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The effectiveness of environmental assessment in Flanders: An analysis of practitioner perspectives

Hens Runhaar[a,b,*], Annick Gommers[c], Katelijne Verhaegen[c], Katrien Cooman[d], Peter Corens[e]

[a] Copernicus Institute of Sustainable Development, Utrecht University, P.O. Box 80,115, 3508TC, Princetonlaan 8a, Utrecht, The Netherlands
[b] Forest and Nature Conservation Policy Group, Wageningen University and Research, P.O. Box 47, 6700 AA, Droevendaalsesteeg 3, Wageningen, The Netherlands
[c] KENTER, Muizenheuvelstraat 87, Ranst, Belgium
[d] Flemish Department of Environmental & Spatial Development (Departement Omgeving), Koning Albert II-laan 20, 1000 Brussels, Belgium
[e] Tractebel Sustainable Urban Development, Van Immerseelstraat 66, 2018 Antwerp, Belgium

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ABSTRACT

The extent to which Environmental Assessment (EA) contributes to incorporating environmental values and objectives into decision-making (i.e. the effectiveness of EA) has been subject to much research. Still relatively little is known about how the effectiveness of EA is influenced by the specific features of EA systems and their context. International comparative research can shed more light on these relationships. In this paper we report on a survey of EA in Flanders, taking a similar approach as previous surveys in the Netherlands, UK and Denmark. We observe that the effectiveness of the Flemish project-based EA (EIA) is comparable to that in the other countries, whereas the Flemish plan-based EA (SEA) is more influential than the Dutch one (no data on Denmark and UK). As in the other countries, EA in Flanders has an influence on decision-making both before and after the EIA has been completed. According to respondents to the surveys, in all four countries the legal requirement is the main explanatory factor for EA effectiveness. The mechanisms by which EA characteristics and other factors contribute to EA effectiveness seem rather country-specific, however. Rather than trying to isolate the individual influence of factors we encourage more in-depth, qualitative and case-study based follow-up research in order to better understand the complex interplay between factors related to the EA system itself, how it is applied in practice and influenceds from its specific context.

1. Introduction

The 'effectiveness' of Environmental Assessment (EA) is a recurring theme in EA research (Arts et al., 2012; Loomis and Dziedzic, 2018). Yet, while effectiveness is commonly understood as achieving predefined objectives, different authors mean different things with this term as there is no consensus about the goals assigned to EA (see Loomis and Dziedzic, 2018, for an overview). At the same time, frequently different terms are employed for similar meanings of effectiveness (e.g. 'performance'; Van Doren et al., 2013).

In this paper we focus our investigation of effectiveness in terms of the extent to which EA achieves two of the goals that are commonly associated with EA (both in EIA legislation and in scholarly debates) namely (a) incorporating environmental objectives in projects and plans, in anticipation of a future Environmental Impact Assessment (EIA) or Strategic Assessment (SEA) (the 'preventive effect' or 'ex ante effectiveness' of EA i.e. before the EA is conducted) and (b) adjusting plans, projects or licenses based on the EIA or SEA ('ex post effectiveness') with the eventual aim of environmental and health protection. These outcomes ultimately result in lower environmental pressures or even enhanced environmental conditions.

Literature suggests effectiveness of EA as it is defined above is moderate but at the same time highly context-specific in terms of the specific characteristics of the instrument and how it is applied by the actors at issue (e.g. Arts et al., 2012; Lyhne et al., 2016). Yet, how context matters for the effectiveness of EA is not clear (Runhaar and Driessen, 2007).

International comparative research can help obtaining a better understanding of not only the effectiveness of EA but also what contextual conditions are at issue. International comparison namely allows for variance in contextual factors that may be taken for granted in single-country comparisons (Nadin, 2012). In this paper we present the results

* Corresponding author at: Copernicus Institute of Sustainable Development, Utrecht University, P.O. Box 80, 115, 3508TC, Princetonlaan 8a, Utrecht, The Netherlands.
E-mail addresses: h.a.c.runhaar@uu.nl (H. Runhaar), annick@kenteradvies.be (A. Gommers), katelijne@kenteradvies.be (K. Verhaegen), katrien.cooman@vlaanderen.be (K. Cooman), peter.corens@tractebel.engie.com (P. Corens).

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of a survey of professionals working with EA in Flanders on the perceived effectiveness of EA in this context. The survey was part of the formal evaluation of the Flemish EA legislation, commissioned by the Department of Environmental & Spatial Development, and carried out by the authors of this paper.[1] The survey largely built on the same methodology as earlier assessments of EA effectiveness in the Netherlands, UK and Denmark (Arts et al., 2012; Lyhne et al., 2016, 2017; Runhaar et al., 2013) and in this way facilitates international comparative assessments of effectiveness of EA and the factors that account for it, particularly *contextual* factors.

Our paper addresses the following questions:

1. How effective is EA in Flanders (as perceived by people actively involved in EA)?
2. What factors are perceived to contribute to EA effectiveness?
3. What new insights does a comparison of the results of the survey on the Flemish EA with earlier surveys in the Netherlands, UK and Denmark yield regarding the context-specificity of EA effectiveness?

The paper unfolds as follows. In Section 2 we outline our analytical framework and explain the survey. In Section 3 we provide a brief introduction into the Flemish EA system. Results are presented in Section 4. We wrap up our main conclusions and reflect on our study in Section 5.

2. Analytical and methodological framework

2.1. Analytical framework

In the EA literature, effectiveness and performance are often employed interchangeably (Van Doren et al., 2013). In general terms, both concepts refer to the degree to which EA meets its purposes. Since a variety of purposes are assigned to EA (including not only formal goals that are formulated in EA legislation and policy documents, but also purposes that e.g. stakeholders and researchers assign to EA; Rozema and Bond, 2015), it is not surprising that effectiveness and performance are operationalised in different ways. A commonly made distinction is between 'procedural' and 'substantive' effectiveness. While the former refers to the fulfilment of procedural requirements such as the quality of the assessment, offering sufficient opportunities for public participation and the timely delivery of an EA report (e.g. Sadler, 1996; Zhang et al., 2012), the latter refers to the degree to which EA contributes to a better consideration of environmental concerns in the preparation and decision-making about projects and plans and, eventually, to a reduction in environmental pressures (Kolhoff et al., 2016). In their state of the art overview of EA effectiveness studies, Loomis and Dziedzic (2018) distinguish two additional dimensions of effectiveness: transactive, which concerns the costs (financial and temporal) associated with EA and the normative effectiveness, which refers to "the extent to which the policy meets its ideal purpose" (ibid., p. 30).

Papers like those of Van Doren et al. (2013) and Loomis and Dziedzic (2018) provide rich overviews of the various interpretations of EA effectiveness as well as indicators employed or suggested. In this paper we restrict ourselves to the *substantive* effectiveness of EA and, more specifically, the extent to which EA contributes to the incorporation of environmental objectives and concerns into the development and approval of projects and plans. This focused interpretation of EA effectiveness not only addresses the ultimate aim of EA (Kolhoff et al., 2016) but also allows for a more comprehensive exploration of factors affecting EA effectiveness, which is complicated in the case of multiple effectiveness criteria.

In the Introduction to this paper we distinguished between ex ante and ex post effectiveness of EA, referring to two moments in project and plan development where an EA can have effects. The ex ante effectiveness refers to the incorporation of environmental objectives, often beyond the minimum legal norms, in anticipation of an EA (so even before the actual assessment is conducted). This is also known as the 'preventive effect' of EA (Ten Heuvelhof and Nauta, 1997). Ex post effectiveness refers to the adjustment of projects and plans in response to the EA report (Arts et al., 2012). Both forms of effectiveness are affected by many factors that explain the eventual effectiveness of EA. In line with Arts et al. (2012) and Lyhne et al. (2017), which built on other papers, we distinguish between the following, interrelated, categories of factors that explain EA effectiveness:

- Factors associated with the instrument *itself*, e.g. the legal requirement to conduct EA for particular plans and activities and the legal responsibilities of actors involved (including proponents, competent authorities, advisors, consultancy companies and stakeholders), which is found to be a main explanation for the eventual effectiveness of EA. These types of factors represent governance mechanisms, i.e. rules that involve particular actors in the EA process and that aim to influence their behaviour, and that may differ between countries. Sometimes governance mechanisms may have unintended effects; for instance, Lyhne et al. (2017: 248) suggest that *"Greater responsibility for EIA for the competent authority provides a negative incentive for the project proponent to use EIA proactively as a tool to enhance the environmental performance of projects"*, implying that (legal) ownership of EIA at least potentially influences how the tool is used and what it achieves;
- Factors associated with *how* the instrument is applied, e.g. the quality of the assessment in terms of accuracy of the assessment, scope of effects, readability etc. and opportunities for stakeholders to participate in the EA process. These factors logically also vary between contexts;
- Factors associated with the *context* in which the instrument is applied: the actors involved and for instance their concerns for the environment. Many scholars have acknowledged the importance of context for how EA is designed and for its effectiveness, but little clarity exists about what constitutes 'context' exactly (Runhaar and Driessen, 2007). Contextual factors that were included in earlier studies of EA effectiveness in the Netherlands, the UK and Denmark included contextual factors such as openness of proponents or competent authorities to environmental concerns or how EA impacts upon decision-making processes in terms of lead times and costs (Arts et al., 2012; Runhaar et al., 2013; Lyhne et al., 2017). Lyhne et al. (2017) provide further examples, suggesting that the influence of the public and other actors can be amplified by an affordable and accessible complaints system and that the size of the community of actors professionally or otherwise involved in EA has no substantial influence on its effectiveness.

For a more detailed description of these factors we refer to the above publications.

2.2. Research design

Studies into the effectiveness of EA have employed a variety of methods. Case studies have been conducted by for instance Runhaar and Driessen (2007) and Rozema and Bond (2015). Document analysis is often employed for assessing the procedural effectiveness of EA (e.g. Ahmad and Wood, 2002), although this can be complemented with expert interviews (Kolhoff et al., 2018). The paper by Loomis and Dziedzic (2018) conducted a meta analysis of published papers on the subject. For international comparative studies, often surveys are employed, which facilitates the collection of relatively many data in a comparable way. Similar as Runhaar et al., 2011 (for the Netherlands), Arts et al., 2012 (for the UK) and Lyhne et al., 2016 (for Denmark) we

[1] A copy of the report (in Flemish; Tractebel and KENTER, 2018) can be obtained upon request to the fourth author of the paper.

conducted a survey of people professionally working with EA in different roles in order to measure their perceptions of the ex ante and ex post effectiveness of EA in Flanders. An online survey was chosen because it is a relatively fast and cheap way of disseminating surveys, completing them and collecting the survey data. Although using perceptions to measure effectiveness has its limitations, we nevertheless relied on it for comparability with the earlier studies. By employing indicators for measuring effectiveness and factors accounting for it that were also used in previous studies we hoped to obtain data that are comparable with these other studies. A study into the actual effectiveness (if objectively existing) requires in-depth analysis of a representative sample of EAs including a before/after comparison of draft and final decisions, the reconstruction of timelines of events that happened during EA procedures and in-depth interviews. Such an analysis however is beyond the scope of our paper.

As a starting point we used the questionnaires employed in the above studies. In view of the goals of the Flemish evaluation (which was not only to get an overall idea of the effectiveness of EA but particularly also to evaluate the usefulness and quality of guidelines and the availability and accessibility of data and expertise), some questions were added whereas others were either removed or moved to the group interviews that were conducted after the survey in order to explain the survey results and to explore solutions for bottlenecks that emerged in the survey (Tractebel and KENTER, 2018; in line with Runhaar et al., 2011).[2] As a consequence, almost all potentially explanatory factors from the earlier EA evaluations in the Netherlands, UK and Denmark were included, albeit some a bit differently than in the other surveys (any deviations are mentioned in the Results Section).[3]

The questionnaire consisted of four parts:

- Some questions about respondents' background (role in EA, experience with EA, primary policy sector, discipline, etc.);
- Perceived general effects of EA associated with how we define effectiveness (ex ante and ex post);
- Factors affecting the effectiveness of EA;
- Perceived costs and other effects of EA (speeding up or slowing decision-making processes, reducing or increasing costs).

See Supplementary material document S1 for the questionnaire.

May 2017 the EA Section of the Flemish Department of Environmental & Spatial Development sent invitations to participate in the online survey to some 3000 email addresses of persons and organisations who had been involved in Flemish EA processes (EIA and SEA) in the last 3 years (until 2017 because the EA legislation had undergone some changes that year). Private and public proponents, competent authorities, consultancy companies that are accredited to write Environmental Assessment reports (EAs), advisors, NGOs and lawyers were approached. Individual citizens were not approached because it was too difficult to contact them.

227 questionnaires were completed, which means a response rate of nearly 8%. The actual response rate is probably (much) higher than 8% because a substantial part of the 3000 mail addresses were invalid (either no longer in use or did not reach the target audience because they were sent to info@ mail addresses (in about 1/6 of the 3000 email addresses) and because many mails were returned because they were no longer in use). Even if the eventual response rate is between 10 and 15%, it is relatively low as compared to the surveys in the Netherlands (20–30%) and Denmark (ca. 33%) (Lyhne et al., 2016).[4]

Fig. 1 presents our sample. The representativeness of our sample in terms of roles of EA professionals is difficult to assess because no overview of the Flemish 'EA professional community' exists. The sample nevertheless encompassed a broad range of respondents in terms of actor group, experience, EIA versus SEA and policy sector.

We conducted both descriptive statistical analyses and chi square statistical tests for significant differences in perceptions among respondent groups. Regarding the latter, we analysed whether experience and role had a differentiating role on respondents' perceptions of EA effectiveness and other variables, because from the Dutch survey it appeared that respondents with 10 or more years of experience with EA and/or working as consultants were more positive about EA than others (Runhaar et al., 2013). As far as possible we compared our results with those of the data sets for the other three countries. Since these did not always include both EIA and SEA we could not compare on all forms of EA.

3. EA in Flanders in brief

Before presenting the results of the survey we first describe the Flemish EA system in order to provide some contextual information. As in most if not all countries with EA systems in place, the roles of proponents and competent authorities (who decide on the proposed project, plan etc. and provide approval or licenses, also in view of the EA) are separated. The screening decision for EA is done by competent authorities: licensors for EIA and the EA Section of the Department of Environmental & Spatial Development for SEA. Proponents and/or the EA Section have to ask for advice from (governmental) bodies regarding the scope of the EA. The actual EAs are conducted by accredited consultants ('acknowledged EA experts'), commissioned by the proponents.[5] Accreditation applies to specific environmental expertise (e.g. air, soil or water quality, biodiversity, etc.) and depends on disciplinary background and education and experience. The Department of Environmental & Spatial Development is responsible for accrediting consultants and for quality control (by issuing guidelines and by approving EA reports). Citizens and NGOs are allowed to participate in EA processes (more precisely: in the scoping stage). (Technum, 2015)

4. Results

4.1. The perceived effectiveness of EA in Flanders

Fig. 2 shows the perceived 'ex ante effectiveness' of EA, i.e. proponents deliberately taking into account environmental concerns and objectives in anticipation of an EA, and beyond what is minimally required by law. This question was mainly answered by proponents.[6] Because of the relatively low response we did not differentiate between EIA and SEA. Fig. 2 shows that according to almost two thirds of the respondents usually or almost always a preventive effect of EA occurs (Tractebel and KENTER, 2018: 34). In the Netherlands and in Denmark this (perceived) effect seems even stronger whereas in the UK this effect was weaker (Arts et al., 2012; Lynhe et al., 2017).

Fig. 3 shows the key effects identified in relation to the perceived ex post effectiveness of EA. Because of a higher response rate on this question, here we could differentiate between EIA and SEA. The Figure

[2] The group interviews had objectives other than those of this paper. We therefore only draw from these interviews what is relevant.

[3] Another difference with the previous surveys was that in our survey respondents could indicate at maximum three factors that explained EA effectiveness in order to get a better understanding of what factors are perceived as really important. Therefore our results are not completely comparable with the previous surveys.

[4] An estimation of the response rate for the UK could not be established.

[5] Formally accredited EA experts are required only for EIAs. For SEAs only the coordinators need to be accredited. In practice no accredited SEA coordinators exist so this role is fulfilled by accredited experts.

[6] To encourage respondents to complete the whole survey, we limited the amount of questions to be answered based on their role in the EA process and the type of EA they had experience with. This reduced the number of questions a respondent should answer with "I don't know"."

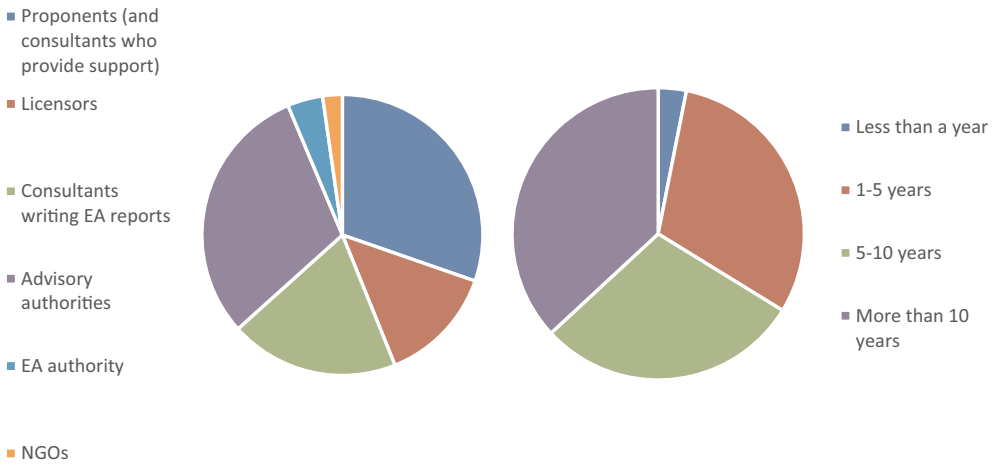

Fig. 1. Response group in terms of roles and experience. (Source: reproduced from Tractebel and Kenter, 2018: pp. 18–19. See Section 3 for a brief explanation of the roles of professionals involved in EA).

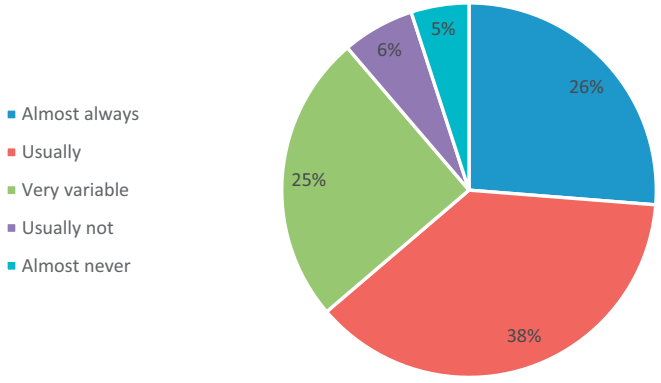

Fig. 2. Perceived ex ante effectiveness of EA (n = 80): frequency with which environmental objectives are taken into account, beyond minimum legal standards, in anticipation of the EA. (Source: Tractebel and KENTER, 2018).

suggests EIA has a bit more influence than SEA, which is reflected in higher scores on 3 out of the 5 possible effects. However, if EA has an effect on the project or plan at issue (which, according to the respondents, occurs in about 65% of SEA and almost 60% of EIA), the main effect is a modest influence on the draft projects or plans (the biggest category is 'changing to a limited extent').

Also in the Netherlands a (slightly) larger effect of EIA as opposed to SEA was found (Runhaar et al., 2013). In the UK and Danish survey SEA was not included. The effectiveness of EIA in Flanders does not differ much from that in the Netherlands, UK and Denmark. Is has relatively more often an impact on projects, but a bit less often a substantial impact (see Supplementary material S2). Regarding SEA we can only compare the Flemish SEA with the Dutch SEA due to a lack of data on the Danish and UK SEA; from this comparison it follows that the Flemish SEA is seen as more influential than the Dutch one (see Supplementary material S3).

Table 1 shows the specific impacts of EA (EIA and SEA together).

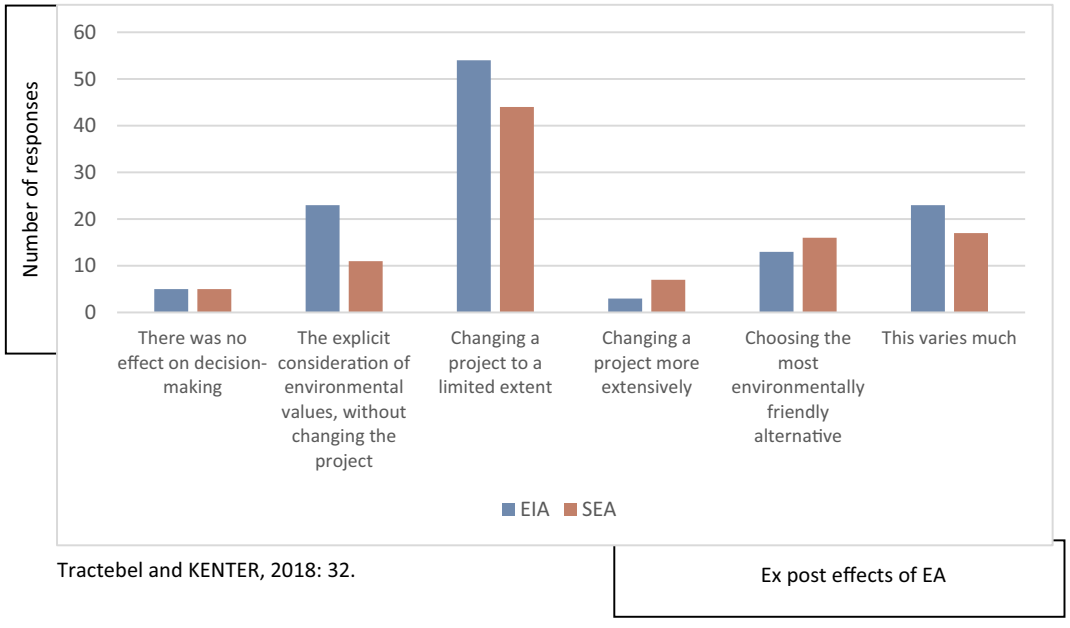

Fig. 3. Perceived ex post effectiveness of EA (n = 103 for EIA and 125 for SEA). (Tractebel and KENTER, 2018: 32.)

Table 1
Specific impacts of EA on mitigating measures (n = 168), revisions of projects or plans (n = 167) or on abandoning projects or plans (n = 169).

	Plan/project abandoned (%)	Plan/project revised (%)	Mitigating measures (%)
Almost always (> 80 of all EAs I was involved in)	0	13	26
Very often (60–80% of all EAs I was involved in)	0	9	14
Often (40–60% of all EAs I was involved in)	2	11	11
Regularly (20–40% of all EAs I was involved in)	2	19	12
Seldomly (< 20% of all EAs I was involved in)	28	28	11
Never	53	9	5
I don't know/no experience	14	12	22

Reproduced from Tractebel and KENTER (2018): 33. Note: 12–22% of the respondents does not know what the impact of EA is; in part this can be explained by the role of EA professionals (consultants who write the report are not always involved in later stages of the process (which can take several years) and hence cannot oversee the effects the EA has had).

Adding additional mitigating measures to the project or plan is the most frequently perceived influence, followed by other changes to the proposed projects or plans. Some 28% of the respondents have observed cancelling or stopping a project or plan as a consequence of EA, albeit in < 20% of the EAs respondents were engaged in. Our impression is that therefore this effect is small, also because we do not know how many double-countings we have in our sample (i.e. respondents involved in the same project or plan that was cancelled due to an EA). We have no data for the other three countries but the effect nevertheless seems slightly higher in Flanders than elsewhere (data for the Netherlands from 1997 suggest 3% of all projects and plans is stopped due to an EA (Ten Heuvelhof and Nauta, 1997), which Kolhoff et al. (2018) in the context of developing countries characterise as 'high').

Proponents substantially more often perceive impacts of EA than competent authorities (e.g. licensors) do (over 50% versus < 10%). Some possible explanations that emerged in the group interviews are that proponents do not always realise that compliance with environmental legislation is not 'caused' by EA but perhaps becomes *manifest* during an EA; that proponents sometimes have projects or plans assessed in an EIA or SEA that are not yet fully thought-through (which becomes manifest during an EA); that EA can identify cumulative effects that require additional mitigating measures; and that licensors are often less aware of changes made during an EA other than mitigating measures (Tractebel and KENTER, 2018).

4.2. Factors accounting for the perceived effectiveness of EA in Flanders

What explains the effectiveness of EA? Regarding the *ex ante* effectiveness, the Flemish survey suggests that speeding up the decision-making process and the EA process and avoiding delays due to additional mitigating measures are the main explanations for the incorporation of environmental objectives beyond minimum norms in anticipation of the EA-process. Only a minority of the respondents mentioned concern for the environment as a reason (see Supplementary material S1). During the group interviews, speeding up the decision-making process in the case of EIAs was explained by the fact that the EIA facilitated interaction with stakeholders, which allowed for identifying concerns and adding measures to mitigate these, thus enhancing public support for the project at issue (cf. Runhaar et al., 2013).

Regarding the *ex post* effectiveness, the factor that was mentioned most often (by 54% of the respondents) and hence considered the main factor was the legal requirement to conduct EA (see Fig. 4).[7] This means that according to most respondents, EA has an impact on projects and plans because the EA has to be conducted. In the previous surveys this factor also emerged as the main factor explaining EA effectiveness.

The quality of EA was not an explicit factor in the survey but some related factors were the requested scoping advice (which is indicative of the level of detail and focus of the eventual report) and advice on the eventual report (44%) and the readability of the report (15%). Hence quality can be considered the second most important factor contributing to ex post effectiveness of EA.

The third most important factor (41%) was the preventive effect of EA, i.e. its ex ante effectiveness.[8] In the other surveys this factor was considered as one of the dependent factors and not also included as a factor that could influence ex post effectiveness (which at least in Flanders it apparently does).

About a quarter of the respondents indicated that environmental awareness and concerns on the part of the competent authority (28%) or the proponent (26%) represent an important factor. The importance of this factor however is considerably lower than in the Netherlands, UK and Denmark (see Supplementary material S5), also when taking into account the differences in which this question was formulated in the survey.

Participation by citizens was mentioned by only 19% of the respondents as being important, which again deviates from the findings of the previous surveys. During the group interviews an additional factor emerged, namely the degrees of freedom for revising projects and plans. Respondents indicate that SEA contributes more often to more substantial changes than EIA does (see scores on the categories 'Changing a project more extensively' and 'Choosing the most environmentally friendly alternative' in Fig. 3), which participants in the group explained by the fact that EIAs are often conducted for very detailed projects, which makes it difficult to fundamentally redesign them. SEAs are often conducted in an earlier stage of the planning process, which facilitates choosing another alternative (cf. Runhaar and Driessen, 2007).

The relative importance of the above factors can probably not been seen in isolation of how they manifest themselves in practice. For instance, if the quality of EA reports is considered as satisfactory by actors involved in EA, this variable will probably be less prominent in the ranking of factors than if the quality is perceived as either (very) low or (very) high (and hence attracting particular attention). Therefore we will focus on three issues that appeared to be both important for EA effectiveness and that were also identified as controversial among actors involved in EA in the Netherlands (Runhaar et al., 2013): the scope of EA reports, their quality and the impact of EA on decision-making processes.

Regarding the *scope* of Flemish EAs, respondents clearly have different experiences and perceptions. About 40% perceive that scoping is efficient, but some 30% disagrees whereas 30% of the respondents state that the efficiency of scoping differs from case to case (see Supplementary material S7). This suggests that similar as in the

[7] Proponents and advisors consider the legal requirement relatively more important whereas the EA Section of the Department for the Environment and EA experts consider the preventive effect relatively more important for the ex post effectiveness of EA.

[8] A chi-square test showed that proponents and advisory authorities consider the legal requirement significantly more important than the total sample, whereas EA experts significantly more often think the preventive effect is more important.

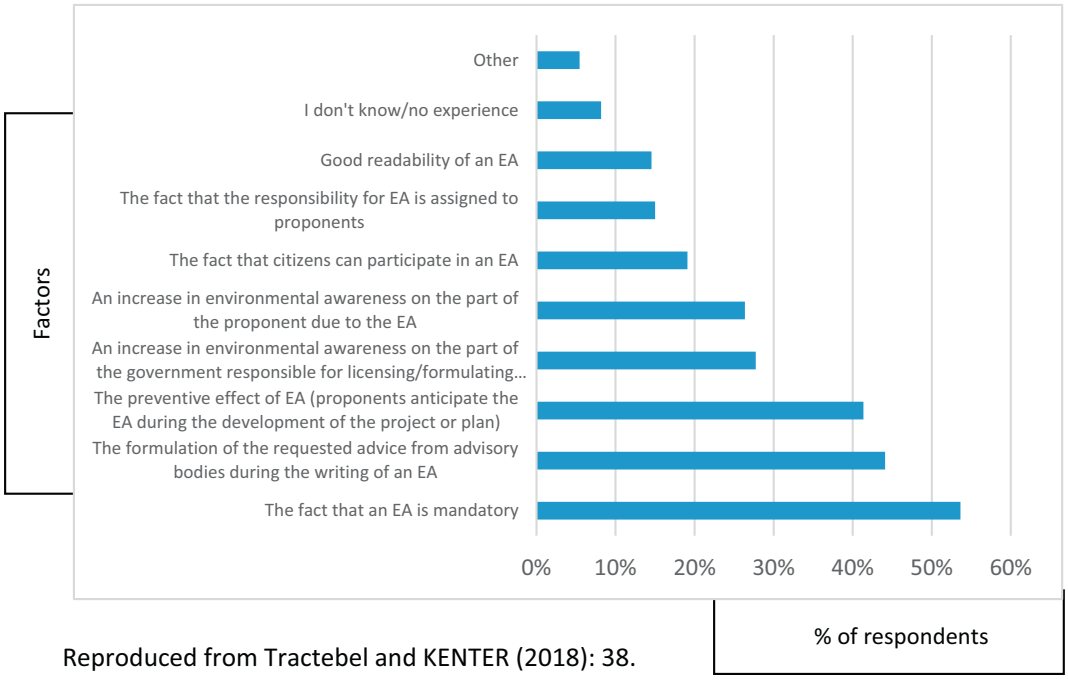

Fig. 4. Factors explaining the perceived ex post effectiveness of EA (n = 220). Reproduced from Tractebel and KENTER (2018): 38.

Netherlands, scoping could be improved. However, based on the survey we cannot verify whether more efficient scoping will translate into a higher ex post effectiveness of EA (the group interviews that were conducted after the survey however do suggest this will happen).

Regarding the *quality* of Flemish EAs, we looked at two indicators: the perceived usefulness of the EIA or SEA report in terms of mitigating measures and whether the information provided is sufficient, and the underpinning and justification of the assessments. A majority of the respondents feels that EA reports provide sufficient information, albeit for SEA fewer respondents agree than for EIA (see Table 2). This may be explained by the often more abstract character of plans subject to SEA and hence more qualitative assessments in SEA as opposed to the generally more quantitative character of EIA. Regarding mitigating measures, the usefulness is perceived as variable (see Table 2), which is a reason for concern. A minority of our respondents feels the underpinning of assessments usually or almost often good (see Supplementary material S8). Again a relatively large percentage of our respondents (ca. 30%) perceived the quality of the underpinning as variable. It should be noted that among respondent groups some differences in opinion were observed; EA experts and representatives of the EA Section tend to be more positive about EA quality than other actors (cf. Runhaar et al., 2013). Nevertheless we conclude that there is room for improvement regarding the (perceived) quality of EA. Given that the quality of EA was found to be important for EA effectiveness in the Netherlands, UK and Denmark, we expect that an improved quality of Flemish EAs can contribute to a higher effectiveness.

Finally, we looked at the impact of EA on the decision-making processes in which it is embedded in terms of costs and time. Although this factor is not expected to contribute to EA effectiveness directly, it has an influence on the legitimacy of the instrument and how actors involved deal with it (Runhaar et al., 2013). In the evaluation of the Dutch EA these 'side-effects' were considered as very modest and moreover, a large part of the respondents felt that EA contributes to a faster implementation of decisions subject to EA (Runhaar et al., 2011). In Flanders however respondents are less positive about EA's impact on decision-making processes (see Table 3). Apparently, the reasons for anticipating EA and taking into account environmental objectives beyond what is required by law (the ex ante effectiveness of EA) in order to speed up decision-making processes and avoid delays do not completely materialise in practice.

In sum, the legal requirement of EA is the most important factor explaining EA effectiveness in Flanders, similar to the findings of Runhaar et al. (2011) (for the Netherlands), Arts et al. (2012) (for the UK) and Lyhne et al. (2016) (for Denmark). Other factors seem more specific for Flanders however. These relate not so much to the instrument itself because the procedure and roles of actors involved does not differ much from those in other countries, but how it is *applied* in the Flemish context. This is reflected in the fact that the quality of EA and

Table 2
Perceived usefulness of EA.

	EIA		SEA	
	Sufficient information in the report? (%)	Mitigating measures useful? (%)	Sufficient information in the report? (%)	Mitigating measures useful? (%)
Almost always	16	4	12	0
Usually	52	35	41	21
Very variable	16	50	39	57
Usually not	5	2	2	7
Almost never	0	0	2	4
I don't know/no experience	11	9	2	11

Reproduced from Tractebel and KENTER (2018: 43).

Table 3
Perceived contribution of EA on decision-making processes.

	Quality (n = 126) (%)	Costs (n = 96) (%)	Lead times (n = 126) (%)
Substantial deterioration	1	25	20
Limited deterioration	1	22	38
No influence	15	9	14
Limited improvement	59	1	12
Substantial improvement	10	0	1
No opinion	14	43	15

Tractebel and KENTER (2018: 70).

stakeholder participation have a substantially different importance for EA effectiveness in Flanders as opposed to the three other countries. Also the perceived impact of EA on decision-making appears to differ.

5. Conclusions and discussion

In this paper we assessed the effectiveness of EA in Flanders in terms of two goals commonly assigned to EA namely (a) incorporating environmental objectives in projects and plans, in anticipation of a future EA (preventive effect or ex ante effectiveness) and (b) adjusting plans, projects or licenses based on the EA report (ex post effectiveness).

The results presented in this paper are indicative but not necessarily representative of the actual effectiveness of EA in Flanders. One, we measured perceptions rather than 'real' impacts on (draft) decisions. Two, the response rate was relatively low (compared to similar surveys in other countries) and we cannot assess the exact representativeness of our sample. By building on previous surveys and employing largely the same questionnaire we nevertheless contributed to international comparative research, expanding the empirical basis with data from Flanders.

Our analysis suggests that in most cases EA in Flanders has a preventive effect. This effect seems a bit stronger in the Netherlands and Denmark and weaker in the UK. The ex post effectiveness of EA seems moderate: in many cases EA influences the project or plan at issue, but seldom in radical ways (e.g. choosing the most environmentally friendly alternative). In that, the Flemish EIA does not differ much from EIA in the other three countries is; it is more influential than the Dutch SEA however.

The wish to avoid delays and speed up decision-making processes is the main factor explaining the ex ante effectiveness of EA in Flanders whereas the legal requirement to conduct EA is the main factor explaining ex post effectiveness. This suggests that EA is mainly considered from a legal and procedural perspective but less as an instrument to optimise the environmental performance of projects and plans (cf. Runhaar et al., 2013). These factors were also found to be of importance to EA effectiveness in the Netherlands, the UK and Denmark. Other factors seem specific for Flanders.

What new insights does this analysis yield regarding our understanding of the effectiveness of EA and the importance of the context in which it is applied? One insight is that by and large the effectiveness is modest but important: at two stages in the development and decision-making process EA often has an impact (ex ante and ex post, i.e. before the EA procedure is started and after the EA report is published), although it seldom results in radically different projects and plans. This suggests EA is a rather robust tool to be applied in a wide range of contexts. Another insight is that the mechanisms that impede or contribute to EA effectiveness are more subtle and complicated than the initial analytical framework suggests. This is in line with Arts et al. (2012) who, in their comparison of the Dutch and UK EIA systems conclude that *"the impact of governance mechanisms and context elements depends more on how these are shaped in practice, rather than on the mere presence or absence of them"* but also that *"there may also be some form of compensation between governance mechanisms and context factors. However, our surveys do not allow to draw any firm conclusions on this"*. Rather than singling out factors (with the legal requirement as an exception), it seems that a variety of interrelated factors are at play. Although we recognise that international comparative research is important in order to assess variance in the dependent variable of our study – EA effectiveness – we recommend that explanatory factors and their interactions are explored in more detail in case study research (similar to e.g. Hansen and Wood, 2016), complementing the more quantitative approach taken in this and the previous surveys we referred to.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eiar.2019.02.006.

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