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Quick scan

A quick scan for infrastructure planning: screening alternatives through interactive stakeholder analysis

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Neglect of stakeholder values is considered to be a main source of opposition and resistance to new infrastructure in the Netherlands. A new way of dealing with stakeholder values is needed. In the initial problem definition phase, quickly acquiring the essential strategic information and insight into which part of the public will be highly involved is considered to be strategically important. The quick scan approach assists planners to define a problem and reduce uncertainty. Stakeholder values are central elements in the design, and stakeholders should be actively involved. The proposed quick scan gives speed (time) and transparency to the problem specification process, and can be used to assess and pre-select promising alternatives. Moreover, its use allows active stakeholder participation in the decision-making process by disclosing the relevant information to everyone involved.

Keywords: quick scan; stakeholder analysis; project planning; screening; evaluation

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RECENT PLANS FOR LARGE infrastructure projects in the Netherlands, such as high-speed railroads, new harbours and airfields, have been met with a lot of public resistance and scepticism. The need for, and benefits of, new infrastructure projects are often disputed by public awareness groups, environmental organisations, politicians, economists, and those who are affected by the direct (negative) impacts (the NIMBYs (not in my back yard)). Their argument runs that the negative (environmental) effects largely outweigh the expected (economic) gains. The focus of this paper, however, is not on the discussion about need and benefit but on methods used to improve decision-making in infrastructure planning by involving stakeholders in the early stages of the policy process.

Setting the stage

Poor designs and unequal distribution of costs and benefits may hamper projects. Investors focus on expenditure, the values of stakeholders are neglected and the project team focuses on technical details rather than on public debate; these are all ingredients for counterproductive sentiments. The Centre for Underground Constructions (COB)[1] at Gouda was one of the organisations that recognised these kinds of problem, and it has funded a study for the design of the interactive quick scan approach described here.

The approach is aimed at interactive problem definition, and the generation and screening of alternatives and fits in the tradition of participatory policy

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analysis, in which, as Fischer (1993) states, "co-operative relationships between scientists and citizens can develop, and the role of expert is re-conceptualised as facilitating public learning and empowerment". In 1997, a project team drawn from the university of Delft, research organisations and private engineering companies started to debate the design requirements of the requested quick scan approach. The team finished the project in 1998 and, in the spring of 1999, their design for a quick scan was tested in practice in the town of Ede in the Netherlands.[2]

At the heart of the proposed quick scan approach lies the notion that, in the early stages of policy preparation, quickly acquiring essential strategic information and insight into which part of the public will be highly involved should be considered more important than acquiring extensive technical information. The word 'strategic' in this sentence is contrasted with 'content'; the focus is on a process that should allow for successful exchange of information between relevant parties. To quote Fisher and Ury (1981), in the quick scan "interest can be discussed before positions get set". The approach should assist in defining the problem and reducing uncertainty for all parties and stakes involved or affected:

by mapping the problem area;
through recognition of constraints and opportunities for solving the problem;
by assessing the prospects of the proposed alternatives.

A quick scan in this initial stage of a future project should be focused on the essential characteristics of the problem, on the relationships between these characteristics and on the dynamics of the decision-making process. Information at this stage should be broad and superficial; political debate rather than technical detail is considered important. Involving stakeholders actively early on allows the team to capitalise on local knowledge and expertise.

A quick scan should be a concerted and cost-effective effort, since the available resources, money, time and expertise at this stage of problem recognition will be limited. The research team should try to reach a state of 'optimal ignorance'. Strategic information gathering is required because the cost-effectiveness of further information gathering will be questioned continuously — does more information pay off in more certainty? Quick, however, cannot be at the expense of quality, as defined by de Bruijn and ten Heuvelhof (1999): "both effective and efficient are required, resulting in satisfied users and authoritative selections made from a wide variety of options".

Stakeholder involvement

The need for a new way of dealing with stakeholder values in decision-making regarding land use in the Netherlands is little disputed. In 1994, the Dutch Scientific Council on Government Policy suggested that large projects should be considered a radical social transformation instead of a mere technological realisation. In their report, the Council concluded that "the habit [of engineers] especially of preparing [projects] in detail in closed circles before confronting — in a defensive way — the socio-political discussion, generates unnecessary resistance and is a cause of delay" (WRR, 1994, page 7, translation by the author). The Council suggested that, by integrating the social and political — the process — aspects in all stages of the problem formulation, problem solving and decision-making process, social discrepancies with regard to large projects will come out sooner and the gaps then may be bridged (WRR, 1994, page 105).

The Dutch Government Council for Traffic and Water Management gave advice along the same lines: have discussions on need and necessity as early as possible and implement interactive, open planning processes (RVW, 1998, pages 6,7)

Both boards came to the conclusion that the traditional view on public participation as a legal right of citizens affected by decisions no longer held; public participation should be seen as a means to improve the quality and efficiency of decision-making.[3] The Institute for Participatory Management and Planning (1990) sketches the advantages as: the public can come up with information that would otherwise not be available, and with innovative solutions. This aspect is clearly recognised by the two Councils: their concern is the institutionalisation of public participation in practice; they face the issue how to organise the active involvement of stakeholders, and whom to involve at what stage of the planning process.

The words of these Councils reflect the growing attention paid to public participation in project planning in the Netherlands. In both academic circles and government agencies, initiatives have been deployed for 'open planning processes' and participative decision-making; especially at the local or community level, successful experiments with public participation are reported. In the latter practice, however, actual participation often is limited to commenting on the choice between pre-determined alternatives, and discontent may be met just around the corner.[4]

Actual involvement of local stakeholders in the early planning stages of large infrastructure projects is rare. In practice this is restricted to professional and administrative consultation; for the stakeholders who

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are not formally represented — the citizens — consultation is restricted to traditional forms of imparting knowledge and to appeal procedures.

A clear illustration of these kind of opportunism can be found in the 'open planning process' that was set up for the amelioration of the A12 highway and the rail track between Amsterdam and the German border. This HST–Oost/A12 project[5] is one of the major infrastructure projects in the Netherlands at present as it affects the major transport axes between the major Dutch and German industrial areas. Not only is the capacity of the existing A12 highway and rail infrastructure inadequate, there is also a need for a new high-speed rail connection between Amsterdam (Schiphol Airport) and Koeln.

A 'Bestuurlijke Begeleidingsgroep' (BBG) or administrative steering committee was installed in 1994 as an informal co-ordination and advisory council in which the provinces, the inter-regional co-operating communities, the national railroad services and the national government co-operated, aiming at realisation of the HST–Oost. In its report on the reconnaissance of the problem the BBG (1996) boasts about:

> having informed *all* stakeholders about the initial plans;
> the stakeholder's constructive way of thinking;
> their profiting from the knowledge of *all* stakeholders;
> the appurtenant benefit of speeding up of the decision-making process at a later stage.

The influence of local pressure groups and citizens was limited; they were only involved in the formal planning procedure. A spokesperson of the BBG explained: "at least we listened to everybody" and "we do not give the opportunity to submit a wish list, as some options, such as anything underground, are simply not realistic".[6] The criteria for screening alternatives remained implicit and the decision whether or not an alternative originating from stakeholder involvement was to be considered for the EIS (environmental impact statement) procedure was left to the administrators.

The quick scan approach presented in this article takes a fundamentally different point of departure. It shows how stakeholders can actually get actively involved in the problem formulation, delineation and design of alternatives in the early stages of infrastructure planning and how it can contribute to both the quality of the policy-making process and content of the infrastructure planning.

The quick scan was designed as a problem recognition exercise leading up to the start of a formal EIS procedure. After a number of desk-top case studies (Enserink *et al*, 1997a; 1997b), the approach was put into practice for the first time in spring 1999 for screening alternatives for the high-speed rail line passing through the town Ede.[7] Examples from this case are used to illustrate the steps and activities undertaken in the quick scan.

Large projects

By definition, the costs and benefits of large projects are unequally distributed. Lack of attention to the public debate and denial of the legitimate worries and objections of local stakeholders is a major reason for resistance and hold-ups.[8]

A second reason for the uphill battle to realise many infrastructure projects in the Netherlands lies in the poor environmental and aesthetic quality of many projects. The focus of the initiator and investor, most often the national government, is the transport function and the required capital expenditure. Consequently the aesthetic and environmental quality of the design or finish is often poor. Growing awareness that infrastructure planning has a large impact on land use in its surroundings is a recent phenomenon. This impact can be positive as well as negative. The impact on the visual quality of the landscape, noise and vibrations originating from heavy traffic are considered negative impacts.

On the other hand, nowadays junctions are considered to be primary locations for industry and trade, and highways and railroads have been rediscovered as the lifelines of office and trading centres. Currently, commercial development and exploitation through public–private co-operation of transport corridors and their immediate surrounding is a hype in the Netherlands.

A positive side effect of this growing commercial and economic interest in the exploitation of infrastructure and its surroundings is the rising concern for the quality and aesthetics of the proposed solutions, and for new ways of accounting for the costs and benefits of infrastructure projects. Paying attention to the design and the fitting of the infrastructure into its surroundings may improve the environmental quality of an area or at least compensate for the loss of quality. The balance of costs and benefits may then shift and resistance be reduced.

Integral assessment

The government's focus on capital expenditure rather than on investments and life-cycle costs unquestionably leads to poor designs; because of this focus on costs, qualities such as aesthetics and durability are considered less important and are often disregarded. Integral assessment of the life-cycle costs of infrastructure alternatives in the early stages of project planning should prevent premature dismissal of potentially privileged alternatives.

This was one of the arguments for the Centre for Underground Construction to sponsor this research effort. It argued that underground solutions for land-use problems are often undeservedly discarded as being too expensive. As advocates the Centre reasons that, although underground constructions are more expensive to build than surface constructions, accounting for the negative effects of surface infrastructures — environmental effects, hindrance,

congestion, safety during construction and life-time operation — might outweigh the initial extra investment required for underground construction.

Moreover, in many cases, underground constructions add to the environmental and aesthetic quality of the surroundings since they allow for other surface activities to take place on top of the infrastructure. Mitigation of most of the negative effects resulting from underground construction of infrastructure might even reduce or remove opposition, they argue, especially when this leads to redevelopment of disadvantaged areas. The quick scan approach sought by the research team should allow for such an integral assessment; it should reduce uncertainty in a quick and authoritative manner.

Quick scan as adaptation of rapid appraisal

Rapid appraisals are common practice in comparative agricultural sciences and agro-ecosystems research in developing countries, where they are principally used for problem reconnaissance and formulation.[9] Rapid appraisals are a tool for problem specification and structuring, and concerned with mapping the essential characteristics of the problem area and its immediate surroundings. Making this information available and transparent allows the analyst and the participants to recognise constraints and opportunities for problem solving.

Specification and structuring of the problem are thus instrumental for a quick assessment of the problem solution space. As Renshaw *et al* (1998) state:

> "such an assessment should be rapid, simple and structured. Whereas others rely on secondary data, key informant interview and focused group discussion for problem structuring, stakeholders should be actively involved in our approach because their values are considered central elements in the design."

MacArthur (1997) showed that stakeholder analysis — the essence of rapid appraisal techniques — is not restricted to agriculture extension programmes, but in recent years has become one of the main ideas in development thinking. A literature scan shows that stakeholder thinking is penetrating project planning in western countries. In the past few years, a rising interest in quick scans and rapid appraisal techniques can be witnessed in various disciplines, for instance, for infrastructure planning, for assessing the economic, environmental, safety and health impacts of land-use projects.[10]

The design for a quick scan presented in this article is an adaptation of 'traditional' agro-ecosystems rapid appraisals. The quick scan approach should provide speed (time) and transparency to the problem specification process, and takes it one step further! It can be used to assess and pre-select promising alternatives and disclose the information for everyone involved. Analogous to Conway *et al* (1987), the quick scan should be a systematic, semi-structured activity executed by a multi-disciplinary team in the field to generate new information rapidly for policy makers. A quick scan methodology thus should contain five elements:[11]

> interaction — exchange of information and knowledge between stakeholders;
> information — open access to all sources available;
> innovation — no predetermined solutions;
> society participation —of all stakeholders wanting to partake;
> iteration — ongoing process of definition and redefinition of the problem.

Design of a quick scan methodology

Almost by definition, land-use planning in the Netherlands is complex. The project team argued that this is caused mainly by: the number of stakeholders involved; and their conflicting goals and interests. For this reason, mapping the problem area through analysis of the stakeholders is the central idea underlying the conceptual model for the design of the quick scan (see Figure 1). Elements taken from the first field-test of the methodology in the town Ede will be used to illustrate the steps in the quick scan.

The point of departure of the quick scan is a given land-use problem, in this case the HST–Oost/A12 project. In the Ede case, the cause was a national plan

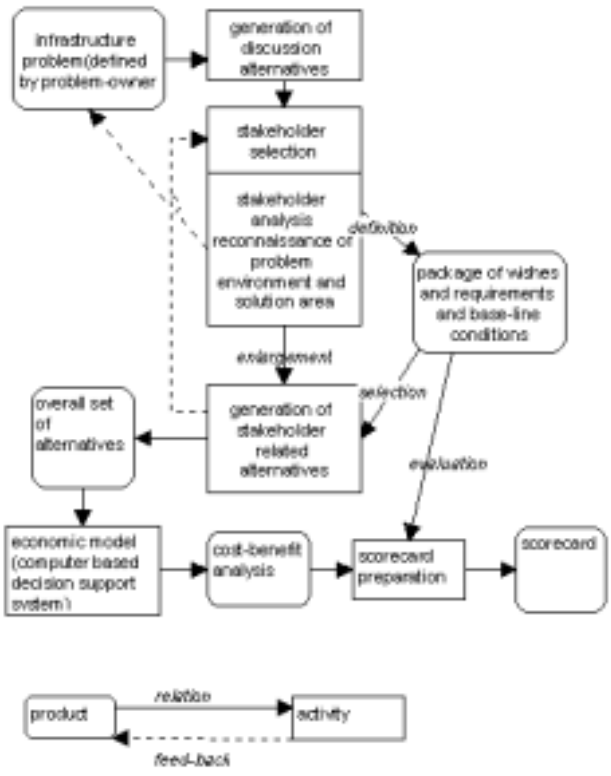

Figure 1. Conceptual model of quick scan

Stakeholder knowledge and experience is used to enrich and delineate the problem area: they link the problem-owner's problem to those of the stakeholders, inevitably leading to redefinition of the problem and enrichment of the solutions

for improvement of the existing railway and construction of an additional high-speed railway connecting Amsterdam (Schiphol Airport) and Koeln. The problem-owner in this case was the municipality of Ede which was unhappy with the alternatives for further exploration presented in the official EIS procedure decided upon by the Minister of Transport. Together with the analysts, the problem was redefined to "finding a good solution for fitting in the renewed railway into the urban fabric".

After the initial problem (re-)formulation, an iterative process is started to evaluate and reformulate the problem and to scout the solution area through stakeholder analysis. To do this, the team designed several (three or four) possible/plausible solutions for the initial (land-use) problem. In this iterative step, the delineation of the problem area influences the selection of relevant stakeholders, while in turn their perspectives on the problem are used to redefine it.

In Ede, there were three obvious candidate discussion alternatives: surface level; set in a cutting; and underground; all used the same trajectory. The first two were to be considered in the EIS procedure, the third was the municipality's favourite. These three designs or discussion-alternatives were discussed with the stakeholders to scout the problem area. As Keeney (1992) argues: discussing the desirable and undesirable features of alternatives can be used to stimulate thought about objectives. As described by, for instance, Chekland (1989), Fischer and Forester (1993) and Bras-Klapwijk (1999), the concerns and issues brought up by the stakeholders generate the required insight into their objectives, means and ends that are relevant to the problem.

The voiced concerns and issues can be 'translated' into requirements and criteria for the project (Guba and Lincoln, 1989; Keeney, 1992) and may lead to the generation of, and preliminary designs for, additional alternative solutions. New issues, for instance, related land-use problems, such as congestion on the underlying infrastructure, the intersection of a built-up area, the lack of playing grounds for children or the nuisance of local activities, might be connected to the initial problem.

In this way, stakeholder knowledge and experience is used to enrich and delineate the problem area. Stakeholder knowledge links the problem-owner's problem to those of the stakeholders, inevitably leading to redefinition of the problem and enrichment of the solutions. The next steps are concerned with screening the alternatives using both qualitative and financial criteria.

Stakeholder selection

The question of stakeholder selection precedes the actual analysis. Who should participate in this early stage of infrastructure planning, which stakeholders should be left out for the time being? Country planning practice and policy science literature give some clues. Formal country planning procedures provide for consultation and co-ordination of plans with government agencies at different levels — federal, state, province, region, community — and allow for stakeholders to have a say in the decision-making process.

In the Netherlands, the geographical scale of a project is one of the elements determining the (judicial) nature of the formal appeal procedures and public hearings. For instance, whether or not an EIS should be produced depends on the scale of a project. When an EIS is needed, the law prescribes the procedure: a sequence of specific forms of extension; public announcements; depositions for inspection; public hearings; and appeal procedures. Consequently, the scale and procedure of a project co-define the character and number of stakeholders involved or affected, and thus a preliminary list can be made.

A second clue for stakeholder selection was found in the theoretical concept 'decision moment' as formulated by Teisman (1992). During the actual design process, several decisions are made that can be decisive in the further decision-making process. The generation of new variants, such as a public transport alternative in the case of road infrastructure, implies involvement of a new class of (public transport) specialists and stakeholders. The presence of these new stakeholder groups leads to the introduction of new themes in the problem area. Internal procedures of the problem-owner, such as the customary recurrent informal deliberations of civil servants concerned with a project, the internal regulations for the planning process of a company, or agreements on procedures and milestones in a project, are examples of potentially influential decision moments.[12]

The 'decision moments' can lead to a first extension of the preliminary list of potentially influential stakeholders. A second extension was based on a study of the history of several large-scale projects and a third category of potentially influential actors — public organisations, such as environmental, nature preservation and public awareness groups — was distinguished. In this way, lists can be created of stakeholders who might be interested in active participation.

The criteria for selection might differ from case to case. Useful criteria might be the need for the support of a specific stakeholder in the implementation phase, the legal power of an actor and their willingness to use this power to obstruct a project, that is, the critical actors (Enserink, 1993). Others might be selected because of their specific knowledge and dedication to

the project. The actual selection within the quick scan is made by the project team and largely depends on experience in comparable situations and on local circumstances; the problem-owner is consulted but does not determine the selection.

Stakeholder analysis

In Ede, two intensive workshops were held, during which the stakeholders reconfirmed the redefined problem definition, voicing that even more attention was needed for the physical barrier formed by the required baffle boards, and for improvement and integration in the urban fabric of public transport, especially light-rail. The concerns and issues voiced by the participants during their discussions on the three alternatives and while designing improved versions, led the analysts to deduce criteria for the *ex ante* evaluation of possible alternative solutions.

During the workshops, the participants were challenged to design better alternatives without the adverse consequences they had voiced in debating the three discussion alternatives. Using a number of standard profiles for the rail infrastructure (on the ground, in a cutting and under the ground), the participants generated 15 new variants for fitting the railroad into the urban fabric.

How were the stakes recorded and translated into criteria? In the preparatory stage of the first workshop, the analysts conducted individual interviews with the Alderman of the city, some civil servants and some of the selected stakeholders. In the interviews, the interviewees were asked about their current knowledge, their stake in, and opinion of, the problem situation, thus giving the process organisers an idea of the issues that should be addressed in the first workshop.

In this first workshop. the participants were split up into focus groups.[13] Among other things they discussed the problem, delineated the problem area and voiced their concerns and issues (Guba and Lincoln, 1989, pages 186,187). Minutes were taken of these deliberations, and were used as the basis for the formulation of an initial set of criteria for the qualitative evaluation of the alternatives that would be generated during the process. The analysts constructed a preliminary list of overall criteria (Keeney, 1992) and asked the participants to fill in a form assessing the impacts of the alternatives generated in the first workshop by the criteria listed. The respondents were asked to add any criteria lacking to that list.

In the second workshop, the issue of criteria formulation was discussed explicitly. A new participant, the representative of the fire department, formulated new issues: the safety of underground constructions and the accessibility for emergency workers. In the final documents (Enserink *et al*, 1999) these concerns were translated into the criteria of internal and external safety.

In the second workshop, the preliminary criteria for screening were discussed, a new set of alternatives was created, appraised by the participants, and consequently detailed by the expert team. Along with the concept version of the final document, the participants were again asked to judge the elaborated alternatives with the updated and now complete set of qualitative criteria that had been formulated. This overall qualitative score was visualised in a score card and formed an integral part of the integrated assessment which is elaborated in the next section.

Strategic integral assessment

To this point, the quick scan is new with respect to the actual involvement of stakeholders in thinking up, designing and assessing solutions. This, however, is not uncommon in traditional agricultural rapid appraisal techniques. Now the quick scan goes one step beyond rapid appraisal; the alternatives or variants that have been elaborated by the team have to be assessed quantitatively. In effect, the commissioning organisation, the COB, asked for a monetary evaluation tool that eventually could be used by the stakeholders themselves. For this reason, the team choose to develop a user-friendly computer-assisted economic evaluation tool. This computer tool was equipped with a user-friendly interface to allow for use by the stakeholders for cross-checking and analysing their own preferred solutions.

The decision support tool allowed for estimating the construction costs, the cost of congestion and annoyance caused by the construction works and the costs of maintenance and annoyance, that is, noise, vibrations, visual barrier, during life-time operation. For reasons of political and social acceptance, this monetary evaluation had to be robust, which meant applied in practice, and accepted by the stakeholders. Acceptance was striven for by making explicit both the presumptions underlying the monetary evaluation model and the requirements for what is considered an acceptable solution. Underlying the monetary model were large databases with figures on cost factors, real-estate prices and price-index. These were based on empirical data derived from implemented projects.

Required inputs for the monetary model are the lengths of trajectories, the character of the construction, a judgement of the geomorphological and geological suitability of the potential route and the character of the surroundings.[14] All required characteristics could easily be read from commercially available detailed dedicated maps on the scale 1:50,000. The results of this economic evaluation tool are automatically translated into a scorecard where they can be complemented by the stakeholder's qualitative evaluations for those effects which are hard to express in monetary terms, such as landscape, annoyance, loss of cultural heritage and safety.

In the Ede case, the monetary evaluation turned out to be very important. A fierce debate between the local council and the national railroad service was in progress over the cost of putting the railway line underground. Our study reconfirmed the estimates of the national railroad service that tunnelling would be about 150 to 200 million guilders more expensive than 'in a cutting' solutions. Because of differences in

the list of demands and consequently in the design and realisation, the underground solutions proposed by the stakeholders would be half as expensive (in the range of 625–862 million guilders) as the underground solution considered viable by the railroad services (1500 mn). Although possibly cheaper than estimated by the railroad services, the monetary evaluation showed that the additional investment for underground construction could by no means be compensated for financially by the monetary valuation of the double use of space and reduced annoyance, which was estimated in the range of 50–60 million guilders.[15]

As depicted, the economic evaluation of the alternatives is only part of the screening process. It is combined with the results of the qualitative impact assessment and then presented in a scorecard, on which colours in combination with figures indicate whether an alternative has a better score on a particular criterion, is worse, or is in the same range as other alternatives.

In the Ede case, in the final report (Enserink *et al*, 1999), eight alternatives were assessed and the results presented in a scorecard. Four alternatives were judged potentially worthwhile for further elaboration in the EIS. Remarkably, the two alternatives imposed by the Minister ('on the ground' and 'in a cutting') which figured in the preparation of the EIS were not among these four.

The quick scan in Ede was not part of the formal EIS procedure, but was carried out in parallel. The EIS procedure by then had reached the second stage: preparation of the actual impact statement. The study results largely supported those parties supporting incorporation in the environmental impact studies of underground solutions as serious alternatives for the high-speed rail track within the city limits of Ede. Near the end of our study, but independently, the Minister of Transport decided in May 1999 to let the municipality of Ede have its favourite alternative worked out analogously and at the same level of detail as the Ministry's two favourite alternatives within the EIS.

Conclusion

Summing up, the quick scan process outlined in this paper results in a screening and pre-selection of promising options that can be used to form the plausible starting point for a fully-fledged planning or EIS procedure. Moreover, because of the stakeholder involvement in the generation of alternatives and screening criteria, a social basis for the redefined problem and the proposed solutions can be expected. The objective is to reach a consensus by pursuing reasoned dialogue and by facilitating learning between stakeholders as early as possible in a planning process. Of course this brings in the risk of conflict escalation, which might result in a dialogue of the deaf (van Eeten, 1999). Short of this, as Fischer (1995) reasons, the goal is clarification and mutual understanding among the parties engaged in the deliberation.

In the evaluation of our field test of the quick scan, several stakeholders voiced their surprise at having learned so much about the technical aspects of the problem situation and especially about the other stakeholders and their perspectives.

An open and interactive start to a planning procedure is a fruitful basis for recognising different stakeholder perspectives on a land-use problem, and for the reconnaissance and recognition of potential 'win–win' situations. It is believed that such an open approach will pre-empt unnecessary resistance at a later stage and give important clues for the organisation of further stakeholder involvement in a planning procedure.

Notes

1. The Centre for Underground Construction at Gouda administrates a large number of projects with regard to the technical aspects, design, construction, materials and use of subsurface constructions. The research team consisted of country planning consultants, environmental impact assessment specialists, policy analysts, economists and modellers.
2. Ede is one of the municipalities along the HST–Oost track and is confronted with the problem of fitting in a high-speed train (HST) in its urban fabric.
3. Public participation can be seen in three roles: as a legal right of affected social groups; as a means for empowerment of social groups; and as a means for improving the quality and effectiveness of decision-making (see, among others, UNESCO/IHP, 1999, Mostert *et al*, 1999).
4. In interviews with participants to prepare for the evaluation of the design workshops for the field test of the quick scan method carried out in the town Ede, those respondents who also participated in the sounding-board groups of the formal open planning process voiced this complaint.
5. The A12 is the motorway from Rotterdam to the German border.
6. Mr Wessels of the province of Utrecht, cited in *OverWegen* 4, December 1996, page 22 (translation by the author).
7. The cases are described in research reports N410 and N420 of the Centre for Underground Construction. The cases are the Rijswijk railway route (existing) and Delden rail route (planning stage), and highways near Rotterdam (planning stage), Voorburg (decision-making), and a hypothetical case illustration in a handbook for practitioners.
8. Linda Firth (1998, page 327) argues that only a small portion of the general public will be engaged, since it is rare that a project or programme conflicts with the deeply held convictions of a great number of people at the same time. Large infrastructure projects in the Netherlands seem to be an exception to this rule. Recent major projects; the two high-speed rail lines, the Betuwelijn, the Schiphol extension project and Maasvlakte project have caused huge controversy and public debate, on both a national and a local scale.
9. See, among others, Conway *et al*, 1987; McCracken *et al*, 1988; Beebe, 1995.
10. See, among others, van Geenhuizen *et al*, 1995; ten Heuvelhof *et al*, 1995; Renshaw *et al*, 1998.
11. This is an annotated list derived from Conway *et al* (1987) and McCracken *et al* (1988).
12. An example are the agreements on how to carry out the 'open-planning procedure' (open plan process) of the Dutch Ministry of Transport's General Directorate Rijkswaterstaat, that are listed in, among others, Projectgroep Open Planproces (1996), or the internal procedures of the Dutch Railways (Nederlandse Spoorwegen) as described by Saanen (1996).
13. By focus group we mean people with more or less the same problem perception: environmentalists, people living in the neighbourhood, business representatives and administrators.
14. The character of the construction will be either a two-, four- or six- lane motorway, and two- or four-track railway lines. Possible (sub-)surface situations are subsurface, on-the-surface, viaduct and the required inclinations (relative to the character

of the use). The character of the surroundings can be either natural, agricultural or urban.

15. The monetarisation of the expected changes in real-estate prices were based on the prevention method, reflecting the costs which would have been made for constructing baffle-boards; the yield of the double use of space was based on the regional value of property (land) for business development.

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