Abstract

Health Impact Assessment (HIA) has been promoted as a key public health advocacy tool within decision making processes relating to spatial planning. In this dissertation the quality of 12 project level Health Impact Statements published in the Netherlands is assessed by using a newly developed HIA checklist, developed by Fredsgaard et al (2008). The external realities of the HISs are further explored by gauging opinions of relevant policy makers through a questionnaire.

The main conclusion of the study is that overall quality of the HIS reviewed is good, and that in terms of usefulness of the HIA exercises this varies from being instrumental in the spatial planning process, to not being used at all. The reasons for this variance can be attributed, as indicated in the literature, to the presence of ‘drivers’ in the forms of policy makers or HIA practitioners.

In addition, considering the different approach to HIA in the Netherlands to the United Kingdom (for which the checklist is originally intended), has meant that various parts of the checklist have been not-applicable, e.g. stakeholder involvement. This does however not imply that these issues are not addressed elsewhere in the decision making process.
Acknowledgements

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1. INTRODUCTION

Health Impact Assessment has been championed as an important policy making tool, which can actively promote health issues in spatial planning processes (Kemm, 2000). In this dissertation the quality of health impacts statements (HIS), a HIAs primary output, produced in the Netherlands (period 2000-2007) are assessed on their quality.

In terms of appraising a HIA the following questions can be asked (derived from McIntyre & Petticrew, 1999 and Kemm et al, 2004):

- Was the HIA ‘fit for purpose’? or in other words were the terms of reference appropriate to the project;
- Were there any biases or pitfalls present? E.g. enough time given to assessment, budget made available;
- Was the HIA technically adequate? (e.g. appropriateness of health impacts evaluated);
- Were the recommendations made practical and executable?
- Has the HIA effected overall decision making?

These questions relate to both the internal realities of the HIA (i.e. the vigour under which it is conducted) and the external, political or organisational realities (i.e. has the produced HIS actually been looked at by policy makers?) (Putters, 2005).

1.2 Organisation of document

Section 2 provides an overall introduction to HIA, and describes its conceptual context. In addition the HIA as it is applied in the Netherlands is discussed. Section 3 presents the methods used in this study. Section 4 presents the result, after which section 5 discusses each HIS and providing also an overall discussion.

1.3 Objective & Aims

The overall objective of this dissertation is to assess the quality of HISs produced in the Netherlands using a novel HIA checklist. Thus the specific aims are:

- To review project based HIS produced in the Netherlands between 2000-2007 using the HIS checklist;
• To explore what effect these HISs have on the local decision making processes.
2. Introduction to Health Impact Assessment and its conceptual context

2.1 NEED FOR HIA

Governments have always regarded the health and well-being of their populations as one of the cornerstones of their reign. Famously the Romans had an extensive welfare system in place to ensure stability of the empire (Porter, 1999); the Arabic Empire continued this tradition, with most of its cities having for example tight regulations on food handling complete with public health inspectors (Brockington, 1966); whilst the Italian States which had a complex health system in place providing care to the rich and poor alike (De Renzi, 2004).

Undoubtedly with the advent of modernity and the emergence of the risk society, “health” is considered a key theme when it comes to government accountability (Broadbent & Laughlin, 2003; Robinson, 2003). The current modern urban landscape is considered in the popular mind to be hazardous to health, as Scott & Williams (1992, p3) noted, ‘the threads come from everywhere – from the air we breathe, the rays of the sun, the multi-national petrochemical companies, the ’man’ on the street ...’ Therefore risks associated with this environment are reoccurring themes in controversial discussions where economic development and issues of public health converge (Holdren, 1990; Clark, 1984; Ekins, 2003).

This has meant that certain human actions, or activities that appear to raise ‘threats of harm to human health or the environment’, are placed under greater scrutiny in order to identify ‘precautionary measures’, even in cases where ‘cause and effect relationships are not fully understood’ (Rio Declaration in Kriebel & Tickner, 2001, p1351). This statement underpins the premise of impact assessment, that the state of the physical environment is a key indicator for the state of human health, or in other words: ‘humans affect the environment, and the environment affects humans’ (Steineman, 2000, p627).
This ecological context of assessing the state of human health through the state of the physical environment has given prominence to Health Impact Assessment (HIA). HIA is promoted as one of various policy appraisal tools within impact assessment intending to serve as predicative evidence-based tool; in its case, to inform decisions makers on likely impacts on human health as a result of a proposed policy, plan or project (Douglas et al, 2001; Kemm, 2000; Fehr, 1999).

HIA’s main reason d’être is that health of a community is affected by a wide area of public policies, thus not necessarily by health policies per se. It is therefore hailed by its supporters as an advocate to highlight health issues in complex decision making processes, usually relating to spatial planning (Kemm & Parry, 2004). Its primary output, or the Health Impact Statement (HIS), serves to inform policy makers who are not likely to be experts on health. Its therefore assumed that these decision makers cannot automatically foresee impacts on public health as a result of a certain PPP. In this respect the HIS serves to limit these adverse impacts on public health, and promote the positive health impacts that might result from a proposal (Quigley & Taylor, 2003).

Although since the industrial revolution ample experience has been gained with issues of pollution, it is now recognised that cumulative impacts can be detrimental to health (BMJ, 1998). Understanding the direct correlations between human health and state of the environment is complex, there is scope to explore these interactions and produce either qualitative or quantitative estimates (Den Broeder et al, 2003; Mindell et al, 2008).

There are many approaches to HIA developed over the years (further discussed in section 2.3), but its overall approach follows normally the stringent steps of screening, scoping, appraisal or risk assessment, presentation of recommendations and monitoring and evaluation – the stages and their characteristics have been outlined in table 1.
### Table 1: steps of HIA (Source: Mindell et al, 2003)

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<tr>
<td><strong>Screening</strong></td>
<td>Sieving out the proposals that do not require an HIA, so that limit resources can be used on proposals that will be enhanced with HIA – screening should be done systematically scored against set criteria or other tools.</td>
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<tr>
<td><strong>Scoping</strong></td>
<td>i.e. terms of reference of the HIA. This includes elements of the proposed PPPs, aims and objectives of the HIA, the geographical area concerned, the affected communities and their make-up (e.g. vulnerable, marginalised or disadvantaged groups), stakeholders to be included in the assessment (and their relation to the PPP), potential health impacts; resources available to conduct the assessment; methodology.</td>
</tr>
<tr>
<td><strong>Appraisal or Risk Assessment</strong></td>
<td>Health impacts (both negative and positive are identified) according to both stakeholders and assessors.</td>
</tr>
<tr>
<td><strong>Preparation and Submission of Report</strong></td>
<td>Integration of information from stakeholders during appraisal/risk assessment with the evidence-base appropriate to policy, plan or project (expert judgement, literature etc). recommendations should be appropriate to the identified impacts, and mitigation suggestions should be effective.</td>
</tr>
<tr>
<td><strong>Monitoring and Evaluation</strong></td>
<td>Monitoring and evaluation includes several components: <em>Process evaluation</em> – how successful was the HIA? <em>Impact evaluation</em> examines to what degree recommendations have been accepted and implementation of these recommendations once they have been accepted. <em>Outcome evaluation</em> examines indicators and actual health impacts after proposal has been carried out.</td>
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### 2.2 CONCEPTUAL ROOTS OF HIA

HIA is rooted in the principles of healthy public policy (HPP) and impact assessment (Kemm & Parry, 2004). In the following a synopsis is given of the
main developments behind HIA and the main principles underpinning the concept.

2.2.1 Definition of health
The World Health Organisation (WHO) stated in its 1948 charter the archetypical definition of health as 'not a mere absence of disease but positive physical, psychological, and social well-being' (WHO in BMA, 1998, p39). The broadening of the definition of health at that time, just after the 2nd World War, to include mental and social wellness was considered a landmark statement (Saracci, 1997). In essence however health policies are normally devised to provide health services for the unwell, and to ensure preventative measures are in place through for example education and immunization (Kemm & Parry, 2004).

Saracci (1997) has argued that the WHO definition of health is in theory valuable, but that it has 'no direct operational value’ (p1409). This is because the definition assumes that ‘happiness’ is interchangeable with physical well-being, for example that ‘any disturbance to happiness, however minimal, may come to be seen as a health problem’ (Sarraci, 1997, p1409). Elsewhere too the WHO definition has been deemed to be too systemic or idealistic (Kemm & Parry, 2004). Those who practice HIA however tend to stress their pragmatic approach to ‘health’, focussing on the core themes of physical, mental, and social well-being (Mittelmark, 2001; Kemm & Parry, 2004). This pragmatism is based on using objective methods from life sciences (e.g. toxicology), but also methods to assess subjective sides of health, albeit many of them still in full development (Mittelmark, 2001; Kemm & Parry, 2004).

2.2.2 Legal basis of HIA in Europe
In 1992 public health was firstly introduced as one of the responsibilities of the European Union (EU) by means of the Maastricht Treaty (Whitehead & Nordgren, 1997). Article 129 of the treaty states that ‘the Community shall contribute towards ensuring a high level of human health protection by encouraging cooperation between the Member States and, if necessary, lending support to their action’ and that ‘health protection requirements shall form a constituent part of the Community’s other Policies’ (EC, 1992). European Treaty of Amsterdam
crystallised this commitment further; therein Article 152 states that “a high level of human health protection shall be ensured in the definition and implementation of all Community policies and activities” (EC, 1997).

2.2.3 The Gothenburg Consensus

In 1983 the world health Organisation (WHO) published the first guidelines that were used to assess the positive health impacts of water supply systems (Mindel & Joffe, 2003). These guidelines and their outcomes were used to gauge the effectiveness of improved sanitation projects and their expected benefits (ibid). However many view the Gothenburg Consensus paper as instrumental in solidifying the concept of HIA as a viable policy appraisal tool (Mathers & Parry, 2004; Kemm & Parry, 2004; Bekker, 2007).

The paper, which had been the product of an international workshop organised by the WHO and the Nordic School of Public Health in Gothenburg in 1999, gave HIA its widely used definition of “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 a population” (WHO-ECHP, 1999). For other definitions see table 2.

**Table 2: some definitions of HIA**

<table>
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<td>“A methodology which enables the identification, prediction and evaluation of likely changes in health risk, both positive and negative (single or collective), of a policy, programme or development action on a defined population. These changes may be direct and immediate or indirect and delayed” (Kemm, 2000, p431)</td>
</tr>
<tr>
<td>“A methodology which enables the identification, prediction and evaluation of the likely changes in health risk, both positive and negative (single or collective), of a policy, programme, plan or development action on a defined population’ (BMA in Kemm, 2000, 431)”</td>
</tr>
<tr>
<td>“A developing process that uses a range of methods and approaches to help identify and consider the potential – or actual – health and equity impacts of a proposal on a given population” (NHS-NDA, 2002, p3)</td>
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In the Gothenburg paper an international consensus is presented on what principles are inherent to the concept of HIA (Bekker, 2007). Through the consensus the attendees acknowledged that HIA in various contexts has a multitude of approaches to health – this in reference to inter- and intra-sectoral gaps and variations between the public and private sector (ibid). All policy processes are carried out in the framework of values, goals and objectives that may be more or less explicit in a given society and at a given time. It is essential that such values are taken into account; otherwise HIA runs the danger of being an artificial process, divorced from the reality of the policy environment in which it is being implemented (WHO-ECHP, 1999). As such, the paper is considered as a ‘living document’, emphasising that HIA is a dynamic notion, which needs constantly to be tuned to the realities of decision making it finds itself in (ibid). The paper however did state the core principles to which every HIA system in theory should adhere to, namely: Democracy equity, sustainable development and ethical use of evidence (ibid). These pillars are discussed in the next sections.

2.2.4 Democracy

HIA aims to embody the principles of transparent decision making and accountability, which includes the involvement of the public throughout the assessment exercise (op cit). Decisions made in the HIA exercise have to be transparent and inclusive in all of its stages, i.e. formulation, implementation and evaluation. Participation can either directly or through elected political decision makers (op cit).

2.2.5 Equity

Recognizing that HIA should not only focus on collating data on the impact on the health of a community, but should also detail how this impact is distributed amongst various groups within that community (e.g. gender, age, ethnic background and socio-economic status) (op cit). Therefore HIA should aim at addressing health disparities within populations and focus on reduction of adverse health effects on people with a vulnerable socio-economic status (e.g. by being unfavourably exposed to material, psychosocial and behavioural and behavioural factors) (WHO-ECHP, 1999; Mackenbach et al, 2004).
2.2.6 Sustainable development

Recognizing the principles of sustainable development where both short and long term impacts have to be considered. The concept of sustainability is famously broad in its aims, as it envelopes the economical, social and environmental spheres – which are interwoven with the principle of intra- and intergenerational equity, essential needs and limitations to development (Barraque, 2003; Cashman, 2006; Hediger, 1999).

Sustainable development has been prominently defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED in Hediger, 1999, p1121). Therefore the concept dictates that human progression through economic development needs to be subjected to scrutiny in order to protect the natural systems that support life on earth, or to at least minimise these effects (Hediger, 1999).

Critics often argue that balancing the three dimensions of sustainable development (economic, social and environmental) has in practice often resulted in favouring one component over the other, with for example many commentators arguing that more often than not environmental considerations have taken a back seat compared to economic or social considerations (Morrison-Saunders, 2006; Sheate et al, 2003).

This argument has also been used in the context of HIA, sustainability and impact assessment. Environmental Impact Assessment (EIA) was in theory intended to assess impacts on both the physical environment and human health, the fact that the latter became according to many underrepresented in the EIA discourse, has become a pivotal in the development of HIA as a separate entity (Mindell & Joffe, 2003). EIA will be discussed further is section 2.4.2.

2.2.7 Ethical use of evidence

Finally, the last pillars recognizes that ‘the use of quantitative and qualitative evidence has to be rigorous, and based on different scientific disciplines and
methodologies to get as comprehensive assessment as possible of the expected impacts’ (WHO-ECHP, 1999, p4).

2.3 TYPES OF HIA

Over the last decade the principles of HIA have been adopted and implemented by various governments, such as the United Kingdom, Scandinavian countries, the Netherlands, but also by supra-nation organisations such as the World Health Organisation (Krieger et al, 2003). Multi-national companies have also used HIA to assess the impacts of their activities on public health. For example Shell has used HIA to address the issue of sexually transmitted infections associated with large construction projects in developing countries (Birley, 2005). However the type of HIA varies along a broad scale. On one hand these differences relate to the terms of reference in the assessment (i.e. ‘broad focus’ Vs ‘tight focus’ HIA), and on the other hand relate to the actual time taken to carry the assessment and the timing of the HIA.

2.3.1 Broad and tight focus HIA

Broad focus HIA – HIA which is has a strong base in social sciences (thus can be referred to qualitative HIA). Here a holistic approach is taken to health, therefore the assessment is not solely attached to quantitative data, but through a sociological viewpoint also addresses more subjective issues. This could also include popular concerns vis-à-vis environmental concerns, therefore public participation, or public input, forms a key part in this approach (Kemm, 2000; McCarthy & Utley, 2004). This type of assessment is carried out for example in the United Kingdom (NHS-HDA, 2002).

Tight focus HIA – or HIA which has a strong base in epidemiology and toxicology (thus can be refereed to quantitative HIA) (Kemm, 2000). Emphasis is put on quantifiable, or conspicuous health impacts, where the primary output consists of quantified estimates of risk. This type of HIA is carried out for example in Germany, the Netherlands and New Zealand (Den Broeder et al, 2003)

2.3.2 Rapid, comprehensive and desk-top appraisal
• **Rapid appraisal (or mini-HIA)** whereby primarily information is used which is already exists (Mindell et al, 2003).

• **Comprehensive appraisal (or maxi-HIA)** whereby new data is produced (e.g. through surveys, literature review, comparative HIA reviews. Is considered to be time and resource intensive (ibid).

• “**Desk-top**” appraisal is a rapid or quick scan of likely health impacts, done by officers in certain organisations or government bodies. Can be likened to the screening phase of HIA, without the subsequent steps (ibid). .

### 2.3.3 Prospective, concurrent and retrospective HIA

Sometimes HIAs are categorised under being prospective, concurrent or retrospective (Mindel et al, 2008). Whereby a distinction is made between timing of the assessment exercise, i.e.: a prospective HIA is undertaking before a proposal is implemented and has a chance to actually influence the decision making process; a concurrent HIA is undertaken whilst a proposal is carried out, and can therefore identify impacts on an ad hoc basis; a retrospective HIA which is undertaken after the proposal is implemented, where it serve to identify health impacts after completion – a appropriate mitigation actions can then be undertaken, or it can serve to contribute its findings to similar proposals undertaken in the future (ibid).

Morgan (2003) has argued that making these sort of distinctions can make HIA a convoluted paradigm, noting that ‘all impact assessment is “prospective” in nature. “Concurrent” HIA is, in impact assessment (IA) circles, a form of monitoring carried out within the overall IA process to assist impact management. “Retrospective” HIA would refer in IA circles to health impact auditing, and is part of evaluating the IA process and learning about actual impacts for future assessments. The implication that there are three types of HIA is thus misleading: these are in fact three phases of a unified HIA process’ (Morgan, 2003, p390). Similar views of HIA turning unnecessary opaque have been expressed elsewhere (Mittelmark, 2001). In reality however, it is prospective HIA that is applied (Scott-Samuel et al, 2001).

### 2.3.4 Other significant differences in approach
Further clear distinctions can be made vis-à-vis HIA conducted for projects and HIA conducted on broader policy and strategy proposal (Kemm, 2000; Kemm, 2003; Mindell et al, 2001). All in all, HIA remains an ‘open framework’ in which assessment methods should be appropriate for the matter at hand and time and resources available (EPHIA, 2004).

There is general consensus of what constitutes a good HIA, which usually accumulates into a mixed or ‘holistic approach’, where qualitative approaches are underpinned with qualitative approaches, and vice versa, taking into account the core principles of the Gothenburg Consensus (Mcintyre & Petticrew, 1999; EPHIA, 2004; Kemm, 2000).

2.4 IMPACT ASSESSMENT

2.4.1 Introduction

HIA has become the product over continuous drive in the since the 1960s to grasps mans impact on all facets of life, all under the umbrella of sustainable development.

The assessment of impact as a result of development action formally started off in the environmental field with the introduction of the National Environmental Policy Act (NEPA) (1969) in the United States (Glasson et al, 2005). The Act itself was the product of various actors (e.g. the media, non-governmental organisations, general public) which all expressed concerns on the treatment of the physical environment (Weston, 2000).

In addition, in the 60s there was a certain push for more rational, scientific and environmental decision making, combined with an increased call for public involvement, or democratization of environmental decision making processes (op cit). Indeed, the issue of public participation would be considered to be a cornerstone of the entire impact appraisal tools developed under the umbrella of NEPA (Barrow, 1997; Weston, 2000; Christensen et al, 2005; ).
2.4.2 Environmental Impact Assessment

The US Environment Protection Agency (USEPA) formulated an environmental impact assessment (EIA) framework. This EIA was an amalgamation of various fields, including land-use planning, cost-benefit analysis, multiple-objective analysis and modelling and simulation (Barrow, 1997), and has become the blueprint for impact assessments across the world (ibid). EIA as formulated by the USEPA was in essence a qualitative approach to risk assessment, founded on toxicological and observational data (McCarthy & Utley, 2004). This approach is based on the classic four pillars of risk assessment, and thus has at its core the identification of an exposure pathway, often referred to as the source → pathway → receptor (or target) framework (Eduljee, 1999), which are:

- Hazard identification – or the identification of potentially harmful substances;
- Dose-response assessment – or quantifying dosage levels and their potential effects;
- Exposure assessment – or the duration of exposure on an identified group;
- Risk characterisation – overall outcome of risk assessment through description of probabilities and severities of risks identified (Eduljee, 1999; McCarthy & Utley, 2004).

The uniqueness of EIA as developed by USEPA was policy tool which systematically indentified potential impacts on the physical environment arising from development action (Glasson et al, 2005). In its primary output, the environmental statement (ES), results of each of the EIA stages are reported – i.e. screening, scoping, impact prediction and evaluation. As stated above, each of these stages have a reciprocal relationship with classic risk assessment – i.e. for example hazard identification can be likened to scoping and so forth (Brookes, 2000; Demidova & Cherp, 2005).

The ES includes concrete suggestions for alleviation of expected impacts (Glasson et al, 2005). The ES can then be used by decision makers to make an informed decisions vis-à-vis any new proposed developments; again it is left at
their discretion as to how the ES would influence planning decisions (Thomson et al, 1997). How then the outcome is exactly used, depends on the decision making process, and to which degree the identified risks are deemed acceptable or manageable by the decision makers (McCarthy & Utley, 2004).

In Europe EIA has become a requisite under Directive 85/337/EEC as amended by 97/11/EC and 2003/35/EC (EC, 2003). Therein it is stated that an EIA should provide for identification, description and assessment of potential impacts on human beings, fauna, flora, soil, water, air, climate, cultural heritage and any interaction between these receptors resulting from a proposed development (op cit). Annex VI (1) of the Directive states that “an estimate, by type and quality of expected residues and emissions (water, air and soil, pollution, noise, vibration, light, heat, radiation) resulting from the operation of the proposed project” should be included in the EIA (op cit). The Directive has been implemented across the European Union through various local regulations, impacting mostly planning systems and regulations (DoE, 1989; Treweek, 1996).

2.4.3 Strategic environmental Impact Assessment
As EIA is takes place on a project level, and was therefore deemed to be too narrow minded in its assessment of impacts. An important issue are cumulative impacts, where for example one planned production plant might be within the thresholds, but two plants in the same area combined might exceed these thresholds (Glasson et al, 2005). In this light Strategic Environmental Assessment was developed to evaluate potential significant environmental impacts of overall policies, plans or programmes – thus SEA is a form of EIA, only taking place on a higher tier in the decision making process (Fisher, 2002; Sheate et al, 2003; Glasson et al, 2005).

2.4.4 Social impact assessment
Social impact assessment (SIA) is a method that can be used to assess and manage the impacts of a project, plan, program or policy on a defined population (Barrow, 2000). There is a multitude of definitions of HIA available, such as ‘a significant or lasting change in people’s lives brought about by a given action or actions’ (Barrow, 2000, p2) or more elaborately a framework which ‘includes the
processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions’ (Vanclay, 2003, p6).

Impacts can include changes to how people live, work, relate to one and other, the ways people organise themselves to meet their needs, or other ways act as members of their community – this obviously has a strong bearing to impacts on the community’s norms, values and believes (Rattle & Kwiatkowski, 2003). To a very large degree, broad-end HIA is strongly aligned with HIA (NHS-NHD, 2002).

2.4.5 EIA and HIA reviews

Given that EIA (and to a lesser extend SEA) have a long proven track record, various academic exercises have been conducted to examine the overall thoroughness of ESs. For example, Glasson et al (1997) found that although overall quality of ESs in the UK had improved since the first ESs where submitted, a large portion of the reviewed ESs was still of unsatisfactory quality. Besides shortcomings relating to communication – e.g. availability of ESs, pre-consultation submission, lay-out and jargon used in the non-technical summary – considerable deficiencies were found relating to core parts such as the scoping phase, consideration of alternatives and to what degree competently trained consultants were used to carry out the EIAs (ibid). Similar findings were uncovered in a European-wide comparative study of EIA/ES quality (Barker & Wood, 1999).

Many studies have also looked at how specific environmental components have been treated within the overall assessment. Many reviews have for example have focused on ecological considerations, which have received considerable critique due to apparent lack of vigour and diligence (Steward-Oaten et al, 1986; Treweek et al, 1993, Treweek, 1996; Thomson et al, 1997; Fernandes, 2000).

Various EIA/ES review packages have been developed, which includes the checklist published by the Manchester University EIA Centre and the Oxford Brookes University Impact Assessment Unit (Lee et al, 1999; IAU in Glasson,
Both packages assess quality of ESs in all stages of EIA (i.e. screening, scoping, impact prediction, magnitude of predicted impact, mitigation proposals and communication), which also includes issues of quantification of impacts, methods used and aspects relating to significance and uncertainty.

2.5 HIA AND POLICY MAKING DYNAMICS

2.5.1 Introduction
The pivotal question in any policy based review, this either relating to HIA or to any other policy tool is: has the output actually been used by the policy makers? This issue relates to two key points, namely that of the divide between technical and political rationality and that of policy networks HIA finds itself in (Bekkers et al, 2004; Putters, 2005).

2.5.2 Policy making theory
It is widely accepted that the sometimes positivistic mind frame of the scientist tends to clash with the political reality. In other words, what has been conjured up through a rigorous scientific approach is not always wholeheartedly accepted and implemented by decision makers. This dissonance is referred to as the difference between a technical reality and a political one, or the science-policy gap (Bradshaw & Borchers, 2000; Owens et al, 2004; Roberts, 2004; Putters, 2005).

In the field of EIA there is evidence that conflicts between EIA practitioners and how they feel scientific information should be incorporated in the wider decision making process, and policy makers who might not hold similar believes (Nitz & Brown, 2001). As primary output of HIA should be easily digestible by policy makers (Kemm et al, 2002).

Weston (2000, p186) explains that there are essential two widely known theories relating to administrative decision making. Firstly, the “structure of the society in which the decision maker operates”, and therefore is expected to behave according to that structure. In the literature this is also referred to as the rational model for decision making (Bekker et al, 2004; Putters, 2005). On the other hand
there is “the actual behaviour of the decision maker within an organizational context” (Weston, 2000, p186). This is also referred to as the incremental, and therefore more realistic, model for decision making (Bekker et al, 2004; Putters, 2005). These theories do not necessarily have to clash, as they indeed can also complement each other (Weston, 2000; Bekker et al, 2004).

The integration of HIA into dynamic, complex and ad-hoc decision making processes seems to be the most significant external challenge that HIA faces (Scott-Samuel, 1998; Joffe & Mindell, 2002). Ideally HIA should be interlinked during its prospective phase, during the implementation phase as well as during the retrospective (or post-implementation) phase (NHS-HDA, 2002). However, as Kemm et al (2002) assert, decision making processes tend to be a-linear, are often incremental, and need to adhere to decision making time-tables in order to be taken into account.

2.5.3 The Merseyside Guidelines

The Merseyside Guidelines provided an influential, theoretical, blueprint for successful integration of HIA in decision making processes (Scott-Samuel et al, 2001; Bekker, 2007). In the Guidelines a detailed representation is given on how HIA should ideally be carried out – see figure 1. The authors of the Guidelines differentiate between assessment methods and ways of ensuring the HIA is relevant to all the stakeholders involved (Bekker, 2007).

Firstly, to ensure a germane HIA, under the Guidelines the outcomes of the screening procedure should define the epidemiological as well as the economic and strategic issues (Scott-Samuel et al, 2001). Secondly, key to the overall success of the HIA is the establishment of a multidisciplinary steering group (ibid). This group should include ‘representatives of the commissioners of the HIA, the assessors carrying it out, the project’s proponents (i.e. those developing, planning or working on it), affected communities, and other stakeholders as appropriate’ (Scott-Samuel et al, 2001, p7). The group then should devise the Terms of Reference which are used as a quality assurance procedure, this in relation to roles, time schedules, methods, scope, budgetary requirements and issues of ownership, confidentiality and copyright (ibid).
This Steering group should avoid what Bekker et al (2004) refers to as ‘negotiations over the substance and procedure of the HIA’, which can take place in a ‘virtual arena’ disconnected from the ‘implementation arena’ (section 2.1.3). Utilization of the primary output of a HIA is defined broadly: whether the HIA has lead to cognitive change in perceptions and preferences (conceptual use), and/or to policy action (instrumental use); or to strategic action (ibid).

*Figure 1: stages in the HIA process according to Merseyside guidelines (adapted from Scott-Samuel et al, 2001, p6)*
2.6 HIA IN THE NETHERLANDS

2.6.1 Introduction
Like in many countries which have started implementing the concept, HIA in the Netherlands in many ways been ‘work in progress’ since it was first introduced in 1996 (Abbing, 2002). As Abbing (2002) describes, HIA here as to be seen in the context of a pluralistic health system which puts emphasis on health service policy. Health policy practitioners and researchers were becoming increasing interested in external factors which might have an effect on health. Although policy makers on a national level initially have acknowledged the importance of appraising policies and projects on possible adverse public health outcomes, the exact status of HIA within the Dutch planning has had a tumultuous history (Bekker, 2007).

2.6.2 Legal basis and development of HIA
Underpinning the protection of public health in the Netherlands is the Collective prevention and Public Health Act, therein it is stated in article 2 that the municipalities need to safeguard public health when devising public policies (Tweede Kamer der Staten-Generaal, 2004-05). In this Act using HIA as a means of achieving this safeguarding is not mentioned, resulting in HIA in becoming a voluntary exercise (Bekker, 2007). The only legal reference made to HIA can be found in the Explanatory Memorandum of the Interim City & Environment Act (2006), which has been the product of a long political process which started in the mid-90s (Bekker, 2007).

After a thorough review of the relevance of HIA in the late 90s, the then minister for Public Health, welfare and Sports argued that although aspects of causality within HIA could not be quantified, HIA was still deemed to be worth the effort (Abbing, 2002). This instigated the screening by the Intersectoral Policy Office of the various government ministries and their national policies in order to determine whether either an extensive HIA was necessary or a Health Impact Screening (HIS), which is comparable to rapid HIA appraisal (ibid). Research was commissioned into developing qualitative methods of impacts and the examining the discrepancy between theory and practice (Bekker, 2007). The results of this
research were used to experiment with HIA on a national policy level – for example HISs were conducted on national budgets and the Tobacco Act 1999 (ibid). During this experimental phase both a Health Impact Screening (HIS) – which is a short, quick scan method - as well as full HIAs. Simultaneously, the City & Environment model was developed by the National Institute of Public Health and the Environment (RIVM) in cooperation with the ministry of Housing, Spatial Development and the Environment (ibid).

This process resulted in dressed down HIA ambition, where in the end the HIA appraisal of national policies was abandoned in favour of HIA on a project level (Bekker, 2007). This reason for this dressing down was primarily that the Ministry of Health, Welfare and Sport was not swayed by the promises of HIA, and partly because it believed responsibility of HIA should also lie with other relevant ministries – as is the cross-sectional nature of so many policies relating to labour and health, environment and health, lifestyle, food, youth and the reduction of health inequalities (Abbing, 2002).

It was in this environment that HIA responsibility was under the City & Environment framework delegated to municipalities and other ministries who felt it was worthwhile (op cit). Therefore, since the start of the new millennium, HIAs have primarily been conducted by Community Health Services on projects (e.g. construction of a distribution centre) or strategically on whole municipalities (e.g. to assess the current health of a municipality, and possible policy implications), with most of these HISs used in this study.

In this Act it is stated that HIA can be conducted on construction projects which are likely to surpass legal environmental limits (Bekker, 2007). Furthermore, within the City & Environment framework, guidance on how to conduct HIA has been published. As stated in the Explanatory Memorandum (2006), this guidance is meant to enable quantitative assessment of projects set within a defined boundary. As Den Broeder et al (2003) explain, this approach is strongly connected with risk assessment – i.e. baseline data on noise, smell, air pollution and pollution of soil and water is gathered, and compared to predicted changes to this baseline as a result of the proposed policy or project.
2.6.3 HIA method in the Netherlands
As indicated above, the Dutch have adopted a tight version of HIA, strongly associated with the classical approach to risk assessment. Notably, the issue of stakeholder involvement (or the consultation of the people that might be affected by the proposed project) seems conspicuously absent (Bekker, 2007). The national health community service (GGD) published under the City & Environment framework the guidelines for conducting HIA, which was commissioned by the Ministry of Public Health and the Ministry of Housing, Spatial Planning and the Environment (GGD, 2006). First guidance was published in 2004 and a revised version in 2006 (GGD, 2006).

2.6.4 The City & Environment approach
HIA in the Netherlands, as defined in the City & Environment (C&E) handbook, ‘assesses the public health effects of exposure to air pollution, noise, odour and electromagnetic fields, and external safety risks. All relevant sources such as businesses, roads, railways, shipping, aircraft and overhead power lines are taken into account. In addition, the health impact of soil pollution is assessed’ (GGD, 2006, p9). The C&E is a checklist, which guides the HIA practitioner through all aspects that might affect public health.

This means that environmental exposure data is compared to legal and scientific standards for acceptable environmental risk (GGD, 2006). Consequently, the results are illustrated through HIA scores on background levels of air pollution, noise nuisance and ‘external safety” (or risk assessment) – see figure 2 (GGD, 2006; Bekker, 2007).

The purpose of these labels is to easily compare various environmental risks between and within the areas of exposure (Bekker, 2007). Furthermore, various environmental health aspects are collated to provide an overall picture of threats posed to health (GGD, 2006; Bekker, 2007). A full list of aspect that might need consideration under the C&E framework is listed in table 3.
The results of the C&E exercise are then used to produce contoured output maps outlining the state of the various environmental aspects, refer to figure 3 for an example of such a map.

**Table 3:** list of environmental aspects that might need consideration under the C&E framework (adapted from C&E handbook, GGD 2006, p7, In Dutch).

<table>
<thead>
<tr>
<th>Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry and air pollution, smell nuisance, noise nuisance and ‘external safety’</td>
</tr>
<tr>
<td>Road traffic and air pollution, smell nuisance, noise nuisance and ‘external safety’</td>
</tr>
<tr>
<td>Rail traffic and noise nuisance and ‘external safety’</td>
</tr>
<tr>
<td>Nautical traffic and noise nuisance and ‘external safety’</td>
</tr>
<tr>
<td>Air traffic and smell nuisance, noise nuisance and ‘external safety’</td>
</tr>
<tr>
<td>Contaminated land</td>
</tr>
<tr>
<td>Over ground power cables and electromagnetic fields</td>
</tr>
</tbody>
</table>

**Steps in the C&E framework**

In the screening phase of the C&E HIA the need for an HIA needs to be identified, i.e. will the HIA have any significant purpose in advocating possible adverse impact on human health? What also needs to be considered is if the HIA can be linked in at an early stage into the planning process, whether there is already spatial exposure baseline data available, and if indeed the local community health service has enough resources available to actually conduct the HIA (GGD, 2006). As a result of these requirements to make the HIA ‘useful’, the following requirements have been drawn up:

- Data collection for the HIA should not demand ‘too much’ time and financial resources of the local health service;
- The method should be ‘user friendly’; in fact, no new health assessment techniques are developed under the City & Environment model, and is a collection of existing assessment techniques. It is acknowledged in the handbook that preference has been given to certain methods on grounds of easy to use.
- Methods used should be deemed acceptable by the project managers of City & Environment and/ or environment departments of municipalities.

After establishing that there is a need for HIA, the process of quantifying possible effects can be started. The core again here is the source/pathway assessment, which has been defined as the following chain:
Key questions relating to this chain are:

- Which sources of environmental pollution are there present?
- Which substances are being emitted and at what levels?
- In general terms, what are the effects of these substances on health?
- How does this relate to dose and exposure time?
- What and how many people are being exposed?
- In what way can this lead to adverse health effects? What is the severity?

(Source: GGD, 2006)

<table>
<thead>
<tr>
<th>HIA scores</th>
<th>Labels</th>
<th>Boundaries defined by</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>Good (green zone)</td>
<td>Boundary between 1 and 2: desirable exposure level¹</td>
</tr>
<tr>
<td>2-5</td>
<td>Moderate (orange)</td>
<td>Boundary between 5 and 6:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Legally defined Maximum Acceptable Risk (air pollution)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group risk and Location risk for external safety</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-legal, scientific nuisance level for noise and odor²</td>
</tr>
<tr>
<td>6-8</td>
<td>Unacceptable (red)</td>
<td></td>
</tr>
</tbody>
</table>

¹ In Dutch: ‘Strevenwaarden’
² In Dutch: ‘Maximum Toelaatbaar Risico’ (MTR); ‘Groepsrisico’ = orientation score for number of deaths given population density (established by the City Council) and ‘Plaatsgebonden risico’ = boundary score for acceptable risk of death (not legally required, except for ambient particulate matter (= in Dutch: ‘luchtstof’)

* Additionally, a ‘residential score’ (‘ woningsrisico’) is calculated in order to indicate the density of people living or working in the area.

Figure 2: HIA C&E scores and labels, adapted from Bekker, 2007, p 83
Figure 3: example of C&E contour map (Adapted from the Pernis HIS, p32) relating in this case to noise from industry for the eastern part of Pernis (where amber represents ‘moderate’ and red is ‘unacceptable’).

2.6.5. Reviews of HIA in the Netherlands

Recent evaluation of HIA in Netherlands seems to be – at least what has become apparent in peer reviewed research – scarce. As stated above, HIA or the quick scan version, GIS, were actively used during the experimental phase primarily on national policies (Abbing, 2004). Therefore some case-study evaluations have taken place on the HIAs done on these policies. An example is a paper by Broeder et al (2003), who conducted a health impact review on the HIA done for the national housing policy in the Netherlands, another good example of ‘best practice’. However, here the authors focused on the issue of overcoming the issue of the unavailability of “hard” data, and thus focusing on issues internalities of the HIA tool.

However evaluation of HIAs done on project is almost non-existing, which is not surprising considering that HIA done on a project level has been only actively done since the new millennium. Bekker (2007) and Bekker et al (2005) have looked at an HIA applied on a municipal reconstruction plan (with at its core a health centre), which was deemed as one of the ‘best practice’ examples of HIA in the Netherlands. Here the authors concluded that influence on the decision making process did not hinge on the quality of the HIA or its recommendations,
but on the strategic implications by the HIA that the project could face fierce opposition by the municipal council and public (ibid). This HIS is further discussed in the discussion section 4.3.7. A meta-review of HISs produced in the Netherlands has however thus far not been conducted.
3. Methodology

3.1 INTRODUCTION
The overall methodology used in this study has consisted out of three components, namely;

• A literature review;
• A review of HISs using a new Review Package;
• An open questionnaire survey amongst policy makers who have worked with the reviewed HISs.

3.2 LITERATURE REVIEW
A literature review has been conducted by using UREA library catalogue and journal databases, in addition to two specific HIA resource pages have been accessed: HIA gateway and ‘GGD knishes’ – which is the main online database for all documents concerning HIA published by the community health service in the Netherlands.

3.3 REVIEW OF HISs

3.3.1 Sample
All HIS have been obtained through ‘GGD knishes’ – except for one two statements which were obtained through a provincial council (HIS ‘Moerdijkse Hoek’ (this statement was the only statement not solely produced by the community health services) and a municipality. See table 4 for list of used HISs. The sample completes nearly the total set of HISs that have been produced since the end of the City & Environment experimental period at the beginning of this millennium, and the devolution of HIA responsibilities to local government. The obtained HISs can be divided according to the following traits:

• 3 HISs are commissioned as part of a review to local spatial plans (in Dutch: ‘bestemmingsplan’)
• 3 HISs are commissioned to assess health impacts of industry related schemes
• 6 HISs are commissioned to assess the effects of the existing environment on the proposed projects (housing, ban redevelopment and mixed-schemes)

Table 4: list of used HISs

<table>
<thead>
<tr>
<th>number</th>
<th>Year</th>
<th>Municipality</th>
<th>Synopsis proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2007</td>
<td>Pernis (A borough of Rotterdam)</td>
<td>HIA carried out on whole borough of Pernis, as part of review of local development plan.</td>
</tr>
<tr>
<td>2</td>
<td>2007</td>
<td>Sliedrecht</td>
<td>HIA carried out on whole municipality – as part of review of local development plan (in Dutch ‘bestemmingsplan’)</td>
</tr>
<tr>
<td>3</td>
<td>2005</td>
<td>Zwijndrecht</td>
<td>HIA carried out on whole municipality – as part of review of local development plan (in Dutch ‘bestemmingsplan’)</td>
</tr>
<tr>
<td>4</td>
<td>2006</td>
<td>Noord-Brabant (Provincial Council)</td>
<td>Siting of a large industrial park (600ha) in the Moerdijkse Hoek area. Companies to stem mainly from the heavy industries and the logistical sector, together with other businesses affiliated with these sectors.</td>
</tr>
<tr>
<td>5</td>
<td>2006</td>
<td>Leerdam</td>
<td>Redevelopment of Leerdam-West, which includes new housing</td>
</tr>
<tr>
<td>6</td>
<td>2004</td>
<td>Giessenlanden</td>
<td>Proposal to build logistical centre at Schelluinen</td>
</tr>
<tr>
<td>7</td>
<td>2004</td>
<td>Dordrecht (Smitsweg)</td>
<td>Development of a greenfield site at the Smitsweg area</td>
</tr>
<tr>
<td>8</td>
<td>Unknown</td>
<td>Harderwijk</td>
<td>Redevelopment of a industrial site to include housing and recreation facilities</td>
</tr>
<tr>
<td>9</td>
<td>2004</td>
<td>Waddinxveen</td>
<td>Construction of 2600 homes</td>
</tr>
<tr>
<td>10</td>
<td>2003</td>
<td>Dordrecht (Health park)</td>
<td>Construction of a ‘health park’ – to include an extension of the existing hospital, new sport facilities and mixed use developments</td>
</tr>
<tr>
<td>11</td>
<td>2000</td>
<td>Drachten</td>
<td>Construction of 800 new homes (close to a contaminated industrial site)</td>
</tr>
<tr>
<td>12</td>
<td>2002</td>
<td>Amersfoort</td>
<td>Urban renewal project adacent to busy railway</td>
</tr>
</tbody>
</table>

2.3.2 Review method

The HISs have been reviewed using the HIS Review Package as developed by Fredsgaard et al, 2008 (See Appendix III for the review package). The package is the first attempt to develop a standard checklist for assessing quality of HIS, similar to the EIA checklists.
At the time of writing this study, the Package was still in its draft stage, therefore an unpublished draft has been used. At the time of writing this dissertation the main issue with the draft concerned the length of the checklist; therefore it maintained its ability to be used to assess the key components of HISs.

Guidelines for reviewing HIS as an individual have been followed – these steps have been summarized in table 5. Grades awarded to sub-categories, categories, areas and overall grade for HIS are stated in figure 6. For complete review package see appendix III.

**Table 5: individual review guidelines (adopted from Fredsgaard et al, 2008)**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Quick scan of HIS – with focus on layout and situation of essential information</td>
</tr>
<tr>
<td>Step 2</td>
<td>Reading through review areas, which are:</td>
</tr>
<tr>
<td></td>
<td>1. Description of the development, the local population and the baseline health conditions;</td>
</tr>
<tr>
<td></td>
<td>2. Identification and evaluation of key health impacts;</td>
</tr>
<tr>
<td></td>
<td>3. Alternatives and mitigation;</td>
</tr>
<tr>
<td></td>
<td>4. Communication of results (which should deserve special focus in the review process).</td>
</tr>
<tr>
<td></td>
<td>Each of these areas consist of sub-categories (which received individual grades) which make up overall categories (which receive overall grades according to the sub-category grades), which on their part ‘accumulate’ to provide an overall grade for the area.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Overall grades for areas are then to provide total grade for whole HIS</td>
</tr>
<tr>
<td>Step 4</td>
<td>Summary of quality assessment, including major strengths and weaknesses – for the latter in particular oversights which might hamper proper identification and evaluation of impacts.</td>
</tr>
</tbody>
</table>

**Table 6: grades used to assess all sections of HISs (adopted from Fredsgaard et al, 2008)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Relevant tasks well performed, no important tasks left incomplete.</td>
</tr>
<tr>
<td>B</td>
<td>Generally satisfactory and complete, only minor omissions and inadequacies.</td>
</tr>
<tr>
<td>C</td>
<td>Can be considered just satisfactory despite omissions and/or inadequacies.</td>
</tr>
<tr>
<td>D</td>
<td>Parts are well attempted but must, as a whole, be considered just unsatisfactory because of omissions or inadequacies.</td>
</tr>
<tr>
<td>E</td>
<td>Not satisfactory, significant omissions or inadequacies.</td>
</tr>
<tr>
<td>F</td>
<td>Very unsatisfactory, important tasks(s) poorly done or not attempted.</td>
</tr>
<tr>
<td>N/A</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>
3.4 QUESTIONNAIRE

3.4.1 Rationale
The purpose of the questionnaire is as stated in the aims and objectives to explore the external realities of HIA, i.e. to see what role the HISs have played in the decision making processes.

The experience of policy/decision makers who have engaged in the HIA process has been gauged through an open question questionnaire has been deemed to be the most appropriate. As Stacey (in Simmons, 2008, p191) explains, ‘closed questions should be used where alternative replies are known, are limited in number, and are clear cut. Open-ended questions are used where the issue is complex, where relevant dimensions are not known, and where a process is being explored’.

Due to the fact that this study deals with a small sample size, and can therefore afford to explore the wider thoughts of the policy makers concerned, the more restrictive closed questions questionnaire has been considered inappropriate.

3.4.2 Identifying policy makers
Decision/policy makers who have working knowledge of the HISs concerned have been identified by contacting councils (and in a single case a provincial council). The potential respondent was then asked to participate in the survey. The questionnaire was then sent through email directly to the participant, who gave his or hers consent verbally. The questionnaire was accompanied with a covering letter explaining the purpose of the study.

2.4.3 Problems with open questionnaires
Simmons (2008) notes as a drawback to open questions questionnaires that they relatively require more input from respondents (or in other words, respondents might not bother to answer the questions thoroughly) and that there is the risk of
having to deal with responses which might be vague, too broad or too hard to put into context.

The former issue of lack of enthusiasm for the questionnaire has been overcome by identifying likely respondents and asking directly if they were willing to share their HIA experience through the questionnaire. The latter issue of having to deal with ambiguous language should also be a limited barrier – the questionnaire is intended to give an insight into the respondents’, and the questions have been devised to address defined key issues in HIA.

See appendix II for questionnaire used. A Dutch version has been sent to the respondents.
4. RESULTS

Table 6 present the results from the review exercise. The last column indicates whether a questionnaire was completed for the HIS. 5 questionnaires were completed in total. The reason for the unaccounted questionnaires is primarily that individuals at the municipalities that have worked, or are familiar with the HISs, are no longer employed there, and thus could not be identified. The number of the HIS corresponds to the number in table 4. Refer to Appendix I for detailed grades (sub-categories).

**Table 6: results review exercise**

<table>
<thead>
<tr>
<th>Areas</th>
<th>Population description</th>
<th>Identification and evaluation of key health impacts</th>
<th>Overall Grade Area</th>
<th>Alternatives &amp; mitigations measures</th>
<th>Overall Grade Area</th>
<th>Communication of results</th>
<th>Overall Grade Area</th>
<th>Question. Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>2</td>
<td>B</td>
<td>D</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>F</td>
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<td>3</td>
<td>A</td>
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<td>5</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
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<td>A</td>
<td>B</td>
<td>B</td>
<td>C</td>
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<td>F</td>
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<td>A</td>
<td>A</td>
<td>A</td>
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<td>A</td>
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<td>A</td>
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<tr>
<td>9</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>B</td>
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<td>B</td>
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<td>B</td>
<td>B</td>
<td>C</td>
<td>B</td>
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<tr>
<td>12</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>
5. Discussion

5.1 Introduction

The results of the HIS review using the Fredsgaard et al review package have been aggregated in Table 6. Here only the grades for categories, area and overall HIS have been stated, for all grades including sub-categories refer to appendix I.

In the following sections each HIS is discussed individually according to step 4 in the Fredsgaard et al review procedure, i.e. to summarize the quality assessment of the HIS and its main strengths and weaknesses. Where applicable, the results of the questionnaire are taken into account. This is followed by an overall discussion of the review exercise.

5.2 Spatial HISs

The HIAs conducted as part of review processes to municipal spatial plans are intended to highlight sensitive area’s in the localities concerned in terms of environmental pressures. There are some parts of the review package which in this context are irrelevant, mainly the parts discussing the precise outline of proposed developments, and to some degree the issue of health inequalities.

This latter issue is difficult grade as obviously all citizens of the localities concerned deserve a healthy, or healthier, environment. In that respect all the HISs discuss particular ‘hot spots’ where for example housing development should be prohibited as these areas are deemed unsuitable to establish good living environments.

5.2.1 Pernis (overall grade A)

The HIA of Pernis (a borough of Rotterdam) is conducted to aid a thorough review to the spatial plan. This report, ‘health and environment in Pernis’ adapts a holistic approach to the health of the population of Pernis, the tight-focus City & Environment methodology is therefore in this case part of a larger, more holistic assessment framework. Environment and health in Pernis are contentious issues,
as the borough is situated in the midst of the heavily industrialised environment of the Port of Rotterdam.

Its strengths are that it has evaluated thoroughly the current state of Health of the citizens of Pernis, and addresses key issues of physical and mental health of the community, attitude to risk, lifestyles, and a detailed account of the composition of the population. The HIS addressed thoroughly noise, air, odour levels, and provides a risk assessment of the local industries and road and river traffic. An important part of this report forms the outcome of a large survey conducted amongst the citizens of Pernis set out to identify key health concerns.

The statement concludes with specific guidance on where development (housing, schools etc) should take place, and where development should be avoided.

No survey was returned as the principle planner stated that it was to premature at this stage to comment on the usefulness of the HIS to the spatial review process.

5.2.2 Sliedrecht (overall grade B)

The Sliedrecht HIA follows strictly the City & Environment approach. As such it thoroughly addresses the core environmental pollutants (i.e. emissions to air, odour, noise, electromagnetic radiance etc). Its strength lies in the fact that in the HIS it is made clear what the limits of the HIA process were, which has been the result of unavailability of data. Therefore the author strongly emphasises that the HIS should be considered as a working paper, and reviewed as soon as particular data becomes available. The issue of health inequality, or rather vulnerable groups, is addressed (for example in the context of overland electricity cables) and in the context of people already living close to pollution sources.

The main weakness of the HIS lies mainly in its presentation, with sentences written in ‘bullet point style’ it lacks a certain flow and clear paragraphs
5.2.3 Zwijndrecht (overall grade B)

The Zwijndrecht HIA follows strictly adheres to the City & Environment approach, it therefore addresses the key environmental pollutants. Similar to the Sliedrecht HIS, it is technically thorough. In the HIA all significant polluting and risk full sources are identified an assessed according to the C&E framework, and discussed accordingly. Its strength lies in its final summary, where key points and recommendations are listed, one of which includes establishing a public engagement plan. Similar to the Sliedrecht HIS, its main weakness lies in its presentation, making the HIS appear to be complex.

A questionnaire has been returned for this HIS. The policy maker’s response was as follows.

The HIS provided a good summary in terms of where the sensitive areas are in the Zwijndrecht municipality. The HIS, and especially its accompanying maps, have been deemed clear.

Although the HIS was useful in elevating concerns relating to risk, noise and air quality, and certain proposed projects have as a result been re-examined. This resulted in raising the threshold levels of pollutants. The HIS did not influence policy in actually locating proposals elsewhere or altering them to a large degree. As pointed out by the respondent, that this would have in any case been done at project level to have a more precise understanding of emissions to air, risk estimates and noise from traffic, rail and industry. In addition, problem areas where already known to the council.

In terms of public engagement, as part of a three year environmental management plan¹ which has been commissioned a population survey is conducted which included the key environmental aspects.

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¹ In Dutch ‘Milieubeleidsplan’
5.3 Project HISs

5.3.1 Moerdijkse Hoek (overall grade A)

The Moerdijkse Hoek HIS is part of a siting process to determine a location for a large industrial estate in an already heavily industrialized area. Of the entire set of reviewed HISs, the Moerdijkse Hoek statement can be considered as the most substantive and most detailed. Accompanying the HIS is a large selection of output maps. The size of the HIS reflects the large area affected by the proposal, and its premise to find a location which results in finding a location with the least overall impact.

The HIA procedure itself has been extensive. A large steering group put in place, which included environmental and health experts, policy makers representing the various municipalities potentially affected, representatives of companies involved and representatives of local action groups.

The chairman of the steering group, who has returned the questionnaire, indicated that the GES had been instrumental in overall decision making process.

Firstly, the HIA produced detailed contour maps of the area in which development on this scale should be discouraged, and the preferred outline of the proposal (i.e. the clustering of certain industries on certain locations). This resulted that during the initial siting exercise best suitable location was chosen, including a section which was outside the initial siting area. The accessibility of the HIS for both policy makers and ‘lay’ stakeholders was mainly due to the detailed maps, which resulted that citizens were presented with an easy understandable framework under which ‘good questions could be formulated’.

Secondly, the issue of stakeholder involvement had been a key part of the exercise. The siting of the estate was controversial, and was met with a great deal of opposition by local residents. Therefore, the HIS became a ‘political instrument’ which was used by opponents and proponents alike. The assurance of the Provincial Council that the proposed estate should not pose any ‘adverse effects on health’ exuded ‘great pressure’ on the health impact exercise. The
dynamics of the steering group itself could be considered political, with participants wielding power through cessation of cooperation. In addition, various public meetings and presentations were held for the citizens affected.

5.3.2 Leerdam-West (overall grade B)
The HIA at Leerdam was commissioned to outline the health profile of the district of Leerdam-West prior to development of new housing, and reconstruction of older parts of the same neighbourhood. The HIS strictly adheres to the City & Environment framework, and therefore is a strongly technical report.

For that reason, its main strength is that it outlines clearly the methodology used, and the output maps provide a clear insight into the results of the HIA. Another strong point is that it attempts to predict future scenarios, with and without the proposed housing development. In addition, its recommendations are presented in a clear and concise manner. A weakness can be considered the actual lay out of the main body of text, which might appear convoluted.

No questionnaire was returned for this HIS.

5.3.3 Transport hub at Schelluinen
The main purpose of this HIA is to determine whether a new transport the town of Schelluinen would cause unacceptable pressures on quality of life for the inhabitants.

The HIS is commissioned to aid the council if such a scheme would be sustainable and in addition, the HIS is meant to inform the concerned citizens of Schelluinen on what impact such a scheme might have. The proposed scheme has endured controversy, with local residents opposing the scheme on grounds that the area already is subjected to heavy traffic flows.

Its main strength is that it is written in an accessible manner, outlining in a clear manner the purpose of the HIS and its limitations. The supporting maps are clear, and provide an instant insight into the results. Its main weakness could be considered that its conclusions and recommendations are short, and could have received more discussion. In addition, pivotal themes such as alternatives and
mitigation measures have not been addressed. It is likely however that these themes would have been addressed elsewhere in the decision making process.

This HIS formed part of a wider public engagement and consultation process with the citizens of Schelluinen. A long string of public meetings has been held in the village, and various reports have been published to address what the proposed scheme would mean overall for the village, i.e. socially, environmentally. The HIS itself concluded that the scheme would pose adverse effects (or red scores under the C&E framework) for a large part of the village (air quality, noise). The scheme was accepted by the council with a small margin, with various concession made to the villagers to improve their quality of life.²

5.3.4 Smitsweg- Dordrecht (Overall grade B)
The HIA of the Smitsweg area in the municipality of Dordrecht was commissioned to assess the current environment on any potential housing developments, and thus to outline the potential health impacts on the prospective inhabitants. The purpose of the HIS is to examine at an early stage what the potential risks could be. The HIS can therefore be considered to be mainly a risk assessment, making various parts of the Review Package non-applicable.

The HIS adhered to the C&E framework, and therefore its main strength is its visually attractive representation of its findings. The report outlines clearly what its limitations are, i.e. that the report is a preliminary study, and what important points require further examination. Some improvements could have been made to represent the main body of text in a more accessible fashion.

No questionnaire was returned for this HIS.

5.3.5 Waterfront Zuid – Harderwijk (Overall grade A)
This HIA was commissioned to assess impacts of the existing environment onto the proposed redevelopment of a waterfront in Harderwijk (housing, mixed use, leisure facilities). The report is overall good, written in an accessible manner,

² Information obtained from the municipality’s dedicated website to the scheme (in Dutch):
clear in its findings, and clear presentation of recommendations of the health experts to the local decision makers/planners.

The HIS has however, as pointed out by the chief planner of the municipality, that the report has not been used by the planning officials. The reason stated was that the issues relating to health were already addressed by the existing planning documents and environmental regulations.

5.3.6 Waddinxveen
This HIA was commissioned to assess if a brownfield site is suitable for housing development. The report adheres to the C&E framework, and provides a good insight in what the likely concerns might be. Its recommendations are clear and concise. An important weak point however is the convoluted appearance of the bodies of text.

No questionnaire was returned for this HIS.

5.3.7 Health park – Dordrecht (overall grade B)
The Dordwijk Health Park HIA was commissioned to assess the environmental health risks posed by the surroundings of the proposed scheme. In the proposed scheme the health theme is central, as it includes an extension to of hospital facilities, first aid services (ambulance, fire brigade, police), commercial and primary care facilities (GPs, outreach care, community health services), new and extension of sport facilities, plus shops, offices and 200 homes.

The report is overall strong, adhering to all the key themes of the checklist, in terms of technical vigour. No questionnaire was returned for this HIS as the relevant actors where no longer employed at the municipality. The HIS has however received extensive discussion by Bekker (2007). Bekker describes in detail the intensive ‘invisible’ negations that occurred behind the scenes between the HIA practitioner, the planners and the developer. The HIS instigated change to the initial proposal (e.g. change of the initial location of the proposed housing), but was accompanied with intensive effort by the HIA practitioner (ibid). An important point here is that policy makers and developers were not convinced by
technical adequacy of the report alone, but by the active promotion of the findings by the HIA practitioner, which even included arguments of financial benefits to the developer if certain recommendations were followed (ibid).

5.3.8 Amersfoort

The Station Zone HIA at Amersfoort was part of a selection of 25 HIAs that were commissioned during the experimental phase of the C&E model (under the Experiment Act City & Environment). The HIA is concerned with the urban renewal scheme in the Train Zone (in Dutch: ‘Spoor zone’) area of Amersfoort, where noise nuisance from trains and traffic and land contamination were the main points of concern.

The HIS scored low on the checklist as it is in essence a collation of various tables presenting emission levels, with minimal discussion. The associated maps are not easy interpreted, and it appears that the report itself is written for expert eyes only. However, as the report adheres strictly to the C&E framework it remains a pure technical report (although with no reference list, glossary and clear output maps).

The principle planning officer at the municipality, who has had hands-on experience with the HIS (and has also been actively involved by contributing data), has deemed the HIA irrelevant. In essence the HIA was not instrumental in changing the initial proposal; however changes in environmental regulations and changes in the nature of the train flows did instigate alterations to the initial plan. Important criticism of the planner was that the C&E model adheres to unrealistic goals. During one of the draft HIS for example “extreme noise levels were applied in places where people can’t come, unless they are on a ‘flying carpet’”, and continues to say that the setting of unrealistic thresholds continues to this day, and therefore “makes the HIA, in itself a valuable instrument, incredible as a policy instrument”.

As far as the public engagement part was concerned, the formulation process of this HIA ran parallel to the planning process, which has formal consultation junctures (where in the HIA has been made available). The immediate inhabitants
of the proposed scheme have also been formally involved on numerous occasions, which led to the immediate acceptance of the scheme without delay.

As far as public engagement is concerned, “you do not know the future inhabitants, and thus unfortunately you cannot consult these people on the design of their living space”.

### 4.3.9 Drachten

Similar to the Amersfoort HIS, this report was part of the experimental phase of C&E. Here the HIS was set to inform planners on the suitability for housing development (800 homes) in an area close to industrial activity. The HIS is clear, written in an accessible manner. The report is written with good technical verve, justifying and explaining each assumption. Its recommendations are clear, underlining the key concerns. Its weakness can be considered to be its poor output maps, which although very detailed, appear to have been drawn for expert eyes.

No questionnaire was returned for this HIS.

### 5.4 DISCUSSION OF CHECKLIST RESULTS

#### 5.4.1 Different perspectives

The Fredsgaard et al (2008) checklist was developed to assess HISs in the UK, where a HIA would be commissioned by the developer, and therefore the HIA would only assess the impact of proposed development onto the existing living environment. In the Netherlands however the ‘perspectives’ of the reviewed HISs is different.

Firstly, the HIA is conducted mainly by a public body (i.e. Community health services), except for one of the reviewed HIS (namely the Moerdijkse Hoek HIS, which was conducted by a consultancy, albeit led by a steering group). This makes to some parts of the checklist non-applicable.
Secondly, all of the project-based HISs, except one (namely the Dordwijk Health Park HIS) were commissioned at an early planning stage. Exact outlines of the developments are at this stage broadly defined (e.g. ‘housing’ or ‘leisure facilities’).

The HIA is then purely used to set the stage preliminary in terms of suitability to human health or quality of life. Again, this makes some part of the checklist non-applicable (for example, a large part of the population description and alternatives and mitigations measures). The LDF HIAs are even broader in their scope, identifying and quantifying pollutants over whole municipal territories. It would then be unfair to grade aspects which the HIA never intended to investigate to the degree required.

The application of the C&E framework as part of a broadly defined proposal has the advantage that the HIA can, at an early stage, be used successfully to formulate guidance which planners and developers can use to ensure a ‘healthy design’ is made. A clear example is the Moerdijkse Hoek HIS, which has been at the core of the planning and design process.

Thirdly, five of the HISs reviewed are not concerned with the ‘health’ of existing inhabitants, but the future inhabitants or service users of the proposed project. All statements, except two (industrial park at Moerdijkse Hoek and the transport hub at Schelluinen) outline what could be detrimental polluting sources for these prospective inhabitants and service users.

5.4.2 Overall quality
Overall, the HISs produced in the Netherlands since the application of HIA on a local level, are good. The C&E framework provides clear guidance on how the HIA should be conducted, which has resulted in uniformity of the HISs produced. The reports, as discussed in the introduction, are at the very narrow-end of the HIA spectrum, providing in essence qualitative estimates of pollutants. The reports make this key point explicitly clear in their respective introductions.
The reports on the whole appear to have been written in a clear and concise manner, with in some cases scope for improvement of lay-out and presentation of text. Although non-technical summaries are not provided in all cases, in general the fact that in each report the scope and purpose of C&E is explained at in the introduction, with easily comprehensible recommendations as part of the conclusions, counteract this absence.

5.4.3 The issue of public engagement

The issue of public engagement is not addressed in the actual HIS documents, except for one (the Pernis HIS, where the C&E application was part of a wider study holistic study by the community health service). In essence, as might have been expected, the C&E is in all cases used one of many policy instruments. The Dutch planning system however has always been applauded for its inclusiveness of stakeholders (Van Der Valk, 2002; Wolsink, 2003), which has been pointed in two questionnaires, and it appears that the HIA reports can in those cases serve as an important point of reference for stakeholders (as demonstrated in the Moerdijkse Hoek HIA process).

5.4.4 Usefulness of the HISs

As stated in the introduction, there is some apprehension in the literature of HIA becoming another bureaucratic hurdle, with no added value to the planning process. The feedback received from the decision makers is mixed. In some cases the reports have not been used, or have stressed concerns already known to the decision makers, whilst in other examples being instrumental in making adjustments to proposals.

What has become clear is that although the Dutch HIS are of good quality and fit for purpose, this does not necessarily mean they are incorporated into planning decisions. This is to some degree peculiar, as the C&E HIA remains a purely voluntary exercise in the Netherlands. This voluntary aspect mean, as discussed by Bekker (2007), that the incorporation of the HIA is almost entirely reliant on the presence of ‘drivers’, or in other words HIA practitioners and decision makers who see the added value a HIA can bring to planning decisions.
5. Conclusion

In this dissertation 12 project level Dutch HISs have been reviewed using a novel review package. In addition, an attempt has been made to explore the external realities of the HISs. The overall quality of the HISs is good, although some parts of the package are in the Dutch context not-applicable (as these do form part of the official HIA exercise.

No overall judgement can be made in terms of influence of these HISs on local decision making processes, replies from policy makers varied from no effect at all to being pivotal. Thus, in terms of further research, with more time available a better attempt could be made to gauge the expierences of these policy makers.
7. Literature


