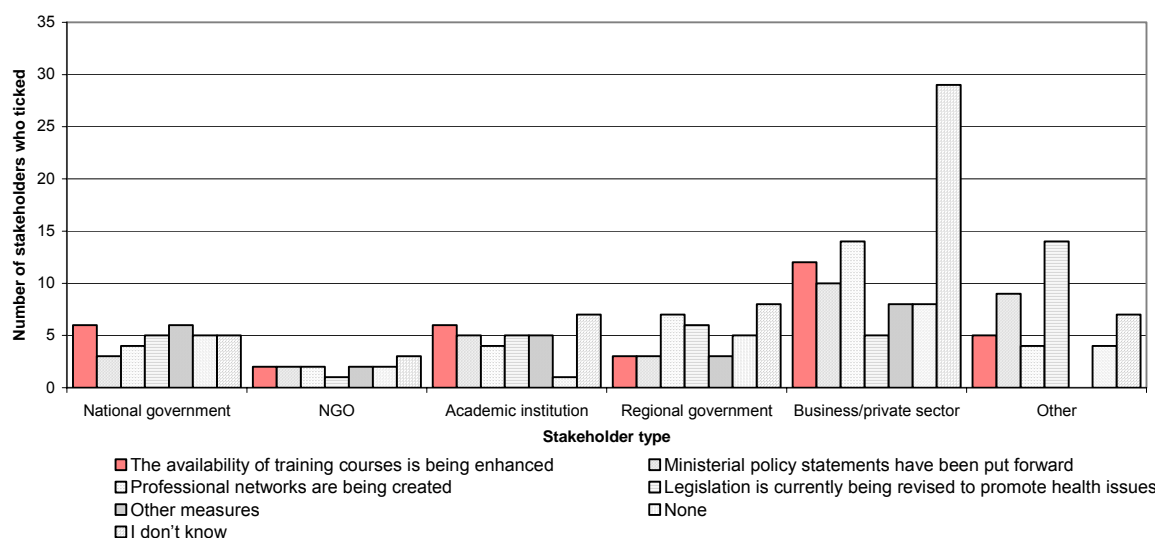
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Figure 33: Measures to raise awareness of environmental and health impacts by country

MEASURES TO RAISE AWARENESS OF THE RELATION BETWEEN HEALTH IMPACTS AND ENVIRONMENTAL IMPACTS



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Figure 34: Measures to raise awareness of environmental and health impacts by stakeholder type

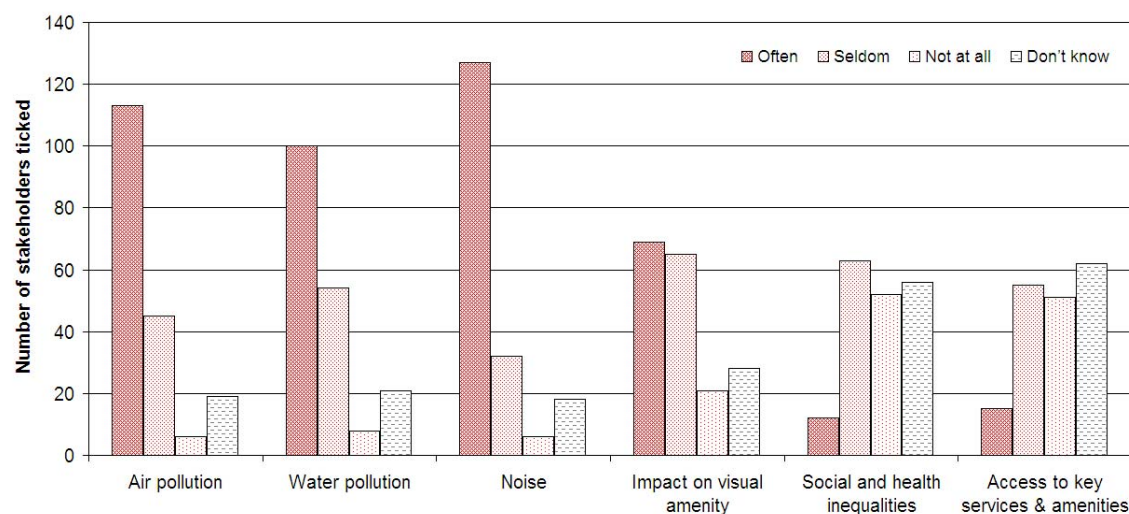
Figure 34 above, shows the responses concerning measures to raise health awareness by stakeholder type. The graph shows that business and private sector stakeholders showed the greatest lack of awareness about awareness raising measures though there were stakeholders from all types who were not aware of any measures being taken. However, business and private sector stakeholders were also the largest proportion of respondents who knew of professional networks being created, the increased availability of health training courses and ministerial policy statements having been put forward on the issue of environment and health. Lastly, there was a significant number of respondents from each stakeholder group who felt that there were no measures being taken to increase the awareness of the relationship between health impacts and environmental impacts. Overall, a significant number of Member States are undertaking awareness raising measures on the links between environmental and health impacts.

3.1.5 Extent to which human health impacts have modified project designs in EIA

Of the 183 respondents, 69% and 62% stated that noise and air pollution assessments often influenced the modification of project designs compared to only 3% who stated that they did not have such influence. 55% and 38% felt that water pollution and impact on visual amenity had an influence on project design compared to 4% and 11%, respectively, who stated that they had no influence on project design. In contrast to these high figures only 7% and 8% of respondents felt that social inequalities and access to services had an influence on project design compared to 28% of respondents who stated that their assessment had no influence on project design (see Figure 35). Overall, pollutant emissions have the greatest influence on project design followed by visual amenity, with access to key services and health and social inequalities having the least influence.

INFLUENCE OF THE ASSESSMENT OF HUMAN HEALTH IMPACTS IN EIA

Question asked: For each of the following: To what extent has the assessment of human health impacts modified project designs or developments or otherwise influenced them before or after an EIA? (Tick one per row)



Questionnaire answered by 183 EIA-experts in the EU Member States;

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Figure 35: Influence of the assessment of human health impacts in EIA

The quotes below give a flavour of the issues that respondents raised:

"The general approach and understanding is that human health is protected if the environment is clean. So, it is about indirect consideration and influence: if, e.g., there is no air pollution it is good for health. No specific requirements are needed in terms of health protection – instead it is enough to say that no air pollution should be allowed."

"I find that the issues affecting health above are often covered in EIAs for major residential/mixed use urban development, but not all from a specific 'health impact' perspective!"

"Social and health inequalities and access to key services & amenities are guaranteed, but that's as good as it gets. Projects aren't designed in order to promote them."

3.1.6 Key findings questionnaire

The predominant view of human health within EIA, across the whole of the EU, is that it is mainly understood as the environmental risks to health. However, there is a significant minority view, within all Member States and across the different stakeholder groups that human health, within EIA, is understood as a state of complete physical, mental and social well-being.

Health outcomes across the EU are inadequately covered within EIA with psychosocial health impacts being much more poorly assessed than death and serious physical illness. Health impacts of pollutant emissions and the pathways by which they act are most fully considered within EIA with less consideration given to visual amenity and accidents. Impacts on recreational areas, employment opportunities and effects on the local economy are considered within EIA but impacts on educational opportunities, social capital and cohesion, and the widening of health inequalities are seldom considered. Overall, pollutant emissions have the greatest influence on project design

followed by visual amenity, with access to key services and health and social inequalities having the least influence.

The range of barriers to the incorporation of health issues within EIA were similar across each of the Member States and there were no major differences discernable in terms of the types of barriers faced and their significance. The key barriers identified at country level were a lack of, or insufficient, guidance on how to consider health issues within EIA; insufficient knowledge and understanding of health and health determinants; a lack of clear guidance indicating that health issues should be included in EIAs; the definition of human health in EIA requirements was inadequate, too narrow or missing; and covering human health within EIAs would increase its duration and cost. A significant number of Member States are undertaking awareness raising measures on the links between environmental and health impacts.

3.2 Results interviews

3.2.1 How human health is generally considered in EIAs

There was general agreement among the interviewees that EIAs did cover human health issues in their respective countries. These tended to be the environmental risks to health (such as air, water, soil and noise pollution) though, depending on the region and the project, social, economic impacts and well-being are also covered within EIA. Health assessment in EIAs generally involves a quantitative health risk assessment of exposure to pollutant emissions into the soil, water and air.

In the majority of countries specific types of transport, infrastructure and industrial projects are the focus for more in-depth health assessments e.g. rail, road, waste incinerators and nuclear power stations.

In Austria an environmental medicine expert reviews the health aspects of the EIA and in the Czech Republic a licensed public health impact specialist undertakes the health assessment within EIA.

Key issues of concern raised by a number of interviewers was the emphasis on physical impacts and on the environmental risks to health, the lack of baseline health data from which to make a full health assessment and the difficulties of assessing the impacts of people's perceptions of health risks.

"It's pathetic! Human health coverage in EIAs is seldom considered and, for the most part, completely ignored. Even when addressed, human health issue coverage in EIAs is quite irrelevant for the decision-making process, as the great majority of the studies are hardly more than simple pollution forecasts which are then weighted, having only in mind the limits imposed by the law. Besides, for such projects as co-incineration, human health impacts can only be properly evaluated if the effects on the food chain are taken into consideration. However, these depend on the territorial context considered for the studies as well as of the cumulative impact of other project developments included in the same territorial unit. The problem is that there are no epidemiologic base studies."

"Health is rarely covered at the moment in EIAs. Where they are dealt with they are rarely followed through. A good example would be noise, for certain types of projects, there might be

certain thresholds set within guidance or within legislation that define a level you can go up to, and this applies to air quality as well, and traditionally in EIAs so long as people are below those levels they say 'that's fine'. They don't take account of the change in the noise environment or the air quality environment they're actually generating and if you take a definition of health relating to general well-being of a person and quality of life those changes could have some sort of effect. Probably not some sort of biophysical effect on their well-being but potentially some psychological effect e.g.."

"There is a discussion about the effects of telecommunication poles on human health. Even if the risks caused by emissions could not affect human health, the discussion about the risks, knowledge of existing telecommunication poles, and the perception of the alleged risks can make people ill, even if there is no scientific evidence that the emissions cause illness."

Interviewees from the US and Canada also agreed that EIAs did cover human health issues in their respective countries though there were some differences in perspectives between respondents from the US about the breadth and depth of health coverage. The human health issues covered in the US tend to be the environmental risks to health and there is a strong focus on quantitative health risk assessment. In contrast, EIAs in Canada, depending on the project and province, can focus on social, economic and well-being aspects as well as the environmental risks to health.

Of the senior health expert interviewees all agreed that EIAs within their respective countries covered the environmental risks to health and did not consider the wider social determinants of health or mental, social and well-being impacts.

The senior health experts interviewed in the Czech Republic and Slovakia stated that although a health assessment was required these were inadequate. Health was not sufficiently well covered and because of a lack of baseline health data the health risk assessments varied greatly in quality. In Sweden and the UK the findings were similar with environmental risks being well covered and social and well-being effects poorly covered. In Sweden, health issues are covered in more detail in densely populated areas and social issues tend to be covered by the Institute of Public Health. In the UK human health issues are coming through more in the strategic environmental assessment (SEA) process.

3.2.2 Knowledge of good practice case studies and guidelines

The majority of interviewees could point to some good practice case studies where health aspects were well considered in EIAs. In Austria, the work of Walter Knofler in the Lower Inn Valley, the high performance Inntal rail project and the VOEST enlargement at Linz were mentioned. In the Czech Republic, the dry fuel storage facility at Temelin, the rebuilding of the rail junction at Brno, the plasma incineration plant in Karvina and the construction of highway D47 were highlighted. In France, the EIAs for roads and nuclear power stations were mentioned. In Germany, the tramline through the English Gardens in Munich was highlighted. In Latvia, the EIA of the Kraft paper pulp mill in Ozolsala, Riga was identified. In Portugal, the gold mines in Castromil, Lipor II and Oporto; the industrial hazardous co-incineration project and the municipal waste incinerator in Lisboa were mentioned. In Sweden, the EIAs of the north-southbound road connection near Stockholm was highlighted. In the UK, the EIAs of waste incinerators and the HIA of the Kings Cross redevelopment were mentioned. The above examples include both good practice case studies in health risk assessment as well as HIA with health risk assessment examples dominating.

Fewer interviewees could mention good practice guidelines. In Austria, the Salzburg matrix-checklist was mentioned. In France the 'Guide Sante' and the guidelines for roads, wind farms and mining projects were highlighted. In Germany, the guidelines for HIA from the state government of Hamburg were mentioned.

Of the senior health expert interviewees the majority could point to some good practice case studies and guidance. In Slovakia, the modernisation of S-PVC (NCHZ a.s.), Nováky and the golf course in Tale, Donovaly were mentioned. In Germany, the developments of Frankfurt and Berlin airports were highlighted. In Sweden, the Nuclear Fuel Waste Depository in Oskarshamn and the Swedish Road Administration's 'children impact assessments' were identified. In the UK, the Tyne Tunnel, the Merseyside Line 1, the Westminster City Council Westbourne Green development and Cross Rail in London were mentioned.

As with the interviews with national EIA stakeholders, good practice guidelines were harder to identify. In the Czech Republic health risk assessment and environmental epidemiology guidelines were mentioned. In Slovakia, scatter studies and the estimation of risk guidelines were mentioned. In Sweden various types of dispersion models and computer-based calculations relating to affected populations and vulnerable groups were highlighted. In the UK the Merseyside guidelines were referred to. The majority of senior health expert interviewees highlighted the inadequacies of current guidance on integrating and assessing health within EIAs.

3.2.3 Separate processes through which health aspects of projects assessed

The majority of interviewees stated that there was no separate health assessment process through which the human health aspects of projects on communities were assessed. Where a separate process was mentioned this related to health assessment for specific projects and groups such as IPPC, waste licensing and occupational health and safety processes. The same was the case for Canada, though in the US, government agencies can and do instigate their own ad-hoc health assessments.

There was almost unanimous agreement among the interviewees that wherever possible human health impacts of a project should be assessed within an EIA rather than through a separate HIA. The advantages highlighted were that all key issues would be included in a single 'seamless' process, the public were more familiar with the EIA process; the dissemination and obtaining of information would be simpler and that it would be easier for decision-makers and project proponents. However, interviewees were also aware of the disadvantages particularly in terms of costing more money and taking more time as well as making the resulting environmental statement too large. The advantages of a separate HIA process were also highlighted by a number of interviewees in that it would give health more prominence and that a thorough and detailed assessment could be undertaken. The quotes below exemplify the two poles of opinion with regard to integrated environmental and health impact assessment and separate autonomous HIAs.

"It's worth integrating rather than doing separate EIAs and HIAs as it a more flexible approach. If we take the examples we've been discussing it might be sufficient in some cases e.g. noise, just to follow through to the potential health implications on a specific issue even if it is to demonstrate there aren't any health effects. There may be other cases where a more complete HIA is required. If it's an integrated study it gives you that flexibility to adapt to the circumstances surrounding that particular project in that particular location. And in a sense do some sort of partial (health) assessment whereas if HIA is classed as a separate study they'll

always be this issue of what triggers it and what doesn't and what do you do with the projects that fall on the margins."

"An integrated environment and health assessment procedure has advantages as it enables a more comprehensive assessment of health issues due to the same subject being discussed by different people with different skills and specialities. However, ... there is the risk of decreasing the environmental impact statement's quality, owing to a less specific analysis concerning human health issues in particular."

The senior health expert interviewees concurred with their respective countries EIA stakeholder interviewees. All agreed that there were no separate health processes that dealt with health outside of those for specific types of project that were covered by IPPC and waste regulations. They all also concurred that while some detail might be lost in integrating health into EIA this was the best way forward for a more coherent and holistic assessment.

3.2.4 Need for greater or lesser coverage of human health within EIA

The majority of interviewees from Austria, Czech Republic, Latvia and Poland were satisfied with the current level of coverage of human health aspects within EIAs in their respective countries. In Austria, greater coverage was emphasised by two interviewees for projects in densely populated areas and affecting sensitive sites. For one interviewee this meant lowering thresholds and for the other the need to assess more carcinogenic substances and electromagnetic smog. In the Czech Republic, one interviewee felt that less coverage was needed and that the health effects of the direct impacts of projects should be the focus of EIAs. In Germany, though one interviewee felt that more coverage was needed, the majority were unsure.

In France, Ireland, Portugal, Slovakia, Sweden and the UK the majority of interviewees felt that more health coverage within EIAs was needed. However, in France, there was uncertainty about how to go about this as regulations and guidance were in place but the lack of awareness about them and lack of appropriate implementation of them were seen as key challenges. In Portugal, there was a call for the inclusion of psychological well-being, access to medical services, fuller impact of the contamination of air, food, water and soil. However, one respondent stated that they did not 'conceive' of health as being a part of EIA. In Slovakia, there was a call for more focus on the social, psychological and economic impacts, though here again, one respondent felt that the current level of health coverage was sufficient. In Sweden, there was a call for more health assessment in all areas from noise and pollution to social and psychological aspects. There was also a mention of public participation being a crucial ingredient, the need to identify all the people likely to be affected by a project, not just those living near it, and the need to deal with public concerns about health risks. In the UK, the need for more health coverage was qualified with the statement that the level of health coverage depended on the project and its location. While one UK interviewee felt that there was a need to consider indirect effects such as anxiety and the psychological impacts of small cumulative impacts. However, another UK interviewee felt that current health coverage within EIA was adequate as health issues could be considered and dealt with within the wider planning process as and when they arose.

The quotes below give an idea of the key issues raised by interviewees in relation to more or less coverage of human health within EIA.

“Less. The main attention should be given to the direct impact of the project (e.g. pollution or noise impact). The other issues (e.g. employment/unemployment) are more political than ecological topics. Despite they should be mentioned and assessed in the EIA process, they must play just a secondary role in the EIA.”

It is OK how it is. In the... Law, there is a definition of the impact on the environment, it always means impact on the environment and the human health.

“More – because EIA should cover all impacts, research is going ahead and it is clear that clean environment is not only a condition for good human health, social and economic aspects seem to be more important...”

In both the US and Canada, the majority of interviewees felt that health coverage within EIA was adequate in their respective countries. However, two interviewees from the US did say that it would be good to have more health coverage.

The senior health expert interviewees all concurred that there was need for more coverage of health within EIAs particularly on mental, social and well-being impacts as well as health inequalities. Though one respondent also mention the sustainability of health and the need to cover reproductive and development health.

3.2.5 Barriers to the assessment of human health within EIA

A range of barriers were highlighted by Member State interviewees to assessing human health within EIA. These are listed below:

Time and money:	Will take longer to do and be more expensive.
Capacity:	Lack of health experts with expertise and experience in HIA Lack of EIA professionals with experience of health impact assessment.
Baseline data:	No or partial baseline health data; or baseline health data difficult to access because of confidentiality, cost and other issues.
Knowledge:	Lack of knowledge about environment and health and the health assessment methods that could be used.
Institutional:	Sectoral working and lack of multidisciplinary and interdisciplinary working and co-ordination between health and environmental professionals. Different and antagonistic perspectives between environmental and health experts. Need to strengthen the role of health experts within EIA. Decision-makers find health assessments difficult to interpret. Fear of the unknown and lack of certainty about what will be found. Lack of involvement of the Ministry of Health. Disregard of the long term by public authorities and reactive responses to short term public pressure. Legislation includes health as one of the impacts to assess but this has not translated into practice. Tendency to focus on small projects at the expense of large and/or important ones.
Methods:	Lack of explicit methodology and methods for assessing health impacts. Difficulties in assessing psychosocial impacts.
Research:	Lack of strong research evidence on health and well-being impacts. Lack of knowledge about synergistic health impacts.
Public:	Need to engage with public. Public do not understand the health information and hence can become overly concerned. Public do not necessarily understand the concept of 'risk'.
EIA:	Lack of or insufficient scoping. Health is not specifically required during scoping. Definition of human health is not clearly stated in EIA. Too much emphasis on impacts to the natural environment. Dependency of consultants on their EIA clients.

The key barriers mentioned by interviewees from the US were that: more work was needed on methods and methodologies to assess health quantitatively, more financial support was needed to buy the required health expertise, and more research was needed in some areas in linking health effects to project actions. However, one interviewee did feel that there were currently no barriers to covering health aspects within EIA. Finally, the key barrier identified by the interviewees from

Canada was the difficulties in measuring some types of health impacts especially those related to perceptions.

The senior health expert interviewees all highlighted similar barriers to those identified by the EIA stakeholder interviewees.

3.2.6 Key findings interviews

There was general agreement among the interviewees that EIAs did cover human health issues in their respective countries. These tended to be the environmental risks to health (such as air, water, soil and noise pollution) although, depending on the region and the project, social, economic and well-being impacts are also covered within EIA. Health assessment in EIAs generally involves a quantitative health risk assessment of exposure to pollutant emissions into the soil, water and air.

In the majority of countries specific types of transport, infrastructure and industrial projects are the focus for more in-depth health assessments e.g. rail, road, waste incinerators and nuclear power stations.

The majority of interviewees could point to some good practice case studies where health aspects were well considered in EIAs.

The majority of interviewees stated that there was no separate health assessment process through which the human health aspects of projects on communities were assessed. Where a separate process was mentioned this related to health assessment for specific projects and groups such as IPPC, waste licensing and occupational health and safety processes.

The majority of interviewees from Austria, Czech Republic, Latvia and Poland were satisfied with the current level of coverage of human health aspects within EIAs in their respective countries. In France, Ireland, Portugal, Slovakia, Sweden and the UK, a majority of interviewees felt that more health coverage within EIAs was needed.

A range of barriers were highlighted by Member State interviewees to assessing human health within EIA. The key themes were: time and cost, lack of HIA capacity, lack of baseline health data, lack of knowledge, lack of institutional and professional co-ordination and co-operation, lack of robust methods to assess health impacts, lack of research evidence for health impacts, public involvement and inadequate EIA frameworks at EU and Member State levels.

3.3 Summary of key findings of questionnaire and interviews

There was general agreement among the questionnaire respondents and interviewees that EIAs did cover human health issues in their respective countries. However, the health issues covered were the environmental risks to health (such as air, water, soil and noise pollution). Depending on the region and the project, social, economic and well-being can be covered within EIA but these were considered much less often and not as a matter of routine. However, there is a significant minority view, within all Member States and across all the different stakeholder groups who participated in this study that human health, within EIA, should cover physical, mental and social well-being and not just the environmental risks to human health.

Health assessment in EIAs generally involves a quantitative health risk assessment of exposure to pollutant emissions which might go into the soil, water and air. In the majority of countries specific types of transport, infrastructure and industrial projects were the focus for more in-depth health risk assessments e.g. rail, road, waste incinerators and nuclear power stations.

While a majority of interviewees could point to some good practice case studies where health aspects were well considered in EIAs only a minority of questionnaire respondents were able to do so. This implies that there are few good practice case studies where human health has been adequately assessed within EIA.

Although the pattern across Member States is mixed, health outcomes are inadequately covered within EIA, with psychosocial health impacts being much more poorly assessed than death and serious physical illness. Health impacts of pollutant emissions and the pathways by which they act are most fully considered within EIA with less consideration given to visual amenity and accidents. Impacts on recreational areas, employment opportunities and effects on the local economy are considered within EIA but impacts on educational opportunities, social capital and cohesion, and the widening of health inequalities are seldom considered. Overall, pollutant emissions have the greatest influence on project design followed by visual amenity with access to key services and health and social inequalities having the least influence.

There was no separate health assessment process through which the human health aspects of projects on communities are assessed in the EU. However, there are separate processes related to the health assessment of specific projects and groups such as IPPC, waste licensing and occupational health and safety processes.

A range of barriers were highlighted by Member State interviewees to assessing human health within EIA. The key themes were: time and cost, lack of HIA capacity, lack of baseline health data, lack of knowledge, lack of institutional and professional co-ordination and co-operation, lack of robust methods to assess health impacts, lack of research evidence for health impacts, lack of public involvement and inadequate EIA frameworks at EU and Member State levels.

Finally, there was a range of views about the value of increasing the coverage of human health within EIA, with the majority of stakeholders in Member States wanting more, a large minority happy with the current situation and a small number wanting much less health coverage.

4 CONCLUSIONS AND DISCUSSION

This chapter presents the key conclusions of Work Package 2 (WP2) in the project *IMProving the IMPlmentation to Environmental IMPact Assessment, “(IMP)3”*, based on the results from the desk study and the findings from the questionnaire and interviews. We also discuss the WP2 results from a broader perspective.

The significant amount of data gathered in WP2 and the analysis of these has enabled a coherent series of policy options to be presented in Chapter 5.

4.1 Overall conclusions

There is significant overlap between the themes emerging from the desk study in Chapter 2 and the findings of the empirical study presented in Chapter 3.

There is still the continuing refrain of the lack of adequate methods and baseline data, the lack of institutional capacity and partnership working, the lack of explicit statements on the importance of assessing health within EIA in EIA legislation, and the lack of awareness and resistance among project proponents, EIA consultants and planning authorities to the need to assess human health within EIA. More than a decade on from the amendment to the EIA Directive these complaints and criticisms are still with us.

However, there are signs that small but significant shifts have occurred in most Member States. A significant minority of EIA stakeholders in each of them recognises and acknowledge the importance of human health and the need to assess not just the environmental risks to health but the wider social determinants and the mental, social and well-being impacts. There are also signs that assessing human health within EIAs is being undertaken but the majority of these either tend to be detailed health risk assessments of emissions into the air, water and soil or are separate HIAs undertaken after the EIA has already been completed. The questionnaire and interviews also give a picture that there already exists, to a certain extent, a political and more practical momentum in relation to promoting inclusion of human health in EIA. Legislation and ministerial orders are being prepared, professional networks are being created and education and training are conducted. The question is if it is enough to rely on this momentum?

Part of the difficulty of moving towards dealing more adequately with human health within EIA is the complex interplay between the various factors listed above and the different degrees to which these are important barriers in each of the Member States.

The difficulty of obtaining key primary legislation and key guidance on EIA varied, with material on the new Member States generally much more easily available than those for the old Member States. This implies that this study has only been able to rapidly review and analyse these important documents. Although some Member States do explicitly state that human health should be considered in EIAs and implicitly define health within legislation to encompass economic, social, nuisance as well as mental and well-being impacts these have not yet translated well into EIA practice. This highlights the indirect and complex ways in which legislation actually affect and change local level practice. The influence of legislation is rarely quick, direct and as intended. Similarly, of the EIA guidance reviewed there was a diversity of emphases and explicitness in the

need to include and assess the human health effects of projects. This is likely to reflect the fact that these documents were advisory and so the degree to which this advice was acted upon is dependent on the interest and motivation of EIA stakeholders within each of the Member States.

In Chapter 1, we set out some of the key questions that are at the centre of the debate and discussions about health and EIA: should health be integrated into EIA or should it be dealt with separately?; if health should be integrated then what form should that integration take, in terms of the process and content of EIAs?; what methodologies and methods are needed to adequately assess health impacts?; in particular, should these health impacts be assessed in largely quantitative or qualitative ways?; finally, should community experiences and knowledge be incorporated into impact assessments and if they should be then how should this be done?

4.2 To integrate or not

Starting with the first question, should health be integrated into EIA, both the literature and our study show that there is considerable recognition that the assessment of human health is a part of EIA. This is manifested in the EIA legislations, guidelines and in the professional EIA practice. There was almost unanimous agreement among the interviewees in (IMP)3 that, wherever possible, human health impacts of a project should be assessed within an EIA rather than through a separate HIA. The difference emerges in where the boundaries are set on what health impacts are assessed. There are however a small but significant number of EIA stakeholders who feel that separate HIAs after an EIA is done is the best way forward.

The EIA practice and discourse so far imply that the main option, in relation to impacts on human health, is to include these as part of the EIA implementation. The question of integration though is embedded in a larger question. This concerns the current state of the overall EU and national legislative and professional practice picture in relation to how human health is treated in the planning and approval processes of development projects. Are human health issues and impacts dealt with in the realms of other environmental or human health legislations or not? The results from the five-year report from the Commission (Commission of the European Communities 2003) indicated that human health issues are partly covered by other legislation. Taking the wider picture into consideration makes it appropriate to not only explore the integration into EIA option but to also explore the option of not integrating human health issues in EIA. For the sake of the discussion one could argue for a solution that clearly narrows down the range of health issues included in EIA. At the same time the regulation and promotion of a separate HIA process could be launched, encompassing a HIA process with a broad human health definition. What we are doing thus is to pose the basic question of which role, in promoting mitigation and prevention of human health impacts, that is most appropriate to give to EIA specifically? EIA may not be the only relevant context and tool for promoting and integrating human health issues in project planning. There is always the risk of overburdening EIA with too many issues and expectations as regards outcomes – outcomes like the promotion of integration of environmental and health issues, the promotion of sustainable development and achieving implementation effectiveness (having direct impact on changes of projects or on the direction of the decisions taken). Arguments against a separate HIA process approach is e.g. that legislation, guidelines, and professional practice in line with the integrations aspirations already are in place. In order to keep up the momentum for change it can thus be argued that it is important to build on what is already in place. The question of integration is also closely linked to the effectiveness of EIA as a tool in itself. Is the integration of human health issues in EIA an effective way of promoting mitigation and prevention of human health impacts?

Maybe the indications of the low effectiveness of EIA in general (e.g. Barker & Wood 1999, Council on Environmental Quality 1997, Wood 1999, Stenstadvold 2001, Wallentinus & Päiviö 2001, Hokkanen 2001, Hilding-Rydevik 2001, Hilding-Rydevik 2005, Emmelin & Lerman 2004) and that there still exists problems among EU member countries with the conformity of national measures with and the existence of bad application of the EIA Directive (Commission of the European Communities 2003) point at a direction where human health issues should be assessed separately?

4.3 How to integrate

The second question posed initially, if health should be integrated then how should this be done? The question of how to integrate is linked to the issue of which human health definition is most adequate to implement in the context of EIA legislation, guidance and implementation. The majority of stakeholders in Member States agree that the environmental risks to human health are well covered and that mental, social and well-being impacts are not well covered. Where they don't agree is in the need to widen and broaden the implicit definition and boundary for what is considered a health impact. There are stakeholders of all types who recognise the need to broaden the scope of what is considered in the assessment of human health impacts within EIA but, though growing, they are small in number. The results from WP2 thus show that presently a narrow range of the overall health determinants from development projects are being treated in EIA. As a basis for choosing policy options one needs to consider the implications for EIA implementation of choosing different human health definitions. At least three different approaches can be outlined:

- EIA only cover risks to human health.
- Human health determinants to be included in EIA include only human health determinants related to impacts on the environment. The impact assessment takes into consideration the direct pathological effects of chemicals, radiation, biological agents of well-being and the often indirect effects of the broader physical, psychosocial, social and aesthetic environment, which includes housing, urban development, land use and transportation.
- EIA should be developed into Environmental and Health Impact Assessment (EHIA). This includes covering a broad range of human health determinants (see section 1.4.1) and it thus implies that also economic and social impacts of the project must be described as a basis for the HIA (the results from WP2 shows that this is already being done in certain countries). How in practice to go about this merging of EIA and HIA is not self evident (see comments below).

Both the literature and the WP2 study emphasise the barriers to integrating health into EIA, there are few actual case studies and no detailed step-by-step methodologies in existence. The case studies readily available tend to be separate HIAs or health risk assessments (HRAs) done alongside or after an EIA. Of the methodologies currently available most outline the key process steps but do not provide the details on how the content should be developed.

4.4 Methodologies and community experiences

The third question was: what methodologies and methods are needed to adequately address health impacts within EIA? The literature and the WP2 study provide no easy or simple answer to this question. What the literature and the study do highlight is that the methodologies need to be a) both quantitative and qualitative to be scientifically robust, b) in a form that is as legally robust as EIA in the planning system within which it is being undertaken, and c) consensually agreed upon by both health and environmental professionals and institutions both within each Member State and across the EU.

The final question, should community experiences and knowledge be incorporated into impact assessments and if they should be then how should this be done? There is already call for more public participation but the reasons for undertaking them tend to be unclear, sometimes they are simply to inform local people that a project is being submitted for planning permission, sometimes they are to find out the likes and dislikes of local people, sometimes they are to help improving the design of a project and in rare cases they are used to tap into a community's store of experiential knowledge about how their localities work, the current environmental and health problems within it, what projects have succeeded or failed in the past, and why these are so. While there is general understanding and agreement about the first two reasons there is less consensus and agreement among EIA stakeholders about the value and validity of the latter two reasons for community participation and involvement. The EIA Directive and most HIA methodologies argue strongly for the need to involve and engage with local communities. Community concerns are unlikely to be allayed if the perceived health impacts as understood by the community are not dealt with and hence any methodology that integrates human health assessment into EIA should involve local communities and take serious account of perceived health impacts. The existing literature on HIA highlights some of the key approaches to involving communities and taking into account the health impacts that they perceive and their knowledge and experience of the local area.

4.5 Good and best practice and guidelines

Both the literature as our study emphasise the barriers to integrating health into EIA, there are few actual case studies and no detailed step-by-step methodologies in existence. Existing guidelines have a varied approach going from risk assessment to broader HIA approaches. Going from this, which conclusions can be drawn concerning what constitutes “good or best practice”? The answer to this question is complex, due to two reasons. The first is related to the idea that a so called best practice can be formulated out of the implementation context (national, regional, local etc). This issue is elaborated on more below. The second reason is that we will not in the WP2 report advocate one or the other of the policy options proposed later in this chapter and a formulation of best and good practice is by necessity related to a specific policy option. We will however outline a best practice scenario by building on the WP2 results concerning barriers that have been identified.

4.5.1 The limitation of a context independent “best EIA practice”

Research on how to make environmental issues an integral part of decisions and action has traditionally been perceived as a question of providing different kinds of decision-makers and agents with an adequate information base (based on the belief that a better environmental information basis will lead to more environment friendly decisions, or at least provide better

possibilities to do so) in line with the planning thoughts based on instrumental rationality (“goal oriented behaviour within a means-end structured problem area” and “it tells how to best combine means to achieve ends when no preferences are attached to the means” (Sager 2001)). Consequently, great focus and emphasis has been laid on developing and providing effective tools to measure and present environmental information (Hilding-Rydevik & Bjarnadóttir 2005). The results from the WP2 study does however, effectively demonstrate that the barriers to inclusion is not just about a lack of information concerning human health issues in the EIA process. A whole range of other factors have been put on the table and which need to be taken into consideration for furthering how human health issues are treated in project planning and decision-making. Which of these factors constitute the main barriers in a country specific context varies e.g. in relation to how human health issues in general are treated in legislation and professional practice in project planning and decision-making. This implies that “best practice” and guidelines for this in fact can be formulated out of context and on a general level. One must however have in mind that this formulation may not capture all the country context specific issues that are crucial for enhancing best practice or good practice in a specific country context (Hilding-Rydevik & Bjarnadóttir 2005). One can also argue that what is considered to be “good practice” in one national context may not self-evidently be good practice in another national context. What is good practice will be related to what is currently in place in a specific context. In order for the promotion of inclusion of human health issues in EIA to be effective there needs to be both EU Commission activities and regulations as Country specific activities and regulations. The country specific measures can thus target the crucial context specific barriers (assuming here that integration of human health issues are to be integrated in EIA, the arguments are however also valid for the option of having a separate HIA process). One can thus identify good practice in different contexts (“this is what we apprehend as good in our country taking our legislation, education, data situation, etc., into account”), this practice may not however need to be best practice. By best practice we thus mean an outline of some general and ideal situation.

4.5.2 Best practice

Having the above in mind and using the information from WP2, what then can be outlined as best practice as regards inclusion of human health in EIA? As most of the results in WP2 point in the direction of integrating human health in EIA we will use this option as a basis. What constitutes best practice is however also related to the choice of human health definition in EIA – if it is narrow, just related to environmental impacts or if it covers a broad range of human health determinants (see Figure 36 in the introduction to policy options below) as a basis for the outline of what could constitute best practice. We also include in the “practice” concept all the actor levels going from best practice at the EU level down to the EIA everyday professional practice. We have included in the best practice concept also the overall perspective of capacity building in relation to promoting a human health perspective in project planning and decision-making where EIA and HIA could be important measures. The list below is mainly derived from the barriers identified and solutions posed in the guidances in the WP2 study and it thus represents a maximum list of all possible good “things” that could promote best practice in relation to impact assessment and human health in project planning and decision-making. This list is not a prescriptive list of all actions and measures that are needed in order to promote improvement of how human health issues are included in EIA. It is simply a list of all the proposed possible measures and approaches that can be derived from the WP2 results. As stated above, different measures are of more or less crucial importance depending on the implementation context.

EU level:

- EU Directive is clear on the importance of including human health in EIA, also the annexes are formulated to be relevant from an human health perspective and in relation to the human health definition chosen in the directive
- EU Directive has a clear human health definition or/and;
- EU EIA guidance has a clear human health definition
- EU EIA guidance includes clear instructions concerning how to include human health in EIA e.g. concerning the procedures in relation to screening case-by-case and the scoping procedure but also in relation to public participation
- Motivation and awareness raising actions are taken in order to promote the human health perspective in planning and decision-making in general and in EIA. Since there already exists overall policy commitment and policy targets for this are at the EU level there is a good foundation to build on.
- EU Commission targets research funds for exploring the links between the overall project impacts (economic, social, environmental) and human health and for furthering methods for prediction and evaluation of human health impacts
- EU Commission monitors the progress concerning the inclusion of human health impacts in EIA.
- Joint working between DG Environment and DG Health and Consumer Protection.
- Identification and dissemination of best and good practice.

National level:

- National EIA legislation is clear on the importance of including human health in EIA and the legislation is formulated also from a human health perspective
- National legislation has a clear human health definition or/and;
- National EIA guidance has a clear human health definition
- National EIA guidance includes clear instructions concerning how to include human health in EIA, e.g. concerning the procedures in relation to screening case-by-case and the scoping procedure but also in relation to public participation
- Improving the amount of human health experts and training in HIA
- Human health competence is provided by consent authorities and EIA competent authorities in early consultations with proponent, the scoping phase and in the review of the EIA)
- Baseline data is provided that is useful and updated in relation to impact assessment of human health (which exact measures that are needed in each country will differ) and;
- Actions are taken in order to promote the human health perspective in project planning and decision-making in general and in EIA. The existence of national human health policies and programmes is an important basis for this work.

- National research funds ear-marked funds for exploring the links between the overall project impacts (economic, social, environmental) and human health and for furthering methods for prediction and evaluation of human health impacts
- Monitoring of progress in relation to how human health issues are treated in the overall context of project planning and decision-making and more specifically in EIA.

Project level EIA and professional issues:

- Human health experts are an integral part of the EIA work and the EIA team from the very beginning of the EIA work through out the whole procedure
- EIA screening procedures are formulated and conducted also with a human health perspective
- EIA scoping procedures are designed and conducted also with a human health perspective
- Impact Assessment of environmental and health impacts are conducted in an cost-efficient manner in order to capture the most important human health impacts and not to over burden the EIA process and at the same time having effectiveness as a goal (to have an impact on the project planning and the decision-making)
- The EIA process is used and function as a cooperation platform where different professions and disciplines work together with a common language
- Citizens should be given the possibility to actively bring out their views, concerns and expectations
- Improve the awareness as regards the linkages between human–environment interaction through education and pilot projects
- Use lay and non-technical language and avoid professional jargon. Undertake more open communication
- Human health impacts are considered equal to other types of impacts within an EIA

4.6 Monitoring progress

This study highlights to the need to carry out more detailed assessment of the primary and secondary legislation and key guidance within Member States in relation to human health and EIA. It also emphasises the need to undertake more regular questionnaire surveys of EIA stakeholders on the health aspects in EIA to survey what changes, if any, are occurring within Member States and across the EU with regard to the adequacy of the incorporation and assessment of human health within EIA.

5 POLICY OPTIONS

This chapter is the culmination of the considerable data collection and analysis undertaken for this study. It sets out a series of policy options. The chapter starts with an introduction giving a summary of the current context of human health in EIA and gives also a summary of the basis for developing the policy options.

5.1 Introduction

Before looking at the policy options that emerge from the findings of this study it is useful to summarise the current context of human health in EIA in the EU through a SWOT-Analysis based on the results from WP2.

SWOT-Analysis

Strengths

The current strengths with regard to the health aspects of EIA are that best practice guidelines and examples of good practice exist in relation to the assessment of human health impacts within EIA. In many of the EU members human health is somehow included in the EIA legislation. This is also the case for the EU EIA directive. Public participation is built into the EIA process and there is a democratic focus to EIA discourse and legislation. HIA is being developed in a number of Member States and a diverse range of approaches and methods have been created to assess health impacts. Finally, there is considerable common ground between EIA and HIA and between EIA and HIA practitioners. EU and national policies concerning the importance of human health is already in place e.g. the article 152 of the Amsterdam Treaty (European Union 1997) which obliges the Commission to integrate health in all its activities.

Weaknesses

The current weaknesses are that the existing EU guidance on EIA is not regularly used because the use of the guidance is optional. Human health is not clearly defined in the EIA Directive and consequently is not well defined in Member State legislation. There does not today exist good step-by-step descriptions of how to integrate human health in EIA. There is a diversity of practices in the field of EIA but there is little or no learning from good practice both within and between Member States. National EIA centres were set up over ten years ago but many are now inactive due to lack of funding. There is currently a lack of health professionals with expertise and experience of assessing health impacts of projects. Health professionals also tend to either not get involved in EIA processes or be excluded from them. There is a widespread lack of awareness and understanding about the links and relationships between environment and health in both environmental and health professionals. There is a lack of or gaps in baseline health data from which to assess and estimate health impacts. There are disagreements and conflicts between the value and validity of qualitative data quantitative data and the place for lay and community experiential knowledge within environmental and health impact assessments. Human health impacts also tend to be seen as negative and there is little recognition that projects can have positive impacts which need to be identified and where possible enhanced. EIA is also a decision-support, not a decision-making tool, and there are concerns that it is too weak a process to enable the adequate assessment of human health impacts. Public consultation and involvement in EIA despite being legislated for is poor. Finally, the awareness and understanding of HIA and its value to development projects is low. EIA as a tool does in itself, still and in many instances, exhibit low effectiveness which may indicate that this may not be the most effective way of incorporating human health in project planning and decision-making.

SWOT-Analysis

Opportunities	Threats
<p>Past and present research has identified the need and scope for improvement in relation to the health aspects of EIA. There is significant potential in building on, and disseminating more widely, existing guidelines, good practice and methodologies. National health agendas are bringing to the fore the need to have good quality baseline health data at the level of local communities. There is growing recognition that the best assessments bring together and assess qualitative, quantitative and lay knowledge data. Public concern and protest is pushing human health up the environment, health and planning agendas. There is significant potential in selling the benefits of assessing health impacts (the pull factors) to developers, consultants and planners. There is growing recognition that health, within EIA, should be seen in a broader context beyond the environmental risks to health. The inclusion of human health could make EIAs more relevant and more effective decision tools. There is a potential to build on existing HIA work and integrated this into EIA and for EIA to help develop the quantitative methods within HIA.</p>	<p>The key threats for improving the health aspects of EIA are that Member States continue to ignore EU level EIA guidance. Skills and knowledge gaps will remain and that this will reduce the level of consideration of health impacts within EIAs. There is a risk that significant health impact will be missed and that the health risks of a range of developments will go undetected and unmitigated. This will have health consequences on the population affected, but also have wider implication in terms of reducing public trust in and credibility of EIA and the wider planning process within Member States. There is considerable fear that health risks will make EIAs more political, more difficult and more confrontational as well as too long, too big, too expensive and hinder economic development. Finally, there is a threat that environmental and health institutions will continue to work in their own silos and not develop intersectoral and interdisciplinary relationships, networks and partnership working.</p>

Table 8: SWOT-Analysis based on the results from WP2

Drawing on the SWOT-Analysis above, we acknowledge that there exist both opportunities and threats in the current situation on the EU, national and project levels in relation to the management of human health issues in development projects. In relation to human health issues in EIA there are signs that small but significant shifts have occurred in most Member States in favour of promoting human health issues. As stated earlier though a number of the complaints, barriers, etc., in relation including human health in project planning, are still with us a decade after the amendment of the EU EIA Directive. The question we need to pose as a consequence of this situation is of course what kind of challenge we are facing?

We are facing a situation where practical politics in different contexts, legislation, regulations, project practice and moral still not consider human health issues as important as would be preferable. The situation can be compared to the early days of the emergence of environmental consciousness worldwide. The overall point of view taken here is thus that in relation to the challenges facing development and human health issues there is an overall need to promote the inclusion of human health perspectives and information in planning and decision-making in relation to development projects. Regulating and promoting either the integration of human health issues in EIA or a separate HIA process are parts of this promotion work but may not be enough. There is also a need for general motivation and awareness raising campaigns where also the “pull factors” of including human health are put in focus. In the promotion activities of human health in general and in the development of EIA, HIA also the needs and rationale of the developer and the development of for example the economy need to be put in focus. What can the developer gain from including human health? We see today e.g. in the industry and business sectors in parts of the world the emergence of approaches in relation to the concepts of “corporate citizenship”, “corporate responsibility”, business sustainability appraisals (including e.g. equity and justice issues) on the one hand. On the other we also find studies showing that e.g. small and medium-sized companies can economically benefit if they dare to be proactive in relation to the goals of sustainable development. These examples show that the pull factors can relate both to the general

will to contribute to a sustainable development of society but also relate to the possibility to use environmental, human health issues, etc., as part of a successful business or project concept.

We also recognise, as a result from the WP2 analysis, that there is a need for conducting basic research concerning the linkages between overall project impacts (including social and economic impacts) and environmental impacts on one hand and the human health impacts on the other hand. As pointed out in Chapter 4 we recognise that for human health issues, in order to develop good practice, some kind of measures are needed at all levels of practice – at EU, national, regional, local and project levels. In our policy options however, we focus the options available from an EU Commission point of view but we also relate them to the impact they might have on the practice of the EU member states. The following figure summarises the focussing of the WP2 study findings and the narrowing down of options.

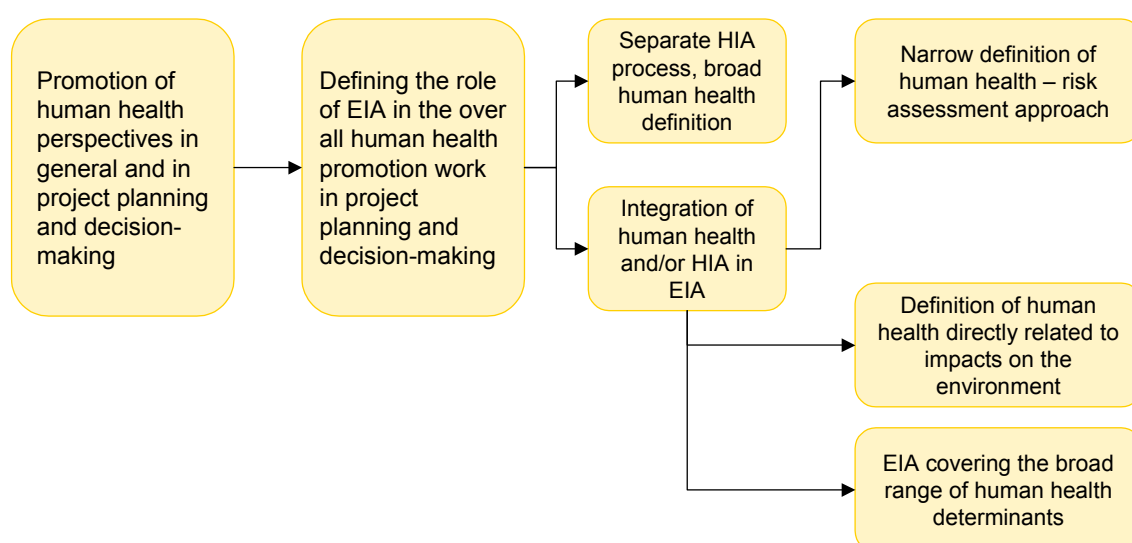


Figure 36: Focussing of the WP2 study findings and the narrowing down of options

The right hand boxes give examples of possible approaches for inclusion of human health in EIA all representing approaches found in the WP2 study.

Drawing on the findings of this study it has been possible to identify six policy options which encompass the range of actions that the European Commission could take to improve the implementation of EIA with regard to human health. The development of a series of policy options, as opposed to a simple list of recommendations, is a more robust approach as it recognises that different levels of action are possible and that each has advantages and disadvantages. By doing so, our aim is to provide a solid basis for informed discussion and decision-making on the ways forward. The six policy options put forward here reflect the broad scope of actions and different combinations outlined in the introduction. The options are put forward as the basis for discussion and to inform the Commission on future developments. The options are grounded in the extensive research undertaken for this study.

1. Do nothing
2. Preparation of a new guidance package on incorporating health into EIA
3. Supporting measures plus the preparation of a new guidance package

4. Minor amendments to the EIA Directive plus supporting measures plus the preparation of a new guidance package
5. Major amendments to the EIA Directive plus supporting measures plus the preparation of a new guidance package
6. New HIA Directive

Each policy option below is described in detail, together with comprehensive analyses of strengths, weaknesses, opportunities and threats. The first option 'Do nothing' has been included for the sake of completeness but as the analysis of the study has identified, there is a movement for action to ensure that health is considered more adequately in EIA.

5.2 Option 1: Do nothing

Description

This policy option assumes that nothing is done from a European Commission and European Union perspective. There is no further work on health and EIA issues, no new guidance, no active awareness raising measures, no new research and no changes to the EIA Directive. This policy option assumes that what is currently in place at EU level continues and that the actions taken of Member States themselves in the field of health and EIA will not be significant.

SWOT-Analysis Policy Option 1

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ No cost ▪ No additional work required ▪ Comfortable and acceptable to most Member States and the majority of EIA stakeholders ▪ No change to existing legislative, guidance and institutional frameworks ▪ There is some momentum already within many Member States 	<ul style="list-style-type: none"> ▪ Commission does not take a leadership role in this area ▪ Lack of co-ordination between Member States ▪ Take-up of best practice guidance is dependent on willingness of Member States and EIA stakeholders to act ▪ Does not put health at the forefront of impact assessment practice
Opportunities	Threats
<ul style="list-style-type: none"> ▪ Individual countries can go their own way within bounds of Directive ▪ Member States can develop at their own pace and in a way that suits their own national circumstances 	<ul style="list-style-type: none"> ▪ No or slow progress within Member States ▪ Loss of momentum within Member States ▪ Increasing divergence of approaches between Member States ▪ Divergent approaches between Member States leads to lack of co-operation and conflict especially when dealing with transboundary and global issues ▪ Divergent progress could lead to the widening of inequalities and inequities between citizens in different Member States ▪ Practice does not change significantly across the EU ▪ Importance of human health ignored or undervalued ▪ Failure of the Commission to fulfil obligations on integrating health into policies and activities ▪ Existing guidance continues to be ignored or underused ▪ Potential of assessing health impacts within EIA not realised ▪ HIA does not develop at all or develops as a completely autonomous assessment process to EIA ▪ Lack of or fragmented and disjointed progress on key barriers especially those to improve methodology and methods

Table 9: SWOT-Analysis of Option 1: Do nothing

5.3 Option 2: Preparation of a new health in EIA guidance package

Description

Option 2 would enhance the health aspects of the Commission's existing guidance on EIA by developing a new package of guidance. Currently there are four guidance documents related to EIA, each of them repeating and going over material that is in one or the other of the guidance documents. There is potential to streamline this guidance, highlight and emphasise the role of assessing health impacts within EIA, and linking this to existing EU and international best practice.

The guidance would:

- Provide explicit definitions of health, environmental health, health impacts and the determinants of health.
- Identify and describe the quantitative and qualitative methods currently in existence to assess health impacts including health risk assessment.
- Identify and provide links to good practice case studies, literature and resources.

Dissemination and awareness raising about this document will involve electronic media only via the Europa website and the websites of other public, NGO and private sector websites as well as email dissemination to key stakeholders across the EU. However this would not be one-off but would involve regular re-disseminations to ensure that as many stakeholders as possible were aware of the new guidance.

A SWOT-Analysis of Option 2 is provided on the next page.

SWOT-Analysis Policy Option 2

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Relatively simple and low cost ▪ Builds on what already exists ▪ Goes some way to addressing the concerns about assessing health impacts within EIA ▪ Provides an opportunity to bring together, review and highlight best practice at EU and international levels ▪ Guidance is likely to be more easily taken up by Member States (low levels of resistance from EIA stakeholders) ▪ Commission takes a leadership role ▪ There is some momentum already within many Member States 	<ul style="list-style-type: none"> ▪ Commission's leadership role is minimal ▪ Continuing lack of co-ordination between Member States ▪ Take-up of new guidance is dependent on willingness and active interest of Member States and EIA stakeholders ▪ Puts health on the EIA agenda but at a minimal level and not at the forefront of impact assessment practice
Opportunities	Threats
<ul style="list-style-type: none"> ▪ Member States can use the guidance to enhance their own national guidance ▪ Stakeholders within Member States can use the guidance to advocate for and improve EIA practice ▪ Member States can develop at their own pace and in a way that suits their own national circumstances 	<ul style="list-style-type: none"> ▪ No or slow progress in the majority of Member States because this is guidance only ▪ Loss of existing momentum within Member States ▪ Continuing potential for divergent progress between Member States ▪ Divergent approaches between Member States leads to lack of co-operation and conflict especially when dealing with transboundary and global issues ▪ Divergent progress could lead to widening of inequalities and inequities between citizens of different Member States ▪ Practice does not change significantly across the EU ▪ Importance of human health ignored or undervalued ▪ Failure of the Commission to fulfil obligations on integrating health into policies and activities ▪ New guidance continues to be ignored and underused ▪ Potential of adequately assessing health impacts within EIA not fully realised ▪ HIA develops as a completely autonomous assessment process ▪ Lack of or fragmented and disjointed progress on key barriers especially those to improve methodology and methods

Table 10: SWOT-Analysis of Option 2: Preparation of a new health in EIA guidance package

5.4 Option 3: Supporting measures plus new health in EIA guidance package

Description

Option 3 builds on the new guidance package and passive dissemination strategy described in Option 2.

It consists of:

- The new guidance package described in Option 2

Plus,

- the rejuvenation through full or part-funding of national EIA centres within Member States to act as focal points and links within and between Member States on EIA issues;
- the funding and recognition of health impact leaders or 'champions', based within national EIA centres, to promote the integration of health into EIA;
- the development and implementation of a systematic, widespread and long term awareness raising programme for environmental and health professionals from the public, private and NGO sectors about the environmental and health impacts and the links between them;
- the development and implementation of a systematic, widespread and long term training programme for environmental and health professionals from the public, private and NGO sectors on health impacts, HIA, health risk assessment and how to incorporate these into EIA;
- the development and implementation of a systematic research programme to tackle the barriers to the assessment of health impacts within EIA focussing especially on data and methodological issues;
- the co-ordination and development of national and European level health datasets that can be used at the small area level to provide a baseline for the health of communities and populations affected by development projects;
- the development of a programme of monitoring and evaluation of the implementation of the supporting measures within and between Member States; and
- the creation, co-ordination and maintenance of an online repository or library of good practice case studies of the incorporation of health into EIA along the lines of the HIA gateway potentially as part of the programme of work of national EIA centres.

A SWOT-Analysis of Option 3 is provided on the next page.

SWOT-Analysis Policy Option 3

Strengths	Weaknesses
<ul style="list-style-type: none"> Builds on what already exists Goes a significant way towards addressing the majority of concerns about assessing health impacts within EIA Commission takes a significant leadership role Comprehensive package that addresses the majority of identified weaknesses Likely to be cost-effective in terms of the time, money and personnel involved and the likelihood of effecting change Supports Member States to progress and therefore likely to be taken up by most stakeholders Builds on and uses existing regulatory and institutional frameworks Building on existing momentum already within many Member States Less chance of divergence between Member States Strategic use of Commission programmes in DG Consumer Protection and Health and DG Environment Demonstrates joint working between Directorate Generals Systematic and co-ordinated approach Puts health on the EIA agenda at a significant level 	<ul style="list-style-type: none"> Concerted, sustained and long term effort required Long term financial, personnel and resource support needed Take-up of supporting measures and new guidance is dependent on willingness and active interest of Member States and EIA stakeholders
Opportunities	Threats
<ul style="list-style-type: none"> Significant progress on health in EIA Better co-ordination between Member States Increase and enhance co-operation between EU Directorate Generals (DGs), between DGs and Member States and between Member States Member States can continue to develop at their own pace and in a way that suits their own national circumstances Goes a significant way towards realising the potential of adequately assessing health impacts within EIA Improves EIA practice significantly Improves awareness and understanding of environmental and health linkages Builds commitment and confidence to go further on health within EIA within Member States 	<ul style="list-style-type: none"> No or slow progress in the some Member States because these are supporting measures and guidance only Some continuing potential for divergent progress between those Member States who take up the guidance and support and those who do not (but less than for Options 1 and 2) Some continuing potential that divergent progress leads to widening of inequalities and inequities between citizens between those Member States who take up the guidance and support and those who do not (but less than for Options 1 and 2)

Table 11: SWOT-Analysis of Option 3: Supporting measures plus new guidance package

5.5 Option 4: Minor amendment to EIA Directive plus supporting measures plus new guidance package

Description

Option 4 builds on the supporting measures and new guidance package described in Option 2 and 3.

It consists of:

- The new guidance package described in Option 2.
- The supporting measures described in Option 3.

Plus,

- a change to the wording of the current EIA Directive so that there was an explicit reference in the main part of the Directive to need to consider the positive and negative impacts on human health; and
- an explicit reference in the descriptive part of the Directive to a broad definition of health that incorporated the influence of the wider determinants of health, e.g. the WHO definition of human health;
- the development of a programme of monitoring and evaluation of the implementation of the amendments to the Directive and change in EIA practice within and between Member States.

A SWOT-Analysis of Option 4 is provided on the next page.

SWOT-Analysis Policy Option 4	
Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ All the strengths of Option 3 ▪ Member States obliged to take action ▪ Makes explicit what was already implicit in the Directive ▪ Will not require major changes to the EIA legislation of Member States ▪ Strong and significant demonstration of the Commission's commitment to improving the health of its citizens ▪ More consistent approach across Member States ▪ Greater progress towards Amsterdam Treaty obligations ▪ Responds to public concerns ▪ Will drive change and hence be even more effective than Options 2 and 3 at effecting change in EIA practice ▪ Puts health at the forefront of the EIA policy and practice agendas 	<ul style="list-style-type: none"> ▪ More effort and resources needed than Options 2 and 3 ▪ Will take longer to implement than Options 2 or 3
Opportunities	Threats
<ul style="list-style-type: none"> ▪ All the strengths of Option 3 ▪ Deeper and more sustained progress with regard to the health aspects of EIA 	<ul style="list-style-type: none"> ▪ Some Member States and EIA stakeholders are likely to be very resistant to amending the Directive ▪ Changes to the Directive may still lead to little or no change in EIA practice within Member States

Table 12: SWOT-Analysis of Option 4: Minor amendment to EIA Directive plus supporting measures plus new guidance package

5.6 Option 5: Major amendment to EIA Directive plus supporting measures plus new guidance package

Description

Option 5 builds on the directive amendments, supporting measures and new guidance package described in Option 2, 3 and 4.

It consists of:

- The new guidance package described in Option 2.
- The supporting measures describe in Option 3.
- The minor amendments described in Option 4.

Plus,

- a change to the wording of the current EIA Directive so that there was an explicit reference in the main part of the Directive to need to consider the determinants of health in influencing impacts on human health; and
- an explicit reference in the main part of the Directive to a broad definition of health.
- an explicit reference in the main part of the Directive on the areas that need to considered include reference to the need to assess social, health and environmental equity and inequalities.
- an explicit reference in the main part of the Directive to the reporting requirements for health impacts within environmental statements.

A SWOT-Analysis of Option 5 is provided below.

SWOT-Analysis Policy Option 5	
Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ All the strengths of Option 4 ▪ Most likely to achieve significant change in terms of integrating HIA into EIA ▪ Provide the clearest understanding of what human health means within in EIA ▪ Creates a legislative basis for health in EIA 	<ul style="list-style-type: none"> ▪ More effort and resources needed than Options 2, 3 and 4 ▪ Will take longer to implement than Options 2, 3 and 4 ▪ Will require considerable negotiation and agreement between the Member States
Opportunities	Threats
<ul style="list-style-type: none"> ▪ Great possibilities for improving health and equity among EU citizens 	<ul style="list-style-type: none"> ▪ Many Member States and EIA stakeholders are likely to be very resistant to making major changes to the Directive ▪ Changes to the Directive may still lead to little or no change to EIA practice within Member States

Table 13: SWOT-Analysis of Option 5: Major amendment to EIA Directive plus supporting measures plus new guidance package

5.7 Option 6: New HIA Directive Guidance plus supporting measures plus new guidance package

Description

There are concerns that fully integrating health assessment into EIA will overburden a process that is already long, costly and complicated. Option 6 involves the creation of a new HIA Directive.

It consists of:

- the preparation of a new and separate HIA Directive;
- the preparation of separate guidelines for HIA according to this directive;
- the development and implementation of a range of supporting measures involving awareness raising measures, training, institution building and research; and
- the development of a programme of monitoring and evaluation of the implementation of the Directive and HIA practice within and between Member States.

A SWOT-Analysis of Option 6 is provided on the next page.

SWOT-Analysis Policy Option 6

Strengths	Weaknesses
<ul style="list-style-type: none"> Member States obliged to take action Strong and significant demonstration of the Commission's commitment to improving the health of its citizens Puts health at the forefront of the EU's and Member States' agendas Goes a significant way to addressing all of the concerns about assessing health impacts within project planning and decision-making Commission takes a significant leadership role Comprehensive package that addresses the majority of identified weaknesses Building on existing momentum already within many Member States Less chance of divergence between Member States Strategic use of Commission programmes in DG Consumer Protection and Health and DG Environment Demonstrates joint working between Directorate Generals Systematic and co-ordinated approach Puts health on the EIA agenda at a significant level 	<ul style="list-style-type: none"> More effort and resources needed than Options 2, 3, 4 and 5 Will take longer to implement than Options 2, 3, 4 and 5. Will require considerable negotiation and agreement between the Member States Does not build on what already exists like Options 2, 3, 4 and 5 Requires new institutions and frameworks Will require major changes to the legislation of Member States
Opportunities	Threats
<ul style="list-style-type: none"> Greatest possibilities for improving health and equity among EU citizens Significant progress on assessing the health impacts of development projects Goes a significant way towards realising the potential of HIA 	<ul style="list-style-type: none"> Many Member States and EIA stakeholders are likely to be very resistant to making major changes to the Directive, Could create conflict and contradictions for policy and decision-makers and between EIA and HIA practitioners May overburden the project planning and decision-making procedures by introducing a separate HIA process parallel to EIA (all depending on how EIA and HIA is implemented) and thus not be cost-effective

Table 14: SWOT-Analysis of Option 6: New HIA Directive Guidance plus supporting measures plus new guidance package

Table 15 provides a summary of the regulatory and supporting measures that form the basis of each of the six options. The following sections describe each of the six main policy options in greater detail and list their advantages and disadvantages in the form of a SWOT-Analysis.

Table 15: Summary of all preliminary and draft six policy options for WP2 and the included measures

		Supportive measures					Regulative measures		
Policy option [European policy level]		Amendment of guidelines, and passive dissemination activities	Training	Active awareness raising campaign	Research funding, and targeted research	Monitoring progress in MS	Minor amendments to EIA Directive	Major amendments to EIA Directive	New HIA Directive
1	Do nothing SE ARTO	–	–	–	–	–	–	–	–
2	Preparation of new guidance package	x							
3	Supporting measures plus preparation of new guidance package	x	x	x	x				
4	Minor amendments to EIA Directive plus supporting measures plus guidance package	x	x	x	x	x	x		
5	Major amendment to EIA Directive plus supporting measures plus guidance package	x	x	x	x	x		x	
6	New HIA Directive	x ¹	x	x	x	x			x

1. A new health impact assessment (HIA) directive may demand the preparation of separate guidelines for HIA plus the amendment of existing EIA guidelines

6 REFERENCES

6.1 Literature and publications

Alenius, K. (2001): Consideration of health aspects in environmental impact assessments for roads. National Institute of Public Health, Sweden 2001:27. Tryckcentrum i Stockholm AB, Stockholm.

Barker, A. & Wood, C. (1999): "An evaluation of EIA system performance in eight EU countries. Environmental Impact Assessment Review 1999; 19, pp 387-404.

Beagleholde, R., Bonita, R. & Kjellstrom, T. (1993): Basic Epidemiology. World Health Organization, Geneva.

Breeze, C.H. & Lock, K. (eds) (2001): Health impact assessment as part of strategic environmental assessment. WHO, Regional Office for Europe.

Cherp, A. (2002): Integrating health into EIA in Central and Eastern Europe

Cole, B.L. et al (2004): Prospects for Health Impact Assessment in the United States: New and Improved Environmental Assessment or Something different? Journal of Health Politics, Policy and Law. Vol. 29, No 6. ABSTRACT ONLY

Commission of the European Communities (2000): Proposal for a decision of the European Parliament and of the Council adopting a programme of Community action in the field of public health (2001-2006). Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on the health strategy of the European Community. Brussels .16.5.2000, COM(2000) 285 final, 2000/0119 COD).

Commission of the European Communities (2001a): Environment 2010: Our future, our choice. The Sixth Environment Action Programme. Proposal for a decision of the European Parliament and of the Council. Laying down the Community Environment Action Programme 2001-2010. Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions on the sixth environment action programme of the European Community. Brussels, 24.1.2001, COM (2001) 31 final 2001/0029 (COD).

Commission of the European Communities (2001b): A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development. Communication from the Commission. (Commission's proposal to the Gothenburg European Council). Brussels, 15.5.2001 COM(2001)264 final.

Commission of the European Communities (2003): How successful are the Member States in implementing the EIA Directive? Report from the Commission to the European Parliament and the Council On the Application and Effectiveness of the EIA Directive (Directive 85/337/EEC as amended by Directive 97/11/EC).

Commission of the European Communities (2004a): The European Environment & Health Action Plan 2004-2010. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee. Brussels, 9.6.2004, COM(2004) 416 final, Volume I. {SEC(2004) 729}

Commission of the European Communities (2004b): Towards a thematic strategy on the urban environment. Communication from the Commission to the Council, the European Parliament, the

European Economic and Social Committee and the Committee of the Regions. Brussels, 11.02.2004, COM(2004)60 final.

Commonwealth Department of Health and Aged Care (2001): Health Impact Assessment guidelines. Commonwealth of Australia. Canberra.

Council on Environmental Quality (1997a): The national environmental policy act. A study of its effectiveness after twenty-five years. CEQ, Executive Office of the President, January 1997. Washington DC.

Dahlgren & Whitehead (1991): Policies and strategies to promote social equity in health. Stockholm, Institute for Future Studies.

Davies, K. & Sadler, B. (1997). Environmental Assessment and Human Health: Perspectives, Approaches and Future Directions. A Background Report for the International Study of Effectiveness of Environmental Assessment, Health Canada, Ottawa.

Department of Health and Neighbourhood Renewal Unit (2002): Health and neighbourhood renewal, HMSO. London.

Dora, C. (2004): HIA in SEA and its application to policy in Europe. In Kemm, John & Jayne Perry & Stephen Palmer (eds.) (2004). Health impact assessment. Concept, theory and applications. Oxford University Press.

Emmelin, L. & Lerman, P. (2004): Environmental regulations – obstacles for development and a healthy environment? Blekinge Institute of Technology, Research report 2004:09. Karlskrona. (In Swedish)

European Commission (1997): Directive "On the assessment of the effects of certain public and private projects on the environment" (Directive 85/337/EEC as amended by Directive 97/11/EC). Official Journal no. L 073, 14/03/1997 P. 0005

European Commission (1999a): ESDP. European Spatial Development Perspective. Towards Balanced and Sustainable Development of the Territory of the European Union. Agreed at the Informal Council of Ministers responsible for Spatial Planning in Potsdam, May 1999. Published by the European Commission.

European Commission (1999b): EIA Review Checklist (EIS Review) and Guidelines on the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.

European Commission (2001a): Guidance on EIA. EIS review. Office for Official Publications of the European Communities, Luxembourg. ISBN 92-894-1336-0.

European Commission (2001b): Guidance on EIA. Scoping. Office for Official Publications of the European Communities, Luxembourg. ISBN 92-894-1335-2.

European Commission (2001c): Guidance on EIA. Screening. Office for Official Publications of the European Communities, Luxembourg. ISBN 92-894-1334-4.

European Parliament (2001): Directive "On the assessment of the effects on certain plans and programmes on the environment". Directive 2001/42/EC of the European Parliament and of the Council. 1996/0304 (COD), C5-0118/2001, LEX 271.

European Parliament (2002): Decision No 1786/2002/EC of the European Parliament and of the Council of 23 September 2002 adopting a programme of Community action in the field of public

health (2003-2008). http://europa.eu.int/comm/health/ph_programme/programme_en.htm 2005-10-11

European Union (1997): Treaty of Amsterdam. October 1997.

Fehr, R., Mekel, O. & Welteke, R. (2004): HIA: the German perspective. In Kemm, J., Parry, J. & Palmer, S. (eds.) (2004): Health impact assessment. Concept, theory and applications. Oxford University Press.

Franssen, E.A.M., Staatsen, B.A.M. & Lebre, E. (2002): Assessing health consequences in an EIA. The case of Amsterdam Airport Schiphol. *Environmental Impact Assessment Review* 2002:22.

Health Canada (1999): Canadian Handbook on Health Impact Assessment. A report of the Federal/Provincial/Territorial Committee on Environmental and Occupational Health. Minister of Public Works and Government Services, Canada. Cat. H46-2/99-235E. ISBN 0-662-28086-5.

Hilding-Rydevik, T. & Bjarnadóttir, H. (2005): Understanding the SEA implementation context and the implications for the aim of SEA and the direction of SEA research. Draft paper presented at the conference International Experiences and Perspectives in Strategic Environmental Assessment, Prague, Czech Republic, Sept 27-30, 2005 at the session SEA Theory and Research. In preparation for final version and submission. Nordregio, Stockholm.

Hilding-Rydevik, T. (2001): Large projects, decision making and EIA. In: Hilding-Rydevik, T. (ed) (2001) EIA, large development projects and decision-making in the Nordic countries. Nordregio report R2001:6. Stockholm.

HMSO (1994): Good Practice Guide. London.

HMSO (1995): Good Practice Guide. London.

Hokkanen, P. (2001): EIA and decision making in search of each other. In Hilding-Rydevik, T. (ed) (2001) EIA, large development projects and decision-making in the Nordic countries. Nordregio report R2001:6. Stockholm.

Kauppinen, T. & Tähtinen, V. (2003): Ihmisiin kohdistuvien vaikutusten arviointi – käsikirja. Stakes aiheita 8/2003. (Handbook on Human Impact Assessment. National Research and Development Centre for Welfare and Health)

Kemm, J (2004): What is health impact assessment and what can it learn from EIA? (p. 131-134). *Environmental Impact Assessment Review* 24.

Kemm, J., Parry, J. & Palmer, S. (eds.) (2004): Health impact assessment. Concept, theory and applications. Oxford University Press.

Kwiatkowski, R. E. (2004): Impact Assessment in Canada: an evolutionary process. In Kemm, J., Parry, J. & Palmer, S. (eds.) (2004): Health impact assessment. Concept, theory and applications. Oxford University Press.

Last (1995): A dictionary of epidemiology. 1995:73. New York: Oxford University Press.

Lee, N., Walsh, F. & Reeder, G. (1994): Assessing the performance of the EA process. *Project Appraisal*, Vol 9, no 3, pp 161-172.

Lieskovská & Palúchová (2004): Report on the Possible Implementation of Health Risk Assessment Principles into the EIA Process.

Ministry of Social Affairs and Health (1999). Environmental Impact Assessment. Health and social impacts on human beings. Ministry of Social Affairs and Health Guides 1999:1. (In Finnish) Ympäristövaikutusten arviointi. Ihmisiin kohdistuvat terveydelliset ja sosiaaliset vaikutukset. Sosiaali- ja terveysministeriön oppaita 1999:1.

National Research and Development Centre for Welfare and Health (Finland) (2005): Handbook on human impact assessment (also available as an internet application, see addresses in appendix 1)

New Zealand Public Health Commission (1998): A Guide to Health Impact Assessment.

ODPM Circular 02/99 (HMSO 1999)

Public Health Commission (1998): A guide to Health Impact Assessment. Public Health Commission, New Zealand.

Sager, T. (2001): A planning theory perspective on the EIA. In Hilding-Rydevik, T. (ed) (2001) EIA, large development projects and decision-making in the Nordic countries. Nordregio report R2001:6. Stockholm.

Savolainen-Mäntylä, R. & Kauppinen, T. (2000): Koettu terveys ympäristövaikutusten arvioinnissa. Stakes raportteja 249. (Perceived Health in Environmental Impact Assessment. National Research and Development Centre for Welfare and Health, Finland.)

Schrader, H.J. et al. (2004): Guidelines on Environmental Impact Assessment in the Czech Republic

Scottish Executive Development Department Circular 15/1999 (The Scottish Executive. August 1999)

Stenstad, M. (2001): The role of EIA in the planning and decision process of large development projects in the Nordic countries. The case of the Gardermoen project. In Hilding-Rydevik, T. (ed) (2001) EIA, large development projects and decision-making in the Nordic countries. Nordregio report R2001:6. Stockholm.

Swedish National Board of Health and Welfare (2001): Hälsa i miljökonsekvensbeskrivningar. Resultat från en undersökning om hur hälsa uppfattas och bedrivs. Ale Tryckteam AB, Bohus. ISBN 91-7201-550-0.

Tielaitos (2000): Tiehankkeen vaikutukset ihmisiin ja yhteisöihin. Tiehallinto. Tie- ja liikennetekniikka. Finland. (Road project's impacts on human beings and communities. Finnish Road Administration)

Turnbull, R.G.H. (ed) (1992): Environmental and health impact assessment of development projects. A handbook for practitioners. Elsevier on behalf of the World Health Organization, Regional Office for Europe and the Centre for Environmental Management and Planning, cop. 1992.

University of Ottawa (2005) Measurements in Health, EPI5251, Course Notes, Definitions of Health, http://courseweb.edteched.uottawa.ca/epi5251/Index_notes/Definitions%20of%20Health.htm (last accessed in November 2005).

University of Ottawa (2003): Measurement on health. EPI5251, Course Notes, http://courseweb.edteched.uottawa.ca/epi5251/Index_notes/Definitions%20of%20Health.htm (last accessed in November 2005).

Utzinger, J. et al (2005): Assessing health impacts of the Chad-Cameroon petroleum development and pipeline project: challenges and a way forward (p. 63-69). Environmental Impact Assessment Review 25.

Vingilis and Sarkella (1997): Determinants and indicators of health and well-being: tools for educating society on the sustainability of well-being. Social Indicators Research 6, 1-20.

Wallentinus, H-G. and Päiviö, J. (2001): The Hallandsås railway tunnel project. In Hilding-Rydevik, T. (ed) (2001) EIA, large development projects and decision-making in the Nordic countries. Nordregio report R2001:6. Stockholm.

Welsh Office Circular 11/99

WHO (1948): Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

WHO (1984): Health promotion: a discussion document. Copenhagen

WHO, Regional Office for Europe & European Centre for Health Policy (1999): Health Impact Assessment. Main concepts and suggested approach. Gothenburg consensus paper. Brussels.

WHO, Regional Office for Europe (1989): European Charter on Environment and Health, http://www.euro.who.int/AboutWHO/Policy/20010827_3 (last accessed in November 2005).

Wood, C. (1999): Comparative evaluation of EIA systems. In Petts, J. (1999): Handbook of EIA. Volume 2. EIA in practice: impact and limitations. Blackwell Science.

Wright, J. (2004): HIA in Australia. In Kemm, J., Parry, J. & Palmer, S. (eds.) (2004): Health impact assessment. Concept, theory and applications. Oxford University Press.

6.2 Legislation

Austria	Federal Act on Environmental Impact Assessment (Environmental Impact Assessment Act 2000) BGBl. (Federal Law Gazette) No. 697/1993 as amended by BGBl. No. 773/1996, BGBl. I No. 89/2000, BGBl. I No. 108/2001, BGBl. I No. 151/2001, BGBl. I No. 50/2002, BGBl. I No. 153/2004 and BGBl. I No. 14/2005
Canada	Canadian Environmental Assessment Act (1992, C.37)
Czech Republic	Act No. 100/2001 on Environmental Impact Assessment
Czech Republic	Act No 100/2001 Coll. on environmental impact assessment and on the amendment of some related act and as amended by Act No. 93/2004 Coll.
Czech Republic	Decree 353/2004 Coll. laying down detailed conditions of certificates of professional qualification for EIA, the procedure for verification thereof and the procedure for granting and withdrawing authorization
France	Loi 76-629 Law on the protection of nature [relative à la protection de la nature]

France	Loi 96-1236 Law on air and the rational use of energy [sur l'air et l'utilisation rationnelle de l'énergie]
Germany	The Environmental Impact Assessment Act of 5 September 2001 (BGBl I p.2350)
Germany	Environmental Impact assessment Act (BGBl. I 2005 p. 1757)
Ireland	European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. No. 349 of 1989)
Latvia	Law on Environmental Impact Assessment of October 14, 1998
Poland	Environmental Protection Law (2001), Amendment 10 May 2005
Portugal	EIA legislation – Decree-Law 69/2000 amended by Decree-Law 197/2005
Portugal	Portaria No.330/2001
Portugal	Environment Framework Act Law No. 11/87
Slovakia	Act No. 127/1994 of the National Council of the Slovak Republic on EIA
Slovakia	Act No. 391/2000 Coll. Amend. the above Act
Slovakia	Regulation No. 52/1995 on List of Professionaly Qualified Persons for EIA:
Sweden	The Environmental Code (1998:808)
Sweden	The Ordinance on Environmental Impact Statements (1998:905)
United Kingdom	Town and Country Planning EIA (England and Wales) Regulations 1999 (SI No. 293)
United Kingdom	Town and Country Planning EIA (England and Wales) (Amendment) Regulations 2000
United Kingdom	Environment Impact Assessment (Scotland) Regulations 1999 (No. Endnotes SSI 1)
United Kingdom	Planning (Environmental Impact Assessment) Regulations (N. Ireland) 1999 S. Rule No. 73
United States of America	National Environmental Policy Act (NEPA)
United States of America	Council on Environmental Quality's (CEQ's) regulation for implementing NEPA: Code for Federal Regulations (CFR) title 40: Protection of the environment

6.3 Internet sites

Australian HIA activity: <http://chetre.med.unsw.edu.au/hia/>

The Health Impact Assessment Gateway provides access to HIA related information resources. Sources of evidence and networks to assist people participating in the HIA approach. <http://www.hiagateway.org.uk/>

Human Health Impact Assessment and CEAA. Environmental Health Assessment Services provides direction to Health Canada on all activities carried out under the Canadian Environmental Assessment Act (CEAA). <http://www.hc-sc.gc.ca/hecs-sesc/ehas/index.htm>

IAIA is a forum for advancing innovation, development and communication of best practice in impact assessment. <http://www.iaia.org/>

The International Health Impact Assessment Consortium (IMPACT) is a multi-agency partnership formed to help further the research, study and practice of Health Impact Assessment. <http://www.ihia.org.uk/>

STAKES (Finnish national research and development centre for welfare and health). Human Impact Assessment. <http://www.stakes.fi/sva/huia/>

USA, State of Minnesota: HIA from a US perspective. <http://www.health.state.mn.us/divs/chs/mhip/#6>

Vertigo (France) http://www.vertigo.uqam.ca/vol4no1/j_ai_lu/j_ai_lu.html

The Welsh Assembly Government is committed to developing the use of Health Impact Assessment. <http://www.cmo.wales.gov.uk/content/work/health-impact/index-e.htm>

World Health Organization (WHO) WHO/Regional Offices/Europe. Health impact assessment. <http://www.who.int/hia/network/regional/en/index2.html>

World Health Organization (WHO): Health impact assessment. <http://www.who.int/hia/en/>

6.4 Further reading

Ahmad, B.S. (2004): Integrating health into impact assessment: challenges and opportunities. *Impact Assessment and Project Appraisal*. Vol. 22, No. 1.

Birley, M. (2003): Health impact assessment, integration and critical appraisal. *Impact Assessment and Project Appraisal*. Vol. 21, No. 4.

Bond, A. (2004): Lessons from EIA. In Kemm, J., Parry, J. & Palmer, S. (eds.) (2004): *Health impact assessment. Concept, theory and applications*. Oxford University Press.

British Medical Association (1998): *Health & environmental impact assessment: an integrated approach*. ABSTRACT ONLY

Environmental Assessment Group (2003): *The outcome of EIA. An evaluation of Danish EIA rules*. Department of Development and Planning, Aalborg University.

EURAC Research: Health impact assessment within the scope of the environmental impact assessment for the Brenner Base line. <http://www.uve.at/>;
http://www.eurac.edu/Org/AlpineEnvironment/RegionalDevelopment/Projects/publichealth_de.htm

European Commission (2003): The health status of the European Union. Narrowing the health gap. Health and Consumer Protection. Office for Official Publications of the European Communities, Luxembourg.

European Environmental Agency (1999): Environment in the European Union at the turn of the century. Environmental assessment report No 2.

Gérin, M. et al (2003): Environnement et santé publique: Fondements et pratiques. Éditions Edisem. Edisem au Québec et Éditions Tec & Doc, France.

Impact Assessment and Project Appraisal (2003). Vol. 21, No. 2 and No. 3.

Institute of Public Health: Health Impact Assessment guidance (Draft). Developed by the Institute of Public Health in Ireland on behalf of the Ministerial Group on Public Health.

Ison, E. (2000): Resource for Health Impact Assessment. NHS Executive, London.

Janssens, P. & Hens, L. (1995): Environmental health impact assessment in Flanders, Belgium. Management of Environmental Quality: An International Journal. Vol. 6, No 4. ABSTRACT ONLY

Joffe, M. & Sutcliffe, J. (1997): Developing policies for a health environment. Health Promotion International. Vol. 12, No. 2.

Lerer, L. (1999): How to do (or not to do)... Health impact assessment. Health Policy and Planning. Vol. 14, No. 2.

Milner, S.J. et al (2005): Integrated impact assessment in the UK – use, efficacy and future development. (p. 47-61). Environmental Impact Assessment Review 25 (2005).

Mindell, J. & Joffe, M. (2003): Health impact assessment in relation to other forms of impact assessment. Journal of Public Health medicine. Vol. 25, No 2. ABSTRACT ONLY.

Ministry of the Environment (1999): Guidelines for the environmental assessment of plans, programmes and policies in Finland.

Ministry of the Environment of the Slovak Republic (1996a): EIA Guidance for the Chemical Technology

Ministry of the Environment of the Slovak Republic (1996b): EIA Guidance for Incineration

Ministry of the Environment of the Slovak Republic (1998): EIA Guidance for the Landfills and Installation for Waste

Reinikainen K., Karjalainen T. P. & Talvenheimo, K. (2003): Ihmisiin kohdistuvien vaikutusten arviointi. Vaikutukset, menetelmät ja vuoropuhelu arviointiselostusten valossa. Tiehallinnon selvityksiä 20/2003. Finland. (Human impact assessment. Impacts, methods and dialogue in EIS. Finnish Road Administration)

Spiegel, J. & Yassi, A. (1997): The use of health indicators in Environmental Assessment. Journal of Medical Systems. Vol. 21, No. 5. ABSTRACT ONLY.

Steinemann, A. (2000): Rethinking human health impact assessment. Environmental Impact Assessment Review, December 2000, vol. 20, no. 6, pp. 627-645.

Vohra, S. (2005): Health Impact Assessment – a training reader. Living Knowledge Consulting.

World Bank (1997): Health aspects of environmental assessment. Update no. 18 for the World Bank Environmental Assessment Sourcebook. The World Bank, Washington D.C.

6.5 Country abbreviations

Austria (AT)

Belgium (BE)

Canada (CA)

Cyprus (CY)

Czech Republic (CZ)

Denmark (DK)

Estonia (EE)

France (FR)

Germany (DE)

Greece (GR)

Hungary (HU)

Ireland (IE)

Italy (IT)

Latvia (LV)

Lithuania (LT)

Luxembourg (LU)

Malta (MT)

Netherlands (NL)

Poland (PL)

Portugal (PT)

Slovakia (SK)

Slovenia (SI)

Spain (ES)

Sweden (SE)

United Kingdom (UK)

United States of America (US)