CITIZEN VALUES ASSESSMENT
An Instrument for Integrating Citizens’ Perspectives into Environmental Impact Assessment

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Proefschrift

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Summary

This thesis outlines an impact assessment instrument called “Citizen Values Assessment” (CVA). In CVA, the potential impacts of planned interventions in the environment are investigated from the perspective of those citizens who are potentially influenced by them. The central idea behind CVA is that the values individual citizens attach to particular environmental characteristics often differ (at least partly) from expert judgements. Further, these perceived qualities of the living environment are not only related to the physical environment, but also include social issues like risk perception, accessibility of facilities and social cohesion. Therefore, CVA can provide useful information about the potential impacts of planned interventions for Environmental Impact Assessment (EIA).

By means of CVA, the scope of EIA can be broadened:

1. CVA provides an overview of potential impacts on the quality of the living environment based on the judgements of citizens (non-experts; lay-persons). As such, CVA provides information about environmental impacts from citizens’ perspectives, complementary to relevant experts’ assessments.

2. In addition, CVA can provide information about social impacts related to the perceived quality of the living environment.

This thesis consists of three parts. Part I focuses on issues related to the development of the CVA instrument. Here, the starting points and context of CVA method development are described. The conceptual framework and the CVA instrument are presented, and CVA is positioned within the Impact Assessment context. The research questions to be investigated in the thesis are introduced. Part II focuses on the practical application of CVA to EIA and on the relevancy of CVA as an information source for EIA. CVA case studies are evaluated and the potential contributions of CVA to EIA are discussed from relevant actors’ perspectives. In Part III, the practical applicability, suitability and effectiveness of CVA are evaluated and the research questions are discussed.
PART I: DEVELOPMENT OF CVA

In Chapter 1 an explanation is given as to why social issues have, so far, rarely been included in EIA, and why broadening the scope of EIA to include citizens’ perspectives is logical and necessary. The common view that, because EIA should provide a rational basis for decision-making, it therefore should only utilise data that are based on technical considerations, and that citizens’ perspectives (especially when investigated by qualitative research methods) are too subjective and therefore not appropriate for EIA, is criticised.

Chapter 1 proceeds with an explanation of the development of CVA: the historical, institutional, disciplinary, and Dutch context. An overview of the CVA Development Project, which was conducted within the Directorate General of Public Works and Water Management (Rijkswaterstaat) of the Ministry of Transport, Public Works and Water Management in the Netherlands, is given. After this, the premises on which CVA development is based are presented.

Finally, Chapter 1 presents the research questions that were central in this PhD study. These research questions, relate to the methodological soundness and applicability; the suitability; and the effectiveness of CVA:

1. **Is CVA a plausible and methodologically sound instrument for analysing citizens’ values and citizens’ views about their living environment?**
   - Is it possible to operationally define and implement a process to measure peoples’ subjective values about their living environment?
   - Is it possible to collect the data that would be required for CVA?
   - Is CVA methodologically sound in terms of reliability, validity, sensitivity and bias?

2. **Is CVA suitable for integration within EIA?**
   - Is CVA compatible with the rationale of EIA?
- Does CVA produce information that is relevant to EIA?

3. **Is CVA effective in improving the processes and outcomes of EIA?**
   - Does CVA lead to different EIA outcomes than would have been achieved otherwise?
   - Does CVA increase the legitimacy of the EIA and the decision-making process?
   - Does CVA influence or change the final political decision?

In **Chapter 2**, CVA is positioned within the context of four theoretical perspectives. First, from a science policy perspective, CVA can be considered an instrument that provides rational, neutral and structured information on everyday knowledge. Secondly, CVA shares some basic starting points with phenomenological research approaches. The meaningfulness of the living environment to citizens is central, and ideas and conclusions are arrived at inductively. The outcomes are considered valid if they are understandable and recognisable to the people they concern. The third theoretical perspective, environmental psychology, is introduced with the intention of explaining how CVA differs from it, but also how insights from environmental psychology may become relevant to explain patterns in data. Fourthly, within an environmental science context, Citizen Values can be defined as comprising: the intrinsic values of the natural (biophysical) environment and the intrinsic values of the constructed living environment as perceived by citizens, as well as the use values of the natural (biophysical) environment and the use values of the constructed living environment.

Chapter 2 proceeds with explanations of how citizens’ judgements are investigated in CVA and what is the role of CVA experts in assessing impacts from citizens’ perspectives. After this, the CVA instrument is described in detail. CVA consists of four phases and a follow-up step which integrates the outcomes of CVA in the EIS or other policy evaluation document. **Phase 1** consists of problem definition, delineation and identification of interest groups, and the collection of background information. **Phase 2** is a preliminary qualitative study to provide in-depth understanding of local peoples’ connections to the area affected by the project. Semi-structured interviews are conducted with people from all relevant affected and interested citizen groups, including residents, commuters, workers, day-trippers and tourists. The outcome is a listing of the selected key values of the affected community (a preliminary profile). In **Phase 3**, a quantitative survey is conducted to validate the key values identified in Phase 2, to determine the relative
importance of those key values, and determine how respondents feel about their present living environment in respect of these key values. The outcome is an assessment matrix or Citizen Values Profile. In **Phase 4**, the Citizen Values Profile is translated into evaluation criteria for the assessment of impacts potentially caused by the planned intervention. Qualitative and quantitative indicators are identified for each of the assessment criteria. Impacts are determined and alternatives are compared.

In **Chapter 3**, CVA is positioned as an impact assessment methodology. Relations between CVA, Social Impact Assessment, Environmental Impact Assessment and Public Involvement are discussed. Within the context of Social Impact Assessment, CVA addresses a specific selection of social impacts and, therefore, can be considered a type of Social Impact Assessment adjusted to EIA practice. CVA only applies to the social impacts associated with the category ‘quality of the living environment’. Within that category, CVA specifically applies to the *perceived* values related to the qualities of the living environment, such as perception of personal safety and fear of crime, as opposed to *actual* values, such as hazard exposure and crime rates. CVA combines a thorough consultation of potentially influenced citizens in the identification of the character and weights of potential impacts with professional (expert) measurement, evaluation and comparison of future impacts. The primary objective of CVA is to add neutral overviews of potential impacts (based on local knowledge) on values relevant to citizens, to the technical overviews of potential impacts provided by relevant experts.
Within the EIA context, CVA identifies the (potential) changes in those characteristics and functions of the biophysical environment that are relevant to and valued by citizens, and it judges and evaluates these potential changes from the perspective of citizens. As such, CVA is a type of EIA. It provides complementary information on environmental impacts in addition to expert assessments.

Within the context of public involvement, CVA can be considered a complementary instrument. Participatory processes, no matter how carefully designed and conducted, and no matter how satisfactory they are to those involved, cannot prevent a project from having some, and sometimes major environmental and social impacts. This is the dilemma between the collective (national, regional) and the individual (local) interest. Therefore, it is important to investigate these impacts. Participatory approaches are not designed to do this. To achieve a systematic evaluation of impacts on the perceived qualities of the living environment, a structured study on the functions and characteristics of the local living environment, and what they actually mean to people, is required. This requires SIA instruments adjusted to EIA practice, specifically CVA.

**PART II: APPLICATION OF CVA**

In Chapter 4, a CVA case study is described and evaluated. This CVA study was part of an EIA of a highway project near the city of Rotterdam. It was the first complete CVA study and is presented to illustrate the learning-by-doing development process of CVA. The CVA study was applied here in a ‘stand-alone’ mode, which means that it was conducted independently of the EIA. The case concerned a highway section in which the congestion chance was much higher than the accepted national standards.

The application of the CVA instrument and the way in which the CVA results were integrated in the EIA is described in detail. Next, the practical applicability, suitability and effectiveness of the CVA study are evaluated. The CVA study provided new insights and put some assumptions of experts in a broader perspective. Surprisingly, noise nuisance appeared to be less important than a range of other issues, such as traffic jams and ‘sneaky traffic’. The outcomes of the CVA study were different to the EIA expert assessment of ‘liveability’, highlighting the consistently different emphases between citizens and experts. Thus, the CVA study provided relevant additional information for the impact assessment process. Problems in the practical application arose with the construction of the Citizen Values Profile and with the use of data sources for assessing impacts.
In **Chapter 5**, a CVA case study is presented concerning the intended dredging, storing and processing of contaminated sediments in coastal harbours in the Province of North-Holland. This case study illustrates an example in which CVA had been optimally integrated in the EIA process, and discusses relevant issues concerning the role and contribution of CVA in an EIA process in general. The project attempted to identify possibilities for short term storage, as well as for finding structural solutions to the sedimentation and pollution problems. The project consisted of studies including the identification of solutions; technical and financial assessments; and an EIA which included a CVA. The project was conducted by means of a comprehensive interactive process (a so-called “open plan process”) involving a large number of stakeholder groups. The project, which involved seven possible sites, included the identification and assessment of four types of strategies for dealing with the problem of contaminated saline sediments.

In **Chapter 6**, three more cases are briefly presented with the aim of illustrating the different ways in which CVA can be applied. The cases described in this chapter confirmed the findings regarding the suitability and effectiveness of CVA. CVA provides location specific details that are suitable for comparing and judging alternatives and variants; that can be used for the development of mitigation and compensation measures and for a Most Citizen Friendly Alternatives. It was also concluded that CVA contributed to the legitimacy of the EIA.

In **Chapter 7**, the relevancy of CVA output for utilisation in EIA is investigated from all actors’ perspectives. Because a quantitative evaluation of cases is impossible at this stage, a different approach was used to gain insight into the effectiveness of CVA. The *perceptions* of the (potential) effectiveness of CVA were investigated from relevant actors’ perspectives. Three exploratory studies on the perceived effectiveness of CVA have made clear that CVA is considered to be a suitable addition to EIA by the majority of respondents. Particularly from the citizens’ perspective, the inclusion of CVA in EIA was perceived to contribute to the quality and legitimacy of EIA. Whether or not CVA output is presented to decision-makers partly depends on how relevant this information is in the eyes of their advisors. However, the potential influence of CVA (and EIA) is perceived to depend largely on decision-makers’ attitudes towards rational information.
PART III: EVALUATION OF CVA

In this part of the thesis, the potential of CVA is evaluated in relation to the three research questions. The methodological soundness and applicability, suitability and effectiveness of CVA are discussed in Chapter 8. General conclusions on the potential of CVA in relation to the research questions are drawn and recommendations for future research are presented in Chapter 9.

The first research question “Is CVA a plausible and methodologically sound instrument for analysing citizens’ values and citizens’ views about their living environment?” refers to the methodological soundness and applicability of CVA. In general, this question can be answered in the affirmative. Despite some remaining minor methodological issues, CVA is a theoretically plausible and methodologically feasible process for investigating citizens’ perceptions about their living environment. By means of CVA, citizens’ values and citizens’ views about their living environment can be analysed in a way that leads to valid and reliable results.

Apart from the methodological soundness of CVA it was concluded that the efficiency of the instrument could be improved. The development of a database could contribute to an increase in the efficiency of data collection and analysis. A systematic methodological evaluation of cases may well contribute to an increase of the efficiency of CVA regarding the construction of Citizen Values Profiles and the impact assessment process. This could contribute to improvement of integration with EIA and improved coordination with the EIA team; increased of cost-effectiveness; and enhance the use of existing data from other CVA studies.

The second research question “Is CVA suitable for integration within EIA?” refers to the suitability of CVA to be integrated into EIA and to provide relevant output for EIA. The answer to this question is also in the affirmative. CVA is compatible with the procedure and rationale of EIA and it produces information that is relevant to EIA. As far as the EIA process is concerned, only small adjustments in the timeframe were required to utilise CVA output optimally. Where CVA did not fit within the timeframe of projects,
this was because it started relatively late in the EIA process. The cases described in this thesis made clear that citizens’ judgements of environmental values differed, sometimes considerably, from expert judgements in character as well as in weighting. It was concluded that CVA provides insight into the potential impacts of a planned intervention and it provides outcomes that are usable for a rational, neutral comparison of alternatives and variants; the development of mitigation and compensation measures; and for the development of citizen friendly variants.

The increasing level of public participation and increased attention for liveability issues in government policy development in the Netherlands may have contributed to the perceived relevancy of CVA, particularly for advisors of decision-makers and EIA professionals. In the Netherlands, the citizens’ perspective is gaining recognition as a vital part of policy development. It was concluded that the information provided by CVA is in line with developments in the field of governmental policy development in the Netherlands and as well as with relevant developments in the field of impact assessment. However, the current reorganisation within Rijkswaterstaat in 2003-2005 has led to a serious reduction of the available CVA capacity. It was concluded that the current availability of CVA expertise within Rijkswaterstaat is too limited to ensure adequate application and further development of CVA.

The third research question “Is CVA effective in improving the processes and outcomes of EIA?” is related to the influence of CVA outcomes. Although it is too early to conclusively establish that CVA has led to significantly different outcomes of EIA and/or that CVA outcomes influenced or changed political decisions, it can be concluded that CVA has the potential to do this and to contribute to the legitimacy of EIA. Systematic monitoring and evaluation of cases is needed to gain insight into the actual influence of CVA to the outcomes of EIAs and to the EIA-based decision-making processes. The outcomes of such evaluations may stimulate the use of the instrument and, as such, contribute to the further development and application of the instrument.

For optimal application and further development of CVA, the thesis concludes with recommendations for both knowledge development and practical applications.
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ACKNOWLEDGEMENTS

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Preface

This thesis is the result of a PhD study conducted in the Civil Engineering Division (Bouwdienst) of the Ministry of Transport, Public Works and Water Management; Directorate General of Public Works and Water Management (Rijkswaterstaat). The PhD study was part of a larger project called the Citizen Values Assessment Development Project financed by Rijkswaterstaat, conducted from 1994 until 2002. The project included theoretical exercises, methodological studies, pilots, workshops, inquiries, case studies and evaluation of cases. The scientific results of these activities are reported in this thesis.

The thesis has been written under the supervision of prof.dr H.A. Udo de Haes (Scientific Director of the Leiden University Centre of Environmental Science; the Netherlands) and prof.dr. F. Vanclay (international expert in Rural Sociology and Social Impact Assessment; University of Tasmania; Australia). Both have intensively contributed to the process of writing this thesis and have rigorously commented on various versions of the manuscript. Prof. dr. ir. E. Schultz (international expert in Hydraulic Engineering and Environmental Impact Assessment; Rijkswaterstaat, The Netherlands) has been involved as advisor.

The thesis includes presentation and discussion of data and results that were collected by various members of the CVA Unit as they undertook CVA studies as components of EIA studies for different infrastructure and water management projects. References to these projects and their reports are provided in various places. As the coordinator of the CVA Unit, I had overall responsibility for most projects but did not necessarily have hands-on experience in data collection or analysis in all cases. In some cases, data collection was sub-contracted out to commercial consultants. I therefore do not wish to portray that all of the work implied in the thesis was undertaken by myself. Nevertheless, the concept of CVA, its final form as discussed in this thesis, and the discussion of its meaning and value to EIA, is my intellectual property.

Annelies Stolp
Oosterwolde, June 2006
CHAPTER 1 INTRODUCTION

1.1 Broadening the scope of Environmental Impact Assessment: a question of rationality

Environmental Impact Assessment (EIA) is an ex-ante decision analysis instrument that produces information about potential environmental impacts of landuse and infrastructure development. In many countries, EIA has become a standard procedure supporting spatial development and project preparation in the public as well as the private sector. A general conception of EIA is as a decision support tool: EIA is meant to inform interested parties about the likely environmental impacts of a planned intervention (policies, programs, plans, and projects) and its alternatives. It identifies and illuminates the environmental issues to be considered in making decisions (Ortolano and Shepherd, 1995). However, the ultimate purpose of EIA is not just to contribute to the consideration and design of alternative solutions, or to developing compensation and mitigation measures, or to the assessment and monitoring impacts – it is to improve the quality of decisions (Formby, 1990).

Within EIA, environmental values are primarily defined in terms of the biophysical environment. Although the assessment of social issues is meant to be integrated in EIA (Burdge and Vanclay, 1995), social impacts are, up to now, rarely included in EIA studies anywhere in the world (Chadwick, 2002; Burdge, 2003a; Slootweg, Vanclay and Van Schooten, 2003; Stolp, 2003). A major reason why this is the case, is because social impacts and other non-biophysical impacts are not fully included in EIA legislation (Ortolano and Shepherd, 1995). Impact studies about the human living environment usually focus on the potential health impacts that result from, for example, exposure to certain emissions or noise nuisance – in other words, the ‘technical’ impacts on humans.
The *social* living environment is often not considered. Furthermore, social analyses about the meaning of the biophysical (natural) environment to human beings are also rarely included in EIA. Social analyses of environmental issues greatly differ from scientific and technical analyses. They investigate different realities and they define and identify causes and consequences differently. This implies that, if the scope of EIA would be broadened with information about relevant social issues, such an enriched EIA would provide a more balanced overview of potential impacts (Gregory, Keeny and von Winterfeldt, 1992; Stolp, 2003).
Social Impact Assessment (SIA) and social impacts are respectively defined as:

Social Impact Assessment is 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 so as to bring about more sustainable and equitable biophysical and human environment (Vanclay, 2003a: 1; Vanclay 2003b: 6).

Social impacts can be defined as the consequences to human populations of any public or private actions that alter the way in which people live, work, play, relate to one another, organise to meet their needs and generally cope as members of society. The term also includes cultural impacts involving changes to norms, values and beliefs that guide and rationalise their cognition of themselves and their society (Interorganizational Committee for Principles and Guidelines for Social Impact Assessment, 2003: 231).

Including social impacts in EIA raises the issue of how to investigate these impacts. Planned interventions for which EIA is obligatory are those types of interventions that are expected to have impacts on the biophysical environment. The social impacts that will occur as a consequence of these interventions will, therefore, primarily be related to the qualities of the living environment for people. Yet, what the qualities of the living environment exactly are, and what it means to people is a subjective matter. Expert opinions of environmental values and impacts – including those of Social Impact Assessment practitioners – can differ from the way citizens feel about the state of their living environment (that is, where they live, travel, work and play) and how intended activities may impact on the various characteristics of that environment. Therefore, information about citizens’ judgements about the qualities of their living environment might provide useful input for EIA. In EIA, however, the views, statements and results emanating from the EIA practitioners (the experts) are central. Qualified, neutral professionals are to carry out objective and verifiable (i.e. valid and reliable) assessments, as is ideally required in the rational decision-making model. The considerations of citizens (non-experts or lay-persons) are deemed to be emotional and/or irrational and, therefore, are often not seen as appropriate input for a scientifically rigorous, rational EIA.
Although there is nowadays widespread consensus among impact assessment practitioners that social impacts should be included in EIA, and despite the fact that involvement of local people and the use of local knowledge are becoming generally accepted, the integration of social impacts based on local knowledge of the qualities of their living environment in EIA is rare.

The question is: would broadening the scope of EIA with information based on citizens’ perceptions of their living environment affect the rational basis of EIA? No one will deny that impact assessment always includes a certain amount of subjectivity. Within any EIA, expert judgements are inherently based on the specific value orientations of the individual expert, even if those orientations are shared with other members of the profession or discipline. For example, there are obvious differences between ecologists and hydraulic engineers in relation to river dyke reinforcement. In the case of river dyke ‘Bomendijk’, near Deventer in the Netherlands, there is a unique forest growing on a section of dyke that belongs to a large private estate. While engineers argued that the trees should be removed because the roots destabilise the dyke, ecologists argued for the preservation of the ecological values of this unique phenomenon. Historians, on the other hand, considered the area to be of cultural and historical value and argued not only to preserve the dyke forest, but also the private estate of which it is part.

Disciplinary value orientations are not the only source of bias within EIA. Although expert judgements are often presented as being value free, the EIA process involves interpretations, uncertainties, information gaps, normative elements and value orientations (van der Steen, 1995; Mostert, 1995; Mostert, 1996). Numerous subjective judgements lie behind the choices experts make regarding the aspects of the environment that will be investigated, which key variables will be used, how data will be collected and interpreted, and how the results will be presented. Premises may be false, and the evidence supporting expert judgements may be flawed or inadequate. How often are subjective value orientations hidden in statistics and other so-called hard data? Ortolano and Shepherd (1995: 7) conclude that this happens frequently:

Surveys of the methods used to predict impacts in EIA find that technical specialists often rely heavily on professional judgement to forecast environmental impacts, and predictions are often so vague that they cannot be validated. Mathematical models are also used in making predictions; this
practice is sometimes criticised because models are presented as black boxes, and the bases for predictions are not made clear. Indeed, because EIAs generally contain so little information about models and their assumptions, errors that are inherent in this approach are not readily traceable, and the results are not subject to scrutiny (Leon, 1993).

The view that, because EIA should provide a rational basis for decision-making, it therefore should only utilise data that are based on technical considerations, and that social issues, especially when investigated by qualitative research methods, are too subjective and therefore not appropriate for EIA, can be regarded as being technocratic. All assessments include subjective (normative) elements, and any assessment, including those focusing on social considerations, can be done rigorously, i.e. in a methodologically and scientifically sound manner, in terms of a systematic and transparent collection, measurement and structuring of data.

The technocratic culture of planning agencies tends to focus on technical issues underlying policy problems and the rigorous separation of so-called ‘hard facts’ from subjective values (Gregory, Keeny and von Winterfeldt, 1992; Dale and Lane, 1995; Mostert, 1995; Glasbergen, 2005). Burdge and Vanclay (1995) refer to the ‘asocietal mentality’ and technical discourse that dominates EIA procedures affecting public officials, politicians at all levels of government, physical scientists, engineers, and even economists and planners. The technocratic approach of many professionals involved in EIA – the so-called ‘hard scientists’ – can be seen as a major barrier to the utilisation of Social Impact Assessment in EIA (Burdge and Vanclay, 1995; Denq and Altenhofel, 1997; Burdge, 1998). This creates what Firth (1998: 329) refers to as a spiral of distrust:

The missing link is at the point where public agencies exclude the emotional/irrational ‘stuff’ the public offers, seeing it as non-data. Agencies may even take specific measures to avoid the ‘non-data’ … while their public is deciding to oppose projects based on that ‘non-data’. In a deepening spiral of distrust, the agency’s disregard of the public’s emotional ‘non-data’ leads to the public viewing the agency’s ‘rational’ data as irrational.
Although distinguishing between neutral information and values can be very useful for the rational analysis of physical changes caused by an intervention, the impacts caused by these changes should not and can not be treated separately from the functions and values of the environment for different users (Gregory, Keeny and von Winterfeldt, 1992; Mostert, 1995; van der Steen, 1995; Slootweg et al., 2003; Glasbergen, 2005). Furthermore, there is no basis for the assumption that the social sciences, using either qualitative or quantitative research methods to investigate citizens’ value judgements of their living environment, cannot be applied rationally in EIA. EIA is part of a decision-making arena where political, public and scientific rationalities interact, and where different value orientations are juxtaposed. Legitimate questions that determine whether data are relevant for EIA are:

- do they provide information on the relevancy and acceptability of a project?
- do they provide relevant information for the design of alternatives?
- they have the potential to discriminate between alternative plans?
- do they have relevance to determining compensation and/or developing mitigation measures?

According to these questions, the use of data about social impacts is as legitimate as other types of information. Moreover, looking at EIA from the perspective of sustainable development (World Commission on Environment and Development, 1987), the structural integration of Social Impact Assessment in EIA would be essential. Sustainable development advocates a ‘triple bottom line’ approach, which in its narrowest sense is a framework for assessing development against economic, environmental and social parameters (Elkington, 1998; Vanclay, 2004). The inclusion of information about citizens’ perceptions of their living environment in EIA, in SIA, and in other planning procedures, therefore, should be considered a matter of rationality rather than a concession to citizens’ demands. The ultimate rationale for obtaining information about the way local people perceive their living environment is that an analysis which fails to incorporate these value judgements is not only incomplete, but is likely to be (at least partly) incorrect.

The question, therefore, is not whether or not to address social considerations in EIA, but how to do it. There are two overarching ways in which social considerations can be integrated in EIA:
1) Public involvement during the EIA process. Representatives of relevant (organised and unorganised) interest groups are invited to participate in parts of the project or policy development process which may include: problem definition; identification of possible solutions; development of alternative plans; the evaluation of alternative plans on the basis of an environmental impact statement; and the selection of the preferred alternative.

2) Broadening the scope of the EIA content. A study of social impacts is conducted as part of the EIA, in order to include other types of impacts than in current EIA studies. The outcomes of the social impact study are presented and used in the evaluation of alternatives in the environmental impact statement.

This thesis presents and discusses an impact assessment instrument called “Citizen Values Assessment” (CVA), which provides a means by which the scope of EIA can be broadened. CVA does this in two ways:

1. CVA is an impact assessment approach that is based on judgements of citizens (non-experts; lay-persons) about the qualities of their living environment. As such, CVA provides information about environmental impacts from citizens’ perspectives, complementary to relevant experts’ perspectives.

2. In addition, CVA can provide information about social impacts related to the perceived qualities of the living environment.

The thesis describes how the qualities of the living environment can be investigated by means of CVA. It considers what type of additional, complementary information CVA can deliver; and what the output of CVA may contribute to the quality and effectiveness of EIA.
1.2. Citizen Values Assessment:
an instrument for broadening the scope of EIA

In CVA, the potential impacts of planned interventions are investigated from the perspective of those citizens who are potentially influenced by those interventions. The central idea behind CVA is that the importance individual citizens attach to particular environmental characteristics often differs (at least partly) from expert judgements (van Poll, 1997). Further, the qualities of the living environment are not only related to the physical environment, but also includes social issues like risk perception, accessibility of facilities and social cohesion (see Fig. 1-1). CVA, therefore, provides additional relevant information about the potential impacts of planned interventions to decision-makers. By means of CVA, EIA is enriched, with both social issues and citizens’ judgements on environmental qualities and potential impacts.

![Figure 1-1: Relations between Environmental Impact Assessment, Social Impact Assessment and Citizen Values Assessment in terms of scope and impact assessment approach.](image)

CVA is based on the following premises:

1. **Decisions about what matters in the environment, and what is studied as part of an EIA, should be based on value orientations that should not come exclusively from technical experts.** Local communities are an important reservoir...
of knowledge, which is based on their use and experience of the local environment and their observations of the operations of facilities and infrastructure. Therefore, they can be considered experts in their own right (Gregory, Keeny and von Winterfeldt, 1992; Mostert, 1995; van Poll, 1997; Baines et al., 2003). Citizens’ lived rationalities should be incorporated in EIA, not only by means of public involvement during project planning and the EIA process, but they should also be part of the scope of EIA (Stolp et al., 2001; Stolp, 2003; Slootweg, Vanclay and van Schooten, 2003).

2. **Value orientations in impact assessment should be made explicit.** Justification and transparency are key indicators of good impact assessment practice.

3. **The incorporation of citizen values in EIA improves the rational basis for decision-making.** By including CVA in EIA and other policy analysis studies, a broader and more complete overview of the positive and negative impacts of planned interventions is provided by generating additional information on environmental values, potential impacts, and comparison of alternatives (Stolp, 2003; Stolp et al., 2001).

4. **The incorporation of CVA increases the legitimacy of EIA and other policy studies.** With CVA, the contribution of citizens’ everyday knowledge to the decision-making process is recognised, especially when complementary to expert judgements, making the process more legitimate from a citizen’s point of view (Gregory, Keeny and von Winterfeldt, 1992; van Vliet, 1996).

5. **Citizen values should be incorporated in EIA by using a qualitative phenomenological approach.** Citizen values are best understood with a research approach that respectfully voices citizens’ ways of experiencing their living environment. Such an approach should be included in the process of collecting and analysing data.

CVA has been designed to be an integral component of EIA and, therefore, it is an instrument that is consistent with the rational decision-making model. In CVA, thorough understanding and systematic collection of citizens’ subjective value judgements are combined with neutral, professional assessments based on objective, verifiable data. A CVA study provides information from the perspective of citizens:

- on the character and importance of impacts;
- on the relevance and acceptability of a project;
- for the development and further design of alternatives and variants;
- to assist in the judging and comparing of alternatives;
- to assist in the determination of compensation and/or mitigation measures.

CVA provides an inventory of the values that people in affected communities associate with their living environment collected through in-depth interviews with individual citizens, and later validated by a survey of a representative sample of the population. The term ‘citizen values’ is interpreted as being the value judgements of individuals about the qualities of their living environment. The living environment comprises the places where people live, travel through, work or play. The term ‘citizens’ refers to all residents and other users of an area potentially influenced by an intended activity. The word ‘citizen’ was chosen because it reinforces the notion that the level of analysis is the individual, and it does not refer to citizenship or nationality.

The general outline of CVA is as follows (see Fig 1-2). Selected key values are presented in an assessment framework that is called the Citizen Values Profile. The Citizen Values Profile forms the basis of an assessment by which project alternatives are evaluated. The Citizen Values Profile is translated into evaluation criteria, which are subsequently operationalised by qualitative and quantitative indicators. CVA thus combines a participatory Social Impact Assessment approach investigating subjective value judgements of individual citizens on the meaning of the qualities of the living environment with a technocratic approach using scientifically rigorous and technically-sound data.

![Figure 1-2: Phases of a Citizen Values Assessment study](image-url)
1.3 Development of Citizen Values Assessment

1.3.1 Historical context

CVA has been developed primarily for application within EIA. The historical context of EIA-supported decision-making in the Netherlands explains why the late 1990s was the time when CVA became conceived and developed. The history of post-war spatial development in Western Europe can roughly be characterised by three periods: 1945-1960; 1960-1990; and 1990-now.

The first period, roughly from the Second World War until the 1960s, was the post-war reconstruction period in which industrialisation, the development of new residential areas and infrastructure, and the development of large-scale agriculture and bio-industry were central in spatial development. During this phase in history, planning and decision-making were mostly based on technical and economical information.

The second period extends from the 1960s up to the late 1980s, during which time environmental problems became apparent and environmental consciousness developed. This period is characterised by the rise in the environmental movement and by legal actions against private and public sector initiatives. Most developed countries have their own well-known examples of serious environmental problems during this period. Famous examples of environmental accidents in the Netherlands are the large poison spills in the river Rhine in 1969 and 1986, which resulted in large fish-kills and which forced the government to temporarily stop the use of Rhine water for drinking (van der Windt and Harle, 1998). In 1980, hundreds of families needed to be evacuated after it transpired that a large residential area in Lekkerkerk had been built on soils which were heavily contaminated with heavy metals, PCBs and other toxins (van der Windt, and Harle, 1998). The “Lekkerkerk affair” can be considered the Dutch equivalent of Love Canal in the USA (Levin, 1982; Gibbs, 1982).

A well-known example of successful action by environmentalists in The Netherlands was the one against the construction of a dam in the Eastern Scheldt. This dam had been
planned as part of the Delta Project; a system of dykes, dams and additional constructions built to protect the south-west of the Netherlands against flooding. The Delta Project was conceived after the 1953 flood, in which 1,853 people drowned and hundreds of square kilometres of land were flooded (Van de Ven, 1993). The Delta Project was broadly supported by the public at large and was generally considered to have high priority. Nevertheless, the protests against the proposed dam, based on the expectation that the dam would destroy an important part of a highly valued estuarine ecosystem, severely delayed this important part of the project. Negotiations finally resulted in an acceptable technical solution, albeit an expensive option, the construction of an open storm surge barrier with movable sliding doors between 66 pillars over a length of 3200 metres across the 9 kilometre wide mouth of the estuary. The project was initially planned to be completed in 1978, but it took until 1986 before it was ready (van de Ven, 1993).

This second period was also marked by many actions against the construction of highways and other motorways. Successful examples were the actions against the Provincial Road 1 (also known as the “Duinweg” between the towns of Scheveningen and Katwijk) (Committee against Provincial Road 1, 1970) and the ones against the “Leidse Baan” between Leiden and The Hague (Ter Keurs, Sevenster and Udo de Haes, 1971). Highway A27, notorious because of the many public actions against the destruction of part of the old forest ‘Amelisweerd’, is a well known example of a road that became constructed despite much protest (Gorter, 1986).

In this second period, EIA was developed and institutionalised. While internationally EIA began around 1970 with the passage of the National Environmental Policy Act in the USA, EIA legislation was not introduced in The Netherlands until 1986\(^1\). The introduction of EIA had three goals: a) to give environmental considerations a serious position in decision-making processes; b) to streamline decision-making procedures by providing information about environmental consequences in an early stage of the process; c) to change attitudes towards environmental issues into a positive direction (VROM, 1987; VROM and LNV, 1994).

The third period started at the beginning of the 1990s. This period was characterised by an increase of participatory processes and awareness of social issues. Earlier, there had

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\(^1\) Since 1994, EIA has been part of the Netherlands’ National Environmental Policy Plan 2 (Ministry of Housing, Spatial Planning & Environment (1994), Dutch Lower House (1993-1994), 23560, nos.1-2, The Hague)
been an education and media-driven emancipation of the public. Citizens demanded more and better information from the government, and they did not take decisions made by governments for granted anymore. Citizens demanded to have a more direct role in democratic processes rather than being just a voter. Planning and decision-making that gave no recognition or serious consideration to the way citizens’ lives were affected became heavily criticised. Elected politicians no longer were the mandated decision-makers working independently, without interaction with relevant stakeholders. During this transition period, the legitimacy of political parties decreased, and the influence of traditional interest organisations decreased because they no longer represented (or influenced) the majority of the population. Stakeholder groups became larger, more numerous and more diffuse. Governmental and private organisations realised the need to increase their openness (accessibility, accountability and transparency) to the public and to put more emphasis on justifying their policies. Politics became an arena in which justification and explanation of decisions and policies were increasingly important for gaining public support in addition to political support. This implied that EIA-based decision-making did not only require scientific and technocratic information about environmental (biophysical) impacts, but that information sources had to be broadened to include the social, and issues had to be placed and analysed in their societal context.

The increase in public involvement in EIA world-wide, illustrates that more effort has been placed in including the norms, values and interests of interest groups and the public at large in planning and policy development (Roberts, 1995). Three models of public involvement can be distinguished (Susskind, 2001, Roberts, 2003). The first model is known as ‘DAD’ (decide, announce, and defend), also known as ‘command and control’, and basically includes presentations to explain why decisions are made or have to be made. The second model is known as the traditional consultative model and includes education, information sharing and negotiation. Interest groups and individual stakeholders are given the opportunity (with or without facilitation by the government) to react to the information presented by the project initiator. However, no general rules exist (and often no commitments are made) about what would be done with this input. The third, a participatory model, allows for responsible involvement in decision-making. Representatives of stakeholder groups are able to influence, share and/or co-control the decision-making process. In these participatory processes, representatives of the public are invited to contribute to discussions on issues like: alternative solutions; what needs to be studied and how; and the development of evaluation criteria. The basic differences between the consultative and participatory model are: (1) participation starts with problem identification and the development of solutions instead of after solutions are
presented by the project initiator; (2) it challenges the right of the elected officials to be
the sole decision-maker; (3) the model presumes that it is possible for stakeholders to
focus not just on their own individual self interest but to share responsibility to make the
wisest decision in the interest of all stakeholders.

In the 1970s, the first examples of the replacement of the ‘DAD’ model by the
consultative model occurred. In the 1980s, the consultative model was more commonly
applied and the limitations of the model began to become clear. In the 1990s, various
participatory approaches were developed and explored in the Netherlands. These
developments provided an innovative climate that turned out to be a fruitful basis for the
development of CVA: an impact assessment instrument from the perspective of citizens.
1.3.2 Institutional context

The institutional context in which CVA was conceived and developed and which resulted in this thesis on CVA is the Netherlands Ministry of Transport, Public Works and Water Management and more specifically the Directorate-General for Public Works and Water Management (Rijkswaterstaat). Like many government organisations, the Ministry of Transport, Public Works and Water Management was, for a long time, a strictly internally-focused organisation with its own knowledge infrastructure. Policy development took place primarily on the basis of internal knowledge.

Dyke reinforcement was one of the issues in the 1990s that highlighted that political acceptability of environmental decision-making required not only EIA (including formal public involvement procedures), but also additional participatory approaches to project preparation. In the mid 1990s, two decades of controversy about dyke reinforcement for flood protection along the great rivers came to an end. Until then, heated debates dominated preparation procedures and many projects were contested and delayed for many years. Central issues were the limited attention given to environmental values or to the cultural heritage of the river landscape in project preparation and decision-making. Discussions focussed on the differences between experts and the public, between experts, and between different groups within the community, in relation to perceptions about the need for, and design of, dyke reinforcement. EIA was not obligatory for dyke reinforcement projects. Project preparation had been dominated by technical considerations and requirements, and little attention was paid to ecological, historical, landscape or social issues. Technical experts tried to fast-track project preparation, emphasising the urgent need to reinforce river dykes because of flooding risk. The first dyke reinforcement projects in the 1970s had serious impacts on historical, cultural, landscape and nature values, leading to strong public criticism and negative publicity. Furthermore, engineers and EIA experts debated the way in which environmental values (in the broadest sense of the word) should be considered. Perceptions of flood risk varied considerably between different groups in the communities, which caused much discussion about the urgency of dyke reinforcement.

In the early 1990s, the issue reached the national political agenda and a Royal Commission to investigate planning processes in relation to dyke reinforcement was established by the then Minister of Transport, Public Works and Water Management, Mrs.
H. May-Weggen. One recommendation of the Commission was that EIA should become compulsory for dyke reinforcement. Shortly after, however, severe river floods occurred in December 1993 and February 1995. The threat of the 1995 flood was so severe that 240,000 people and over a million cattle were preventively evacuated.

As a consequence of these floods, the need for EIA was off the political agenda and public opposition to dyke reinforcement evaporated. An emergency law, ‘Deltaplan Great Rivers’, was enacted to accelerate dyke reinforcement. Its aim was to make the Netherlands ‘waterproof’ by the year 2000. It provided for rapid procedures, but mandated the involvement of interest group representatives. Despite initial scepticism, after the first meetings had commenced, it became clear that the recent flood experience had convinced all actors that a cooperative, interactive approach would be the most efficient way to develop broadly supported plans in the shortest possible time. This positive experience with participatory processes sent a strong signal to Rijkswaterstaat and to other government agencies and the corporate sector that participatory processes were useful. This led to much willingness to experiment further with them. After a period of many years with protest actions, legal procedures and intense public criticism them. After a period of many years with protest actions, legal procedures and intense public criticism reflected in a large amount of negative publicity in national and local media, the need for increased public involvement in planning dyke reinforcement slowly became acknowledged.

During the 1990s, a number of internal innovation processes were implemented within Rijkswaterstaat with the aim to develop a more open attitude towards the public. Interactive planning of infrastructure started to replace centralised planning (Glasbergen, 2005). The outcome of these newly developed participatory approaches revealed crucial differences in the perceptions between various groups, notably engineering experts, local residents, newcomers, environmental organisations and other interest groups. The internal focus in the Ministry and other organisations such as the Waterschappen (Water Boards) slowly moved towards a more open attitude. One example is the introduction of so-called ‘Joint Fact Finding’ (JFF) processes in policy studies within the Ministry (Pans, 2001). The basis of JFF is fact that scientific information underlying decision-making processes is not neutral and the diversity in perspectives should be respected. In a JFF process interest groups are engaged in the process of design and execution of policy studies with the aim to develop broadly-supported policy studies. Agreement on a ‘Fact Finding’ process provides a clear starting point for discussions during a participatory
process. Another example is the establishment of the ‘Participation Desk’ in 1997 with the aim to facilitate and guarantee a careful application of the compulsory public involvement procedures. The Desk’s efforts to maintain and increase the quality of participatory procedures included inquiries amongst citizens and evaluations. Various new approaches to policy development and project planning were developed, one of which was CVA.
1.3.3 Disciplinary context

Legal frameworks for EIA often do not include social impacts, nor do they specify precisely which social impacts should be included. Furthermore, few countries have additional agency regulations or procedures to carry out Social Impact Assessment (Burdge, 2003b). Under the National Environmental Policy Act of 1969 (NEPA), project proponents were required to assess impacts of planned interventions on the physical, cultural and human environments. But, despite this formal inclusion of social impacts in EIA in the USA, due to the fact that early EIAs were conducted by engineers and landscape architects, social impacts received little attention or they were restricted to narrow socio-economic impacts, like listings of demographic information (Burdge, 2003a; Vanclay, 2002). This narrow approach to Social Impact Assessment, if applied at all, has dominated EIA up to now in most countries (Chadwick, 2002; Burdge, 2003a; Slootweg, Vanclay and Van Schooten, 2003; Stolp, 2003). However, in some countries, social and environmental issues are far more interrelated and social issues are treated equally with environmental issues (Donnelly et al., 1998).

Another reason why social impacts have so far not been successfully integrated in EIA is that Social Impact Assessment and EIA have emerged as different disciplines, each with its own paradigm and discourse. As a result, Social Impact Assessment studies are often conducted separately from EIA processes. EIA generally focuses on biophysical impacts, whereas Social Impact Assessment focuses on socio-cultural impacts. In those cases in which a social component has been included in EIA, it was mainly as a tool to examine the ‘technical’ impacts on humans, and a tendency can be observed to avoid any detailed consideration of the ways in which people were affected (Burningham, 1995; Dale and Lane, 1995; Ortolano and Shepherd, 1995; Burdge, 2003a).

A barrier to integrating social impacts in EIA is the lack of Social Impact Assessment procedures attuned to EIA practice (Slootweg, Vanclay and van Schooten, 2001; Stolp, 2003). An important advantage of developing a Social Impact Assessment instrument that is fully adjusted to EIA is that EIA is embedded in legal frameworks that guarantee its application in certain situations. Because CVA is directly linked to the EIA process, it provides a mechanism to integrate Social Impact Assessment with EIA, thus establishing a legal mandate for Social Impact Assessment. This, combined with the lack of Social Impact Assessment procedures (particularly those focusing at the perceived quality of
the living environment) attuned to EIA practice, was an important stimulant for CVA development.
1.3.4 The Dutch context

The Netherlands’ EIA system – regarded as one of the most comprehensive and effective in Europe (Wood, 1995; Sadler, 1996; Arts, 1998) – is considered to be well developed because the country is densely populated, has a strong tradition of landuse planning, and has a strong and long standing level of public interest in environmental issues (Arts, 1998). The formal regulatory processes, however, do not prescribe the inclusion of a social dimension in EIA. As a result of this limited Social Impact Assessment tradition in Dutch EIA, there is little expertise available in the field of applied social sciences or Social Impact Assessment attuned to the Dutch EIA context.

The scope of impacts investigated in EIA in the Netherlands is the following (translated from: VROM and LNV, 1994: 85):

1. The natural environment
   - landscape (including archaeology, cultural/historic values, geomorphology),
   - soil, groundwater and surface water
   - ecology (biotic environment)

2. The human living environment:
   - noise and vibrations
   - air pollution
   - liveability and safety/risks

Thus, there is no formal consideration of the full range of social issues.

Since the introduction of EIA in The Netherlands in 1987, discussions on a social component in EIA often focused on whether and how to integrate subjective value judgements of citizens. As early as 1989, the EIA Commission criticised an EIA study on the expansion of “Vliegveld Zuid Limburg” (an airport in the Southern part of the Netherlands) because of the technocratic approach to noise and the lack of attention given to the actual meaning of noise nuisance to citizens, like sleep disturbance and
annoyance (Barendse and Udo de Haes, 1989). More criticism of EIA in The Netherlands in the 1990s focused on the emphasis put on quantification, and the neglect of uncertainties related to quantitative data. By attributing ‘absolute objectivity’ to these quantitative data, uncertainties, inaccuracies and knowledge gaps are ignored (Herngreen, 1995; Mostert, 1995). In the second half of the 1990s, the pleas for the consideration of ‘public rationalities’ in addition to ‘expert rationalities’ in EIA became stronger. The EIA for the expansion of ‘Vliegveld Eelde’, another airport project in the Northern part of the Netherlands, was also criticised by the EIA Commission (Scholten, 1997). Although its Terms of Reference clearly stated that the EIA study should take into account the way in which relevant groups of citizens (and tourists) perceived the current quality of the living environment and the impacts the increased use of the airport might have, this had not been investigated. According to the EIA Commission, investigating the meaning of noise nuisance could have contributed to the development of the Most Environmentally Friendly Alternative2 (Scholten, 1997). During this period, the results of the first (experimental) CVA studies were published and the EIA Commission advised several projects to include a CVA study.

An analysis of the social component in all Environmental Impact Statements published until 1996 revealed that only 17 of over 500 Environmental Impact Statements in The Netherlands contained social issues (de Vlieger, 1996). The Social Impact Assessment method used in most cases had the following characteristics:

- indicators should be quantifiable;
- indicators have to be applicable across different situations and not locally specific;
- the data to be collected should be “objective data” only and not be based on interviews with citizens (Molenkamp, 1998).

This technocratic Social Impact Assessment approach was the only available standardised Social Impact Assessment method applicable in EIA at that time. An analysis of Environmental Impact Statements undertaken between 1998 and 2002 revealed that in 40 percent of cases, a social component was considered to be relevant; however, in only 5 percent of cases was a Social Impact Assessment study carried out. In the other cases, a few criteria were added on exposure levels3. In only two of the 27 EIA studies, a CVA study was carried out (Stevens and Hermsen, 2002).

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2 A Most Environmentally Friendly Alternative is obligatory in EIA in The Netherlands.

3 In Dutch environmental policy, exposure levels are considered the basic relevant data for the assessment of environmental quality.
Thus, it can be concluded that in the Dutch context, attention to social considerations in EIA was limited and there was a (latent) need for the development of Social Impact Assessment expertise.
1.4 The Citizen Values Assessment Development Project

The lack of specified techniques in Social Impact Assessment, together with the ascertained relevancy and necessity to consider differences between citizens’ values and expert judgements in perceived qualities of the environment and potential impacts of intended activities, was the starting point for the development of Citizen Values Assessment (Stolp, 1994). From the example of dyke reinforcement presented in Section 1.2, it is clear that it was the right time for the development of CVA and that the Ministry of Transport, Public Works and Water Management provided an appropriate institutional context. The CVA Development Project was a bottom-up innovation process undertaken by the author within the Civil Engineering Division (Bouwdienst) of Rijkswaterstaat (Stolp, 1994). The overall objective of the CVA Development Project was to develop and implement an impact assessment instrument to investigate and evaluate the qualities of the living environment from the perspective of those citizens whose living environment may be influenced. The instrument would have to meet the requirements of the Dutch EIA procedure. The project was initiated in 1994 and finalised in 2002, when funding for the development work ceased. The research, the results of which are presented in this PhD thesis and in other publications (see Appendix II), was one of the activities in the CVA Development Project.

The CVA Development Project consisted of three types of activities (see Fig 1-3). The central activity was the methodological part: the development of the instrument. This was primarily an on-the-job process of trial and error. In the starting phase of the CVA Development Project, three CVA pilots were conducted on an experimental basis within EIAs. After that, CVA development continued by applying the instrument in many projects (Appendix I). In addition, various methodological studies were carried out (Appendix II). This part of the CVA Development Project led to a standardised procedure. While a generic approach was developed, CVA still needs to be tailored to each specific project and fine-tuning of the instrument, therefore, is necessary in each case. The second activity within the CVA Development Project focused on potential contributions of CVA outcomes to EIA processes. Cases were evaluated, analysed and discussed. Studies on Social Impact Assessment, the quality of EIA, as well as on social impacts in EIA, were conducted, often by MSc students (Appendix II). The third activity within the CVA Development Project was communication and capacity building: the publishing of articles in professional journals, a Handbook in Dutch, and other publications like brochures and project sheets; networking; and development and organisation of courses, seminars,
symposia and other meetings and presentations. A national symposium called “The Citizens’ Perspective: useful information for decision-making” was held in November 2001 and attended by about 150 EIA professionals, social impact assessment professionals, project managers, decision-makers, consultants and university researchers.
Figure 1-3: Overview of the CVA Development Project
## 1.5 The PhD Research

### 1.5.1 Scope

The PhD research focussed on the methodological soundness and applicability of CVA; the suitability of CVA; and the effectiveness of CVA. These three issues were addressed by means of three research questions with corresponding sub-questions as outlined below. The suitability and effectiveness of CVA were investigated within the context of EIA. The research on the effectiveness of CVA had an exploratory character, because during the PhD research, there were limited cases available in which it was actually possible to evaluate the effectiveness of CVA. This part of the thesis, therefore, largely focuses on the potential effectiveness of CVA.

### 1.5.2 Research Questions

#### 4. Methodological soundness and applicability CVA.

*Is CVA a plausible and methodologically sound instrument for analysing citizens’ values and citizens’ views about their living environment?*

- Is it possible to operationally define and implement a process to measure peoples’ subjective values about their living environment?

- Is it possible to collect the data that would be required for CVA?

- Is CVA methodologically sound in terms of reliability, validity, sensitivity and unbiased results?

#### 5. Suitability of CVA.

*Is CVA suitable for integration within EIA?*

- Is CVA compatible with the rationale of EIA?

- Does CVA produce information that is relevant to EIA?
6. **Effectiveness of CVA.**

*Is CVA effective in improving the processes and outcomes of EIA?*

- Does CVA lead to different EIA outcomes than would have been achieved otherwise?

- Does CVA increase the legitimacy of the EIA and the decision-making process?

- Does CVA influence or change the final political decision?
1.5.3 Research activities

The research for the PhD consisted of the following activities:

1) Literature reviews on:
   - Social Impact Assessment: theory, methods and practice
   - Social research methods
   - The quality and effectiveness of EIA in relation to its societal context (particularly in the Dutch setting)

2) The building of a theoretical basis for CVA

3) The operational refinement of CVA in practice

4) An evaluation of two CVA case studies

5) Three exploratory studies of actors’ perspectives of the potential contribution of CVA (citizens; EIA professionals; decision-makers).
1.6. Outline of the thesis

The thesis consists of three different parts (see Fig 1-4):

Part I: Development of CVA: In this part of the thesis, the starting points and context of CVA development are described. In Chapter 1, CVA is introduced and the motives for CVA development are explained. The conceptual framework and the CVA instrument itself are presented in Chapter 2. In Chapter 3, CVA is positioned within its Impact Assessment context.

Part II: Application of CVA: This part of the thesis focuses on the practical applicability of CVA in EIA and on the relevancy of CVA as an information source for EIA. Two CVA cases are evaluated. The case study in Chapter 4 is the first complete CVA study carried out. At the time this CVA case was conducted, the practical application of the CVA instrument was still experimental. Therefore, this case should primarily be seen as a ‘learning case’. The case study in Chapter 5 is a CVA study which was given a central role in the EIA process and, therefore, can be considered to be a good example of ‘best practice’. In Chapter 6, the diverse ways in which CVA can be applied is illustrated by brief presentations of three very different cases. One case concerns a relatively small study area with different alternatives at the same location. Another case concerns a large project including three solutions studied by means of three separate EIAs. The final case is a different application of CVA: a risk perception study. In Chapter 7, the potential of CVA is discussed from relevant actors’ perspectives. The outcomes of inquiries amongst citizens, EIA professionals and decision-makers and their advisors are presented here.

Part III: Evaluation of CVA: In this part of the thesis, the potential of CVA is evaluated and the three macro research questions will be considered in detail. The methodological soundness, suitability and effectiveness of CVA are discussed in respectively in Chapter 8. General conclusions on the potential of CVA in relation to the three research questions are drawn in Chapter 9. This chapter ends with recommendations for future research.
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*Figure 1-4: Structure of the thesis*
CHAPTER 2  CITIZEN VALUES ASSESSMENT: THE INSTRUMENT

2.1 Introduction

In this Chapter methodological issues are at stake. The conceptual framework of CVA is discussed and the instrument is presented in detail. Furthermore, issues regarding the role of citizens versus the role of experts and subjectivity versus intersubjectivity in CVA are discussed.

The basic methodological principle of CVA is to use citizens’ everyday knowledge and experience as the basis for the development of case-specific, location-specific evaluation criteria – in addition to experts’ criteria – in EIA and other policy analysis studies. The theoretical basis primarily comprises a discussion of the perspective from which citizens’ value judgements should be approached and by what data collection and analysis processes the assessment of future impacts can be based. The type of information dealt with in CVA can best be characterised as peoples’ own way of experiencing the qualities of their living environment, expressed in their own words and based on their own personal context. Data are collected by means of semi-structured, in-depth interviews that provide respondents freedom to express in their own way their judgements about the qualities of their living environment. Methods and techniques are applied that ensure a close fit between outcomes and what citizens consider to be meaningful in their daily lives.

CVA is not based on one central theory. CVA does have a range of connections with various knowledge fields, including policy science; phenomenology; environmental science; and environmental psychology. These connections are discussed in Section 2.2. The position of CVA in the Impact Assessment field will be discussed separately in Chapter 3.
2.2 Connections with different knowledge fields

2.2.1 Policy science

EIA has evolved in the context of the rational planning theory of policy science (Meyerson and Banfield, 1955; Banfield, 1959; Caldwell, 1982; Taylor 1984). Within this rational approach, emphasis is placed on the use of neutral information provided by experts independent of politics and policy problems. Within the model, it is presumed that the systematic collection and analysis of information improves the quality of decision-making processes by reducing uncertainty and preventing unexpected consequences. Experts are considered to produce politically-neutral knowledge about the consequences of alternative decisions and policy-makers are considered to use this knowledge rationally. Likewise in CVA, a structured process is followed to provide neutral information about potential future impacts of planned interventions on the living environment from the perspective of citizens. Although the rational model has been widely criticised (Simon, 1957; Lindblom, 1959, 1980; Lynn, 1980; Etzioni, 1967) – basically because the planning process is far more complex than is assumed in this approach – it is a useful to attempt to strive to provide a rational basis for decision-making by a systematic comparison of alternatives (Faludi, 1985; Arts 1998).

Another issue concerns the communicative planning approach that evolved as a reaction to rational planning theory. In this approach, the interactive process among interested and potentially affected parties is the basis of exchange of everyday knowledge and professional information (Sager, 1994; Innes, 1995; Healy, 1996; Susskind and Cruickshank, 1987). Central in this approach is the social interaction (coordination, communication and consensus building) between all relevant stakeholders, supported by facilitators and/or mediators. Within the communicative planning approach, the planning process is considered to be an interactive, cyclic process instead of a structured process of successive phases (Healy, 1996). Communicative planning theory has been criticised for different reasons (see e.g. van Woerkom, 1997; Voogd, 1998; Coenen et al., 1998; Voogd and Woltjer, 1999; Woltjer, 2000) including:
- Interactive processes may conflict with certain policies and/or scientific starting points of traditional planning such as: preservation of ecosystems; sustainable development; and collective interests versus individual interests;

- Limited representation: the interests of those involved in the participatory process are favoured over those who are left out of the process;

- Professional knowledge may be undervalued;

- Biased processes caused by power inequalities.

Within the communicative planning approach, policy analysis is part of an interactive process based on joint fact finding. Within rational planning theory, policy analysis is the central part of a rational, structured process based on expert knowledge. The middle ground, a rational, structured process embedded in a participatory process, is generally considered a suitable combination. CVA contributes to such a combined approach by providing rational, neutral and structured information in relation to everyday knowledge.

### 2.2.2 Phenomenology

The way in which data are collected in the qualitative, inventory research phase of CVA studies is inspired by phenomenological research approaches. In contrast to the positivistic research tradition – in which social phenomena are explained in terms of causal relationships – which was dominant in the social sciences at the time phenomenology evolved, phenomenological research approaches are focused on an understanding of how individuals experience the world (Taylor and Bogdan, 1998).

The basic starting points that the inventory, qualitative phase of CVA shares with phenomenological research approaches are the following:

- Central in CVA is the meaning of the living environment to citizens. The living environment is investigated in terms of how it is experienced by individuals, rather than as a collection of empirically observable objects and events (Griffith, 1981).

- Ideas and conclusions are arrived at inductively. Concepts, insights and understanding are developed from patterns in the data themselves through a
process of analytic induction, rather than data being collected to verify preconceived models, hypotheses and theories. From the comparison and analysis of descriptions of individual experiences, essential characteristics of phenomena (in the case of CVA: essential qualities of the living environment) are identified. When the reported outcomes of this inductive process are understandable to the people they concern, and when a larger group of people recognise themselves in the descriptions of the essential qualities of the living environment, these outcomes are considered valid (Jansen, 1980; Beekman and Mulderij, 1977).

- There is a preference for a holistic, narrative orientation as opposed to reductionistic approaches. In CVA, the aim is to understand what the living environment as a whole means to people and to develop an assessment framework that respects all meanings.
2.2.3 Environmental psychology

A logical step to find direction in assessing impacts on the perceived qualities of the living environment would be to find clues in environmental psychology. In environmental psychology, the relationships between objective, physical phenomena and subjective perceptions and experiences are studied (Bell et al., 1996; Gifford, 1997). Approaches in environmental psychology that study individual evaluation and judgement of environments or environmental attributes have in common that they focus on how people observe, appreciate and evaluate environments; and that they study cognitive, affective and behavioural responses of people to environmental attributes (Knopf, 1987). Both observation and appreciation vary between people and, therefore, individual characteristics have to be studied to understand these differences (see e.g. Lyons, 1983; Coeterier, 1987, 1997; Burningham, 1995; Polak and Jones, 1997; van den Berg, 1999). These approaches also try to uncover certain details of psychological processes that are related to individual environmental appraisal.

In EIA, however, it is not necessary to understand details of why certain environmental characteristics have particular meanings or why certain individuals show particular responses. EIA requires information about the values and functions of the environment. Causal relationships are studied between environmental changes (caused by planned interventions) and the impacts of these changes on environmental values and functions. The same applies to CVA. Thus, in CVA, the causal relationships between environmental changes (caused by planned interventions) and the impacts of those changes on the environmental values and functions that are important to citizens are studied. That is why the environmental psychology perspective in CVA is restricted to which environmental attributes and sources of annoyance are central in the individual evaluations of the qualities of living environments and what meanings these environmental attributes and sources of annoyance have to different user groups, or why certain individuals show particular responses. CVA does not study why certain environmental characteristics have particular meanings. Meanings are used as a kind of filter to select what types of impacts on which characteristics of the physical living environment are most relevant from a citizens’ perspective (see Fig 2-1). This is the basis for the development of location and intervention specific evaluation criteria. In a further stage of development and application of CVA, the environmental psychology perspective might become more relevant. When larger numbers of cases become available, patterns in data may be identified that can be explained by insights from environmental psychology.
2.2.4 Environmental science

Within environmental science, environmental issues are not just considered from a natural science perspective, but also from a social science perspective. Central to the social science perspective is the issue of determining the consequences of planned interventions to the value of the biophysical environment to people, as well as the direct social consequences of the planned intervention (Slootweg et al., 2001). In the Netherlands, EIA is conceived as being an instrument by which the consequences of interventions to the biophysical environment are investigated with the aim to prevent negative consequences as much as possible. CVA is an instrument by which the consequences of interventions are investigated from a social scientific perspective.

There is no unequivocal term within environmental science for describing the process of individual evaluation of environmental qualities. The term 'Citizen Values' has been chosen to emphasise that they are both perceived values and use values based on the functions the environment provides for citizens. A suitable framework for conceptualising citizens values can be constructed using a classification developed by de Groot (1992)
based on a ‘function concept’ in which functional interrelations between natural processes and components on the hand, and human needs and activities on the other, are central. De Groot defines environmental functions as follows:

Environmental functions are defined as the capacity of natural processes and components to provide goods and services that satisfy human needs (directly or indirectly).
De Groot distinguishes four types of functions of the natural environment:

1. Regulation functions (the interplay between abiotic factors and the biotic environment through ecological processes and evolution and control mechanisms)
2. Carrier functions (the natural suitability of a given area or ecosystem to provide space and a suitable substrate or medium for certain physical needs, such as shelter or dispersal)
3. Production functions (resources provided by natural and semi-natural ecosystems such as oxygen, water, food, medicinal and genetic resources)
4. Information functions (aesthetic; spiritual and religious; historic, cultural and artistic, educational and scientific)

De Groot distinguishes the following values that can be attributed to these environmental functions:

- conservation values or non-use values (services provided by the natural environment: regulation and information functions)
- existence values (relating to the intangible, intrinsic and ethical values attributed to nature)
- value to human health
- option value (relating to the importance people place on a safe future either within their own lifetime or for future generations)
- consumptive use values (natural products which are harvested from the natural ecosystem)
- productive use values (production processes such as agriculture and energy conversion)
- contribution to employment (employment depending on environmental functions)

Using the function concept as a starting point, Citizen Values can be defined as comprising the values of the natural (biophysical) environment and the values of the constructed living environment as perceived by citizens, as well as the use values of the natural (biophysical) environment and the use values of the constructed living environment. The term ‘Citizen Values’ only refers to those values related to the natural (biophysical) environment. These perceived environmental values may include:

1. existence and non-use values
- ecological values
- landscape values (geological values, landscape-ecology)
- cultural heritage values

2. use values

- emotional values (values that can be experienced by individuals, like peacefulness, quietness, nostalgia)
- aesthetic values (scenic beauty of landscapes; architecture)
- spiritual values (the influence of a certain area on mental welfare, e.g. by its symbolic or religious meanings)

Apart from these perceived values of the natural (biophysical) environment, citizen values also refers to the physical qualities, as well as social and cultural values of the constructed living environment. The perceived environmental values of the constructed living environment may include existence values such as cultural and historic values; or use values such as emotional values (values that can be experienced by individuals, like place attachment or risk perception), social values (e.g. atmosphere in residential neighbourhoods), or spiritual values (the importance of certain buildings or places on mental welfare, e.g. by its symbolic or religious meanings) (De Groot, 1992; Van Schooten et al., 2003)
2.3 Roles of citizens and experts in CVA

Central in CVA are citizens’ judgements about the qualities of their living environment. Although citizens are considered to be local experts, a relevant question is whether they are appropriate experts to assess future impacts on the perceived qualities of the local living environment.

Impact assessment always concerns the potential future impacts of interventions. Involving citizens as local experts in assessing the possible impacts on the future qualities of the living environment of future activities has a number of limitations:

- Perceptions of impacts of planned interventions may be very different to the impacts that actually occur. Bias may be caused by individual perceptions about what the character and size of potential impacts may actually mean; by perceptions about how project alternatives will actually look like in the perceived future situation (which may be based on comparisons with perceived or experienced impacts of other similar interventions); by political opinions; by NIMBY (not in my back yard) responses; and by other individual attitudes towards the intended activity. All these sources of bias lead to individual preferences about types of solutions and project alternatives.

- Environmental appraisal varies over time. It is very difficult to assess how future impacts on certain environmental characteristics, in combination with personal and other changes, will influence perceptions of environmental qualities in the future.

- Perceptions of impacts of planned interventions are influenced by how plans are presented and visualised and which and how much additional information is presented (see Fig. 2-2). Bias can be caused by how facts and conclusions are (consciously or unconsciously) selectively presented; certain topics may be over-emphasised, or others may be down-played. The extent of uncertainty may be unclear and value orientations as well as interpretations and judgements may be implicit rather than explicit (Gregory, Keeny and von Winterfeldt, 1992; Mostert, 1995).

- The way in which planned interventions affect opinions is only partly related to the intervention itself. The effectiveness and credibility of communication and
participation processes, which in turn are related to image and level of credibility, can strongly influence opinions.

Investigation of the perceived impacts of future interventions would include an accumulated collection of subjective interpretations and opinions, which in turn would make it unclear what is actually measured. Furthermore, respondents may engage in a variety of strategies to present their positions to be more credible than others (Burningham, 1995). This makes it impossible to justify what types of value judgements are measured and, therefore, this would not be a solid, reliable or valid data source.

By having the lay, yet enriching perspective of citizens, followed by a rational, expert approach of assessing impacts on the basis of these citizens’ perspectives, values and facts are optimally combined. This approach provides a solid basis for a rational, neutral evaluation and comparison of alternatives, like in any other impact assessment method.
2.4. Values, subjectivity and intersubjectivity in CVA

In impact assessment practice, the term ‘objective information’ is often wrongly used to refer to information that is intersubjective, neutral and/or rational. The same is the case for the term ‘facts’—usually the word ‘figures’ (as in numerical data) would be more appropriate. On the other hand, CVA has been wrongly referred to by outsiders as being ‘subjective’ and even considered too subjective to be able to provide appropriate information for EIA. These observations indicate that it is relevant to explain how subjective values are dealt with in CVA (see Fig 2-3).

**Fig. 2-3. Facts, values and intersubjectivity in CVA**

The subjective judgements that are measured in CVA are the meanings associated with certain environmental characteristics (positive and negative values) that, according to citizens, determine the quality of the living environment. In CVA, it is these citizens’ judgements that are the object of systematic, professional investigation. A primary goal
of CVA is to raise the status of individual citizens’ perceptions about the qualities of their living environment to be more than being simply ‘small stories’ (or narratives). It does this by considering them at a higher level of abstraction. CVA includes a synthesis of well-specified, concrete positive and negative values, which are grouped into more abstract higher-level categories. These are called Citizen Values. This overview of Citizen Values is validated through a quantitative survey amongst representative samples of the groups within the population. Furthermore, through this inquiry, the relative weights of the Citizen Values are determined. Together, this results in an *intersubjective* basis for assessing impacts: the Citizen Values Profile. The Citizen Values Profile is used for a *transparent, rational and professional* assessment by CVA experts of the potential impacts of a planned intervention on (the positive and negative values of) the qualities of the living environment. Interpretations are described and justified by the CVA experts.

It should be noted that in CVA, individual evaluations of the living environment are not restricted to positive judgements as the word ‘value’ may suggest. The perceived environmental quality consists of the extent of satisfaction and dissatisfaction with various attributes of the living environment (positive and negative values). Positive values may be affected by a planned intervention (negative impacts); negative values may become worse (negative impacts) or better (positive impacts as a result of compensation, mitigation, or as a side effect) (see Fig. 2-4).
Fig. 2-4. Objects for investigation in CVA
2.5 Description of Citizen Values Assessment

2.5.1 Quick overview

CVA consists of four phases and a follow-up step which integrates the outcomes of CVA in the EIS or other policy evaluation document. **Phase 1** consists of problem definition, identification of interest groups, and the collection of background information. **Phase 2** is a preliminary qualitative study to provide in-depth understanding of citizens’ connections to the area affected by the project. Semi-structured interviews are conducted with people from all relevant affected and interested citizen groups, including residents, commuters, workers, day-trippers and tourists. The outcome is a listing of the selected key values of the affected community (a preliminary profile). In **Phase 3**, a quantitative survey is conducted to validate the key values identified in Phase 2, to determine the relative importance of those key values, and determine how respondents feel about their present living environment in respect of these key values. The outcome is an assessment matrix or Citizen Values Profile. In **Phase 4**, the Citizen Values Profile is translated into evaluation criteria for the assessment of impacts potentially caused by the planned intervention. Qualitative or quantitative indicators are identified for each of the assessment criteria. Impacts are determined and alternatives are compared. An overview of the CVA phases are presented in Figure 2-5.
After the CVA study is completed, the results are to be integrated in the EIA or other policy evaluation document. One possible way to integrate CVA outcomes in an Environmental Impact Statement is the development of a Citizen Values Scenario to complement other scenarios such as the Economic Scenario and Nature Protection Scenario, or even to develop a Most Citizen Friendly Alternative to complement the Most Environmentally Friendly Alternative. In line with the above, the following topics are investigated in CVA:

- environmental attributes and sources of annoyance that determine the perceived qualities of the living environment (Phases 1 and 2);
- the relative importance (meaning) of these environmental attributes and sources of annoyance as a result of individual appreciation processes (Phase 3);
- impacts of an intended activity on these environmental attributes and sources of annoyance (Phase 4);
- how these impacts determine the priority of project/policy alternatives (Follow-Up Phase);
- how these impacts can be used to develop compensation and mitigation measures (Follow-Up Phase).
The integration of CVA in the EIA process is represented in Figure 2-6.
2.5.2. Description of the four phases

**Phase 1: Basic Groundwork**

Phase 1 is a brief investigation to identify the likely area of impact, the geographical area in which impacts may occur (i.e. the study area), and the groups of citizens that are potentially affected. It provides insight into landuse patterns, relevant groups of landusers and the organisations representing them. Relationships between interests, and between interests and the proposed development, are analysed. The study area may differ from that considered by the various experts, depending on how alternatives are defined, and how the zone of impact is determined. In CVA, the study area is usually defined as the area where impacts can be experienced by those who live and/or who use it.

A preparatory study starts with an analysis of relevant documents – such as maps, photographs, municipal guides, reports, newspapers, and other information – in order to identify landuse patterns and relevant interest groups. An interest group is considered relevant when the interest(s) they represent are likely to be affected by the proposed development. They include small local interest groups representing specific activities or neighbourhoods, as well as large, professional, national (and potentially international) organisations, e.g. nature conservation bodies. These organisations provide information for understanding the study area through interviews with key informants, often the representatives of these interest groups. Note that these representatives are NOT specifically involved as respondents in Phases 2 and 3, as they represent specific interest groups. Telephone interviews are conducted with key informants, liaison contacts for relevant groups, and other knowledgeable local individuals. The preparatory study results in a research plan, defines categories of respondents, and identifies a process for selecting representatives of the various groups. Respondent groupings are typically based on factors like geographic distribution, landuse patterns and specific activities.

Phase 2: Identifying Key Values

The primary objectives of Phase 2 are to:

- investigate the baseline conditions of the study area;
-collect data illustrating the location-specific relationships of citizens with their living environment;
-identify the environmental values which are considered relevant by citizens.
This information becomes the basis for the development of a preliminary profile. The identification of the Key Values is the core of a CVA study. Data are collected by means of face-to-face interviews with citizens. For each category of respondents, up to seven interviews are conducted, depending on the heterogeneity of the group. The interviews provide detailed understanding about what the environment means to citizens. The interviews are semi-structured, with the course of the conversation led by the interviewer following strategically arranged discussion themes (see Box 2-1). Respondents are invited to discuss these themes in their own way, using their own words, and from their own perspective. Interviews last approximately one hour.

**BOX 2-1: DISCUSSION THEMES IN A CVA INTERVIEW WITH RESIDENTS (PHASE 2)**

- *Perceptions of environmental qualities*. Why did the resident chose to live here? What is the specific connection with this living environment? What makes the person feel attached to the area? What is special about this living environment? What factors cause nuisance? How does the resident make use of the area?
- *Observed and expected changes in environmental qualities*. What changes has the resident recently observed? Are these changes positive or negative? Why? What changes does the resident anticipate will occur in the near future? Are these changes positive or negative, and why?
- *The problem underlying the proposed project*. Does the resident know about the underlying issue? Does the resident acknowledge the problem? Does the resident agree that the problem should be tackled in the way intended by the proponent? What is the resident’s opinion of the proposed project?
- *Opinion towards proposed project*. [Note – this information is used to increase the understanding of the residents’ value judgements about environmental qualities and impacts on environmental qualities; this information is not meant to investigate the extent of public acceptance or resistance.] What is the opinion of the resident about the project and the alternatives that are relevant to them? (maps, drawings and/or artist impressions of alternatives are shown to the resident to provide background).
- *Perceptions of possible impacts*. Resident is asked which environmental qualities may be affected by the proposed alternatives (as before, maps, drawings and/or artist impressions may be shown).
Issues relevant for design. What measures should be taken to minimise those possible impacts that are relevant to the resident? What other measures could the resident think of to compensate for those impacts that cannot be avoided?

Interviews are conducted with representatives of relevant groups such as residents, commuters, workers, day-trippers and tourists. For accuracy and validity, CVA requires skilled professional interviewers committed to its premises. They should be able to approach respondents in an unbiased way and respect differing perceptions of reality. Interviews are tape-recorded and transcribed for qualitative data analysis.

The large quantity of information collected is organised into a coherent picture by a comparative method of ‘open coding’ and ‘analytical memo writing’ (Neuman, 1996), that is “the continual process of comparing data segments and data codes within and across categories” (Strauss and Corbin, 1994). Each transcript is examined for mention of elements of the living environment, and for specific meanings associated with those elements. This results in a listing of ‘element-meaning pairs’ – elements of the environment together with the meanings ascribed to those elements by interviewees. Then follows a process of sorting (interview themes), categorising (types of values), and synthesising a listing of key values underlying the perceived qualities of the living environment. This phase requires social researchers adequately skilled in qualitative analysis.

The results of this phase are presented in a separate report structured along the interview themes. One intention of CVA is to allow citizens to recognise themselves in the outcomes, showing them that they have been heard and listened to, and reinforcing the legitimacy of citizens’ values and rationality in the EIA process. To achieve this, many quotations are used to illustrate and justify the descriptions of what the qualities of the living environment mean to citizens.

The outcome of Phase 2 is a listing of the key values. The report, or at least a summary from this phase, should be sent to all respondents. This is an important step to check whether the analysis is perceived to be adequate. Ideally, the outcomes of this phase are discussed with community representatives. The report, and preliminary drafts of the

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4 At the time, computerised qualitative data analysis packages were not generally available in the Netherlands, however is now possible to use packages such as NUD-IST and N-Vivo.
report, should be distributed to the proponent’s project-team, so that the information can be used as input for the development of alternatives and mitigation measures, and as feedback in response to the communication strategies of the proponent. If CVA is initiated early enough, the (preliminary) outcomes can be used to profile the content of the EIA study. The use of these preliminary results can be a substantial part of the total contribution of CVA to the EIA process.

Phase 3: Constructing a Citizen Values Profile

In Phase 3, the preliminary profile is transformed into a final assessment matrix, or Citizen Values Profile. The Citizen Values Profile represents the importance of the environmental values from the perspective of citizens. The importance of citizen values is determined by the numbers of respondents that score a particular value and the weights or rankings allocated to these values. Data are collected by a quantitative survey, normally a mail-survey of a random sample of the potentially affected population. This is done to:

- Verify the relevance of the key values in the preliminary profile. Data are collected to confirm whether the set of key values is comprehensive and that each is actually relevant;
- Determine the importance of each of the key values by asking respondents to prioritise them. Potentially, this can be done in three ways: (1) scoring each of the key values on a scale [say from 1 to 10, or 1 to 100]; (2) rating each value on a Likert Scale; or (3) ranking them. Ranking is not usually practical since the large number of values makes it too difficult for respondents. Statistically, it is preferable for Likert scales to contain more categories (i.e. 7 or more) to provide greater differentiation, but respondents generally prefer fewer categories. The aggregated scores across all respondents provide the basis for determining the weighting to be assigned to each key value;
- Score the present living environment in respect of the key values;
- Collect information to assist in developing mitigation measures and/or for the consideration of compensation.

The questionnaire consists of four sections (see Box 2-2). To avoid a large non-response bias, it is very important that the questionnaire and accompanying letter are properly formulated (that is, no scientific jargon and no bureaucratic language or legalese). They
must clearly describe the status of CVA within the EIA process to prevent inflated expectations of what will be done with the outcomes of the CVA.

BOX 2-2: OUTLINE OF A CVA QUESTIONNAIRE (PHASE 3)

- **Introduction.** Description of the objective of the study and a brief description of the proposed project, underlying problems and envisaged benefits.
- **Part 1. Evaluation of the present living environment.** For each selected key value in Phase 2, respondents are asked to consider: (1) whether or not they consider the key value relevant in terms of their living environment, and (2) how they judge the quality of their current living environment in relation to this key value. Space exists for respondents to nominate new key values under an 'other' heading. Any additional value must be scored in the same way.
- **Part 2. The relative importance of the key values.** Respondents are asked to judge the key values (which may include the values added by the respondent), by scoring each key value on a scale from 1 to 10 (or 100), or to rate them on a Likert Scale.
- **Part 3. Mitigation and compensation measures.** Different questions are formulated depending on the type of project and the project environment. Questions may relate to impacts such as noise nuisance or loss of visual amenity, or to design and siting issues such as road layout, location of facilities or land reclamation.
- **Part 4. General demographic and socio-economic characteristics of the respondents.**

Where the proposed project has alternative locations in different regions, separate samples are required. In this situation, the key values may differ between locations requiring different questionnaires. To ensure validity and reliability of the results, the sampling procedures need to be justified explicitly, and the way in which key values are translated into questions needs to be transparent.

The results of this phase are presented in a separate report in which the final Citizen Values Profile is presented. The verification of the relevance of the key values implies that in the final Citizen Values Profile, some key values defined in the former phase may not be included because they were not scored highly enough by most of the respondents. On rare occasions, an additional key value is added. It may consist of a number of
different sub-profiles for different locations and/or different alternatives. In each sub-profile, the key values are listed in order of importance.

**Phase 4: Determining Impacts of Project Alternatives**

In Phase 4, the CVA practitioner translates the key values into evaluation criteria. The outcome is an overview from the perspective of citizens of the potential impacts of alternatives on the qualities of the living environment. This phase starts after the design of alternatives has been finalised. It consists of the following steps:

- translation of key values into evaluation criteria;
- operationalisation of evaluation criteria by formulation of quantitative or qualitative variables, and identification of data sources;
- determining importance of impacts for each criterion;
- recommendations for mitigation and/or compensation.

The crucial step in this phase is how the Citizen Values Profile is transformed into evaluation criteria. This involves selection and judgement of the available information by the CVA practitioner. Transparency and justification are essential. There should be no doubt about how the criteria were operationalised.

The first step is the selection of those key values that discriminate between alternatives. For example, concern about safety in a residential area may be relevant for assessing impacts of an infrastructure project when the factors that make people feel unsafe are related to traffic (e.g. shortcuts through residential areas). However, safety concerns may not be relevant to the CVA when such concern is caused by anti-social behaviour unrelated to the proposed project. In the second step, each discriminating key value is translated into an evaluation criterion. For each criterion, the underlying meanings, how operationalised, whether by means of qualitative or quantitative variables, and what data sources exist, needs to be explained on the basis of the outcomes of Phase 2.
The primary and most appropriate data sources are the various impact studies (expert studies) carried out by the EIA team. For example, a criterion ‘quiet, green living environment’ may be operationalised by utilising expert studies on noise nuisance, traffic patterns and visual amenity. The importance of probable impacts can be determined; either directly from the empirical results of the expert studies, or it can be derived from interpretations of these studies made by the CVA practitioner on the basis of the criteria. However, the information needed for the determination of impacts considered relevant by citizens will not always be available in the expert studies. When a criterion cannot, or can only partly, be linked with the expert studies, additional variables have to be conceived. For example, in the case of a proposed highway, the evaluation criterion ‘preservation of visual amenity’ (referring to the scenic or aesthetic qualities of a residential area) might be connected with the variable, ‘road surface height’ in terms of height above (or below) ground level. If so, this may provide an indication of the extent to which the road embankments will block the view of citizens.

In some cases, situations may arise where the majority of the required data is not available in the expert studies. To overcome this, workshops to derive impact measures can be held with a selection of experts, representatives of interest groups and knowledgeable citizens. A Delphi technique can be applied with participants to come to consensus on the weightings (Taylor, Bryan and Goodrich, 1995).

Ultimately, each alternative requires a score for each evaluation criterion. This can be done with a five point scale (such as ++, +, 0, -, --). Another option is to rank the alternatives for each criterion. An overall assessment is conducted by considering all scores of each alternative, together with the weighting for each criterion. This can be done by quantitative or qualitative analysis, resulting in an overview of positive and negative aspects of each alternative. Such an analysis can be summarised in a final score based on an average appreciation of an average user of a local area. Here, the weights can be used in an analysis of the essential differences between alternatives. Such an analysis should focus on those criteria that have relatively high weights, and/or those criteria for which the impacts score relatively high. Alternatively, a Multi Criteria Analysis can be applied, using various weighting techniques (such as using a five point scale ++, +, 0, -, --; rankings; or quantitative techniques). Where alternatives are located in different sub-areas, CVA may result in different criteria and/or varying weights. In these cases, criteria need to be clustered into coherent themes at a higher abstraction level, before Multi Criteria Analysis can be applied. In any case, simple forms of Multi Criteria
Analysis are preferable. Applying a complicated Multi Criteria Analysis procedure suggests a level of quantitative precision that does not reflect the character of CVA, which is primarily a qualitative instrument.

The outcome of Phase 4 is the final (and full) CVA report in which the whole process is described, the outcomes of each phase are summarised, mitigation and compensation measures are specified, the impacts of alternatives are presented, and alternatives are compared.

Working with the outcomes of the various studies performed for EIA has revealed that there is considerable variation in the scales used to score impacts. This makes results hard to compare. Further, it is clear that in many EIA sub-reports, interpretations are often implicit. When justification is lacking, a secondary analysis of these data is difficult for the CVA practitioner. Another problem that hampers optimal use of the impact studies in the EIA process is the time frame in which the studies are conducted. Sometimes there is insufficient time for appropriate information exchange between impacts studies. Specific periods of information exchange between the CVA study and the expert studies should be planned.

2.5.3 **Follow-up Phase: integration of CVA output in an Environmental Impact Statement**

The results of a CVA need to be integrated into the Environmental Impact Statement. This is crucial for the potential role of CVA in decision-making. The more explicit and elaborate the CVA outcomes are presented in this final report, the greater the chance that they influence decision-making. Furthermore, the more explicitly they are presented, the more recognizable citizens’ value orientations will be to the citizens who read the report. This will potentially increase the legitimacy of the Environmental Impact Statement in their eyes (van Vliet, 1996). Preferably, a Most Citizen Friendly Alternative is presented to complement the Most Environmentally Friendly Alternative, which is compulsory in the Netherlands.
There are four ways in which CVA outcomes can be incorporated in the Environmental Impact Statement. Presenting the outcomes of a full CVA in an independent table gives the strongest statement of commitment that citizens’ values will be respected (see Table 2-1). This option emphasises the different nature of the information CVA presents, being based on a citizen’s perspective instead of an expert’s perspective.
Table 2-1: Hypothetical example of independent comparison of alternatives based on CVA

<table>
<thead>
<tr>
<th>EIA criteria:</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Most Environmentally Friendly Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ecology</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flora and vegetation</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Fauna</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Ecological infrastructure</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td><strong>Landscape</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spatial morphology</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Characteristic elements</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td><strong>Soil and Water</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water quality</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Ground water level</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Quality of ground water</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Historic items in the soil</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td><strong>Living environment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Vibrations</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Emissions</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total EIA score/ranking of alternatives</th>
<th>Overall EIA score</th>
<th>Overall EIA score</th>
<th>EIA Overall score</th>
<th>EIA Most Environmentally Friendly Alternative</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CVA criteria</th>
<th>Weights based on Citizen Values Profile</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Most Environmentally Friendly Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of the residential neighbourhood</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic safety Facilities</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Criminality</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td></td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td><strong>Recreation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cycling possibilities</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Accessibility of sites</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td><strong>Nature and landscape</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variety</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Peacefullness</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Number of species</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Scenic beauty</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total score/ranking of alternatives based on Citizen Values Profile</th>
<th>CVA score Alternative 1</th>
<th>CVA score Alternative 2</th>
<th>CVA MEFA score</th>
</tr>
</thead>
</table>

A second way of presenting CVA outcomes is as one separate indicator under the heading 'living environment' (see Table 2-2). This places them alongside the expert impact studies on other sub-components like noise nuisance and emissions. However, this option not only reduces the prominence of the CVA outcomes within the overall EIA, it fails to appreciate the distinct character of data provided by CVA. This option can also lead to confusion because some aspects, like landscape or recreation, may be presented twice in the final table (under technical sections as well as in the CVA).
Table 2-2: CVA outcomes are presented under the heading ‘living environment’

<table>
<thead>
<tr>
<th>Example of expert criteria:</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Most Environmentally Friendly Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ecology</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flora and vegetation</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Fauna</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Ecological infrastructure</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td><strong>Landscape</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spatial morphology</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Characteristic elements</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td><strong>Soil and Water</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water quality</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Ground water level</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Quality of ground water</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Historic items in the soil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Living environment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Vibrations</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Emissions</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Citizen Values</td>
<td>overall CVA score</td>
<td>overall CVA score</td>
<td>overall CVA score</td>
</tr>
<tr>
<td>Total score/ranking of alternatives from experts’ perspective</td>
<td>Overall score</td>
<td>EIA score</td>
<td>Overall score</td>
</tr>
</tbody>
</table>

Third, a Citizen Values Scenario can be developed. In this case, the outcomes of the CVA study are used as an input for a Multi Criteria Analysis applied to the main criteria in the overall assessment matrix (ecology, landscape, etc.). The Citizen Values Scenario can be compared with other scenarios, such as the Nature Scenario or the Economic Scenario. In each of the scenarios, different weights are allocated to the main criteria. For the CVA scenario, the Citizen Values Profile is used to assign weights to the main criteria. This can be done by matching the Citizen Values Profile with the expert assessment matrix (see Table 2-3). All variables in the expert assessment matrix that are not mentioned by
citizens are deleted. The weights for the remaining variables can be calculated by translating weights from the CVA into weights in the expert evaluation matrix. A ranking of alternatives can be constructed by means of Multi Criteria Analysis. The development of a Citizen Values Scenario may be used as the sole outcome of a CVA study, in which case Phase 4 of the CVA method can be omitted. However, this reduces the potential value of the data collected earlier.
### Table 2-3: Hypothetical example of a CVA scenario: matching experts and citizens’ assessment frameworks

<table>
<thead>
<tr>
<th>Selection of expert criteria</th>
<th>Weights translated from Citizen Values Profile</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Most Environmentally Friendly Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ecology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flora and vegetation</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Fauna</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Ecological infrastructure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Landscape</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spatial morphology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristic elements</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td><strong>Soil and Water</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water quality</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
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<tr>
<td>Ground water level</td>
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<td></td>
</tr>
<tr>
<td>Quality of ground water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Historic items in the soil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Living environment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td>Vibrations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emissions</td>
<td>weight</td>
<td>score</td>
<td>score</td>
<td>score</td>
</tr>
<tr>
<td><strong>Total score/ranking of alternatives in CVA scenario</strong></td>
<td>CVA-scenario score</td>
<td>CVA-scenario score</td>
<td>CVA-scenario score MEFA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alternative 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alternative 2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The final option, and weakest form of applying CVA, is to use the information from the Citizen Values Profile to comment on any list of impacts provided by other sources. For example, a CVA practitioner or Social Impact Assessment practitioner may be asked by an EIA team to comment on the impacts of alternatives. In such a case, information about the community could be used by the CVA practitioner to assign weights on behalf
of the community. This option is relatively cheap and can be undertaken in a shorter timeframe (because Phase 4 is not required), but it seriously reduces the potential of the method.
2.6 Concluding remarks

The practical implementation of an instrument like CVA in impact assessment requires a degree of standardisation. A Dutch version of the CVA Handbook has been published (Rijkswaterstaat, Civil Engineering Division, 2003). Apart from having guidelines and principles, the application of CVA also requires considerable flexibility: each project has its own size and characteristics, its location-specific impacts and location-specific issues. More than ecological, groundwater, technical, or landscape criteria, the criteria based on citizen values will vary depending on location-specific circumstances, user groups and interest groups. Furthermore, the size and scope of policy analysis, as well as the abstraction level and timeframe of policy analysis studies have consequences for the set-up of individual CVA studies.

The development of CVA was an iterative process of learning-by-doing which led to the four phases of the method as previously described. In this Chapter, the essential elements of the CVA instrument were presented and vital considerations and premises that guided the CVA development were explained.

The CVA instrument has been applied in about 20 projects (see Appendix I). The circumstances of these projects did not always permit the optimal application of the CVA instrument, at least in terms of its development. Often, financial resources were very limited, and as a result, the instrument could not be applied to full advantage. In some cases where the instrument could be fully applied, time schedules restricted adequate reflection of the different phases. Therefore, the more or less standard application of the instrument as described in this Chapter has only just begun.
CHAPTER 3  CITIZEN VALUES ASSESSMENT:
IMPACT ASSESSMENT METHODOLOGY

3.1  General characterisation of CVA

CVA is an impact assessment instrument. At the core of CVA are the potential impacts of an intended activity on the qualities of the living environment of those citizens who are potentially affected (positively or negatively) by a planned intervention, and that this must be described from the perspective of those people in any EIA or other policy analysis study. CVA is, therefore, primarily an instrument to incorporate, within an EIA, the importance people attach to particular environmental attributes. The term ‘citizen values’ is interpreted here to mean: the value judgements of individuals about the qualities of their living environment. The living environment comprises the area in which people live, work, play and travel through. ‘Citizens’ refers to all residents and other users of an area potentially affected by an intended activity. The word ‘citizen’ is chosen (instead of a word like ‘public’), because it reinforces the notion that the level of analysis is the individual, and it does not refer to citizenship or nationality. Citizen is preferred to ‘community’ because of a philosophical view that there are different groups within society, each with different values. There is not one community, but many communities.

![Fig.3-1: Example of differences between an Experts’ Assessment Framework and a Citizen Values Profile](image-url)
CVA does not evaluate opinions about proposed interventions (the extent of acceptance of, or resistance to), nor is it an instrument to investigate citizens’ preferences or opinions about alternative plans or projects and their perceived impacts. The method focuses on developing insight into the environmental values (positive and negative attributes) that are relevant to citizens and an assessment of impacts caused by the planned intervention, on those values. This means that CVA is designed to investigate which values are important and, consequently, which impacts are relevant to citizens. CVA is not designed to predict how citizens will respond to those impacts.

CVA is a structured study providing an overview of citizen values and how a project may affect those values. Public involvement, on the other hand, is a process intended to build legitimacy for a project and the assessment process by discussing alternatives directly with representatives of community groups and other interested or affected parties. By identifying the key values of the living environment rather than opinions about alternatives, CVA is not likely to be influenced by fears, public resistance, the positions of interest groups, or NIMBY (not in my backyard) responses. The systematic, neutral information generated by CVA can be used in public involvement processes.
3.2. Position of CVA in impact assessment

3.2.1. Relations between CVA and Social Impact Assessment

Social Impact Assessment and social impacts are respectively defined as:

Social Impact Assessment is 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 so as to bring about more sustainable and equitable biophysical and human environment (Vanclay, 2003a: 1; Vanclay 2003b: 6).

Social impacts can be defined as the consequences to human populations of any public or private actions that alter the way in which people live, work, play, relate to one another, organise to meet their needs and generally cope as members of society. The term also includes cultural impacts involving changes to norms, values and beliefs that guide and rationalise their cognition of themselves and their society (Interorganizational Committee for Principles and Guidelines for Social Impact Assessment, 2003: 231).

Although CVA does not cover all elements described in these definitions; it addresses a specific selection of social impacts and therefore, can be considered a type of Social Impact Assessment adjusted to EIA practice.

In SIA reports, there is a lack of adequate reporting of the methods and techniques used (Vanclay, 2003a). In fact, in the SIA discipline as a whole, very few techniques are specified, despite endorsement of a general procedures in the ‘Guidelines and Principles for Social Impact Assessment’ (Interorganizational Committee on Principles and Guidelines, 1994), the ‘Principles and Guidelines for Social Impact Assessment in the USA’ (Interorganizational Committee on Principles and Guidelines, 2003) and the ‘International Principles for Social Impact Assessment’ (Vanclay (2003b), and despite the outlines provided by Freudenburg (1986), Taylor et al. (1995), Burdge and Vanclay (1995), Burdge (1998) and Vanclay (1999).

The generally accepted view of how the SIA process should look like consists of the 11 steps presented in Figure 3-2. In this SIA process, CVA can be characterised as an instrument for Steps 3, 4 and 5 and it produces material to be used in Step 6 (see Fig. 3-2).
Many publications argue that SIA should be fully integrated in the planning and decision-making process, and not be limited to being merely a tool to predict the likely impacts of intended projects (see e.g. Craig, 1990; Dale and Lane, 1994, 1995; Burdge and Vanclay, 1995; ICGP, 1994; Taylor, et al., 1995; Vanclay, 1999, 2003b; Interorganizational Committee on Principles and Guidelines, 2003). It is repeatedly
argued that an SIA process should be an integral part of all four phases of project development: planning or policy development; construction/implementation; operation and maintenance; and decommissioning or abandonment.

Although this may be the ideal situation, impact assessment processes are often different in practice (Burdge and Vanclay, 1996; Barrow, 2000). This is certainly the case for EIA processes. Despite efforts of SIA professionals, practice shows that the integration of SIA in EIA, where it occurs at all, is used only for the assessment of social impacts, and the influence of SIA practitioners in terms of a larger agenda is as limited as the influence of any other EIA professional. Project planning and impact assessment are part of a decision-making arena managed by project managers (who are usually not social scientists but technical professionals), and influenced by politicians. As long as the integration of social impacts in EIA is not common practice, any SIA instrument that facilitates and stimulates an increase of social impact studies (Steps 3, 4, and 5 of the SIA process) in the EIA context, is a step forward. CVA is not full-blown SIA, but because it fits into the EIA process, it is likely to have more effect than other idealistic but not practiced forms of SIA.

Since the late 1970s, there has been discussion among SIA practitioners about the extent to which SIA approaches should be ‘technocratic’ (top-down, product oriented), or ‘participative’ (bottom-up, process oriented) (Burdge, 2003b). Building on this, Taylor et al. (1995) distinguish four approaches to SIA (see Fig. 3-3). In addition to technocratic and participatory approaches, they overlay academic research approaches and practical action-oriented approaches.
The advantages and disadvantages Taylor et al. (1995) describe of the four approaches can be summarised as follows. It is difficult for top-down oriented project proponents to take a positive view of bottom-up participatory processes that may end up significantly altering their programmes and challenging vested interests. Neither is it easy for social science professionals operating from a strong community development perspective to take a positive view of opportunities that top-down policies might provide. The action orientation of most research in the applied policy sphere implies that SIA is considered a means of collecting and using data for an immediate objective and not to produce results that are publishable in academic settings. Academic work is often seen as irrelevant to solving problems in the ‘real world’. In the academic setting, the emphasis is usually on the publication of results for the sake of theoretical and academic development. Taylor et al. (1995) argue that the middle-ground between the four orientations has proved to be the dynamic and creative setting for the development of pro-active, issues-oriented SIA approaches that have the best prospects. They observed that innovative theory and method within SIA have tended to originate from practitioners who have transcended the limitations of their orientation, often in conjunction with their shifts between work environments (Taylor et al., 1995). It is in this middle-ground that CVA can be positioned (see Fig. 3-4).
CVA is an SIA approach in the middle-ground between bottom-up, participatory SIA and top-down, technocratic SIA. It also lies between an academic research orientation and a pragmatic action orientation. Participatory SIA involves representatives of potentially (positively or negatively) affected population groups in the process of identification, measurement, evaluation and comparison of social impacts, whereas technocratic SIA relies on expert judgement only. In contrast, CVA combines a thorough consultation of potentially influenced citizens in the identification of the character and weights of potential impacts with professional (expert) measurement, evaluation and comparison of future impacts. While, the primary objectives of participatory SIA are capacity building and empowerment, the primary objective of technocratic SIA is to provide science-based, neutral overviews of potential impacts in combination with maintaining control. In contrast, the primary objective of CVA is to add neutral overviews of the potential impacts on the values relevant to citizens, to the technical overviews of potential impacts provided by relevant experts. In doing this, it ensures that a representative sample of all relevant citizens groups, including the ‘voiceless’, are consulted. Thus, on the one hand, CVA aims to overcome the potential disadvantages of participatory SIA, like excluding certain (groups of) citizens because of power inequalities in communities, or difficulties in reaching consensus. In this context, CVA can be considered a pragmatic type of advocacy.
research on behalf of citizens. On the other hand, a goal of CVA is to overcome some of the disadvantages of technocratic SIA, those of ignoring local knowledge and local needs.

3.2.2. Type of social impacts addressed by CVA

In existing SIA, social impacts refer to issues varying from quantifiable variables such as the number of newcomers (in-migrants), to qualitative indicators such as cultural impacts involving changes to people’s norms, values, beliefs and perceptions about the society in which they live (Branch et al., 1984; Gramling and Freudenburg, 1992; Interorganizational Committee on Principles and Guidelines, 1994; Taylor et al., 1995; Burdge, 1998; Vanclay, 2002; Interorganizational Committee on Principles and Guidelines, 2003). According to van Schooten et al. (2003), these various lists of social impacts contain social impacts as well details of the social processes causing those impacts. They developed a new, more comprehensive listing of social impacts consisting of seven categories:

1. health and social wellbeing;
2. quality of the living environment (liveability);
3. economic impacts and material wellbeing;
4. cultural impacts;
5. family and community impacts;
6. institutional, legal, political and equity impacts;
7. gender relations.

Social impacts cover a wide variety of issues which can be experienced at the individual level, at the level of family or household unit, by social organisations and institutions, or by communities and society as a whole (van Schooten et al., 2003). CVA does not provide an overview of the full range of possible social impacts of a given development. Neither is it designed to understand the reasons why or predict how people respond to possible changes in the living environment as a result of a proposed development. In van Schooten et al.’s scheme, CVA only applies to the social impacts associated with the category ‘quality of the living environment’. Within that category, CVA specifically applies to the perceived values related to the qualities of the living environment, such as perception of personal safety and fear of crime, as opposed to actual values, such as hazard exposure and crime rates (Vanclay, 2002).

CVA, therefore, is limited in that it does not systematically give attention to:
- the full range of potential social impacts;
- indirect effects, and the upstream and downstream effects;
impacts at meso and macro levels;
- impacts in the long term, the impacts of long-term developments, cumulative impacts, or the interests of future generations.

The specific (limited) focus of CVA is a logical implication of the fact that it was conceived within the EIA context. The primary goal of CVA is to make explicit the meaning of the living environment to citizens and how this may be influenced by a planned intervention. These types of impacts addressed by CVA are those which typically occur in relation to the type of (mostly spatial) interventions that require EIA. For a complete overview of relevant social impacts, an SIA study has to be conducted by an SIA expert. CVA can also be a valuable input in such an expert SIA study.

3.2.3 Relations between CVA and Environmental Impact Assessment

CVA does not only address social impacts. On the contrary, a major focus of CVA is on the functions of the biophysical environment and the way these may be affected by planned interventions. CVA identifies the (potential) changes in those functions of the biophysical environment that are relevant to (and thus, are highly valued by) citizens, and it judges and evaluates these potential changes from the perspective of citizens. As such, CVA is a type of EIA. It provides complementary information on environmental impacts in addition to expert judgements.

CVA can be considered a form of ‘function evaluation’ of nature. ‘Function evaluation’ of nature is a model for translating nature and natural resources into functions for human society (de Groot, 1992a; de Groot, 1992b). The starting point of this approach is that society utilises products and services that are provided by the biophysical environment. De Groot (1992a) concluded that the application of EIA is usually restricted to an assessment of the direct effects of a given project on the environmental characteristics of an area, without a proper analysis of the secondary effects on changes in environmental functions and hazards. He argued that impacts occur in three successive situations: first, changes in the environmental characteristics are caused by interactions between human activities and environmental functions; second, this causes changes in the environmental functions and/or risks provided by a given natural or semi-natural area or ecosystem; and third, this leads to socio-cultural and economic effects. Therefore, according to de Groot (1992a), EIA should be expanded to a complete overview of impacts including:
1. an assessment of direct effects of a given (planned) activity or intervention on the natural environment (i.e. physical, chemical and/or biological);

2. an evaluation of the (indirect) effects of the planned intervention on environmental functions and hazards (through changes in natural processes and components);

3. an analysis of the socio-cultural and economic effects caused by the changes in environmental functions and hazards.

Other authors, like Slootweg et al. (2001, 2003) and Vanclay (2002) argue that there is a fourth pathway to investigate impacts, namely the direct social impacts caused by an intervention. CVA addresses direct and indirect impacts of changes in the biophysical environment.

3.2.4 Type of environmental impacts addressed by CVA

Slootweg et al. (2001) developed a framework for structuring social and biophysical knowledge in impact assessment, based on the function evaluation model (de Groot, 1992b). This framework provides a suitable basis for analysing the type of impacts CVA addresses in EIA. It provides insight in the complex cause-effect relations between human society and the biophysical environment and the role of CVA (see Fig 3-5).
Interventions in the natural environment cause *biophysical changes*. These are subject to what can be called traditional EIA. The biophysical changes cause *biophysical impacts* on *functions* of the natural environment. The type of ecosystem or land-use type in which a biophysical change occurs, determines the type of impacts that will occur. These biophysical impacts, consequently, have impacts on the values of these functions for certain user groups. Thus, changes in the functions of nature will lead to changes in terms of the *values assigned* to nature. These impacts are indirect societal (human) impacts. In contrast, direct societal (human) impacts originate directly from interventions that cause social change processes (Slootweg et al., 2001) (see Fig. 3-5).

Slootweg et al. argued that physical and social *changes* are actual changes that can be objectively measured. Biophysical and societal *impacts*, on the other hand, are context dependent: the weights of these impacts depend on value orientations. Within this framework, CVA can be characterised as a type of function evaluation based on the value
orientations of citizens. CVA identifies (potential) changes in those functions of the biophysical environment that are relevant to (and thus, are highly valued by) citizens and it judges and evaluates these potential changes from the perspective of citizens.

### 3.2.5 Relations between CVA and public involvement

The increasing level of public involvement in EIA world-wide illustrates that increasing effort is being put into the inclusion of the norms, values and interests of interest groups and the public at large in planning and policy development (Roberts, 1995). In the history of public involvement, three models for public involvement can be distinguished. The first model of 'dealing with the public' includes presentations to explain why decisions are made or have to be made; with governmental attitudes approximating what is known as 'DAD' (decide, announce, and defend). The second model is known as the traditional consultative model (Roberts 2003) and includes education, information sharing and negotiation. Interest groups and individual stakeholders are given the opportunity (with or without facilitation by the government) to respond to the information presented by the project initiator. However, no general rules exist (and often no commitments are made) about what should be done with the feedback that is received. The third model, Participatory Engagement, allows for responsible involvement in decision-making. Representatives of stakeholder groups are able to influence, share and/or control the decision-making process (Roberts, 2003). In these participatory procedures, representatives of the public are invited to contribute to discussions on issues like: alternative solutions; what needs to be studied and how; and the development of evaluation criteria. The basic difference between the participatory and the consultative models are: 1) participation starts before decision-making instead of after; 2) it challenges the right of the elected officials to be the sole decision-maker; 3) the participatory model presumes that it is possible for stakeholders to not focus solely on their own interests but to accept responsibility to make the wisest decision in the interest of all stakeholders; 4) less educated groups can participate in a collaborative decision that involves scientific and technical considerations by facilitation and capacity building (Susskind, 2001).
3.2.6 Limitations of public consultation

In EIA, public consultation (the second model) has many limitations and disadvantages. In many cases, large groups of citizens are not knowledgeable about EIA, its role in decision-making, the accessibility of EIS documents, or their right to comment on them. Communication in early stages of EIA is often limited; one needs to be able to find the necessary information independently. Furthermore, the character and amount of information is a complicating factor: EISs are generally very difficult to read. One needs to be able to read and analyse relevant documents, and to respond in a way that is acceptable to the formal process. Issues raised by individual citizens often are related to their personal local situation, have no scientific legitimacy, and are often considered inadequate and, therefore, ignored by EIA professionals. A consequence is that professional interest organisations, such as environmental organisations, dominate public consultation procedures. They have the expertise and resources to be able to engage themselves in EIA related discussions. EIA procedures, therefore, are often criticised for being too much an instrument for professionals and not accessible to the average citizen.

Public consultation in EIA provides citizens with an opportunity to respond to plans, but does not guarantee citizens the right to participate in their development. Subsequently, public involvement does not guarantee influence on the selection of alternatives, the definition of study areas, the implementation of impact studies and design processes. As a result, alternatives or types of impacts may be overlooked or actively excluded by the project initiator. Only in very few cases does public consultation lead to additional investigations. Thus, despite public consultation, citizens’ influence on the content of EIA processes is limited. Moreover, formal response to public comment is often defensive and projects continue unabated. The fact that individual citizens’ input is often ignored leads to frustration by the public. Analyses of public consultation procedures in The Netherlands have shown that citizens consider EISs to be incomplete and unreliable, and that they feel that their input is not taken seriously (Rodenhuis, 2001; Suvaal, 1995; Eekman, 1990). Local communities often feel that EIA does not reflect their perspectives adequately: the issues relevant to them are often not investigated in the EIA studies in an unequivocal and complete way (De Vlieger, 1996).

Although EIA has been designed to incorporate environmental arguments into public decision-making and not to defend the interests of individual citizens, EIA is being
presented to the public as a procedure enabling individual citizens to influence fact-finding processes. The limited opportunities citizens have to actually influence EIA processes is one of the reasons why EIA is often considered as being done only to provide a justification for an intended project.

The limitations of public consulting procedures led to the development of various participatory approaches and collaborative decision-making procedures within EIA all over the world. Advisory groups and steering committees representing interest groups have become more common since the 1990s, but they are not at all commonly applied. Furthermore, none of these methods have reached a formal status. Their application can be very successful (Glasbergen, 2005), but they are dependent on project proponents’ initiatives.
3.2.7 Limitations of participatory approaches

Although the introduction of participatory approaches is a step forward in EIA practice, even the most sophisticated methods can have limitations. First, participatory approaches do not necessarily systematically represent the community: they are not designed to obtain a systematic representative overview of what the environment means to all potentially affected citizens (Burdge and Vanclay 1995; Vanclay 1999; Schiet and Mazor, 2002; Stolp, 2003). Evaluations of public consultation procedures in The Netherlands show that those citizens who are involved are not representative of the affected population (Rodenhuis, 2001; Gelissen and van Dijk, 2001; Woltjer and van de Peppel, 2001; Coenen and Woltjer, 2001). They are often older, higher educated males with plenty of spare time (Rodenhuis, 2001). An exploratory investigation amongst relevant actors on the opportunities and constraints of sharing responsibility in policy making in The Netherlands revealed that, although interest organisations consider themselves to be the appropriate actors in public debates, individual citizens often do not feel represented, in the right way or at the right time, by these organisations (Advisory Council for Traffic and Water Management, 2001). This is partly caused by the fact that many interest organisations have unilateral perspectives, or are single-issue organisations.

Second, individuals involved in participation processes are often higher educated, better informed and have a higher level of interest in the project, and as such these processes can be called ‘elite participation’ or ‘selective participation’. Participation generally requires a certain knowledge level and bureaucratic competency. The highly abstract language of government officials and experts does not match the concrete, specific language of most ordinary people. Moreover, compared to professionals and politicians, individual citizens have limited time and resources to invest.

Third, participatory processes are usually designed to identify and develop broadly supported solutions. These procedures, no matter how carefully designed and conducted, and no matter how satisfactory they are to those involved, cannot prevent a project from having some, or sometimes major environmental and social impacts. This is the dilemma between the collective (national, regional) and the individual (local) interest. Therefore, it is important to investigate these impacts. Participatory approaches are not designed to do this. To achieve a systematic evaluation of impacts on the perceived qualities of the
living environment, a structured study on the functions and characteristics of the local living environment, and what they actually mean to people, is required. This requires SIA instruments adjusted to EIA practice, such as CVA.
3.3 CVA: a different approach of impact assessment

The consideration of citizens’ value judgements is not routinely undertaken in EIA, and even in SIA these citizens’ values are often neglected. Both EIA and SIA for policy development tend to remain technocratic in orientation avoiding any detailed consideration of the ways people are affected (Gagnon et al., 1993; Dale and Lane, 1994, 1995; Burningham, 1995; Ortolano and Shepherd, 1995). Despite awareness within Social Impact Assessment (SIA) of differences in perceptions between social groups, and between experts and the influenced communities, the SIA literature has very little specification of the actual methods used to determine citizen values. As such, CVA is an innovative impact assessment instrument that (potentially) fills a gap in EIA as well as in SIA processes.

CVA provides complementary information, additional to expert judgements, providing systematic and representative insight into the values, criteria and impacts from a citizen’s perspective. The outcome of CVA is a professional assessment of actual impacts that may affect the perceived qualities (environmental attributes and sources of annoyance) of the living environment.

CVA is an SIA instrument because it is an impact study from the perspective of citizens and it focuses on a specific category of social impacts. At the same time, CVA is an EIA instrument because it addresses certain functions of the biophysical environment and the way these may be affected by planned interventions; and because its purpose is to incorporate social considerations within EIA. As such, CVA can be considered an instrument that links SIA to EIA (see Fig. 3-6).
3.4 Concluding remarks

By the type of impacts investigated in CVA, and by its focus on the impact assessment phases of the overall SIA process only, CVA can be considered to be more an EIA instrument than an SIA instrument. However, because its potential applications cover a wider range of policy analysis approaches than just EIA, CVA might better be referred to as an instrument for Impact Assessment from citizens’ perspectives.

CVA is a type of advocacy research that is adapted to the pragmatic reality of EIA-supported, top-down planning. It follows EIA methodology, including: scoping; profiling; describing the existing situation; identifying potential impacts; selecting variables to measure impacts; and assessing and comparing alternatives. The different impact studies conducted for an EIA describe environmental impacts from the perspective of the different functions of the biophysical environment. CVA facilitates identification of potential corresponding impacts from the perspective of users of the biophysical environment. It thus provides additional information about the relevancy of changes in the biophysical environment from the perspectives of citizens.
CHAPTER 4
CASE STUDY 1: APPLICATION OF THE CVA INSTRUMENT

4.1. Case study: CVA in a highway project

In this Chapter, a CVA study that was part of an EIA on a highway project near the city of Rotterdam is described and evaluated. The aims of this case study are twofold. First, this case study is presented to illustrate how the CVA instrument was applied in practice, what the results were, and how the output was used in the overall comparison of project alternatives in the Environmental Impact Statement. Second, this particular case is presented to illustrate the learning-by-doing development process of CVA. This CVA study was the first complete CVA study, being conducted in the period from 1997 to 1999. The practical problems encountered in this early CVA case were instructive and, as such, they significantly contributed to the further development of CVA. Therefore, the case study presented here is an important learning example.

The CVA study was conducted in a ‘stand-alone’ mode, which means that it was carried out independently of the EIA process. Exchange of information between the CVA and EIA was channelled through a steering committee appointed by the project initiator and chaired by the EIA project manager. The CVA project team reported their results to this steering committee and they had no further involvement in the integration of the CVA output in the Environmental Impact Statement.
4.2 Description of the highway project

The Highways A20, A13 and A16 are an important part of the main infrastructure network in the Netherlands, specifically linking Rotterdam City and its harbour (arguably the world’s largest port) with Amsterdam airport Schiphol (a major airfreight centre) and other major Dutch cities, Amsterdam, The Hague, Utrecht, and ultimately Germany, Belgium, France and England. A bottleneck occurs with north-south traffic travelling along the A16 and A13 being forced to traverse a seven kilometre section of the A20 between the highway junctions "Terbregseplein" and "Kleinpolderplein" in the Northern part of Rotterdam (a city of some 600,000 inhabitants) (see Fig. 4-1). Here, the congestion chance (that is, the probability of being in a traffic jam on a specific highway section over a 24-hour period) was above 20 percent in 1995, much higher than the accepted national standards (at that time) of 2 percent for international access highways (A20 and A16) and 5 percent for other national highways (A13). It was considered that, if no action was taken, the congestion chance would increase to over 35 percent by 2010 (Rijkswaterstaat, 1999).

Fig. 4-1 Highway network around Rotterdam
The consequences of this increasing congestion included declining accessibility and longer journey times, as well as severe negative effects on residential areas, particularly declining quality of the adjacent living environment. With only small distances between the roadway and buildings, noise nuisance and air pollution were considerable. Furthermore, there was concern about the extent of a ‘barrier effect’ caused by the Highways A20 and particularly A13, which traverse residential areas. Traffic jams not only occur on the highways, but also on the feeder roads. This leads to increased traffic flows through residential areas caused by local traffic attempting to avoid traffic jams. Cars often pass through residential areas at high speed, which causes additional nuisance and risks. An English translation of the Dutch word for this phenomenon, *sluipverkeer*, is ‘sneaky traffic’.

A steering committee comprising representatives of Rijkswaterstaat, the Rotterdam City Council, the Greater Rotterdam Regional Council, and the Province of South Holland, identified three main alternatives for addressing the problems:

**Alternative 1**: reconstruction and upgrading of the existing highways (see Fig 4-2);

**Alternative 2**: reconstruction and upgrading of the existing highways and construction of a connecting roadway linking the A16 and A13 (see Fig 4-3);

**Alternative 3**: the construction of an alternative route by means of a new Highway A16/13, being a deviation between the A16 and A13 and bypassing the city area, north of Rotterdam airport “Zestienhoven” (see Fig 4-4).

The EIA procedure started in 1996, in which CVA was an integral part. The Environmental Impact Statement was completed in 1999. For each of the three major alternatives, there were a number of possible technical options related to the number and length of tunnels, the number of traffic lanes, precise siting, layout and integration with existing (local or feeder) road networks. To simplify the analysis, the EIA was based on a consideration of two ‘packages of options’ for each of the three major alternatives. Thus, there were six variants in total to be considered. The packages of options represented contrasts, or minimal and maximal options, for the problem solving capacity of each of the alternatives in relation to traffic flow and environmental considerations. In the following overview, essential characteristics of the alternatives and variants are summarised.
Figure 4-2 Alternative 1: improvement of existing Highway A20

Figure 4-3 Alternative 2: upgrade of existing highway plus construction of a connecting roadway
Figure 4-4: Alternative 3: Construction of new Highway A16/13 (Bypass)
**Alternative 1: reconstruction and upgrade of existing Highway A20** (see Fig. 4-2)

- **Minimum variant:** mitigation measures such as sound barriers on Highway A13 (at Location 1)

- **Maximum variant:** tunnel for Highway A13 (at Location 1); improvements in highway intersections, junctions and connections (Locations 2 and 3); and improving access under the highway (Location 4).

**Alternative 2: reconstruction and upgrade of existing Highway A20 plus the construction of a connecting road linking Highway 16 with Highway A13** (see Fig. 4-3)

- **Minimum variant:** mitigation measures Highway A13 (Location 1); reconstruction of existing roads to create a route linking Highway A16 with A13 which will have 2 x 1 lanes including a tunnel under a recreational area, (Locations 5 and 6).

- **Maximum variant:** tunnel for Highway A13 (Location 1); improvements in highway intersections, junctions and connections (Locations 2, 3, and 4); the redeveloped road connecting Highway A16 with A13 with 2 x 2 lanes and improved feed into Highway A16 (Locations 5 and 6); regional motorway at surface level (rather than a tunnel) but will be located further away from residential areas.

**Alternative 3: Construction of new Highway A16/13; a bypass connecting A16 with A13**

- **Minimum variant:** Highway A16/13 at surface level with a wide bow (Location 1A); crosses over existing railway (Location 2); connection with Highway A13 in large bow (3); mitigation measures A13 (2 x 3 lanes) (4); and improved spaces and tunnels underneath Highway A20 (7 and 8).

- **Maximum variant:** Highway A16/13 partly in tunnel (1B); crosses underneath existing railway; connection with Highway 13 in small bow (requiring less space) (3); mitigation measures A13 (2 x 2 lanes) (4); and improved Highway 20 for internal safety and traffic flow (7 and 8).
4.3 The CVA study

4.3.1 Basic Groundwork

In Phase 1 of the CVA study three sub-areas were identified, related to the alternatives and to the functions of these areas for citizens (see Fig. 4-5).

Area 1 consisted of the northern residential area of Rotterdam and a rural area, north of Highway A20, as well as a small industrial area to the west of Highway A16. The area directly adjacent to the A20 and A16 is a small strip of commercial properties. Behind that residential and recreational areas are located. Special characteristics of Area 1 are wealthy neighbourhoods in a semi-rural setting, recreational areas (forest, golf course, artificial ski hill, cycling, sailing, horse riding and so on), and rural areas.

Area 2 is a smaller, but in part densely populated area to the north of Highway A20, and straddling both sides of Highway A13. In the north part of Area 2, an industrial estate and Rotterdam airport are located.

Area 3 is a densely populated residential area situated directly to the south of the A20. Away from the A20, the area is less densely populated with an important inner city recreational area.
The reconstruction and upgrade of the existing highway would have impacts on Area 2 (to the north-west of the A20) and Area 3 (to the South-East). The construction of the bypass (either as Highway or as linking regional road) would have major impacts on the Northern residential area of Rotterdam and the rural area outside Rotterdam (Area 1).

In addition to the identification of sub-areas, different user groups were identified in Phase 1 of the CVA study on the basis of the functions and characteristics of the study area and the alternatives.

Four different user groups were identified: residents; holiday-makers and day-trippers; farmers; and nature-lovers.

### 4.3.2 Identification of key values

Fifty in-depth interviews were conducted with representatives across the four user groups. A wide range of issues was mentioned as being important, and which could be grouped under three headings: the quality of neighbourhoods; traffic nuisance; and
recreation. There were only few differences regarding the key values between the three areas of the study.

As expected, traffic nuisance was a major issue. However, despite the fact that all respondents lived near a highway, in all three sub-areas positive issues were more emphasised than sources of annoyance such as noise and traffic exhaust. Traffic nuisance appeared to be mainly related to traffic jams, exhaust gasses and sneaky traffic through their neighbourhood, and less related to noise. One respondent said: “in the morning I wake up with exhaust gases up my nose”. In Area 1, respondents frequently mentioned sneaky traffic, while in Area 2 traffic jams on Highway A13 were the major issue.

In contrast to expectations about the perceived quality of the residential living environment, most respondents were very positive about their neighbourhoods. Frequently mentioned comments related to the tranquillity of neighbourhoods, green spaces in the neighbourhood, recreation facilities, and accessibility to the city centre of Rotterdam. For example, one respondent from Area 1 said “this area has great recreation possibilities, just because of that I would never want to leave”. The proximity of green, natural areas was generally valued highly.

The key values of nature lovers, holiday makers and day-trippers appeared to be largely similar and could be summarised into nine recreational key values. These nine key values overlapped with the recreational key values mentioned by residents. For visitors to recreational areas and for residents, the presence of relatively large natural, green areas without the presence of roads (traffic nuisance) with a relatively large diversity in species of plants and animals (for urban areas), were highly valued. Key values mentioned by farmers in the rural areas to the north of Rotterdam appeared to be quite similar to those of other residents.

An unexpected outcome was that, in contradiction to the expectations of the EIA team, there was no suggestion that the highways were regarded as barriers which were dividing communities. The crossings underneath the highway were considered by the EIA project team to be so small, that they were referred to as “mouse-holes”. Instead, the opposite was emphasised with citizens living North from Highway A20 highlighting the accessibility of the centre of Rotterdam. To the East and West of Highway A13, residential areas had
developed independently over the years, each having a good level of facilities according to respondents. Residents had become used to the limited number of crossing-points because of the long time the highways had existed.

From the outcomes of Phase 2, two preliminary Citizen Values Profiles (listings of most important key values) could be derived; one for residents and one for visitors to the recreational areas (see Table 4-1).

Table 4-1A: Outcome of Phase 2: preliminary Citizen Values Profile for residents

<table>
<thead>
<tr>
<th>Quality of the neighbourhood</th>
<th>Traffic nuisance</th>
<th>Recreation</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Quiet living environment</td>
<td>* Traffic jams on local roads connecting with the highway</td>
<td>* Presence of recreational sites with a quiet atmosphere</td>
</tr>
<tr>
<td>* Level of facilities</td>
<td>* View of/over highway</td>
<td>* Cycling possibilities</td>
</tr>
<tr>
<td>* Accessibility of the city centre</td>
<td>* Sneaky traffic in the neighbourhood</td>
<td>* Variety in recreational possibilities</td>
</tr>
<tr>
<td>* Rural character of the living environment</td>
<td>* Traffic jams on highways</td>
<td>* Accessibility of recreational sites</td>
</tr>
<tr>
<td></td>
<td>* Noise nuisance of highways</td>
<td>* Diversity in species of plants and animals</td>
</tr>
<tr>
<td></td>
<td>* Noise nuisance of airplanes</td>
<td>* Presence of relatively large natural, green areas without roads</td>
</tr>
<tr>
<td></td>
<td>* Noise nuisance of local roads</td>
<td>* Accessibility of water sports areas by boat</td>
</tr>
<tr>
<td></td>
<td>* Noise nuisance of trains</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Traffic exhaust</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Airplanes exhaust</td>
<td></td>
</tr>
</tbody>
</table>

Table 4-1B: Outcome of Phase 2: preliminary Citizen Values Profile for visitors to recreational areas

<table>
<thead>
<tr>
<th>Recreational facilities</th>
<th>Nature</th>
<th>Traffic nuisance</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Presence of recreational sites with a quiet atmosphere</td>
<td>* Diversity in species of plants and animals</td>
<td>* View of/over highway</td>
</tr>
<tr>
<td>* Accessibility of recreational sites</td>
<td>* Presence of relatively large natural, green areas without roads</td>
<td>* Traffic exhaust</td>
</tr>
<tr>
<td>* Cycling possibilities</td>
<td>* Presence of relatively large natural, green areas without roads</td>
<td>* Noise nuisance of highways</td>
</tr>
<tr>
<td>* Variety in recreational possibilities</td>
<td>* Presence of relatively large natural, green areas without roads</td>
<td>* Noise nuisance of airplanes</td>
</tr>
<tr>
<td>* Presence of specific recreational facilities</td>
<td></td>
<td>* Noise nuisance of local roads</td>
</tr>
</tbody>
</table>
4.3.3 Validation of the key values

Because the key values of residents were largely similar across the three areas, it was decided to construct one questionnaire for all residents. A separate questionnaire was constructed for visitors to recreational areas. A mail survey was sent to a random sample of 3,800 households. This number was determined by estimation of projected response rates and the need for statistical significance. Address lists were provided by the local governments. The mail survey contained a reply-paid envelope and instructions for completion of the survey, including which individual in the household should respond (to control for age and gender effects). With 1,085 usable responses, the response rate was approximately 30 percent. Additionally, 139 visitors were interviewed across a number of different recreation areas.

The respondents were asked to judge each of the key values as being: very important, somewhat important, or unimportant. A key value was considered relevant if more than 50 percent of the respondents considered it to be somewhat important or very important. The results of the survey confirmed that the key values in the preliminary profile were comprehensive and that each of them was considered relevant. In Table 4-2, the relevance of key values is presented. Only a few respondents mentioned other values. None of these additional items, for example having good neighbours or the presence of dog droppings, were relevant to the project.

Table 4-2: Relevance of the key values

<table>
<thead>
<tr>
<th>Key values</th>
<th>Percentage of visitors that considered the item somewhat or very important - n=139</th>
<th>Percentage of residents that considered the item somewhat or very important - n=1085</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiet living environment</td>
<td>-</td>
<td>98</td>
</tr>
<tr>
<td>Presence of facilities in the neighbourhood</td>
<td>-</td>
<td>97</td>
</tr>
<tr>
<td>Presence of recreational sites with a quiet atmosphere</td>
<td>96</td>
<td>94</td>
</tr>
<tr>
<td>Accessibility of the city centre of Rotterdam</td>
<td>-</td>
<td>93</td>
</tr>
<tr>
<td>Intensity of traffic on local roads connecting with the highway</td>
<td>-</td>
<td>92</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>Traffic exhaust</td>
<td>60</td>
<td>91</td>
</tr>
<tr>
<td>Cycling possibilities</td>
<td>81</td>
<td>91</td>
</tr>
<tr>
<td>Diversity of recreational possibilities</td>
<td>68</td>
<td>91</td>
</tr>
<tr>
<td>Accessibility of recreational sites</td>
<td>96</td>
<td>90</td>
</tr>
<tr>
<td>Presence of different species of plants and animals</td>
<td>91</td>
<td>89</td>
</tr>
<tr>
<td>Presence of relatively large nature area without roads</td>
<td>94</td>
<td>89</td>
</tr>
<tr>
<td>View of/over highway</td>
<td>51</td>
<td>87</td>
</tr>
<tr>
<td>Traffic nuisance in residential areas</td>
<td>48</td>
<td>86</td>
</tr>
<tr>
<td>Rural character of the living environment</td>
<td>-</td>
<td>85</td>
</tr>
<tr>
<td>Sneaky traffic in the neighbourhood</td>
<td>-</td>
<td>85</td>
</tr>
<tr>
<td>Traffic jams on highways</td>
<td>-</td>
<td>83</td>
</tr>
<tr>
<td>Noise nuisance of highways</td>
<td>54</td>
<td>80</td>
</tr>
<tr>
<td>Noise nuisance of airplanes</td>
<td>50</td>
<td>76</td>
</tr>
<tr>
<td>Airplanes exhaust</td>
<td>-</td>
<td>76</td>
</tr>
<tr>
<td>Noise nuisance of trains</td>
<td>-</td>
<td>60</td>
</tr>
<tr>
<td>Accessibility of water sports areas by boat</td>
<td>38</td>
<td>50</td>
</tr>
</tbody>
</table>

Note: (- means: not applicable for this category of citizens).

After this validation of the key values, respondents’ judgements of the present situation were measured by presenting statements which they could score on a five-point scale: totally agree; agree; neutral; disagree; or totally disagree. The percentage of respondents who scored ‘agree’ or ‘totally agree’ was used to measure the present situation.

The outcomes of this part of the survey confirmed the outcomes of the in-depth interviews. In Area 1, residents appeared to be quite satisfied with the quality of their neighbourhoods; they considered their neighbourhood to be a quiet living environment (77 percent), as having a good level of facilities (88 percent), reasonable accessibility to the city centre (82 percent), adequate presence of recreational sites with a quiet atmosphere (88 percent) and with good cycling possibilities (82 percent). The present natural environment was judged less positive: 54 percent of the residents judged positive the variety of animals and plants, and only 38 percent judged positive the presence of large nature areas without roads.
In Area 2/3, residents were also quite satisfied with the quality of their neighbourhood. They particularly appreciated the accessibility of the city centre (85 percent) and the level of facilities (78 percent). Traffic nuisance was mentioned by 62 percent of the respondents; noise nuisance by traffic was mentioned by 53 percent, and traffic exhaust by 56 percent. Nevertheless, 59 percent of the residents judged their neighbourhood as being a quiet living environment!

4.3.4 The relative importance of the key values

In order to identify the relative importance or weights of the key values, respondents were asked to rank the five most important key values from one (most important) to five (least important of the 5 most important). In Tables 4-3 and 4-4, the scores (percentage of respondents who put this key value in the top 5) are presented for residents and visitors to recreational areas.

Two sub-profiles were constructed: one for the areas surrounding (and potentially affected by reconstruction of) Highway A20 (Area 2/3), and one for the area surrounding (and potentially affected by) the proposed bypass Highway 16/13 (Area 1). Table 4.3 presents the two sub-profiles.
Table 4-3: Relative importance of residents’ key values

(Percentages of residents who put this key value in the top 5)

<table>
<thead>
<tr>
<th>Key values</th>
<th>Area 1 percentage</th>
<th>Area 1 ranking</th>
<th>Area 2/3 percentage</th>
<th>Area 2/3 ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiet living environment</td>
<td>73</td>
<td>1</td>
<td>65</td>
<td>1</td>
</tr>
<tr>
<td>Presence of facilities in the neighbourhood</td>
<td>52</td>
<td>2</td>
<td>54</td>
<td>2</td>
</tr>
<tr>
<td>Accessibility of the city centre of Rotterdam</td>
<td>40</td>
<td>3</td>
<td>47</td>
<td>3</td>
</tr>
<tr>
<td>Cycling possibilities</td>
<td>30</td>
<td>4</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>Traffic exhaust</td>
<td>28</td>
<td>5</td>
<td>32</td>
<td>5</td>
</tr>
<tr>
<td>Noise nuisance of airplanes</td>
<td>29</td>
<td>6</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>Noise nuisance of highways</td>
<td>29</td>
<td>7</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td>Presence of recreational sites with a quiet atmosphere</td>
<td>25</td>
<td>8</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Noise nuisance of local traffic</td>
<td>23</td>
<td>9</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>Noise nuisance of local roads</td>
<td>21</td>
<td>10</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>Rural character of the living environment</td>
<td>18</td>
<td>11</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Diversity of recreational possibilities</td>
<td>18</td>
<td>12</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Presence of relatively large nature area without roads</td>
<td>18</td>
<td>13</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>Traffic jams on highways</td>
<td>15</td>
<td>14</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Sneaky traffic in the neighbourhood</td>
<td>14</td>
<td>15</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>Accessibility of recreational sites</td>
<td>12</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Presence of different species of plants and animals</td>
<td>11</td>
<td>17</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Noise nuisance of airplanes</td>
<td>10</td>
<td>18</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Noise nuisance of trains</td>
<td>6</td>
<td>19</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Accessibility of water sports areas by boat</td>
<td>3</td>
<td>20</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>View of/over highway</td>
<td>2</td>
<td>21</td>
<td>3</td>
<td>21</td>
</tr>
</tbody>
</table>

The recreational values mentioned by residents on the one hand, and day-trippers and holiday makers on the other, largely overlapped. In Table 4-4 the recreational Citizen Values Profile is presented.
### Table 4-4 Relative importance of key values mentioned by holiday makers and day trippers

| Presence of recreational sites with a quiet atmosphere | 78 | 1 |
| Presence of different species of plants and animals | 64 | 2 |
| Accessibility of recreational sites | 56 | 3 |
| Presence of relatively large nature area without roads | 51 | 4 |
| Cycling possibilities | 39 | 5 |
| Traffic exhaust | 36 | 6 |
| Noise from highways and other motorways | 30 | 7 |
| Recreational facilities | 30 | 8 |
| Noise nuisance of airplanes | 29 | 9 |
| Diversity of recreational possibilities | 22 | 10 |
| View of/on highways | 22 | 11 |
| Accessibility of water sports areas by boat | 11 | 12 |

#### 4.3.5 Constructing the Citizen Values Profile

The construction of one overall Citizen Values Profile required an integration of the relative importance of recreational and residents’ key values. This was complicated because visitors to recreational areas had only been interviewed about recreational values, while residents were interviewed about the quality of their living environment (including recreational values). Therefore, the key values mentioned by residents overlapped only partly with the key values mentioned by visitors to recreational areas. Furthermore, the relative importance of key values differed between the different groups.

The need to combine these different rankings of recreational and residential key values raised the question whether some sort of weighting should be used. It was generally agreed by the CVA practitioners that residents’ key values should have higher weights than the key values mentioned by visitors to recreational areas, because the former
concern places of living and thus have a more substantial, potentially robust character. Holiday makers, nature lovers and day trippers are temporary visitors and have choices in visiting different places.

The relative weights of the different key values were based on the relative importance of recreational values in the three areas (based on the average number of recreational values put in the top 5). This resulted in the weights presented in Table 4-5.

Table 4-5: attribution of weights

<table>
<thead>
<tr>
<th></th>
<th>Residents</th>
<th>Visitors to recreational areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area 1</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>Area 2</td>
<td>80%</td>
<td>20%</td>
</tr>
<tr>
<td>Area 3</td>
<td>75%</td>
<td>25%</td>
</tr>
</tbody>
</table>

These weights were used to synthesise the top five recreational key values for Area 1 and for Area 2/3. The top five for Area 1 are given below. The number in brackets represents the percentage of respondents who gave this item in their original top five.

1. presence of recreational sites with a quiet atmosphere (37%)
2. diversity in species of plants and animals (28 %)
3. presence of large, natural, green areas without roads (28 %)
4. cycling possibilities (25 %)
5. noise nuisance of highways (25 %)

For Area 2/3, the top five recreational values were:

1. traffic exhaust (37 %)
2. presence of recreational sites with a quiet atmosphere (30 %)
3. noise nuisance of highways (25 %)
4. diversity in species of plants and animals (24 %)
5. cycling possibilities (23 %)
The integration of residential key values and key values mentioned by visitors to recreational areas resulted in an overall Citizen Values Profile. Key values that could not possibly discriminate between alternatives and were not relevant to this project – including comments about airplane noise, train noise at night, neighbourly relations, and crime – were deleted. The remaining 18 key values were included in the Citizen Values Profile.

Table 4-6: Final Citizen Values Profile Area 1 (with integration of relative importance of key values mentioned by visitors to recreational areas)

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Key values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Most significant residential key values (residents only)</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Quiet living environment</td>
</tr>
<tr>
<td>2</td>
<td>Presence of facilities in the neighbourhood</td>
</tr>
<tr>
<td>3</td>
<td>Accessibility of the city centre of Rotterdam</td>
</tr>
<tr>
<td><strong>Top 5 recreational key values (all respondents)</strong></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Presence of recreational sites with a quiet atmosphere</td>
</tr>
<tr>
<td>5</td>
<td>Diversity in species of plants and animals</td>
</tr>
<tr>
<td>6</td>
<td>Presence of relatively large natural areas without roads</td>
</tr>
<tr>
<td>7</td>
<td>Cycling possibilities</td>
</tr>
<tr>
<td>8</td>
<td>Noise nuisance of traffic</td>
</tr>
<tr>
<td><strong>Remaining key values</strong></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Accessibility of recreational sites</td>
</tr>
<tr>
<td>10</td>
<td>Traffic exhaust</td>
</tr>
<tr>
<td>11</td>
<td>Traffic nuisance in residential areas</td>
</tr>
<tr>
<td>12</td>
<td>Diversity of recreational possibilities</td>
</tr>
<tr>
<td>13</td>
<td>Rural character of the living environment</td>
</tr>
<tr>
<td>14</td>
<td>Traffic jams on highways</td>
</tr>
<tr>
<td>15</td>
<td>Noise nuisance of highways</td>
</tr>
<tr>
<td>16</td>
<td>Sneaky traffic in the neighbourhood</td>
</tr>
<tr>
<td>17</td>
<td>View of/over highway</td>
</tr>
<tr>
<td>18</td>
<td>Accessibility of recreational areas by boat</td>
</tr>
</tbody>
</table>
The results for Area 1 showed that the two most significant residential key values were ‘a quiet living environment’ (73 %) and ‘the presence of facilities in the neighbourhood’ (52 %). Except for the key value ‘accessibility of the city centre of Rotterdam’ (40 %), all other key values related to the residential living environment scored lower than 20 percent (see Table 4-3). The most important recreational key value was the ‘presence of recreational sites with a quiet atmosphere’ (37 %). Other important recreational key values were: ‘presence of different species of plants and animals’ (28 %); ‘presence of large natural areas without roads’ (25 %); ‘cycling possibilities’ (25 %) and ‘noise nuisance’ (25 %).
Table 4-7: Final Citizen Values Profile Area 2/3 (with integration of relative importance of key values mentioned by holiday makers and day trippers)

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Key values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Most significant residential key values</strong></td>
</tr>
<tr>
<td>1</td>
<td>Quiet living environment</td>
</tr>
<tr>
<td>2</td>
<td>Quality and level of in the neighbourhood</td>
</tr>
<tr>
<td>3</td>
<td>Traffic exhaust</td>
</tr>
<tr>
<td>4</td>
<td>Accessibility of the city centre of Rotterdam</td>
</tr>
<tr>
<td></td>
<td><strong>Top 5 of recreational key values</strong></td>
</tr>
<tr>
<td>5</td>
<td>Presence of recreational sites with a quiet atmosphere</td>
</tr>
<tr>
<td>6</td>
<td>Noise nuisance of highways</td>
</tr>
<tr>
<td>7</td>
<td>Diversity in species of plants and animals</td>
</tr>
<tr>
<td>8</td>
<td>Cycling possibilities</td>
</tr>
<tr>
<td>9</td>
<td>Presence of relatively large nature area without roads</td>
</tr>
<tr>
<td></td>
<td><strong>Remaining key values</strong></td>
</tr>
<tr>
<td>10</td>
<td>Rural character of the living environment</td>
</tr>
<tr>
<td>11</td>
<td>Intensity of traffic on local roads connecting with the highway</td>
</tr>
<tr>
<td>12</td>
<td>Traffic jams on highways</td>
</tr>
<tr>
<td>13</td>
<td>Sneaky traffic in the neighbourhood</td>
</tr>
<tr>
<td>14</td>
<td>Traffic nuisance on local and regional roads</td>
</tr>
<tr>
<td>15</td>
<td>Diversity of recreational possibilities</td>
</tr>
<tr>
<td>16</td>
<td>View of/over highway</td>
</tr>
<tr>
<td>17</td>
<td>Accessibility of recreational sites</td>
</tr>
<tr>
<td>18</td>
<td>Accessibility of aquatic areas by boat</td>
</tr>
</tbody>
</table>

The results for Area 2/3 showed that the most important residential key values were ‘a quiet living environment’ (65 %), the ‘quality and level of facilities’ (53 %), ‘traffic exhaust’ (46 %) and the ‘accessibility of the city centre’ (40 %). The most important recreational values were ‘recreational sites with a quiet atmosphere’ (30 %), and ‘diversity in species of plants and animals’ (24 %) and ‘cycling possibilities’ (34 %).

A serious problem was that the overall Citizen Values Profiles for Area 1 and for Area 2/3 now contained weights from different sources. These sources were incomparable: the weights of residential key values were related to direct measurements, while the
recreational key values were based on interpretations and integration of different weights. Therefore, it was impossible to allocate weights to the key values in the final Citizen Values Profile. Instead, only the rankings were mentioned.
The major differences between the two sub-profiles were that the accessibility of recreational sites scored much higher in Area 1 than in Area 2/3; and that traffic exhaust scored much higher in Area 2/3 than in Area 1. A quiet residential living environment and the quality and level of facilities in the neighbourhood were the most important attributes for residents in both areas; also the presence of relatively quiet, large natural areas appeared to be important attributes.
4.3.6 Selection of indicators and identification of data sources

The first step of this process was to translate the key values into evaluation criteria. Each key value had to be operationalised and the appropriate data source needed to be identified. Some examples of how indicators were selected and data were collected are described below.

The key value ‘quiet living environment’, for example, was operationalised as follows. Respondents associated it with tranquillity, but also with images of children playing on streets, slow-moving traffic, and so on. Given this, it seemed reasonable to select traffic volume in residential areas as the indicator. The underlying assumption was that the less traffic, the more people would judge their neighbourhood as being quiet. Data about the traffic volumes in residential streets were obtained from the traffic impact study.

The key value ‘presence of recreational possibilities in a quiet atmosphere’ was operationalised by looking at possibilities to be in recreational areas without using special facilities. This means possibilities to cycle, hike, jog, swim or ride horse in a green, forest-like environment. The total surface available for recreational purposes was selected as the indicator. Data about recreational areas were used from the impact study on spatial planning.

The key value ‘diversity in species of plants and animals’ could be translated directly from the impacts on the numbers of species described in the ecology impact study.

The key value ‘cycling possibilities’ was mostly related to recreational cycling. The indicator chosen was the number of cycling paths. Two types of cycling routes were taken into account: (1) cycling paths in recreational areas; and (2) cycling path connections between residential areas and recreational areas. Data were used from the impact study on spatial planning.
The key value ‘traffic nuisance on local/regional roads’ was described by the traffic jams occurring on peak hours. Problems mentioned by respondents often concerned three specific roads. However, since problems could occur on many different places in the underlying road system around the highways, it was decided to select the problem-solving capacity or problem-causing effect of project alternatives on all local or regional roads as the indicator. Data about the traffic volumes in residential streets were obtained from the traffic impact study.

For one criterion, it was impossible to select an indicator. For ‘sneaky traffic’, data sources were unreliable and traffic experts found it impossible to predict how the alternatives would affect this issue. Therefore, this issue was referred to as a ‘knowledge gap’.

4.3.7 Impacts of project alternatives

After translating all key values into assessable evaluation criteria, scores for each criterion for each of the six alternatives were determined using a five point scale (−−, −, 0, +, ++) (see Table 4.8). Where possible, scores were based on data from the impact studies of the various disciplines within the EIA. Some key values were easier to operationalise than others because they linked directly with certain impact studies. For example, this was the case with the key values, ‘noise nuisance’, ‘traffic jams on highways’ and ‘traffic exhaust’. Some examples of how the impact sizes were determined are described below.

Upgrade Highway A20 with a regional road; impact scores for ‘recreational possibilities in a quiet atmosphere’. The impact study on spatial planning indicated that the total area of relatively quiet recreational space becomes smaller. The maximal variant scores the most negative because in this variant the largest area of recreational space is lost (score: −−). The minimal variant scores less negatively because the link road is partly in a tunnel (score: −).
Upgrade Highway A20 with a regional road; impact scores for diversity in species of plants and animals. The ecology impact study indicated that the upgrade of Highway A20 without an additional regional motorway would have some positive impacts on the presence of different species of plants and animals in the area directly around the highway. Constructing a link road has severe impacts on the diversity of plant and animal populations living in water shores. Furthermore, 9 hectares (minimum variant: 2x1 lanes) or 16 hectares (maximum variant: 2x2 lanes) of forest and park are lost and an area connecting two bat habitats is lost. The minimum variant scores - and the maximum variant scores --.

Upgrade Highway A20 with a linking road; impact scores for traffic nuisance on local roads. The traffic impact study indicated that the minimum and maximum variant of this alternative have quite different impacts. The large capacity of the maximum variant with 2x2 lanes for the link road reduces traffic jams on local roads and scores +. The minimum variant with 2x1 lanes does solve certain traffic flow problems, but its limited capacity also causes increased traffic on other local roads connecting to the link road. The minimum variant therefore scores -.

4.3.8 Comparing project alternatives

Table 4-8 presents the overall impacts on all areas of the project alternatives and variants.
Table 4-8: overall impacts of project alternatives

<table>
<thead>
<tr>
<th>Key values</th>
<th>A20 without linking regional road</th>
<th>A20 with linking regional road</th>
<th>Major Bypass A16/13</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ranking</td>
<td>Rankin</td>
<td>min.</td>
</tr>
<tr>
<td></td>
<td>Area 1</td>
<td>g Area</td>
<td></td>
</tr>
<tr>
<td>quiet living environment</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>facilities in the neighbourhood</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>accessibility of city centre</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>recreational sites with quiet atmosphere</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>different plants and animals</td>
<td>5</td>
<td>7</td>
<td>+</td>
</tr>
<tr>
<td>large nature area</td>
<td>6</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>cycling possibilities</td>
<td>7</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>noise nuisance of highway (reduction)</td>
<td>8</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>accessibility of recreational areas</td>
<td>9</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>traffic exhaust (reduction)</td>
<td>10</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>heavy traffic on local roads (reduction)</td>
<td>11</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>diversity of recreational facilities</td>
<td>12</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>rural character of living environment</td>
<td>13</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>traffic jams on highways</td>
<td>14</td>
<td>13</td>
<td>+</td>
</tr>
<tr>
<td>noise nuisance from local roads (reduction)</td>
<td>15</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>view of/over highway</td>
<td>16</td>
<td>15</td>
<td>+</td>
</tr>
<tr>
<td>accessibility of aquatic areas</td>
<td>17</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>+2</td>
</tr>
</tbody>
</table>

The first conclusion that can be drawn from Table 4-8 is that the three most important residential key values related to the quality of the neighbourhood did not differentiate between the three project alternatives. Differences were found in key values related to recreation (particularly those related to the natural environment) and traffic nuisance.
From the comparison of alternatives, it can be concluded that, from the perspective of citizens, the reconstruction of Highway A20 without a link road is the preferred alternative. The reason for this is that, in this alternative no new infrastructure will be built, while other alternatives expose people who have not previously been exposed to highway impacts. Also, within this most favourable alternative from citizens’ perspectives, the ‘maximum variant’ is preferred to the ‘minimum variant’, mainly because the additional tunnels of this variant further reduce noise nuisance.

Curiously, in the alternative A20 with the link road, the ‘maximal variant’ scored lower than the ‘minimal variant’, mainly because of its negative impacts on the availability of recreational facilities, on the presence of a relatively large variety in plant and animal species, and the destruction of an important part of a large natural area. This variant is a 2x2 lane road at surface level which passes through forest and recreational areas. The ‘minimum variant’ is a smaller road (2 x1 lanes) which is ‘minimal’ in solving traffic problems, but has a tunnel under the forest and recreational areas. From a citizens’ perspective (that is, local residents as opposed to highway users), the use of tunnels are preferred because of the advantages in noise reduction, less visual impacts, reduction in traffic exhaust, and the ability to develop/maintain green areas on top of the tunnels.
4.4 Use of CVA outcomes in the EIA

The outcomes of the CVA study were reported in documents resulting from Phase 1 (Duinhoven and Hoeksema, 1997), Phase 2 (Steenwinkel et al., 1998) and Phase 3 (Berghahn and Berghahn, 1999); and in an overall Final Report (Groen and Snoek, 1999). Similarly, the outcomes of all other disciplinary impact studies were reported separately.

Contrary to the other disciplinary impact studies conducted for the EIA, the outcomes of the CVA study were not used directly in the overall comparison of alternatives (Rijkswaterstaat et al., 1999). Instead, the EIA project team used the output of Phase 3 of the CVA study to compare the project alternatives in a so-called scenario approach. The CVA project team was not involved in this exercise.

Within this scenario approach, project alternatives were compared from four opposing perspectives:

- **The Human Perspective**: this was the ‘liveability’ perspective based on government policy. In this perspective, the comparison of project alternatives was based on those liveability issues that are obligatory in EIA. In other words, this scenario focused on government policies related to exposures to noise and emissions, and to risks.

- **The Citizen Perspective**: this perspective was based on the outcomes of the CVA study. In this scenario the comparison of project alternatives focused on those issues considered relevant by citizens.

- **The Nature and Landscape Perspective**: this is the perspective based on government policies concerning nature and landscape. In this perspective, the comparison of project alternatives was focused on ecological and landscape values.

- **The Traffic and Economic Perspective**: this was the perspective in favour of economic development and traffic flow issues. In this perspective, the comparison of project alternatives was focused on issues related to traffic flow, based on government traffic policy.
In each scenario, a set of weights was assigned to the four major themes or criteria (and sub-themes or sub-criteria) investigated in the EIA study (traffic, spatial development, economy, and environment) (see Table 4.9). The sum of the weightings in each case was set at 1.00 (100 percent).

The allocation of the weights to the CVA Scenario (by the EIA project team) was explained as follows (Rijkswaterstaat et al., 1999). For each key value, the weights of a selection criteria used in EIA impact studies were summed. For instance, to determine the weight for noise nuisance, four criteria were used from the noise and vibration impact study, with the weights of 21, 11, 8 and 5 points. The total weight for noise nuisance is, therefore, 45. The total amount of all weights was 219. The three disciplinary impact studies that had not been used for determining CVA impacts, each received 1 point, because zero could not be scored in the scenario (and thus scored 0.01). Thus, the total became 223. Noise nuisance, therefore, scores a percentage (weight) of 45/223, or 23 percent. The weights allocated to the four scenarios are presented in Table 4-9.

Table 4-9: Distribution of weights for four perspectives

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-theme EIA</th>
<th>Human perspective</th>
<th>CVA perspective</th>
<th>Nature and landscape perspective</th>
<th>Traffic and economic perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic</td>
<td>Traffic flow</td>
<td>0.05</td>
<td>0.15</td>
<td>0.05</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Traffic safety</td>
<td>0.15</td>
<td>0.01</td>
<td>0.05</td>
<td>0.15</td>
</tr>
<tr>
<td>Spatial development</td>
<td>Local and regional impacts</td>
<td>0.15</td>
<td>0.11</td>
<td>0.15</td>
<td>0.14</td>
</tr>
<tr>
<td>Economy</td>
<td>Direct and indirect impacts</td>
<td>0.10</td>
<td>0.15</td>
<td>0.10</td>
<td>0.40</td>
</tr>
<tr>
<td>Environment</td>
<td>Air quality</td>
<td>0.13</td>
<td>0.10</td>
<td>0.10</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Water and soil</td>
<td>0.05</td>
<td>0.01</td>
<td>0.15</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Ecology</td>
<td>0.05</td>
<td>0.22</td>
<td>0.15</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>External safety</td>
<td>0.13</td>
<td>0.01</td>
<td>0.05</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Landscape aesthetics</td>
<td>0.05</td>
<td>0.01</td>
<td>0.15</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Landscape aesthetics</td>
<td>0.14</td>
<td>0.23</td>
<td>0.05</td>
<td>0.01</td>
</tr>
</tbody>
</table>
The weights in Table 4.3 were applied to a MCA of the six variants (see Table 4.9), which led to scores of all alternatives and variants from the perspective of all scenarios (see Table 4-10).

<table>
<thead>
<tr>
<th>Variant</th>
<th>Human perspective</th>
<th>CVA perspective</th>
<th>Nature and landscape perspective</th>
<th>Traffic and economic perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>A20 without regional motorway MIN</td>
<td>+0.03</td>
<td>+0.14</td>
<td>+0.03</td>
<td>+0.29</td>
</tr>
<tr>
<td>A20 without regional motorway MAX</td>
<td>+0.08 (best)</td>
<td>+0.19 (best)</td>
<td>+0.05 (best)</td>
<td>+0.24</td>
</tr>
<tr>
<td>A20 with regional motorway MIN</td>
<td>-0.11 (worst)</td>
<td>-0.09 (worst)</td>
<td>-0.26</td>
<td>+0.23 (worst, but still beneficial)</td>
</tr>
<tr>
<td>A20 with regional motorway MAX</td>
<td>-0.04</td>
<td>+0.05</td>
<td>-0.19</td>
<td>+0.38</td>
</tr>
<tr>
<td>Bypass A16/13 MIN</td>
<td>-0.01</td>
<td>-0.02</td>
<td>-0.35 (worst)</td>
<td>+0.49 (best)</td>
</tr>
<tr>
<td>Bypass A16/13 MAX</td>
<td>+0.01</td>
<td>-0.08</td>
<td>-0.27</td>
<td>+0.48</td>
</tr>
</tbody>
</table>
In the Human Scenario (governmental liveability policy), the CVA Scenario (citizens’ perspective) and the Nature & Landscape Scenario, the upgrade of Highway A20 without a linking regional road scored best. Furthermore, in both the Human and CVA Scenarios, the A20 with a linking regional road (minimal variant) scored worst. In the CVA Scenario, upgrading Highway A20 with a linking regional road scored negative for the ‘minimum variant’ but slightly positive for the ‘maximum variant’.

In the Human Scenario, upgrading the A20 with a linking regional road scored negative and constructing the bypass scored neutral. Improving the existing highway without constructing a linking regional road scored slightly positive.

Improving the existing highway without constructing a linking regional road scored the highest from the citizens’ perspective. While the differences between the Citizen Scenario and the Human Scenario were not great, they both differed considerably from the Traffic & Economic Scenario.
4.5 Evaluation

4.5.1 Practical applicability

This CVA case was the first example of the full application of the CVA instrument. As such, it was a learning case. This CVA case made clear that some serious hurdles needed to be overcome to make the instrument generally applicable. These problems were primarily related to: first, the construction of the Citizen Values Profile; and second, the use of data sources for assessing impacts.

The construction of the Citizen Values Profile appeared to be problematic because the key values of the two categories of respondents only partly overlapped. Furthermore, the relative importance of the key values differed between Area 1 and Area 2/3. Because it was obvious that this would be the case frequently, this became an important issue to resolve in the further development and application of CVA. The problem encountered here made explicit that constructing one Citizen Values Profile including relative weights is difficult in EIAs involving different locations. Therefore, this became a central issue in the next CVA study, which is presented as a case study in Chapter 5. A more recent CVA case will be described in Chapter 6 to illustrate how the CVA team successfully determined weights and used them in the process of assessing the impacts of project alternatives.

The second issue related to the variation in presenting data within the EIA, in particular, the scales used to define impact sizes made it very difficult to use data from EIA impact studies in the CVA. Moreover, there were a number of impact studies in which it was totally unclear precisely which data had been used, and how interpretations underlying the final scores were made. This made it very difficult (at least with justification) to actually use these data. In several cases, output of disciplinary impact studies could not be used, largely because of inadequate reporting, or by the way in which impacts had been determined and scored. The major problems were:

1. within the different impact studies, the description of impacts had been presented differently, with different levels of sophistication:
2. in some cases, it was impossible to understand how the determined impacts had been translated into the overall judgement of an alternative

3. impact sizes were judged differently in different impact studies: sometimes qualitatively, sometimes in terms of presence or absence, sometimes on 3-point scales; sometimes on 7 point scales.

One issue that has not been touched upon before concerns the interpretations of CVA experts, which are an inherent part of the CVA instrument. This CVA case contains a very illustrative example of how unintended misinterpretations, even by qualified CVA practitioners, can occur and that such an (apparently small) misinterpretation may have significant impacts on the outcome of a CVA study.

The accessibility of recreational areas was a key value of intermediate importance for Area 1 and of low importance for Area 2/3. The line of argument behind this key value is the fact that, in Area 1, a variety of recreational facilities and recreational areas are nearby and that these recreational sites are easily accessible. This contributes to the perceived quality of the living environment for residents of Area 1. The alternative ‘A20 with link road’ and the alternative ‘Bypass A16/13’ scored ‘+’ for the key value ‘accessibility’ (both for the minimum and maximum variant). Although technically the construction of a new road may increase the accessibility of the recreational areas in the Northern part of Rotterdam, it is unthinkable that the respondents living nearby this recreational area actually would be in favour of increasing the accessibility of the recreational areas by the construction of a linking regional road or a highway! Moreover, the outcomes of Phase 2 and Phase 3 of the CVA study revealed that the accessibility of the recreational areas in the Northern part of Rotterdam was already considered positive in the present situation. This example illuminates the vulnerability of the instrument to bias and the importance of quality control.
4.5.2 Suitability

Relevancy of CVA output

The CVA study provided useful insights and put some assumptions of experts in a broader perspective. Although traffic nuisance, in general, was a major issue, noise nuisance appeared to be a less dominant issue than expected. Instead, regarding the impacts of traffic, problems like traffic jams and ‘sneaky traffic’ were emphasised. Despite the noise nuisance in several areas, some of these areas were very positively judged for other qualities, and also judged positively for the quality of the living environment as a whole. The conviction of the EIA project team that the existing highways were serious barriers in the living environment was not confirmed at all. Because the suggested “barrier effect” of the highways was not mentioned by residents, it had not become part of the Citizen Values Profile. An interesting result was the fact that, despite serious traffic nuisance, neighbourhoods were generally judged positively and even the qualification “quiet and green” was often used.

The outcomes of the CVA study showed clear differences in comparison with the expert assessment of ‘liveability’, highlighting the consistently different emphases between citizens and experts. Thus, the CVA study did provide relevant additional information for the impact assessment process.

Compatibility with the EIA process

The CVA study was not optimally integrated in the timeframe of the EIA process, and as a result, CVA outcomes from Phase 2 and Phase 3 could not be fully used in the process of detailing of the designs of project alternatives. This was, however, not caused by incompatibility of the CVA instrument to the methodological or procedural framework of EIA, but by the fact that CVA was new and that the CVA study was initiated rather late in the EIA process.
The integration of Phase 4 in the EIA process had some difficulties in relation to the timelines of the EIA project. Because the other impact studies were used as a data sources for determining impact sizes, the CVA researchers had to wait until these reports were available. As a result, the final report of the CVA study was the last to be completed. This required a certain degree of flexibility and creativity to integrate the results into the final EIS and in project design. For the optimal use of CVA in the future, it is of great importance that this is taken into account in planning the EIA processes.

A problem hampering the optimal utilization of CVA was the fact that the CVA was conducted independently of the other impact studies. Communication was channelled via the steering committee of the project initiator. Furthermore, there had been no interaction with the experts involved in the separate disciplinary impact studies. Apparently, each study had been conducted independently and coordination as to how to present impacts had not taken place. As a result, coordination between the studies as to the selection of data sources and how to present outcomes had not taken place.

### 4.5.4 Effectiveness

The full potential of CVA was not utilised in this project. All four phases of the CVA instrument were conducted, but the final output, the results of Phase 4, remained unused. Instead, output from Phase 3 was used to develop a CVA scenario. The outcome of this scenario exercise, however, partly contradicted the outcomes of Phase 4 of the CVA study! This observation illustrates the risks of working with interpretations of interpretations, as was done in the scenario approach. The lesson learnt from this was to adopt an approach of working as transparently as possible and not to move too far away from the original data.
4.6 Concluding remarks

The case study made clear that it is possible to use citizens’ subjective value judgements of the quality of their living environment for a professional and neutral assessment of impacts and comparison of alternatives, and that CVA is a suitable instrument for application in EIA, provided that some practical problems are tackled. Some of the problems encountered could be explained by the fact that integration of CVA was new. Other issues illustrated that the development of the CVA methodology had not been fully completed yet. The problems encountered in this CVA case, therefore, contributed markedly to the further development of CVA.

The CVA study produced outcomes that were suitable for a neutral, professional judgement and comparison of impacts of project alternatives, although in this case this output has not been used. It was concluded that optimal use of the potential of CVA requires:

1. adequate integration of timeframes;
2. accessible reporting of the other disciplinary impact studies in which interpretations and analyses need to be transparent;
3. application of all four phases and using the output for the overall comparison of alternatives.

The most significant issue with respect to validity and reliability as well as with bias of CVA output is the role of the CVA practitioner, especially concerning the qualitative phases of CVA. Making select samples of respondents, conducting semi-structured, in-depth interviews and analysing protocols of these in-depth interviews require skills and expertise in qualitative research. The validity and reliability of CVA outcomes are very much dependent on the capabilities of the practitioners involved.

To guarantee reliability and validity of CVA outcomes and to prevent bias, the following measures can be taken:

- allow sufficient quality control;
- have respondents comment on preliminary analysis, and integrate data collection and data analysis in an iterative process;
- discuss parts of the analysis during the process with key players;
- use experienced social scientists, preferable CVA professionals;
- use different consultants for qualitative and quantitative analysis;
- keep the CVA process as transparent as possible.

**Postscript**

The EIS for the Rotterdam Highway situation was completed in February 2000. However, changing government policy about major infrastructure development resulted in a reassessment of priorities, which led to a reconsideration of the priority of this project. As a result, it was decided in 2002 that no government funding would be made available for this project before the year 2010. Public release of the Environmental Impact Statement was deemed to be inappropriate since no action was likely to be taken in the short term. The role of CVA in decision-making in this particular case, therefore, is not clear.
5.1. Case study: CVA in a water management project

This case study is a descriptive analysis and evaluation of a CVA study as part of an EIA on the intended dredging, storing and processing of contaminated sediments in coastal harbours in the Province of North-Holland in the Netherlands. This case study illustrates how CVA has been integrated in the EIA process and discusses relevant issues concerning the role and contribution of CVA in the EIA process in general. It focuses on the way in which CVA has been integrated in the participatory process and on how the CVA output was integrated in the resulting Environmental Impact Statement. Contributions of CVA to the decision-making process, within and after the EIA, are evaluated. This case is, so far, the best example of a participatory EIA in which CVA was fully integrated, in both the scope of the EIA and the EIA process.

5.2 The problem of contaminated sediments

In the Netherlands, there are serious problems concerning contaminated sediments in certain estuaries, lakes, rivers, canals, other navigable inland waterways and ports. Pesticides and other chemicals and heavy metals are the main contaminants. This type of pollution requires special consideration and handling. Sediments are dredged from the bottom of water bodies and transported to a facility for storage. These facilities can take the form of underwater pits left over after sand-mining; or artificial islands with ring dikes; or disposal sites on land (see Fig. 5-1). The majority of dredged materials are only slightly contaminated and, therefore, considered acceptable for a wide range of disposal alternatives. However, in some sediments, contaminant levels are so high that disposal, especially in open waters and wetlands, may cause serious environmental damage and is therefore deemed unacceptable. Sediment that originates from saltwater (saline
sediments) is particularly problematic because disposal of this type of sediment in freshwater areas is impossible. Thus, disposal options for saline sediment are limited.

Figure 5-1: Types of storage facilities for slurry:

The Province of North-Holland has a number of coastal harbours which have contaminated saline sediments. In most of these sediments, specifically in the layers that were deposited between 1960 and 1990, the level of contamination is extremely high. In some areas, dredging is urgently needed because of environmental risks. Sufficient capacity for dredging exists, but facilities for storage and treatment (separation, cleaning, immobilisation) are not available. This has led to a delay in dredging, and consequently, to a decreased accessibility of ports and waterways as water depth decreases due to ongoing sedimentation. Until recently, the least contaminated sediments were dumped offshore and only those sediments with extreme contamination were dredged and stored in a local temporary facility. Consequently, the main problem concerns the sediments with medium to heavy contamination.

The most serious contamination problems occur in the region near the town of IJmuiden on the North Sea coast adjacent to Amsterdam (see Fig 5-2). Here, a number of industrial harbours contain large layers of heavily contaminated sediments. In addition to sedimentation from the sea, these harbours have also become polluted over decades as a result of discharges from local industries. The lack of storage facilities has made dredging impossible. As a result, the accessibility of the harbours has been decreasing. A total cleaning up of the IJmuiden area and contaminated coastal sediments in other parts of the Province requires a large scale facility for storing and/or processing of heavily contaminated sediments.
5.3 The proposed project

5.3.1. Problems and proposed solutions

The project proponent is the division of Rijkswaterstaat known as the Regional Directorate North-Holland. The situation in the Province of North-Holland requires short term as well as long term structural solutions to the saline sediment problems. The project attempted to identify possibilities for short term storage, as well as for finding structural solutions to the sedimentation and pollution problems. These included the identification, development, evaluation and selection of environmentally, economically and socially acceptable alternatives for storage and/or treatment of the dredged sediments. Furthermore, the project involved the assessment of new techniques for the processing and re-use of contaminated materials, and the evaluation and improvement of existing methods. The project was called: “a structural approach to the saline sediment problems in North Holland”. The project consisted of studies including the identification of solutions; technical and financial assessments; and an EIA which included a CVA. The project was conducted by means of a comprehensive interactive process (a so called “open plan process”) involving a large number of stakeholder groups. The project included the identification and assessment of four types of strategies for dealing with the problem of contaminated saline sediments:

1. sedimentation reduction (the development of measures which prevent sedimentation in harbour areas) and measures to improve water quality;
2. offshore dumping of slightly polluted sediments;
3. processing sediments (separation, cleaning, immobilisation) and subsequent re-use;
4. storage of the heavily contaminated sediments under ICM conditions (isolate, control, and monitor) using confined disposal facilities on land, in water and underwater.

5.3.2 Brief description of locations and alternatives
A number of alternative locations for implementing the various strategies were identified by the EIA and will be briefly described in this section (see Table 5.1 and Fig. 5-2).
<table>
<thead>
<tr>
<th>Location</th>
<th>Strategy</th>
</tr>
</thead>
</table>
| A The *North Pier* near the village *Wijk aan Zee* | Large-scale storage facility  
Processing unit |
| B The *Third Sea Harbour* and the *South Pier at IJmuiden* | Underwater storage  
Underwater storage with a ring dike |
| C The west section of the *North Sea Canal* | Underwater storage |
| D The *Noorder IJpolderplas*, a small brackish lake | Large scale storage facility  
Processing unit |
| E *Afrikahaven*, an inland harbour in the Amsterdam Port | Underwater storage  
Processing unit |
| F *North Sea and Wadden Sea* | Prevention measures  
Offshore dumping |
| G The town of *Den Helder* and its vicinity | Prevention measures  
Processing unit |
Figure 5-2: overview of the study area and alternative locations

A. North Pier: Wijk aan Zee

The village Wijk aan Zee is a small seaside village surrounded by beach, sea and dunes on one side, and by a large steel plant on the other side. During the past century, the steel plant expanded in such a way that the village became a small enclave near the sea and only accessible by one road (see Fig. 5-3). For this reason, the village has remained a small-scale resort with only about 20 small tourist facilities (hotels, Bed&Breakfast, apartments). Its small-scale character attracts people who do not like the modern and overcrowded large resorts like Zandvoort. In comparison to those resorts, the beach near Wijk aan Zee has plenty of space. The North Pier is a popular recreational site for day trippers like hikers, birdwatchers, fishers and families with children. Near the North Pier, the waves are very large compared to other beaches in the region, which makes this area a special place for windsurfers.

The beach adjacent to the North Pier is a potential location for a large disposal site with a ring dike, combined with a processing unit (see Fig. 5-3). The pier itself could be
lengthened as a preventive measure to decrease the sedimentation process from the sea. The nearby harbour Averijhaven is in temporary use as a disposal site. A processing unit is being built in the adjacent harbour area Werkhaven.

Figure 5-3 The IJmuiden and Wijk aan Zee area.

B. South Pier and Third Sea Harbour: the town of IJmuiden

The port of IJmuiden stretches along the North Sea Canal and consists of various sea harbours and is one of the major fish markets in the Netherlands. The canal and its locks are characteristic elements of this town. The old and new town centres, an industrial area, and residential areas are located near the locks. West of the town, dunes, beaches and more harbours are located. At the small beach near the North Sea Canal, over 100 removable beach cabins are located. The large southern beach contains a nature area and recreational sites, and is bordered by a large dune area. The South Pier of the North Sea Canal with its many fish restaurants is a popular attraction for many local citizens and day trippers from elsewhere. At the South end of the South Pier, an apartment building with its own recreational harbour ‘seaport Marina’ and a shopping boulevard are located. These apartments are mainly for recreational purposes.

Potential locations for a storage depot for heavily contaminated sediments include: (1) the area adjacent to the north of the South Pier (underwater storage with a ring dike),
and (2) a new harbour that will be constructed in this area: the Third Sea Harbour (underwater storage) (see Fig. 5-3).

C. North Sea Canal between the Wijkertunnel and the Velsertunnel
The North Sea Canal is crossed by two tunnels (see Fig.5-3). Near this section of the canal, two residential areas are located. The underwater area between these tunnels is a potential location for underwater storage of lightly contaminated sediments.

D. The brackish lake 'Noorder IJpolderplas'
The Noorder IJpolderplas is a small, brackish lake that is located near the city of Amsterdam, in between an industrial area, a highway, and the North Sea Canal (see Fig. 5-4). Adjacent to the western part of the lake is a canal on which about 60 house-boats are located. This residential area is quite isolated, lying in the middle of (what is left of) a natural environment with a nice view over the lake but also of the nearby industrial areas. This area is considered a very special place to live by the house-boat owners.

The Amsterdam City Council has planned to develop this area into an industrial area. Given this plan, the deepest part of the lake has been selected as a potential location for a large scale disposal site with a ring dike, possibly in combination with a processing unit.
Figure 5-4 Industrial areas at the northern and western part of Amsterdam

E. The inland harbour ‘Afrikahaven’

The Amsterdam Port consists of a growing number of harbours and harbour facilities which are accessible to sea ships via the North Sea Canal. One of the recently built harbours, the ‘Afrikahaven’, is a potential location for underwater storage and a processing unit (see Fig.5-4). If this strategy was to be implemented, the harbour would be made 40 metres deep.

F. The town of Den Helder and its vicinity

Den Helder is located in the most northern part of the Province of North-Holland. The town is bordered by the North Sea in the West and by the Wadden Sea in the North. To the East of Den Helder is a long peninsula which is separated from the town by a canal, as well as the Dutch Navy Harbour (see Fig.5-5). The majority of this peninsula is owned
by the Dutch Navy. The Southern most part of the peninsula is an industrial area (Oostoever) in which contaminated sediments are currently being processed. A residential area (De Schooten) is located about a kilometre on the other side of the canal.

Figure 5-5: The area around the town of Den Helder

A former harbour in this industrial area is a potential location for underwater storage. Processing could take place at the location of the existing processing unit. A measure to reduce sediment accumulation at this location is the reconstruction of the lock that connects the canal with the Wadden Sea.

5.3.3 Historic context of the project

Because of a long history of inadequate public consultation in the area by the government, and much public debate and resistance, the proposed project was extremely vulnerable to public opposition, especially in the IJmuiden-Wijk aan Zee area.

The accessibility problems of the steel plant harbours (Averijhaven and Werkhaven) started in 1985 and so did the public debate. A temporary measure proposed was to use one of the harbours (Averijhaven) for underwater storage of heavily contaminated sediments. The plan to temporarily store heavily contaminated material in an open depot
underwater caused a lot of concern in the region. Citizens feared negative impacts on water quality. A number of legal procedures were initiated which finally stopped the implementation of this plan. In 1989, without any discussion or public consultation, Rijkswaterstaat published a policy called the ‘Coastal Plan’ which was presented in the region as the final policy. In this Coastal Plan, the same harbour (Averijhaven) was now presented as the permanent underwater storage facility for heavily contaminated sediments. This caused an outrage in the region. Immediately, the action group, Hands off the Coast, was founded and legal procedures were initiated by this and other groups to prevent the implementation of the plan.

In response to the controversy, the Provincial Government decided to develop a policy specifically for the removal of contaminated sediments in the whole province. A proposal presented to the Provincial Government at the beginning of the 1990s suggested alternative locations to build large-scale disposal facilities with ring dikes: one adjacent to the North Pier and one in the Averijhaven. The Provincial Government, however, considered the North Pier alternative unrealistic because of the strength of public resistance that would be encountered with this proposal. The Averijhaven alternative did not encounter much criticism because it was now planned as an isolated depot with a ring dike instead of an underwater storage facility. Although an EIA was not required at this location, the Provincial Government requested it, in order to compare the storage capacity of a depot at the Averijhaven with the much larger location at the North Pier. At that time, it was not clear whether the location at the Averijhaven would be large enough for a permanent solution. Thus, the North Pier remained a serious and heavily debated alternative for the whole time the EIA was underway.

The Environmental Impact Statement was published in 1995 and revealed that the size of the Averijhaven was large enough for a long term solution to the local contamination problem. The solution to the local sediment problems, therefore, seemed to be at hand. Nevertheless, at the very last moment, an insurmountable problem developed – two municipalities, Amsterdam and Velsen, used the situation for their own strategic purposes and refused to provide the required approvals. They used argument that this was the last local area accessible for large sea ships and, therefore, it needed to be reserved for industrial development in the future. A covenant was negotiated which would allow the Averijhaven to be used but only for temporary storage of contaminated sediments and only for a maximum period of 10 years (that is, until 2006). The covenant
was signed in 1996, a temporary storage facility was built and the harbours were dredged.

In the meantime, the sedimentation problems appeared to be much larger than previously estimated, and Rijkswaterstaat decided to start a new project study (including EIA) to identify structural, long term solutions for the sediment problems in the whole Province. In an attempt to compare all potential locations for large-scale storage, the beach adjacent to the North Pier was again included as an alternative. Since the attitude of Rijkswaterstaat towards the public had started to change from the beginning of the 1990s, project planning had become more transparent and interactive. Therefore, the EIA had a strong emphasis on the societal context of the project. A two-sided approach was applied to ensure appropriate focus on this context: a comprehensive participatory process involved representatives of a large number of relevant interests and interest groups, and a CVA study was included in the EIA.

The participatory process, the so called ‘open plan process’, involved two types of interests represented in two advisory boards: a Non-Governmental Advisory Board (representing the relevant local interests); and a Governmental Advisory Board (representing the local governments involved). Both advisory boards were kept thoroughly informed about the progress of the project and they were involved in reviewing and commenting on a large number of documents during all phases of the project. The Non-Governmental Advisory Board, in particular, was invited to comment and advise on a large number of issues, such as the preparation of the Terms of Reference of the EIA (what ought to be studied and how); the design of separate impact studies; the interpretation of the data; and discussions on draft reports and on decisions to be made on the basis of the outcomes of the studies. A comprehensive communication plan was designed to support the open plan process. Communication activities were:

- publishing and distributing a ‘Sediment Magazine’;
- press releases;
- advertorials in local newspapers;
- regular information meetings at all locations;
- regular meetings between the project team and the Non-Governmental Advisory Board, chaired by an independent chairman (external consultant from an organisation called the Participation Institute);
- regular meetings between the project team and the Governmental Advisory Board.
The interactions within the Non-Governmental Advisory Board meetings were focused, constructive, critical and respective of each other. The discussions contributed to the introduction of a new alternative. The action group “Hands off the Coast” had been actively exploring opportunities for processing sediments. This group considered Rijkswaterstaat’s initiatives to be too limited. “Hands off the Coast” raised the issue at the Non-Governmental Advisory Board meetings frequently and advocated putting more effort into exploring possible processing methods. The interest group was supported in this by many of their fellow Non-Governmental Advisory Board members.

An opportunity for a processing facility became possible after an unexpected development took place at the Dutch steel company ‘Hoogovens’. This company merged with British Steel in 1998 and a new British-Dutch company called ‘Corus’ was founded. This event led to a changed decision-making processes and to changed policies. One outcome was that Corus decided not to use the Werkhaven area for their own industrial purposes and, therefore, for the first time, the company was willing to discuss the use of this location for building a facility for processing contaminated sediments. At the same time, Corus would benefit from the facility because of the sedimentation problems in its own harbour. This brought Averijhaven back into the picture as a potentially serious alternative for the processing of a large amount of heavily contaminated sediments. Thus, in 1999 Rijkswaterstaat, very much stimulated to do so by the Non-Governmental Advisory Board, decided that Averijhaven should be included as an alternative within the EIA for the saline sediment problems.
5.4 The EIA

The EIA project was managed by two individuals: a project manager who had overall responsibility for the project as a whole, and an EIA project leader who was responsible for content of the EIA. The project team consisted of the project manager, the EIA project leader, a communication advisor, a legal expert, a CVA specialist, and a project assistant. The project team had regular meetings every two weeks to discuss the progress of the study.

The EIA was combined with the project study in which alternative solutions and locations were explored and studied, including technical and economical analyses. The project consisted of two parts. The EIA consisted of the first part: an exploratory strategic study in which the impacts of different strategies at all possible locations were studied with the aim to select alternative strategies and corresponding locations. In the second phase, the designs of the selected alternative(s) at the selected location(s) will be specified in more detail and the impacts of alternative designs will be evaluated and compared.

The EIA consisted of separate impact assessment studies on the following subjects:

- technical feasibility
- soil, groundwater and surface water
- ecology
- landscape
- socio-economic impacts
- regional impacts
- costs
- citizen values

The project manager considered the CVA study to be important for the identification of social issues. Furthermore, CVA was considered to be a necessary supplement to the open plan process, because it would provide a representative overview of citizen values and how a project may affect those values. Therefore, the CVA study was given much emphasis and a central position within the EIA. That is why the CVA-specialist involved became member of the central project team (whereas project leaders of other impact
studies were not). Plans for all phases of the CVA study, as well as the outcomes, presented in draft reports, were presented to and discussed with the Non-Governmental Advisory Board. All information meetings consisted of presentations on the most recent results of the EIA and planned further steps. There was one presentation on CVA, and another on the overall EIA.

5.5  The CVA study

5.5.1  Basic groundwork

Different stakeholders were identified by a snowball method. Short telephone interviews were held with key informants, starting with the member list of the Non-Governmental Advisory Board. A field trip was made and interviews were held with members of the project team and knowledgeable local individuals. In this phase, two interest groups were identified which had not been involved previously. These were a group of small recreational enterprises at the IJmuiden beach and residents from a specific neighbourhood in IJmuiden. Both were willing and eager to participate in the process. All representatives of stakeholder groups were asked how familiar they were with the saline sediment problems and possible solutions, and what their interests and aims were in relation to the project. Information from these interviews was used for the further specification of the communication plan. In the town of IJmuiden, residents appeared to have limited knowledge about the project.

5.5.2.  Identifying key values

Interviews were held with a select sample of 56 individuals: 27 in the IJmuiden region; 8 near the brackish lake IJpolderplas; 12 near the (future) harbour Afrikahaven; and 8 in the Den Helder region. A limited number of environmental characteristics were mentioned by most respondents in all locations: the nearby presence of nature areas, a pleasant atmosphere in the residential neighbourhood, and social cohesion were important to residents in all locations. Furthermore, many respondents expressed
perceived risks related to sediment storage: infiltration to groundwater, dispersion of contaminants by storm spray and local air pollution.

Location-specific key values were related to attributes of the environment such as the North Pier near Wijk aan Zee and the South Pier in IJmuiden. In Wijk aan Zee, the small-scale character, aesthetic qualities (visual amenity) and a quiet clean beach were important attributes. In IJmuiden, the locks and the Pier are considered special, as well as visual amenity recreational values of the sea and the beach. In Den Helder, attributes such as privacy, fresh air and space were important. Environmental attributes at the location IJpolderplas were mainly related to the isolated residential neighbourhood (freedom) and the presence of nature. The situation at the location IJpolderplas, however, was going to change considerably by an autonomous development: the development of an industrial area. The same was the case for the Afrikahaven. At the beginning of the project, this harbour did not yet exist. The location of the planned harbour was fallow land and an abandoned village. Although intended to be demolished, this village had become occupied by a group of hippies and artists many years before. The inhabitants of the village were involved in the participatory process for the EIA/project study as well as in Phases 1 and 2 of the CVA study, because at that time, they were residents at a location of a potential storage facility. Nevertheless, despite many protests, Afrikahaven was constructed in 1999 and the village was demolished. Representatives of the village community remained involved in the Non-Governmental Advisory Board until the end of the project, but as the village had now disappeared and the residents had left the area, they were not included in the following phases of the CVA study.

### 5.5.3 Constructing a Citizen Values Profile

Data were collected by mail surveys and face-to-face interviews on location. A distinction was made between residents and visitors. Mail surveys for residents were sent to a random sample of 3310 households spread across the locations. The average response rate was 34 percent, varying from 27 percent in IJmuiden to 57 percent in Noorder IJpolderplas. Visitors were interviewed on location. In total, 138 visitors were interviewed at the beach of IJmuiden (n=50); in the village and at the beach of Wijk aan Zee
Questionnaires were also sent to two organisations representing recreational sea fishers in Den Helder (n=48) and divers who make use of the Noorder IJpolderplas (n=11).

Constructing one Citizen Values Profile was inappropriate, because the locations differ greatly and the key values were also location-specific. Therefore, specific Citizen Values Profiles were constructed for each of the locations. In the Tables 5-2 and 5-3, these location-specific Citizen Values Profiles are presented.

On the basis of the location-specific Citizen Values Profiles, it was possible to construct an overall Citizen Values Profile at a higher abstraction level. This was done by clustering key values into the following themes: accessibility; visual amenity; nature; recreational opportunities; character of the neighbourhood; and nuisance (specific sources of annoyance) (see Tables 5-2 and 5-3).
Table 5-2 Citizen Values Profiles of Wijk aan Zee and IJmuiden

<table>
<thead>
<tr>
<th>Themes, based on aggregated criteria</th>
<th>Location-specific criteria</th>
<th>Location-specific criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A. Wijk aan Zee</td>
<td>B. IJmuiden</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Area for strolling around</td>
<td>Area for strolling around</td>
</tr>
<tr>
<td></td>
<td>Parking facilities</td>
<td>Parking facilities</td>
</tr>
<tr>
<td></td>
<td>Easy accessibility for the public</td>
<td>Easy accessibility for the public</td>
</tr>
<tr>
<td></td>
<td>Hiking destination</td>
<td>Hiking destination</td>
</tr>
<tr>
<td>Visual amenity</td>
<td>Wide view over the sea</td>
<td>Wide view over the sea</td>
</tr>
<tr>
<td></td>
<td>Openness</td>
<td>Presence of unspoilt nature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presence of beach and dunes</td>
</tr>
<tr>
<td>Values of nature</td>
<td>Birds and marine animals on pier</td>
<td>Birds and marine animals on pier</td>
</tr>
<tr>
<td></td>
<td>Presence of unspoilt nature</td>
<td>Presence of unspoilt nature</td>
</tr>
<tr>
<td></td>
<td>Presence of beach and dunes</td>
<td>Presence of beach and dunes</td>
</tr>
<tr>
<td>Recreational opportunities</td>
<td>Fishing facilities</td>
<td>Fishing facilities</td>
</tr>
<tr>
<td></td>
<td>Diversity of recreational opportunities</td>
<td>Diversity of recreational opportunities</td>
</tr>
<tr>
<td></td>
<td>Much space on the beach</td>
<td>Much space on the beach</td>
</tr>
<tr>
<td></td>
<td>Good surfing spot</td>
<td></td>
</tr>
<tr>
<td>Character of the neighbourhood</td>
<td>views of ships</td>
<td>Harbour, views of ships</td>
</tr>
<tr>
<td></td>
<td>friendly atmosphere</td>
<td>friendly atmosphere</td>
</tr>
<tr>
<td></td>
<td>liveliness of the pier</td>
<td>liveliness of the pier</td>
</tr>
<tr>
<td>Sources of nuisance</td>
<td>Pollution on the beach</td>
<td>Pollution on the beach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Smell and fallout particles in the air</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Industry and traffic</td>
</tr>
<tr>
<td>Themes, based on aggregated criteria</td>
<td>Location-specific criteria</td>
<td>Location-specific criteria</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>C. North Sea Canal</strong></td>
<td><strong>D. Noorder IJpolderplas</strong></td>
</tr>
<tr>
<td>Accessibility</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Visual amenity</td>
<td>Wide view over the water</td>
<td>Space</td>
</tr>
<tr>
<td></td>
<td>View of large ships</td>
<td></td>
</tr>
<tr>
<td>Values of nature</td>
<td>-</td>
<td>Unspoilt nature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variation of species of plants and animals</td>
</tr>
<tr>
<td>Recreational possibilities</td>
<td>-</td>
<td>Diving possibilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hiking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fishing possibilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quiet atmosphere</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clean water</td>
</tr>
<tr>
<td>Character of the neighbourhood</td>
<td>View of ships</td>
<td>Freedom of living</td>
</tr>
<tr>
<td>Sources of nuisance</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
The relative importance of the key values is not presented here, but they were published in the report of Phase 3 (Bureau Veldkamp, 1999). How the relative importance of the criteria was dealt with is explained in the next section.

5.5.4 Impacts of project alternatives for each of the locations

For the construction of the evaluation criteria, each location-specific key value had to be operationalised in a way that impacts could be measured. For each key value, an indicator and data sources were defined, based on the in-depth information from Phase 2. The other impact studies of the EIA were used as much as possible as data sources. In cases where no data were available in the EIA, other data sources were used. For each project alternative, impacts were described qualitatively and scored on a 7-point scale:

--- extremely negative
-- very negative
- negative
0 neutral
+ positive
++ very positive
+++ extremely positive

A few examples of the operationalisation are the following. “Wide view over the sea” means: the openness, the landscape with an undisturbed horizon with no signs of human activities. The selected indicator is: uninterrupted view over the sea. Data for this indicator were available in the landscape study. “Area for strolling around” means: the pier is a place for people to take a breath and enjoy the sea; more than just a walk on the beach: you can walk further ‘into’ the sea, you can have a close look at the ships; you can observe marine animal life in between the rocks. The selected indicator was: the accessibility of the pier to the public and the ability for people to enjoy the sea here in
the way they did before. Data on this subject were not available in the EIA study, therefore a qualitative assessment was carried out by the CVA researchers. *Parking facilities* means: the space available to park cars for a visit to the beach, the piers or the recreational harbour. The impact of intended activities on the number of parking places was available in the landscape study.

After the operationalisation of key values into criteria, impacts were assessed for each of the criteria. After that, scores were constructed for the six themes and ultimately one final score was given to each of the possible interventions for each location. In order to construct these scores at a higher aggregation level, the relative importance of the criteria needed to be taken into account. This was done by means of qualitative analysis. Two issues were taken into account concerning the relative importance. Primarily, the relative importance of the themes (instead of the individual criteria) in each of the location-specific Citizen Values Profiles was considered. Secondly, an analysis was made of how the relative importance of criteria differed between residents and visitors. If substantial differences between respondent groups were found, this was taken into account in the final score for that location. This was expressed by weighting residents’ results by 75 percent and visitors’ results by 25 percent.

The two locations that have been presented as examples in the previous section will be discussed here again. The scores are presented for the alternative of a disposal facility with a ring dike.

At IJmuiden, impacts on the accessibility of the pier differ between residents and visitors. For visitors, the theme ‘accessibility of the pier’ is much more important than for residents. For visitors, there are more location-specific criteria within this theme than for residents. For visitors, the ‘presence of the pier to stroll around’ is the second most important criterion, after ‘visual amenity’. As a result, impacts on the accessibility of the pier scored negative (-) for visitors; and neutral (0) for residents. The criterion, openness, was equally important for both groups and the impacts on openness scored very negative (--) for both groups.

**Table 5-4: Impact scores for a storage facility at the North Pier in IJmuiden**
<table>
<thead>
<tr>
<th></th>
<th>visitors</th>
<th>Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IJmuiden town</td>
</tr>
<tr>
<td>Accessibility of pier</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Visual amenity (openness; wideness)</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Values of nature</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Recreational possibilities</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Atmosphere of the neighbourhood</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Nuisance (specific sources of annoyance)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
The most important theme for visitors was visual amenity, followed by accessibility and recreational possibilities. The themes ‘atmosphere of the neighbourhood’ and ‘values of nature’ had lower weights. For residents of IJmuiden, the themes ‘nature’ and ‘visual amenity’ (openness; wideness) were most important, followed by ‘atmosphere of the neighbourhood’ and ‘recreational possibilities’. The most important theme for residents of Seaport Marina was visual amenity (openness), followed by nature, nuisance and atmosphere.

After combining the relative importance of the themes with the impact scores, an overall score was allocated to each alternative for both groups. Although scores differed, the relative importance of the themes influenced the outcomes in such a way that the final scores for both visitors and residents were negative (-). Because these scores were equal, the final score for this alternative (a disposal facility with a ringdike) at this location (South Pier) was easily made (-). However, this was not always the case, as is illustrated by the next example.

At Wijk aan Zee, the most important themes for visitors were nuisance and recreational possibilities. For residents of the village, the character of the neighbourhood (atmosphere) was the most important theme, followed by values of nature, visual amenity and nuisance. Recreational possibilities and accessibility had relatively low weights. An analysis combining the weights of the themes and impact scores led to the conclusion that a storage facility scores negative (-) for visitors, because the two most important themes score neutral, while themes that score very negative (- -) have lower weights. For residents, the outcome was different. The important themes, character of the neighbourhood and nature, score very negative, while the less important themes score neutral or negative (-). The conclusive score for residents, therefore, was very negative (--) for a storage facility at the North Pier. Because the scores of residents have higher weights (75%) than those of visitors (25%), the final score for a storage facility at the North Pier is very negative (---).
Table 5-5: Impact scores for a storage facility at the South Pier near Wijk aan Zee

<table>
<thead>
<tr>
<th></th>
<th>Residents Wijk aan Zee</th>
<th>Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Scenic beauty (openness; width)</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Nature (facility surface 7 hectares)</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>(facility surface 16-25 hectares)</td>
<td>- -</td>
</tr>
<tr>
<td>Recreational possibilities</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Character of the neighbourhood</td>
<td>- -</td>
<td>0</td>
</tr>
<tr>
<td>Sources of nuisance</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

5.5.5 Comparing project alternatives

The overall Citizen Values Profile enabled a qualitative comparison between alternatives on the six themes: accessibility; visual amenity; nature; recreation; atmosphere and character of the residential neighbourhood, and nuisance. Although not included in the CVA study, the new alternative at the steel plant Corus was added just for comparison. Obviously, the scores at this location were neutral because there were and will be no residents or visitors at this industrial site. The same applies to the location Afrikahaven. The overall assessments are summarised in Table 5.6.
Table 5.6 overview of overall scores for each location

<table>
<thead>
<tr>
<th>Locations</th>
<th>Disposal facility</th>
<th>Underwater storage</th>
<th>Processing unit</th>
<th>Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. North Pier,</td>
<td>–</td>
<td>x</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B.1. South Pier</td>
<td>–</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>B.2. Third Sea Harbour</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>C. North Sea canal</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>D. Noorder IJpolderplas</td>
<td>–</td>
<td></td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>E. Afrikahaven</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>F. Den Helder</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>G. Averijhaven – Werkhaven (Corus)</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
</tr>
</tbody>
</table>

(0 no impact; slightly negative impact; negative; x not applicable at this location)

The most important conclusions drawn from Phase 4 were the following. A storage facility at the North Pier (Wijk aan Zee) scores worst. Furthermore, storage facilities at the South Pier (IJmuiden) and the Noorder IJpolderplas (north of Amsterdam) score negative. The best place for a storage facility is the Averijhaven-Werkhaven at the industrial site of the steel plant Corus. Underwater storage scores neutral. Whether or not these additional underwater storage facilities are necessary depends on the capacity of the facility at the preferred location.
5.6 Integration of CVA output in the Environmental Impact Statement

The CVA outcomes were published in the reports of each of the four phases (Duinhoven and Hoeksema, 1997; Cox and Hoeksema, 1997; Bureau Veldkamp, 1999; Groen, 1999) and an overall summary of the CVA study (Groen and Snoek, 2000). The results of the CVA study were integrated in the EIS by means of a separate chapter (Rijkswaterstaat North Holland, 2001a). The EIS was mainly used and presented as a background document. A more important status was given to the Summary document (Rijkswaterstaat North Holland, 2001b), which was broadly distributed. The presentation of impacts in the Summary document included a section on the outcomes of the impact studies (the experts’ perspective) and a section on the outcomes of the CVA (the citizens’ perspective) for each of the alternatives. Thus, the results of the CVA study had a prominent place within the final document. The underlying CVA reports were available as background information.

5.7 Decision-making and follow-up

Before the final report was published, the outcomes were discussed with the Non-Governmental Advisory Board and the Governmental Advisory Board. The members of both Advisory Boards were informed by means of all documents and presentations by the project team and the CVA team. Both Advisory Boards formulated recommendations. On the basis of the outcomes of the EIA/project study and these two recommendations, an executive summary was written for decision-makers, in which Rijkswaterstaat presented and explained its preference. This document was presented to the competent authority: the Provincial Government. The preferred solution consisted of the following measures:

- preventive measures should be explored further;
- continuation of dumping of slightly contaminated sediments off-shore;
- contaminated sediments from the Waddensea should be processed locally;
- permanent use of the harbour Averijhaven as a storage facility in combination with a processing facility at the location Werkhaven;

- increasing the capacity of this location by an optimal utilization of technical developments, such as cold immobilisation into bricks;

- development of additional storage facility capacity for underwater storage, for slightly contaminated sediment, only if necessary.
These preferred intended measures implied that an EIA was no longer obligatory in the short term, because the development of a storage facility and a processing facility at an industrial site does not require EIA. Only for the underwater storage would an additional EIA be necessary. As a result, a formal decision based on an Environmental Impact Statement, public involvement and other aspects of the formal EIA procedure, was no longer required.

During the last phase of the project, another political issue interfered. This was the issue of the freshwater sediment problems in the same Province (see Box 5-I). A decision of the provincial authority to build a large-scale storage facility for the storage of heavily contaminated freshwater sediments in lake ‘IJmeer’, was overruled by the Dutch National Government. This caused an impasse that led to yet another political reconsideration of all aquatic sediment problems in the Province North-Holland. As a result, the Provincial Government decided to start all over again with a new study on an integrated approach of the saline sediment problems and the freshwater sediment problems.

**BOX 5-I: the case of freshwater sediment problems in the Province North-Holland**

In the mid-1990s, the provincial authorities of North Holland decided to allocate the lake "IJmeer" for a large scale storage facility for storing heavily contaminated sediment from freshwater. An EIA including CVA was commissioned to identify a preferred location in the lake. The lake has been registered as an international wetland under the Ramsar Convention. It is an area known for its magnificent scenic beauty and historic value. Along the shoreline are many historic fishing villages, such as Volendam and Muiden with its 13th century castle 'Muiderslot'. The views over the lake from the shore are beautiful, making living in these old villages very special. The whole IJmeer area is a recreational site for day-trippers, watersports, cyclists, and fishers, and the traditional fishing villages attract tourists from all over the world.

The CVA study revealed, amongst other things, that (despite communication efforts) the intended project was largely unknown to the potentially affected communities. Furthermore, people were shocked at the idea to bring heavily contaminated sediment into such a relatively undisturbed area which had so many environmental and recreational values. Many of the respondents questioned why Lake IJmeer had been selected at all as a potential location for this type of intervention in the first place, and suggested other locations. Although this issue was incorporated in the CVA report, this information was excluded from the EIA because this issue was outside the stated Terms of Reference: the selection of Lake IJmeer was the negotiated outcome of discussions amongst politicians at the provincial level. The completed Environmental Impact Statement identified a preferred location within the Lake IJmeer district, and a formal rezoning procedure was commenced by the Provincial Government to enable the development to
proceed. However, the issue did not disappear from the agenda of local interest groups. One of these groups successfully lobbied members of the National Parliament and generated much publicity. As a result, national politicians overruled provincial politicians and forced them to find another location for a storage disposal facility. The Environmental Impact Statement was left unread.

5.8 Evaluation

5.8.1. Introduction

In this section, the case study is evaluated in relation to the research questions articulated in Chapter 1. Additional data were collected by means of interviews with the project manager, the EIA project leader, and three members of the Non-Governmental Advisory Board.

This CVA case is presented specifically to discuss the potential of CVA in terms of its suitability and effectiveness, which is done, respectively, in Sections 5.8.3 and 5.8.4. As far as issues regarding the practical applicability are concerned, only the most significant methodological issues raised earlier in Chapter 4 will be elaborated upon in the next section.

5.8.2. Practical applicability of CVA

The most significant methodological problem encountered in the highway case in Chapter 4 was the construction of an overall Citizen Values Profile. This problem was twofold. First, it appeared to be difficult to integrate the weights allocated by different respondent groups; and as a result, it was impossible to create one set of weights for each of the
areas. As a result, two location-specific Citizen Values Profiles were constructed with ranking orders. Second, the relative importance of the criteria differed for the two areas. Therefore, it was decided to construct not one, but two Citizen Values Profiles, consisting of one set of criteria but with two ranking orders.

In the water management case described in this chapter, a different approach was used to construct and use Citizen Values Profiles. The situation resembled the previous case: the aggregated criteria (here called: themes) were the same for all areas, but the relative importance of the themes differed for the different areas. Instead of attempting to construct one Citizen Values Profile as the basis of the impact assessment process as was done in the previous case, here it was decided to apply a two-step qualitative impact assessment approach. The first step was to score each criterion and aggregate these scores to scores of each theme (at a higher abstraction level) using the relative importance of the criteria (see section 5.5.4). This was done for the two respondent groups: residents and visitors. After that, the scores of residents and visitors were integrated into an overall score for each location for both groups, taking into account the different weights of the themes for both citizen groups as well as by using different weights for residents (75%) and visitors (25%).

The next step was a comparison of all alternatives at all locations. Because scores were allocated for the same six themes for all alternatives, it was possible to compare the final scores for each of the locations and interventions (see section 5.5.5).

This two step qualitative approach allowed an overall comparison of locations because for all locations the themes at a higher abstraction level were equal; without losing the variation of criteria and weights represented in the location-specific Citizen Values Profiles.
5.8.2 Suitability of CVA

Relevancy of CVA output

The CVA study provided many location-specific details about the perceived quality of the living environment. The prioritisation of alternatives resembled the overall outcomes of the EIA. The scores of the alternatives confirmed, or sometimes emphasised, what was concluded from the expert studies in the Environmental Impact Statement: the most serious impacts would occur with the alternatives of storage facilities with a ring dike; the alternatives at the North Pier (-); the South Pier (-); and at the brackish lake Noorder IJpolder Plas (-). Only a disposal facility at the Averijhaven-Werkhaven scored neutral. Although CVA did not lead, finally, to different scores of alternatives, it did lead to a more differentiated, more complete overview of impacts.

The CVA study ‘neutralised’ two major NIMBY (not in my back yard) discussions. Both discussions related to the fact that possible future interventions resulting from the EIA project will take place in a changed situation, in which current environmental attributes will no longer exist, as a result of preceding interventions in the light of autonomous developments. Within the open plan process, local individuals and representatives systematically tried to fight for the preservation of present environmental attributes, which obviously cannot be preserved in the context of an intervention that builds upon a preceding intervention, as a result of which these environmental attributes will disappear. The residents of the village at the Afrikahaven were fighting against the fact that the harbour would be constructed in the first place. The decision to build the harbour, however, was in the hands of another competent authority. This decision was taken during the course of the EIA/project study and the harbour was built shortly thereafter. Likewise, the residents of the boat houses near the Noorder IJpolderplas were contesting the development of ‘their’ lake into an industrial area, which would be the basis for the development of a disposal facility. The Non-Governmental Advisory Board member representing these residents put it as follows:

All relevant issues are in the CVA report. However, the criticism I still have is the fact that all impacts are interpreted compared to the plans to build an industrial area. So the impacts of a processing unit are zero. Whereas, if I look out of my
window, I see greenery; natural space. I understand why impacts are presented this way, but I still do not agree.

This example illustrates that CVA provides a neutral evaluation of alternatives based on professional knowledge about those environmental qualities that are important to citizens. In contrast, representatives of interest groups will always try to defend their (present) interests by all means, including emphasising the value of environmental attributes and NIMBY responses.

Perceptions of the relevancy of CVA

All relevant steps in the CVA study were discussed with the Non-Governmental Advisory Board. This enabled interest groups to comment on every step of the study and to judge the quality of the CVA study. Informal conversations with members of the Non-Governmental Advisory Board, as well as observations during meetings of the Non-Governmental Advisory Board, made clear that the opinions about the contributions of CVA to the EIA were considered neutral to positive by all members except one, who was a representative of industrial interests in the region and who was mostly interested in the future industrial development of the Averijhaven-Werkhaven area. Interviews with three Non-Governmental Advisory Board members, representing residents and ecological interest groups, revealed a positive judgement of the CVA output. Appreciation for the CVA study was expressed as follows:

If no CVA had been conducted, we would not have known about its potential. Now that it has been conducted, it is very clear that it improved the quality of the EIS.

I think the CVA study was important because it showed the respondents and the people who can read the reports later that the population has been heard. – That their perspective had been taken into account.
They (the project proponent) spread information and communicate, but with a CVA study many people are interviewed and I think that is important. It shows that the impacts we fear are considered a central part of the problem.

Taking the social context into account, like it was done with CVA, prevents a lot of problems. One of my colleagues in the Non-Governmental Advisory Board has stated that CVA is nonsense and just delays the process. This is only true if you ignore the public resistance which will certainly arise when you ignore it [the social context].

The process of keeping the Non-Governmental Advisory Board informed took a lot of time. The EIS could have been written by 5 or 6 persons somewhere in an office in three months. However this would have resulted in a document which would have been criticised by many. Legal procedures would have been initiated. It could have gone a lot faster, but not with the same results.

The presentations on the CVA study during local information meetings were sometimes considered too technical. Yet there was nearly no criticism about the results of the study.

An interesting result of the CVA study was that underwater storage scored neutral for all locations, while at the same time, there was an ongoing debate within the Non-Governmental Advisory Board about the potential risks of seepage in what used to be called an ‘open underwater’ storage facility. It should be emphasised that CVA is an impact assessment instrument in which citizens’ judgements of the quality of their (present) living environment are investigated and that CVA does not investigate citizens’ perceptions of the impacts of future projects, including perceptions of risks. Nevertheless, these risk perceptions were encountered during the CVA study, and they appeared to be quite different from the outcomes of the professional risk assessment carried out within the project. Within the Non-Governmental Advisory Board, intensive discussions have taken place about this subject. Two representatives of interest groups were absolutely, and as a matter of principle, opposed to underwater storage in an open underwater storage facility. Although extensive expert studies revealed that underwater storage of slightly contaminated sediments is technically feasible without environmental risks; these Non-Governmental Advisory Board members were not willing to discuss
alternatives implying underwater storage, even though these alternatives were only meant for the storage of slightly contaminated sediments and technical risk analyses had revealed that chances of seepage were extremely low.

5.8.3. Effectiveness of CVA

As was concluded in Section 5.8.2., CVA did not lead to different results of the EIA, but it did provide relevant location-specific information. A more significant contribution of the CVA study to the EIA was that it appeared to have increased its legitimacy from citizens’ perspectives. The interviews with members of the Non-Governmental Advisory Board revealed that they appreciated the outcomes of the CVA study:

What came out was an average view, but that is a logical result of the fact that many people have been interviewed. Nevertheless, the results make very clear where the interests of this village lie; what people in this village consider valuable. That has become very clear.

I think that the CVA study also influenced the comparison of the locations. It has not been said in so many words, but I think the CVA outcomes contributed to the fact that the North Pier alternative has been rejected.

The plusses and minuses; they do not directly reflect opinions of citizens. It is a sort of indirect analysis of opinions. Yet, I think it is a good report.

The issues we worried about were there in the report.

The summary of the EIA outcomes was read thoroughly by all Advisory Board members. The project manager commented on the specific interest in the outcomes of the CVA study that was generated:

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5 After the new alternative Averijhaven/Werkhaven was included, underwater storage alternatives became less urgent, as a result of which the issue was no longer an explosive issue.
Decision-makers seem to be more interested in information from CVA than in technical details. The CVA study provided them with a view on how citizens feel; information to be taken seriously in their own political agendas.

The project manager concluded that the CVA study was a vital part of the project. He considered this information to be important for decision-makers: according to him, the politicians involved were primarily interested in two things: information about (risks of) storage facilities and information about opinions of citizens.
5.9 Concluding remarks

The practical application of the CVA instrument did not encounter any problems, primarily because CVA was given a central position in the whole project. Timelines were mutually attuned, information exchange between the ‘CVA track’ and the overall ‘EIA-track’ was optimally organised.

The CVA study specified key values and potential impacts from the perspective of citizens. This was appreciated by representatives of interest groups, the members of the Governmental Advisory Board and the EIA project team. According to representatives of most non-governmental interest groups, the CVA study had a positive impact on the quality of the EIA. The decision-makers in the Governmental Advisory Board were keen on being informed about the outcomes of the CVA study.

From this case study, it can be concluded that the CVA instrument was compatible with the EIA process and methodological framework; CVA output was relevant and contributed to the quality of the EIA; and the CVA contributed to the legitimacy of the EIA and the decision-making process.
CHAPTER 7
PERCEPTIONS OF THE RELEVANCY OF CVA

7.1 Investigating the perceived relevancy of CVA

7.1.1 Actors’ perspectives

One of the aims of this thesis is to provide insight in the relevancy (i.e. suitability and effectiveness) of CVA. In this Chapter, the relevancy of CVA is investigated from relevant actors’ perspectives.

An investigation of the relevancy of CVA output for utilisation in EIA would preferably be based on a quantitative evaluation of cases. Although the process of CVA development and application as described in this thesis covers a period of eight years from 1994 to 2002, the number of available cases in which the CVA instrument has been fully applied within EIA is limited. The reasons for this are:

- early CVA studies were conducted on the basis of preliminary designs and, therefore, are not suitable for the purpose of evaluation;
- in a number of cases the CVA instrument was not fully implemented because of financial or time constraints;
- in a number of cases the EIA procedure was, for varying reasons, not finalised; political decision-making was postponed; or EIAs are still ongoing;
- CVA was developed within a governmental organisation and the resources made available, as well as opportunities for systematic ongoing monitoring and observation during the course of CVA studies, were limited.

A different approach to gain insight in the effectiveness of CVA is to investigate perceptions of the (potential) effectiveness of CVA from relevant actors’ perspectives. Within the CVA Development Project, various exploratory studies have been conducted
by students and CVA team members on potential contributions of CVA to EIA. The outcomes of three of these studies are relevant for this Chapter and are discussed in the next sections.
7.1.2 Investigating actors’ perspectives

Three relevant actors can be distinguished. The first and most relevant perspective is that of ‘the citizen’. CVA can be considered a type of advocacy research (see Fig. 3-4), because it is ultimately meant to satisfy citizens’ needs. Thus, it is very important to investigate citizens’ judgements on the potential contributions of CVA to EIA. The second relevant perspective is that of the EIA professional. EIA professionals are the ones who will have to apply and integrate CVA within their EIAs and EISs. The potential effectiveness of CVA will be very much dependent of their attitude towards this instrument. The third relevant perspective is that of decision-makers. They are the potential end-users of the information provided by CVA.

These three relevant actors’ perspectives have been investigated by means of three different exploratory studies. The citizens’ perspective has been investigated by Annemarie Rodenhuis, a Masters student in policy sciences at the Technical University Twente, but within the context of the CVA Development Project and with partial supervision from the author of this thesis. This study focused on the quality of EIA from citizens’ perspectives and particularly on the potential contribution of CVA to the quality of EIA. The research included a series of semi-structured in-depth interviews with a selective sample of 15 citizens who had been actively involved in public involvement procedures of a number of EIAs some of which included CVA. The outcomes of these interviews are discussed in Section 7.2.

The perspective of professionals working in the field of EIA and other areas of policy analysis was investigated by means of a survey of participants at a symposium on “The citizens’ perspective in policy analysis”, which was held on November 1, 2001 as one of the communication activities within the CVA Development Project. The Symposium had the following aims:

- to discuss with relevant professionals the relevancy of including the citizens’ perspective in policy analysis and policy development;
- to present information about (the potential of) CVA
- to discuss potential contributions of CVA to policy analysis in general and EIA in specific.
The participants of this symposium can be considered a selection of professionals interested in the citizens’ perspective in their professional practice. The outcomes are discussed in Section 7.3.

The perspective of decision-makers was investigated as part of the PhD study by means of a series of in-depth interviews on the role of EIA in decision-making and potential contributions of CVA to the effectiveness of EIA. Eleven interviews were held with EIA professionals, professional policy advisors of politicians and politicians. The interviews were held in 2001 and 2002. The outcomes of this study are presented in Section 7.4.

7.2 Citizens’ perceptions of the relevancy of CVA

7.2.1 The study

A graduate student in science policy at the Technical University Twente, Annemarie Rodenhuis, conducted a study on quality characteristics of EIA and corresponding requirements for EIA from citizens’ perspectives. Within the context of this study, potential contributions of CVA to the quality of EIA were identified (Rodenhuis, 2000). The study was conducted within the context of the CVA Development Project.

In order to discuss potential contributions of CVA to EIA, interviews were conducted by Rodenhuis with a selection of citizens who were relatively highly knowledgeable about EIA and public involvement. The respondents had been actively involved in four different EIAs. Two of these EIAs included CVA as well as public participation; one EIA included public participation only; and one EIA did not include CVA or any form of public participation. All respondents were member of residential interest groups, local community committees, environmental organisations or traffic safety organisations. Six respondents had been involved in an EIA which included CVA. All respondents visited one or more information meetings and eight of them had been involved in a Non-Governmental Advisory Board. Fourteen respondents had contributed to the formal public involvement procedure. Most respondents informed themselves about EIA by following
the media and reading published newsletters and reports. The interviews included a discussion on the perceived quality of EIA and on potential contributions of CVA to EIA.

### 7.2.1 Quality requirements of EIA

Rodenhuis (2000) distinguished three groups of citizens with different quality requirements for EIA:

1. citizens who most probably will experience negative impacts of the intended activity;
2. citizens who experience negative impacts of the present situation and who will most probably benefit from the intended activity;
3. citizens who are specifically interested in a certain environmental issue.

Table 6.1 presents an overview of quality requirements of each of these groups, as identified by Rodenhuis. This overview consists of requirements spontaneously mentioned by the respondents, without mentioning of the potential role of CVA.
**Table 7.1: Quality requirements of EIA perceived by citizens** (source: Rodenhuis, 2000)

<table>
<thead>
<tr>
<th>Quality requirements of citizens who most probably will experience negative impacts of the intended activity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIA should provide complete, location-specific information about potential impacts on the personal living environment. This information should be:</td>
</tr>
<tr>
<td>- as complete as possible;</td>
</tr>
<tr>
<td>- easy to obtain;</td>
</tr>
<tr>
<td>- as certain as possible;</td>
</tr>
<tr>
<td>- understandable.</td>
</tr>
<tr>
<td>* EIA should provide opportunities to influence the planning process. Citizens demand:</td>
</tr>
<tr>
<td>- to be offered opportunities to influence the EIA;</td>
</tr>
<tr>
<td>- to be assisted in their activities to influence the EIA.</td>
</tr>
<tr>
<td>* Within EIA, potential impacts on the quality of the living environment should be acknowledged and citizens’ interests should be taken care of.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality requirements of citizens who experience negative impacts of the present situation who will most probably benefit from the intended activity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>* EIA should proceed as quickly as possible</td>
</tr>
<tr>
<td>*Sufficient attention should be paid to the experienced impacts in the present situation:</td>
</tr>
<tr>
<td>- Attention should be paid to present sources of annoyance;</td>
</tr>
<tr>
<td>- EIA should provide opportunities to call attention to certain sources of annoyance.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality requirements of citizens who are specifically interested in a certain environmental issue of which they want to defend the interests</th>
</tr>
</thead>
<tbody>
<tr>
<td>*EIA should include an appropriate and responsible process</td>
</tr>
<tr>
<td>*Attention should be paid to the specific interest that is defended by this citizen</td>
</tr>
</tbody>
</table>

From the overview of these perceived quality requirements of EIA, it can be concluded that CVA, at least partly, meets with quality requirements of all three citizen groups,
primarily because it provides location specific information from the perspective of citizens. Most respondents expressed explicitly that impacts on the citizens’ living environment should be part of EIA. This is exactly the information that is provided by CVA.

Apart from quality requirements of the EIA, the quality of decision-making processes was frequently mentioned by respondents. According to most respondents, decision-making should be based on a balanced weighting of interests and EIA should be used for that and this should be justified by politicians. However, most respondents consider politics an uncertain factor and distrust politicians as well as the government.

They decide what they want anyway

The role of EIA in decision-making is seriously questioned and this, in turn, affects quality judgements of EIA negatively.

All details were investigated rigorously. But when the new Minister was appointed, the decision was suddenly reversed.

7.2.2 The perceived relevancy of CVA

The discussions of the potential role of CVA in the interviews revealed that most respondents consider CVA a valuable addition to EIA, for both the quality of EIA output and the EIA process. This applied to respondents experienced with CVA as well as to respondents with no experience with CVA. Respondents involved in EIA without CVA were critical about the lack of inclusion of liveability issues in the EIA. Respondents involved in EIA with CVA were positive about the inclusion of liveability issues.

Considering the output of EIA, most respondents who had no experience with CVA, were positive about potential contributions of CVA to the quality of EIA. Those respondents who were critical about the lack of inclusion of liveability issues in the EIA, emphasised the importance of the fact that, by means of CVA, local knowledge would be utilised.
Another issue mentioned by this group of respondents was the fact that once you are involved in EIA, you want to know what happens with your input. If this input shows up in recognisable terms in an EIS, this will, in the perception of these respondents, definitely contribute to the perceived quality and legitimacy of EIA. CVA was considered very suitable for this purpose. CVA was perceived to add recognisable information on the quality of the living environment and to specify recognisable impacts on the quality of the living environment. Respondents emphasised that they consider qualitative, concrete descriptions of citizens’ interests in an EIS important. This implies that CVA output should be explicitly included in an EIS and information from the qualitative phase of CVA should be part of that information.

Of the six respondents who were experienced with CVA, three indicated that CVA had contributed significantly to the fact that there had been sufficient attention for the quality of the living environment in the EIA. The other three were not negative about CVA, but they indicated that their quality judgement of the EIA, if no CVA would have been conducted, would not have been less positive, primarily because of the opportunities for public participation that were provided and communication efforts.

Most respondents, including those with and without experience with CVA, expressed the importance of the fact that, by means of conducting interviews and sending out questionnaires, citizens are provided with opportunities to personally introduce the issues they consider important. Respondents experienced with CVA, considered this opportunity of “having a voice” of significant importance for the legitimacy of the EIA. The fact that, by means of CVA, the available local knowledge was utilised was considered very positive by this group of respondents.

Apart from the generally positive judgements of CVA, three respondents who had been involved in a CVA inquiry were critical about the quality of the questionnaire. The questions were difficult to read; sometimes it was unclear what was precisely meant by a question. During the course of filling out the questionnaires, two of these three respondents feared that their answers might be used against them in a later stage. Apart from these critical remarks about the CVA instrument, no negative judgements were made about the (potential) contribution of CVA to EIA.
From the outcomes of this exploratory investigation on the relevancy of CVA from citizens’ perspectives, it can be concluded that CVA is a suitable instrument for bringing in the citizens’ perspective in EIA.
7.3 Professionals’ perceptions of the suitability of CVA

7.3.1. The inquiry

A questionnaire was distributed to the participants of the symposium titled “The citizens’ perspective in policy analysis”, which was held on November 1, 2001. Some 180 participants representing governmental organisations at the national, provincial and city council level; consultancy firms; research institutes; NGOs and Governmental Advisory Boards attended the symposium (see Table 6-2). The questionnaire consisted of five statements about the integration of citizens’ perspectives in policy analysis, to which respondents were asked to react, four of which are relevant to this thesis. In total, 96 questionnaires were returned, which is a response rate of 53 percent.

Table 6-2 Categories of respondents

<table>
<thead>
<tr>
<th>Category</th>
<th>Number (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National government</td>
<td>42 (44%)</td>
</tr>
<tr>
<td>Provincial and city council governments</td>
<td>20 (21%)</td>
</tr>
<tr>
<td>Consultancy firms, research institutes</td>
<td>27 (28%)</td>
</tr>
<tr>
<td>Other</td>
<td>6 (7%)</td>
</tr>
<tr>
<td>Total</td>
<td>96 (100%)</td>
</tr>
</tbody>
</table>

Two statements related to the issue of integrating the citizens’ perspective in policy analysis in general, and two statements directly related to potential contributions of CVA to EIA. Respondents were asked to indicate on a four-point scale whether they totally agreed, agreed, disagreed or totally disagreed with the statements. In addition, respondents were asked to explain their scores. The outcome of the inquiry is discussed in the next sections. The explanations of scores are illustrated in the next sections by means of quotes.
7.3.2 The citizens’ perspective in policy analysis

**Statement 1**: It is useless to include location-specific information on the perceived quality of the living environment within large-scale projects of national importance.

Most of the respondents disagreed (41%) or totally disagreed (49%) with this statement, with varying explanations. Some respondents mentioned specifically the size of large-scale projects, being an important source of local impacts, as the reason to investigate impacts on the quality of the living environment:

> These projects severely influence the quality of the living environment in large areas

Other respondents argued that location-specific information cannot be excluded these days:

> Information about local impacts always needs to be revealed to decision-makers

> Not investigating citizens’ perspectives is: old fashioned, arrogant and ignores local interests and needs

Many respondents considered local knowledge a valuable source of information which can enhance the quality of large-scale projects, or that it offers opportunities for fitting in large projects locally:

> Citizens can provide much relevant information about the quality of the living environment

> Citizens may bring in other perspective

> Citizens have important local insights which experts do not have

> Local knowledge increases the quality of decision making
Arguments also included public support as an important argument to include local knowledge in large-scale projects:

It is important to take local interests into account to enhance public support and to prevent long lasting legal procedures

From experience I know that public participations yields results

Delays may be prevented

A few respondents agreed with the statement, because:

The citizen does not exist at this level

You can and will never change to a completely different alternative anyway

Impacts of large-scale projects cannot be adjusted to all ideas that are present amongst citizens

An interesting observation was the fact that these last three quotes were from senior managers.

**Statement 2: spatial quality is a local issue; therefore, input from citizens is indispensable.**

The large majority of the respondents agreed (50%) or totally agreed (34%) with the statement. Remarkable is that both who agreed and disagreed with this statement argued that spatial quality should not be considered a local issue only, but that it has various abstraction levels:

Spatial quality should not only be defined locally

The local level has a too low abstraction level to define spatial quality
A few respondents emphasised that it is the citizen who continuously experiences spatial quality:

Citizens deal with local spatial quality every minute of their life
Other respondents consider citizens a useful source of information:

- Spatial quality is per definition subjective; so an enumeration of subjective judgements should always be taken into account

- Spatial quality cannot be defined objectively, but only by how it is perceived and experienced by citizens

Citizens are local experts

### 7.3.3 The perceived relevancy of CVA

*Statement 3: in EIA more attention should be paid to the meaning of environmental quality to citizens.*

A large majority of the respondents (49%) agreed or totally agreed (33%) with this statement:

Up to now, this was an issue too often considered irrelevant or unimportant.

Many respondents emphasised the fact that man and environment cannot be separated:

- All environmental impacts are socially defined

- Citizens are part of the environment

Many respondents indicated that an EIS is completer when social implications of environmental changes are included:

- This provides a more realistic overview of reality and that is what we want to achieve

- We have enough attention for environmental issues from experts’ perspectives in EIA; what we lack is input from the citizen
A minority of the respondents (17%) disagreed with the statement, not necessarily because they consider this type of information irrelevant, but primarily because this subject should not be part of EIA:

- Two different perspectives should not be combined in one procedure
- Such impacts require other instruments
- EIA should be restricted to environmental issues; EIA is too extensive already
- Too much information makes EIA inaccessible

Only one respondent totally disagreed and stated explicitly:

- EIA pays enough attention to liveability issues already as it is

**Statement 4: if serious attention is paid to public participation CVA is superfluous.**

The large majority of respondents disagreed (72%) or totally disagreed (19%) with this statement. Most respondents argued that with CVA a better representation of the community is guaranteed:

- CVA can compensate the insufficient representation of interactive planning
- CVA provides objective input similar to other impact studies

Interactive planning involves emancipated citizens, while CVA involves a representative sample of the population

Furthermore, respondents argued that public participation and CVA are two different things:

- CVA is an excellent addition to interactive planning
- CVA provides other, more detailed information
Only 9% of the respondents consider CVA superfluous:

- Public participation reveals citizen values as well
- CVA is just an incomplete substitute for interactive planning
- Interactive planning sufficiently satisfies citizens’ needs

From the inquiry, it can be concluded that a vast majority of the professionals considered impact studies on the local quality of the living environment in policy analysis relevant. Furthermore, approximately the same number of professionals thought that EIA should pay more attention to the meaning of environmental quality to citizens, and that CVA is a relevant tool to fill that gap.
7.4 The decision-making perspective

7.4.1 The interviews

In-depth interviews were held with a selection of 11 individuals involved in the decision-making arena. Political decision-makers are hardly directly involved in EIA; they receive only brief executive summaries. The selection of respondents, therefore, consisted of only two politicians experienced in EIA. In addition, interviews were held with EIA policy advisors of decision-makers. The selection of respondents consisted of two policy advisors of the Minister of Transport, Public Works and Water Management, one advisor of the Minister of Housing, Spatial Planning and Environment, and four of environmental decision-makers at the provincial level. Furthermore, interviews were held with the project manager and the EIA project leader of the EIA presented in Chapter 5, who have been closely involved in integrating CVA in the EIA process, including the role of CVA in decision-making.

The interviews focused on two major topics: the role of EIA in decision-making; and potential contributions of CVA to the effectiveness of EIA. The two interviews with the EIA professionals of the case study focused on contributions of CVA to the effectiveness of EIA only. Apart from these two EIA professionals, none of the respondents knew about CVA at the time of the interview. Before discussing potential contributions of CVA, the CVA instrument was explained to the respondents.

7.4.2 Perceptions of the role of EIA in decision-making

The interviews made clear that particularly policy advisors perceive the influence of EIA to be quite limited. According to most policy advisors the bottom-line is: although EIA provides detailed information about impacts and alternatives, in reality, most decisions are based on very brief summaries of EIA and on political agendas. The interviewed politicians emphasised the relevancy of EIA, but they also stated that more considerations play a role in decision-making. They considered EIA relevant because it makes explicit what the environmental consequences of decisions are.
A decision-maker emphasised that the influence of EIA depends on the type of decision-maker. Three policy advisors mentioned negative attitudes of decision-makers towards EIA:

In our organisation there is a culture to see EIA as a nuisance

According to one respondent, these are politicians who strictly follow their own path:

They are the bulldozers. The other categories of politicians, those who want to listen and learn, are much more susceptible to EIA

Two policy advisors argued that it may be true that EIA output should be the basis for decision-making, but in reality information provided by EIA is often used to justify decisions that have already been taken:

EIA is used to underpin, or justify what was already planned. EIA is for fine-tuning decisions

Three policy advisors emphasised that political issues and political interests strongly influence the role an EIA may or may not play. An advisor of a minister put it as follows:

As soon as a project is of national political importance, which is the case with many large projects, political interests will be at stake and information provided by EIA will be less influential. In smaller projects, further away from the political arena, EIA will have a more prominent role as the informative basis for decision-making

But, one of the decision-makers stated the opposite:

If the EIA relates to sensitive issues or there is a lot of public criticism on an intended activity, I am inclined to read the whole EIS

A remarkable example mentioned was a road project. Although a lobby in favour of constructing a highway by certain interest groups had convinced many politicians of the need for this highway, the EIA revealed opposite: the highway alternative would have significant impacts on the environment, while traffic studies revealed that the problem-solving capacity of the highway alternative would not exceed that of the alternative of a
regional motorway which would have far less environmental impacts. Despite the lobby for the highway, the Minister became convinced by the advisor of the information provided by the EIA and defended the alternative in parliament. The Dutch Parliament, however, voted in favour of the highway alternative, suggesting that the EIA provided the justification for that. Only one advisor was unambiguously positive about the role of EIA and stated that information provided by EIA was generally taken serious.

7.4.3 The perceived relevancy of CVA

During the interviews, three types of (potential) contributions of CVA to EIA were mentioned: contributions to EIA output; contributions to EIA processes; and contributions to decision-making. According to most respondents, the potential relevancy of CVA primarily depends on the type of decision and the scope of that decision. CVA should not be included in every EIA; neither should it be restricted to EIA; this should be considered case by case in the scoping phase.

The perceptions of potential contributions of CVA to EIA were generally positive. One respondent even stated:

If you believe in EIA, you have to have good reasons not to believe in CVA

Only one respondent doubted about the relevancy of CVA. The relevancy of CVA output was generally perceived to be positive, but limited by the respondents who had no experience with CVA. CVA was expected to elucidate local details, issues and specific interests, more than to reveal new issues of high political importance. The two EIA professionals who were experienced with CVA both concluded that the CVA study had been a vital part of the project. According to one of them, the politicians involved were primarily interested in two things: information about (risks of) the intended activity and information about citizens’ perceptions. One of them stated:

Decision-makers derive benefit from objective, structured and systematic information about what citizens consider important in their living environment
The relevancy of CVA to the EIA process was perceived to be much bigger by the respondents. Many respondents believed that, notwithstanding CVA output, the inclusion of CVA in an EIA is a signal to the community that their interests are considered seriously.

The relevancy of CVA to decision-making was perceived to depend on the attitude of the decision-makers involved. According to respondents, politicians who are not very interested in EIA, will not be interested in CVA, while politicians who are open to EIA will be more open to CVA. Whether or not politicians consider CVA output relevant will also depend on the political context and the political weight of the CVA outcomes. But this will also depend on how the CVA outcomes are presented. According to respondents CVA reports should focus on the difference that CVA makes. According to one respondent CVA might increase the political impact of an EIA, because politicians are sensitive to public issues and they have to justify their decisions to the public. CVA may provide them with information for the development of broadly supported decisions or in the development of arguments to justify decisions. This was also observed by the EIA manager involved in CVA:

Decision makers seem to be more interested in information from CVA than in technical details. The CVA study provided them a view on how citizens feel; information to be taken seriously in their own political agendas

One of the EIA professionals experienced with CVA even stated that CVA should be included in EIA legislation. Such a legal framework should make clear in what cases CVA should be conducted and how its results should be integrated in EIA.

From this exploratory study of the decision-makers’ perspective, it can be concluded, that the role of EIA depends on the susceptibility of the decision-makers involved and that CVA might have a positive impact on that susceptibility. Whether CVA output is influential in decision-making depends on the political context, but the information that CVA provides is a type of information that draws the attention of decision-makers.
7.5 Discussion

7.5.1 The content: perceived contributions of CVA to the quality of EIA

Particularly from the citizens’ perspective, CVA output is considered an important addition to the quality of EIA. Professionals consider attention for social issues in EIA far too limited and they consider CVA a suitable instrument to fill that gap. Some professionals were hesitant about the integration CVA in EIA because EIA is too comprehensive already. From the decision-makers’ perspective, CVA potentially provides relevant information. The relevancy of the information provided by CVA depends on its relations with the political context.

7.5.2 The process: perceived contributions of CVA to the legitimacy of EIA

From the interviews it can be concluded that CVA is generally perceived to increase the legitimacy of EIA. For citizens, it is very important that the quality of their living environment is part of the EIA and that the outcomes are presented in recognisable terms. It can be concluded, that CVA is a very suitable instrument for EIA.

7.5.3 Politics: perceived contributions of CVA to decision-making

The interviews made clear that the role of EIA in decision-making can certainly be improved. CVA might contribute to such an improvement, because the information it provides about citizens’ interests and public issues is a type of information to which
decision-makers are potentially sensitive. However, to what extent CVA output can influence decisions depends on the following factors: the political weight of CVA output; the susceptibility of the decision-maker(s) to EIA, and on decision-makers’ political agendas. The interviews made clear that political agenda’s often overrule rational information. A crucial role appears to be played by the decision-makers’ advisors. They select the most relevant information from an EIA. Thus, what happens with CVA output will largely depend on their way of filtering.
7.6 Concluding remarks

The three exploratory studies on perceptions of the (potential) effectiveness of CVA have made clear that CVA is considered to be a suitable addition to EIA by the majority of respondents. Particularly from the citizens’ perspective, the inclusion of CVA in EIA will contribute to the quality and legitimacy of EIA. If CVA output is considered relevant enough by the policy advisors to present it to the decision-makers, this information is likely to be part of the advice that is given to the decision-maker. However, how influential CVA (and EIA) can be will largely depend on decision-makers’ political agendas and their attitudes towards rational fact finding.
CHAPTER 8  DISCUSSION

8.1 Introduction

In this Chapter, the findings described in Part II of this thesis are discussed in relation to the research questions that were formulated in Chapter 1. These research questions deal with:

1. **Methodological soundness and applicability:** Is CVA a plausible and methodologically sound instrument for analysing citizens’ values and citizens’ views about their living environment?
2. **Suitability:** Is CVA suitable for integration within EIA?
3. **Effectiveness:** Is CVA effective in improving the processes and outcomes of EIA?

The discussion is structured along a number of sub-questions related to each of the research questions.

8.2 Methodological soundness and applicability

8.2.1 Question 1 and sub-questions

**Question 1:** Is CVA a plausible and methodologically sound instrument for analysing citizens’ views about their living environment?

**Sub-questions:**
- Is it possible to operationally define and implement a process to measure peoples’ subjective values about their living environment?
- Is it possible to collect the data that are required for CVA?

- Are CVA results methodologically sound in terms of reliability, validity, bias and sensitivity?
8.2.2 *Is it possible to operationally define and implement a process to measure peoples’ subjective values about their living environment?*

The case studies have revealed that it clearly is possible to develop a process to measure peoples’ subjective values about their living environment. About 20 different applications of CVA were conducted and collectively have proven that CVA provides a generally applicable framework to gain insight in the key values of the living environment from citizens’ perspectives. Using that framework, it was possible to collect the required information by interviewing citizens. Respondents were willing, even eager, to share their judgements about their living environment with the interviewers. The cases also demonstrated that it was possible to construct Citizen Values Profiles based on the interviews that were conducted. These Citizen Values Profiles were an adequate basis to compare and judge alternative plans. The interviews with actors involved in EIA, as presented in Chapter 7, confirmed that measuring peoples’ subjective values is also perceived to be feasible (as well as relevant) by relevant actors. Citizens also appreciated the contribution made by CVA and they validated and legitimated the process.

While CVA is, therefore, clearly possible, there were some difficulties that need addressing in the further development and application of CVA. The primary difficulty relates to the construction of a single Citizen Values Profile in certain situations, especially when there are different alternatives in different locations and/or different user groups in the different locations. One issue regarding the practical applicability of the CVA instrument that will require attention in future is one that is common to all social science research, that is, the declining response rates to surveys and the potential bias caused by the non-response. A final matter for future development relates to establishing the appropriate procedure for determining the weights of the key values.

Despite these remaining methodological issues, however, CVA is a theoretically plausible and methodologically feasible process for investigating citizens’ perceptions about their living environment.
8.2.3 Is it possible to collect the data that are required for CVA?

In CVA, the data required for the construction of Citizen Values Profiles (Phase 1-3) are collected by means of in-depth interviews and surveys. The data required for impact assessment are collected from the other impact studies within the EIA. CVA practice described in Part II demonstrated that, in general, it is possible to collect the necessary data. Two issues appeared to be particularly relevant for data collection: the response rates for the interviews and surveys in Phase 2 and Phase 3, and the availability of data from other impact studies in Phase 4.

From the experience of CVA so far, it can be concluded that the response rates of the surveys in Phase 3 were generally consistent with those normally achieved (Dillman, 2000; Sarantakos, 2004): on average they vary between approximately 25 and 35 percent. This acceptable response rate can be explained by the fact that the subject of the inquiry directly relates to respondents’ interests regarding their daily life. Attention should be paid to the select sample of respondents in Phase 2. Experiences with CVA so far indicate that a relatively large number of respondents were older, retired or unemployed people. Interviewing in evenings, or at least making the appointments in the evening, will increase the chance to expand the range of representation.

CVA is very much dependent on the quality of the other impact studies on which the CVA practitioner has to rely. The ‘highway case’ in Chapter 4 made clear that the origin or justifications of certain assessments are often untraceable, vague or implicit. Interaction between the CVA practitioners, the EIA project team, and preferably the practitioners of other EIA impact studies, is an important prerequisite for adequate mutual adjustment and to guarantee the availability of the data required.
8.2.4 Are CVA results methodologically sound in terms of reliability, validity, bias and sensitivity?

Reliability, validity, bias and sensitivity are standard social research methodology considerations (Sarantakos, 2004; Patten, 2002). **Reliability** refers to the extent to which an instrument is consistent in its measurement. In other words, the extent to which it is free from random error, or whether or not it achieves the same result when measured repeatedly, providing that there has been no change. For CVA, this means whether the same Citizen Values Profile (Key Values and their weights) would be obtained if a subsequent application of the instrument was undertaken. **Validity** is the extent to which an instrument actually measures what it purports to measure. For CVA, this means the extent to which the Citizen Values Profile really is an accurate reflection of what citizens actually do think about their living environment. **Bias** is a systematic distortion in the outcome as a consequence of the way the methodology is operationalised. For CVA, this means whether there are processes such as non-response that might systematically influence the content of the Citizen Values Profile. **Sensitivity** refers to the extent to which the instrument is capable of measuring changes in the phenomenon being studied, related to small changes in the underlying conditions. For CVA, this means whether or not the Citizen Values Profile is sufficiently sensitive to provide an adequate basis for comparing and judging between project or policy alternatives, and for detecting small changes between different groups.

Because of the large sample sizes, and the care taken in the qualitative Phase 1 to ensure that the Key Values are appropriate, it is highly likely that the outcomes produced by CVA are reliable. Although coefficients of reliability were not calculated for any of the studies, it would be possible to do this statistically using the quantitative data that is collected in Phase 3. While the potential biasing factors of the survey method (that are associated with the non response rate) may contribute to a degree of variability, in other respects there is no reason to believe that reliability of the method is insufficient.

Similarly, validity is also likely to be high. The most important issue with respect to the validity is whether or not the Key Values that have been reported adequately represent what the living environment really means to people. The open, semi-structured approach of the in-depth interviews, allowing respondents to express how they experience the qualities of their living environment in their own way and in their own words, is an important condition for a thorough understanding of the meaning of the living
environment. Furthermore, the interview approach reduces the likelihood of socially desirable responses being given. Although there is potential influence by interviewers which could theoretically lead to omissions or irrelevant Key Values, the disclosure of CVA output to the public guarantees adequate quality control: if the Citizen Values Profile would not be representative, it would be criticised by the public. The same applies to the qualitative analyses conducted in the impact assessment phase (Phase 4). Moreover, as discussed in Chapter 2, ideally CVA outcomes are the result of an iterative process in which representatives of interest groups are involved and preliminary outcomes should be discussed with key persons.

Potential bias arises as a result of non-response. Often, older people are more willing to participate in an interview or survey than younger people. In 2001, the Public Participation Desk of the Ministry of Transport, Public Work and Water management has commissioned a study on the characteristics of so-called ‘non-participants’ to public involvement procedures (TNO, 2002). Five groups of non-participants were identified: 1) distrustful citizens; 2) uncertain citizens; 3) unconcerned citizens; 4) investigating citizens; and 5) very busy citizens. Other investigations reveal that older, retired males with plenty of spare time are over-represented in public involvement processes (Intomart, 2001; Rodenhuis, 2001). It is likely that similar over- or under-representation of certain groups will occur in CVA, if no adequate attention is paid to non-response issues.

The remaining issue is the sensitivity of the CVA instrument. The available cases have demonstrated that a detailed differentiation between alternatives can result from CVA. The high level of statistical differentiation appeared to enable adequate discrimination between alternatives, locations and between groups of people.
8.3 Suitability

8.3.1 Research question 2 and sub-questions

Research question: Is CVA suitable for EIA?

Sub-questions:
- Is CVA compatible with the procedure and rationale of EIA?
- Does CVA produce information that is relevant to EIA?

8.3.2 Is CVA compatible with the procedure and rationale of EIA?

CVA was designed in such a way that it fits within the administrative procedures of EIA and complies with the methodological framework of EIA. The CVA studies conducted so far make clear that CVA was indeed compatible with both the EIA procedure and the rationale of EIA.

As far as the EIA process is concerned, only small adjustments in the timeframe were required to optimally utilise CVA output. Where CVA did not fit within the timeframe of projects, this was mostly caused by the fact that the CVA started relatively late. An interesting observation is the fact that in the sediment disposal case in Chapter 5, where CVA had a central role in the EIA and where CVA was included in project planning from the very beginning, no problems of this type were encountered. Whether or not CVA should be included in EIA should, therefore, be assessed in an early stage of EIA, preferably during the scoping phase. This has already been recognised in the Scoping Handbook published by the Ministry of Housing, Spatial Planning and Environment (Elsen and Tersteeg, 1999). This handbook contains a section stating that a good scoping process should consider the inclusion of CVA.
The rationale of EIA is to structurally integrate environmental interests in decision-making processes and to contribute to rational decision-making by providing all information required on environmental issues (VROM, 1994). In Chapter 1, it was concluded that the methodological frameworks of SIA and EIA do not match, because the two fields developed as totally different disciplines, each with its own paradigm and discourse. CVA practice has proved that CVA bridges this gap. The cases described in Chapters 4, 5 and 6 have demonstrated that, within a well-structured framework, it is possible to use citizens’ subjective value judgements about the qualities of their living environment for a professional and neutral assessment of the impacts, and in a comparison of project alternatives. It was further demonstrated that this was possible in cases that vary greatly in size, character and geographical area. By means of CVA, it appears to be possible to integrate a socially relevant component in EIA in a way that is compatible with the procedure and rationale of EIA.

The CVA cases described in this thesis made clear that the often-heard position that lay people generally are unable to judge the scientifically and technically complicated issues that are the basis for EIA; that they react emotionally and subjectively; and that, therefore, they should not be involved in decision-making processes, is not correct. CVA practice demonstrated that these arguments, used to exclude citizens’ subjective judgements from impact assessment studies, do not hold. It is rather a matter of how citizens’ judgements are to be incorporated in EIA.

8.3.3 Does CVA produce information that is relevant to EIA?

The information produced by CVA can be relevant in two ways:

(1) CVA broadens the scope of the environmental interests described in EIA by including information on the perceived qualities of the living environment;

(2) CVA brings in a different type of information by adding citizens’ judgements to the expert judgements of which EIA usually exists.
The cases described in Chapters 4, 5 and 6 demonstrated that CVA provides many relevant location-specific details about the perceived qualities of the living environment. Particularly information about recreational values, nature values, traffic nuisance and other sources of nuisance, and the quality of neighbourhoods appeared to provide new insights that might have remained unknown without CVA. All cases described in this thesis did provide relevant insights in the potential impacts of interventions from citizens’ perspectives. Furthermore, the cases made clear that citizens’ judgements of environmental values did differ from, and sometimes even largely differed from expert judgements in character as well as in weight. It can be concluded that the output provided by CVA is indeed relevant to EIA.

The next question is: are the (potential) contributions of CVA to EIA perceived relevant also by those involved in EIA? An important factor hampering the integration of local knowledge found in literature is that such knowledge is often considered common sense and that social impacts are often claimed to be predictable (Burdge, 2003; Firth, 1998; Vanclay 1999; Burdge and Vanclay, 1995). A recent analysis of 16 cases of Social Impact Assessment (SIA), however, reveals that the recognition of and use of local knowledge was a key component of these projects, and that these were surely not common sense (Burdge, 2003). The investigations amongst relevant actors involved in EIA, as presented in Chapter 7, showed that information to be provided by CVA is perceived relevant by most respondents. Particularly the citizens themselves considered the inclusion of an impact study on the perceived quality of the living environment to be an important signal that their interests were taken seriously. This is confirmed by various publications in which citizens’ judgements of the quality of EIA have been discussed: individual citizens or stakeholders appear to consider EISs unreliable and/or incomplete if information on the personal environment is lacking or inadequate (Suvaal, 1994; de Vlieger, 1996; Niekerk, 2000; Rodenhuis, 2001).

The increasing level of public participation and increased attention for liveability issues in government policy development in the Netherlands may have contributed to the perceived relevancy of CVA, particularly for policy advisors and EIA professionals. The citizens’ perspective is gaining recognition as a vital part of policy development in the Netherlands. This is reflected, for example, in the fact that the Dutch Government established a Committee on Future Government Communication in 2001 to prepare recommendations on how to improve government communication. In its report ‘In the service of democracy’, the Committee concluded that a growing number of citizens want
to be co-producers within policy development processes and that government communication could be substantially improved (Committee on Future Government Communication, 2001). Two of the three improvements suggested in this report were particularly applicable to CVA:

1) Citizens should have a central position in policy making: their knowledge and commitment should be represented in a better way, and should be incorporated in policy making processes from earlier stages on;

2) Government communication efforts and interactive policy making processes should be based on an understanding of differences between citizens.

Developments within the organisation that hosted and supported CVA development, Rijkswaterstaat, also contributed to the relevancy of information provided by CVA. Rijkswaterstaat currently is in the middle of a major reorganisation. The aim of this reorganisation was formulated by the former Secretary General of the Ministry of Transport, Public Works and Water Management, as follows:

Rijkswaterstaat should become a client-oriented organisation with close links to its societal context. The new Rijkswaterstaat should actively anticipate its clients' needs and interests and be prepared for changing demands within society (Pans, 2001).

These developments in the field of government policy development in the Netherlands and the recent developments in the field of impact assessment, as described above, confirm that CVA, at least in theory, provides relevant information for policy-makers. This, however, does not guarantee optimal application of this new instrument in practice. As a result of the major reorganisation of Rijkswaterstaat the CVA team at the Civil Engineering Division was disbanded in 2004. Three of the remaining six former CVA team members were reappointed to a recently initiated central Programme “Client Orientation and Public-oriented Approaches of Rijkswaterstaat”. They now fulfil tasks within this programme and only partly on activities related to CVA-development and implementation. Thus, CVA expertise has been institutionalised within Rijkswaterstaat, but with limited capacity.
In conclusion: firstly, the CVA cases demonstrated that CVA produces information that is relevant into EIA; secondly, according to most EIA actors interviewed CVA produces, at least potentially, relevant information for decision-making; and thirdly recent developments in the field of government policy development in the Netherlands as well as recent developments in the international field of Impact Assessment imply that the information provided by CVA is relevant in policy development. But the available CVA capacity recently has become limited. It is evident that optimal use of a new and relatively unknown instrument like CVA requires active promotion and acquisition. The future will learn how often CVA will be applied within and outside Rijkswaterstaat and whether the potentials of the instrument will be optimally utilised.
8.4 Effectiveness

8.4.1 Research question 3 and sub-questions

Research question: Is CVA effective in improving the process and outcome of EIA?

Sub-questions:
- Does CVA lead to different EIA outcomes than would have been achieved otherwise?
- Does CVA increase the legitimacy of the EIA and the decision-making process?
- Does CVA influence or change the final political decision?

8.4.2 Does CVA lead to different EIA outcomes than would be achieved otherwise?

CVA can be considered effective if it has actually influenced the development of an intended activity during the EIA process, for example in the detailing of alternatives or variants or in the development of mitigation or compensation measures; or if it has led to other priorities in the evaluation of the alternatives. Furthermore, CVA can be considered effective if it has indirectly influenced the EIA process by communication of CVA outcomes to the public empowering interest groups and individual citizens.

From the cases presented in Chapters 4, 5 and 6 it can be concluded that CVA provided insight in positive and negative impacts of alternatives and variants and that these insights differed from the expert judgements in the EIA, in terms of impact characters as well as weights. In the ‘highway case’ in Chapter 4, CVA outcomes resulted in slightly different priorities of the alternatives in the ‘Citizen Scenario’ and the ‘Liveability Scenario’. In the ‘sediment disposal case’ in Chapter 5, the priorities found in CVA were in line with those of the overall EIA. In the ‘riverbed case’ in Chapter 6, two ‘environmentally friendly’ alternatives were developed: the Most Citizen Friendly
Alternative and the Most Environmentally Friendly Alternative, which clearly differed from each other.

Concerning the prioritisation of alternatives, in the cases described in Part II, CVA provided varying outcomes. In all cases, relevant additional information concerning impacts of alternatives was provided. In the highway case presented in Chapter 4, the CVA outcomes somewhat contradicted the EIA outcomes, while in the sediment disposal case presented in Chapter 5, the CVA outcomes confirmed the outcomes of the EIA. In the case of the river Waal, CVA even resulted in a ‘most citizen friendly alternative’.

The effectiveness of CVA also depends on the perceived relevancy of CVA in the eyes of the actors’ involved. If CVA is included as just an obligatory ‘nuisance’ by EIA professionals, the chance that CVA output is presented optimally will be small. If decision-makers do not have an open mind towards information from the community, CVA may remain an academic exercise without substantial influence on the decision-making process. On the other hand, even if CVA outcomes would be ignored by decision-makers, CVA provides information that still could be used by citizens and interest groups as well. In the sediment disposal case, CVA was given a central role in the project. Although this EIA also was not published, the CVA outcomes played a serious role during the EIA process. Because CVA was considered relevant, the effectiveness of CVA was optimal. In the Rotterdam Mainport case presented in Chapter 6, CVA was not perceived relevant in the decision-making process, even though the three CVA studies conducted had provided useful information.

8.4.3 Does CVA increase the legitimacy of the EIA?

Insight into whether and how CVA might influence the legitimacy of EIA requires systematic monitoring and evaluation of cases. The perceptions of relevant stakeholders were investigated about how CVA might contribute to the legitimacy of EIA (Chapter 7). This investigation revealed that the explicit inclusion of CVA in an EIA is considered to be an important contribution to this legitimacy. The expectations of the contributions of CVA to the legitimacy of EIA are even higher than the expectations about the contribution of
the actual information provided by CVA to the Environmental Impact Statement. The fact that attention is paid to citizens’ concerns by conducting CVA was perceived to be important, apart from what the outcomes might be. This was confirmed by the experiences in the case studies. Especially in the ‘sediment disposal case’ in Chapter 5 and the ‘river bed case’ in Chapter 6, the CVA study appeared to have contributed to the legitimacy of the EIA.

8.4.4 Does CVA influence or change the final political decision?

The last issue regarding the effectiveness of CVA concerns the influence of CVA on decision-making. Unfortunately, there is still not one case available in which a full CVA was conducted within EIA that reached the stage of formal decision-making. Three types of influence can be distinguished:

-CVA directly influences a decision-making process;

-CVA indirectly influences a decision-making process by empowering citizens and interest groups;

-CVA contributes to the justification of a decision.

In the ‘sediment disposal case’ in Chapter 5, it became clear that the decision-makers were interested in the information provided by CVA. The observations made in this case made clear that CVA provided information that was politically relevant and that decision-makers were at least aware of what the outcomes were. In this case, CVA directly influenced the EIA process.

Even if CVA outcomes are not taken into consideration in decision-making, as for example in the Rotterdam Mainport Development case, they can still indirectly influence political decision-making processes. In such cases, citizens can use the information provided by CVA in a public involvement procedure or in other activities undertaken to defend their interests, as happened in the sediment disposal case. CVA outcomes can be used to challenge decision-makers to justify why other issues had higher priority.
The legitimacy of a decision depends not only on the decision itself, but also on the care with which a decision was prepared in the eyes of relevant actors (was the information provided by EIA used appropriately?) and on the way in which decisions are justified (were sufficient arguments used?). The influence of the information provided by CVA is perceived to be low, particularly by citizens and some policy advisors. Policy advisors suggested that the biggest chance that CVA outcomes influence the decision-making process if the outcomes reveal that a certain alternative will have significant impacts on the quality of the living environment and this differs substantially with the EIA outcomes, or if the CVA outcomes are in line with the political agenda. Policy advisors appear to play a potentially important role in this process, because they are a major filter of information. In conclusion: the direct effectiveness appears to lie mainly in two types of indirect influence: (1) influence by providing rational information that can be used by citizens and interest groups; and (2) by justification of a decision.

The potential direct influence of CVA potentially is low. Direct influence appears to occur mainly if CVA provides outcomes that are in line with political agendas or to which politicians are sensitive.

Direct influence requires the explicit recognition of rational information by decision-makers and by the policy advisors. This, in turn, requires political commitment (or maybe courage) to acknowledge the relevance of systematic information provided by EIA. Moreover, citizen values have to be acknowledged as a relevant data source – expert judgements should be considered an appropriate but not exclusive information source. This seems to be only the case when it fits political agendas.
CHAPTER 9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

9.1.1 Methodological soundness and applicability of CVA

1. Citizens’ subjective value judgements about their living environment can be used for a professional and neutral assessment of impacts and comparison of alternatives in cases that vary much in size, character and geographical area covered. By means of CVA, citizens’ values and citizens’ views about their living environment can be analysed in a way that leads to valid and reliable results.

2. The CVA instrument provides outcomes that are sound in terms of validity, reliability, unbiased results and sensitivity provided that the following measures are taken:
   - sufficient quality control is ensured;
   - data collection and data analysis in an iterative process is undertaken;
   - discuss preliminary outcomes of the analysis with key persons;
   - use experienced social scientists, preferable CVA professionals;
   - use different consultants for qualitative and quantitative analysis;
   - keep the process transparent;
   - ensure to stay as close as possible to the original qualitative and quantitative data.
3. Data required for CVA can be collected provided that unambiguous information is available from other impact studies. This requires adequate information exchange between CVA practitioners and EIA practitioners.

4. The efficiency of the CVA instrument should be further improved. The development of a data-base could contribute to an increase of the efficiency of CVA regarding data collection. A systematic methodological evaluation of cases may well contribute to an increase of the efficiency of CVA regarding the construction of Citizen Values Profiles and the impact assessment process. Such an evaluation could contribute to the following types of improvements:

- improved integration in the EIA and coordination with the EIA team;
- improved cost-effectiveness;
- development of ways to use existing data from other CVA studies.

9.1.2 Suitability of CVA

5. CVA can function as a bridge between EIA and SIA: the CVA instrument can be applied within regulatory frameworks for EIA as a practical tool to integrate citizens’ perceptions of the key values their living environment and potential impact of interventions on that key values. CVA can, however, not replace SIA, because it pays attention to a limited group of social impacts. In addition to the information on biophysical impacts provided by traditional EIA, CVA primarily adds information on the social implications of biophysical impacts.

6. CVA is a systematic study of potential impacts of a planned intervention and it provides outcomes that are usable for a rational, neutral comparison of alternatives and variants; for the development of citizen friendly variants; and for the development of mitigation and compensation measures. CVA (an impact study) is complementary to public participation (an interactive process) because it generates a systematic, representative overview of what the environment means to all potentially affected
citizens to achieve a systematic evaluation of impacts on the perceived qualities of the living environment.

Particularly relevant are the location-specific details about the quality of residential areas, recreational values and sources of nuisance.

7. The information provided by CVA is in line with recent developments in the field of governmental policy development in the Netherlands, as well as with relevant developments in the field of impact assessment.

9.1.3 Effectiveness of CVA

8. CVA produces outcomes that are relevant for EIA. Whether or not these outcomes will actually influence the decision-making process, very much depends on:

-whether the outcomes suit or contradict political agendas;

-whether politicians and their advisors are inclined to take this information serious;

-how the outcomes are utilised by citizens or interest groups in public involvement procedures.

9. Systematic monitoring and evaluation of cases is needed to gain insight in the actual influence of CVA to the outcomes of EIAs and, furthermore, to EIA based decision-making processes. The outcomes of such evaluations may stimulate the use of the instrument and, as such, contribute to the further development and application of CVA.

10. By broadening the scope of EIA to include CVA, citizens are provided with a systematic, professional analysis of the implications for their community. This information has proved to be useful for citizens or representatives of interest groups in the public involvement process.
11. CVA contributes to the legitimacy of EIA. Citizens consider information about the quality of their living environment of significant importance for EIA. If such information is lacking, the quality of EIA is generally considered low by citizens.

12. The effectiveness of CVA partly depends on how the outcomes are presented and integrated in their broader EIA context. CVA will be most effective if a Most Citizen Friendly Alternative is to be defined on the basis of CVA outcomes.

13. CVA is more than an academic exercise to include location specific information on the perceived quality of the living environment. It represents a way of thinking about the need to recognise citizens’ interests as an essential part of policy analysis. If CVA is included in EIA just as an ‘obligatory nuisance’, and inspiration lacks to apply the CVA instrument to full advantage, the effectiveness of CVA outcomes will most probably be low. This implies that EIA project managers as well as EIA project teams will have to be convinced of the added value of CVA. This, in turn, requires more proof to be provided by a systematic evaluation of cases.

14. Optimal application of CVA and SIA requires organisations that have sufficient social science expertise.
9.2 Recommendations

1. To increase the applicability of the instrument CVA should be subject to methodological refinement in an international setting.

2. Outcomes of CVAs should be systematically evaluated in order to generate knowledge about the (potential) contribution of CVA to EIA.

3. CVA should be included in the scoping phases of EIA procedures in the Netherlands and internationally.

4. CVA outcomes should be used in the development of the Most Environmentally Friendly Alternative, or in some cases even to define a ‘Most Citizen Friendly Alternative’.

5. In order to achieve utilisation of the full potential of CVA, Rijkswaterstaat should allocate resources to undertake systematic evaluation of CVA cases to facilitate methodological refinement, to increase cost effectiveness and to demonstrate the potential benefit of CVA in EIA.

6. Rijkswaterstaat should create a central database of CVA outcomes and other social impact assessments and liveability issues. Such a database would contribute significantly to: (a) the quality and cost-effectiveness of CVA and other social impact studies; and (b) raising awareness about the significance of including social issues and citizens’ perspectives in policy development; (c) the inclusion of CVA in consultants’ toolkits; and (d) future studies on contributions of CVA to policy development.

7. The Netherlands Commission for EIA should play a role in ensuring quality control of CVA by inviting CVA professionals to join their pool of experts.
CHAPTER 9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

9.1.1 Methodological soundness and applicability of CVA

1. Citizens’ subjective value judgements about their living environment can be used for a professional and neutral assessment of impacts and comparison of alternatives in cases that vary much in size, character and geographical area covered. By means of CVA, citizens’ values and citizens’ views about their living environment can be analysed in a way that leads to valid and reliable results.

2. The CVA instrument provides outcomes that are sound in terms of validity, reliability, unbiased results and sensitivity provided that the following measures are taken:

- sufficient quality control is ensured;
- data collection and data analysis in an iterative process is undertaken;
- discuss preliminary outcomes of the analysis with key persons;
- use experienced social scientists, preferable CVA professionals;
- use different consultants for qualitative and quantitative analysis;
- keep the process transparent;
- ensure to stay as close as possible to the original qualitative and quantitative data.
3. Data required for CVA can be collected provided that unambiguous information is available from other impact studies. This requires adequate information exchange between CVA practitioners and EIA practitioners.

4. The efficiency of the CVA instrument should be further improved. The development of a data-base could contribute to an increase of the efficiency of CVA regarding data collection. A systematic methodological evaluation of cases may well contribute to an increase of the efficiency of CVA regarding the construction of Citizen Values Profiles and the impact assessment process. Such an evaluation could contribute to the following types of improvements:

- improved integration in the EIA and coordination with the EIA team;
- improved cost-effectiveness;
- development of ways to use existing data from other CVA studies.

9.1.2 Suitability of CVA

5. CVA can function as a bridge between EIA and SIA: the CVA instrument can be applied within regulatory frameworks for EIA as a practical tool to integrate citizens’ perceptions of the key values their living environment and potential impact of interventions on that key values. CVA can, however, not replace SIA, because it pays attention to a limited group of social impacts. In addition to the information on biophysical impacts provided by traditional EIA, CVA primarily adds information on the social implications of biophysical impacts.

6. CVA is a systematic study of potential impacts of a planned intervention and it provides outcomes that are usable for a rational, neutral comparison of alternatives and variants; for the development of citizen friendly variants; and for the development of mitigation and compensation measures. CVA (an impact study) is complementary to public participation (an interactive process) because it generates a systematic, representative overview of what the environment means to all potentially affected
citizens to achieve a systematic evaluation of impacts on the perceived qualities of the living environment.

Particularly relevant are the location-specific details about the quality of residential areas, recreational values and sources of nuisance.

7. The information provided by CVA is in line with recent developments in the field of governmental policy development in the Netherlands, as well as with relevant developments in the field of impact assessment.

**9.1.3 Effectiveness of CVA**

8. CVA produces outcomes that are relevant for EIA. Whether or not these outcomes will actually influence the decision-making process, very much depends on:

-whether the outcomes suit or contradict political agendas;

-whether politicians and their advisors are inclined to take this information serious;

-how the outcomes are utilised by citizens or interest groups in public involvement procedures.

9. Systematic monitoring and evaluation of cases is needed to gain insight in the actual influence of CVA to the outcomes of EIAs and, furthermore, to EIA based decision-making processes. The outcomes of such evaluations may stimulate the use of the instrument and, as such, contribute to the further development and application of CVA.

10. By broadening the scope of EIA to include CVA, citizens are provided with a systematic, professional analysis of the implications for their community. This information has proved to be useful for citizens or representatives of interest groups in the public involvement process.
11. CVA contributes to the legitimacy of EIA. Citizens consider information about the quality of their living environment of significant importance for EIA. If such information is lacking, the quality of EIA is generally considered low by citizens.

12. The effectiveness of CVA partly depends on how the outcomes are presented and integrated in their broader EIA context. CVA will be most effective if a Most Citizen Friendly Alternative is to be defined on the basis of CVA outcomes.

13. CVA is more than an academic exercise to include location specific information on the perceived quality of the living environment. It represents a way of thinking about the need to recognise citizens’ interests as an essential part of policy analysis. If CVA is included in EIA just as an ‘obligatory nuisance’, and inspiration lacks to apply the CVA instrument to full advantage, the effectiveness of CVA outcomes will most probably be low. This implies that EIA project managers as well as EIA project teams will have to be convinced of the added value of CVA. This, in turn, requires more proof to be provided by a systematic evaluation of cases.

14. Optimal application of CVA and SIA requires organisations that have sufficient social science expertise.


9.2 Recommendations

1. In order to increase the applicability of the instrument, CVA should be subject to methodological refinement in an international setting.

2. CVA should be included in the scoping phase of EIA procedures in the Netherlands and internationally.

3. CVA outcomes should be used in the development of the Most Environmentally Friendly Alternative, or in some cases even to define a ‘Most Citizen Friendly Alternative’.

4. In order to achieve utilisation of the full potential of CVA, Rijkswaterstaat should allocate resources to undertake systematic evaluation of CVA cases to facilitate methodological refinement, to increase cost-effectiveness and to coherently identify the potential benefit of CVA in EIA.

5. Rijkswaterstaat should create a central database of CVA outcomes and other social impact assessments and liveability issues. Such a database would contribute significantly to the dissemination of information about this topic; the efficient use of this information; and raising awareness about the significance of including social issues and citizens’ perspectives in policy development.

6. The Netherlands Commission for EIA should play a role in ensuring quality control of CVA by inviting CVA professionals to join their pool of experts.
9.2 Recommendations

1. To increase the applicability of the instrument CVA should be subject to methodological refinement in an international setting.

2. Outcomes of CVAs should be systematically evaluated in order to generate knowledge about the (potential) contribution of CVA to EIA.

3. CVA should be included in the scoping phases of EIA procedures in the Netherlands and internationally.

4. CVA outcomes should be used in the development of the Most Environmentally Friendly Alternative, or in some cases even to define a ‘Most Citizen Friendly Alternative’.

5. In order to achieve utilisation of the full potential of CVA, Rijkswaterstaat should allocate resources to undertake systematic evaluation of CVA cases to facilitate methodological refinement, to increase cost effectiveness and to demonstrate the potential benefit of CVA in EIA.

6. Rijkswaterstaat should create a central database of CVA outcomes and other social impact assessments and liveability issues. Such a database would contribute significantly to: (a) the quality and cost-effectiveness of CVA and other social impact studies; and (b) raising awareness about the significance of including social issues and citizens’ perspectives in policy development; (c) the inclusion of CVA in consultants’ toolkits; and (d) future studies on contributions of CVA to policy development.

7. The Netherlands Commission for EIA should play a role in ensuring quality control of CVA by inviting CVA professionals to join their pool of experts.
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I look back at a challenging period in my professional life in which many more people played a role. I am grateful to you all.

Annelies Stolp

June 2006
Appendix I:
Listing of CVA studies conducted from 1994 to 2004

Small projects with a local scope
1. Dyke reinforcement in a unique forest landscape along the river IJssel
2. Enlargement of Harbour facilities near the town of Lobith
3. Enlargement of a lock and lock chamber in the Beatrixcanal in the city of Utrecht.
4. Broadening of the riverbed of the river Waal near the town of Lent

Small projects with a regional scope
5. Storage of heavily contaminated sediments in a large scale island-depot in the fresh water body Lake IJmeer
6. Study on structural solutions for the problems caused by heavily contaminated salt sediments in coastal waters of the province of North-Holland

Infrastructure development
7. Upgrading the circular Highway of the city of Eindhoven
8. Upgrading of the Highway A2 in the city of Maastricht
9. Improvement Highway A12 and construction of a high speed railway from the city of Utrecht to the German border.
10. Upgrading the highway network in the Northern part of the city of Rotterdam

Large projects with a national scope
11. Project Mainport development Rotterdam (three separate studies for the three major solutions)
12. Enlargement of the riverbeds of the large rivers in The Netherlands

**Risk perception studies**

13. Risk perception in areas not protected by primary dams and barriers.

14. Risk perception of bargemen experiencing different new sludging techniques in an experiment on the river Waal.

15. Risk perception of the re-establishment of a piece of dynamic coast: an incision in the primary dunes in the Province of North Holland (De Kerf).

**Exploratory policy analysis**

16. Coastal Values and possible coastal developments.

17. Expansion Airport infrastructure in The Netherlands.

18. Redevelopment a river shore after removal of highly contaminated sediments.

19. Exploratory study on living in the low-lands: ‘Waterland’

20. Multiple use of space: perceptions of spatial quality.
Appendix II:

Listing of reports produced by the CVA Development Project

(all reports in Dutch)

Student reports (Graduate studies under the CVA development project)

Margriet Suvaal (1995) Tevredenheid door betrokkenheid bij m.e.r.?! Onderzoek naar de (on)tevredenheid van belanghebbenden over de aandacht in het MER voor hun wensen en ideeën (A study of the extent of (dis)satisfaction of individual citizens about the way their wishes and concerns are dealt with in EISs)

Jacqueline van Vliet (1996) M.e.(e)r. waarde belevingsonderzoek. Een onderzoek naar de procesmatige en inhoudelijke integratie van belevingsonderzoek in milieueffectrapportage (A study of ways to integrate CVA in the EIA process and the EIS content)


Kim van der Nagel (1996) Het is kiezen en delen! Onderzoek naar het persoonlijke keuzeproces (A study of individual decision making processes)

Jaap Hogenboom en Wladec Roeling (2000) Zoeken naar belevingswaarden. De mogelijkheden van voorstructurering bij verkennend belevingswaardenonderzoek (A study on possibilities to structure data analysis and data processing in CVA phase 2)

Annemarie Rodenhuis (2001) *Kwaliteit van milieu-effectrapportage door de bril van de burger. Een onderzoek naar kwaliteitskenmerken van m.e.r. vanuit het gezichtspunt van mensen die in hun woon- of leefomgeving geconfronteerd worden met een m.e.r.-plichtig besluit* (A study on quality characteristics of Environmental Impact Assessment from the perspective of citizens who are confronted with an intended activity in their living environment).


**Reports of studies conducted under the CVA Development Project**

Bergers, A. en R. Braat (1995) *Belevingsonderzoek en m.e.r.’s: een eerste aanzet tot de bepaling van onderzoeksmethoden- en technieken.* (Citizen values in EIA: exploration of possible methods and techniques)


Research voor Beleid (1998) *Toetsend Belevingswaardenonderzoek. Verkenning van mogelijkheden voor kwantitatieve toetsing.* (first steps towards an approach for the construction of a Citizen Values Profile)


Appendix III

Listing of respondents

(EIA professionals, decision-makers, professional advisors of decision-makers and politicians)

interviewed for the study on the perceived relevancy of CVA (reported in Chapter 7)

Hans Claus (policy advisor, Minstry of Transport, Public Works and Water Management)
Lenny Huizer (Deputy, Province South-Holland)
Wim Korf (Project Director HSL Zuid)
Henk Laagland (senior EIA professional, Oranjewoud)
Johan Meijer (EIA coordinator/policy advisor, Province South-Holland)
Hans Ouwerkerk (former Minister of Mayor of Almere, member of EIA Commission)
Hans Roelofs (EIA coordinator/policy advisor, Province Groningen)
Volkert Schaap (senior project manager, Rijkswaterstaat North-Holland)
Frans Timmerman (policy advisor, Ministry of Housing, Spatial Development and Environment)
Henk Wubbolts (EIA coordinator/policy advisor, Province Overijssel)
Christian Zuidema (policy advisor, Minstry of Transport, Public Works and Water Management)
Appendix IV: Curriculum Vitae

Annelies Stolp was born on January 5, 1959 in Weesp, the Netherlands. She studied Biology at the Free University in Amsterdam with the specialisations Ecology and Biology&Society. After her graduation in 1987 she joined the Department of Biology and Society as a junior researcher, where she worked on Technology Assessment projects related to biotechnology and its potential for small-scale farmers in developing countries. In 1992 she joined the Environment Department of Rijkswaterstaat, Civil Engineering Division, where she started to work on ecological and social impacts in Environmental Impact Assessment. In 1994 she initiated the Citizen Values Assessment Development Project. In the period 1996-1999 she build up a Citizen Values Assessment and Communication Unit of which she became the coordinator. In 2001 she organised a national symposium “the citizens’ perspective in decision making”. In 2002 she was rewarded with the “Regional Award for Contribution to Impact Assessment” by the ‘International Association for Impact Assessment’. Since January 2004, she is part-time policy advisor at the Ministry of Transport, Water Management and Public Works in the Direction Water and worked part-time on finalising this thesis.