Professional practice

Addressing climate change through environmental impact assessment: international perspectives from a survey of IAIA members

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Environmental impact assessment (EIA) is one of the planning, decision-making and management tools for environmental protection, through which climate change could be potentially addressed. This paper presents a survey of international perspectives aiming to understand: What is the best way to address climate change through EIA? The survey results strongly suggested that specific climate change related regulation and guidelines are needed that will apply in each step of the EIA process. However, there is also need to synchronise EIA practice with other instruments such as strategic and sustainability assessments, as well as broader economic instruments and other political commitments to address climate change. Working towards putting in place EIA regulations and guidance specific to climate change appears to be an important first step in tackling this global environmental issue.

Keywords: environmental impact assessment (EIA), climate change , IAIA survey

NVIRONMENTAL IMPACT ASSESS-MENT (EIA) is designed to identify and limit potential impact on the environment resulting from development. Unique to EIA is the procedure's applicability to a wide range of environmental issues (Barlett and Kurian, 1999: 22; Cashmore *et al*, 2007). In recent decades, climate change has become one of the world's most fervently discussed environmental issues; however, there is little consensus concerning EIA's role in addressing this global cumulative environmental effect (Curtis, 2005; Braklacich, 2008; Caleb, 2008; European Commission, 2009; Agrawala *et al*, 2010).

It is clear that EIA can and should play a role in tackling climate change as international climate change agreements indicate. For example, recommendations addressing impact assessment appear in the United Nations 1992 Framework on Climate Change Convention (UNFCCC)[1], as well as in the 1997 Kyoto Protocol[2] (Box 1). Both place a requirement on the contracting parties to take into account and minimise the adverse effects of climate change by reducing greenhouse gas (GHG) emissions, and by promoting adaptation responses to climate change effects on EIA projects, the economy, human health and the environment, thereby implying that EIA should play an important role. However, the details of exactly how EIA might or should account for climate change, especially at the individual project level, is not specified in these international agreements.

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For acknowledgements see page 324.

Box 1. Role of impact assessment in international climate change agreements

United Nations Framework on Climate Change Convention (UNFCCC)

- Article 4(f): 'All Contracting Parties have responsibilities to take climate change into account...., to minimize adverse effects on the economy, public health, and quality of environment, in projects or measures undertaken to mitigate or adapt to climate change'

Kyoto Protocol

- Article 2.3: 'The parties included in Annex I shall strive to implement policies and measures ...to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties'.
- Article 3.14: 'Each Party included in Annex I shall strive to implement ... to minimize adverse social, environmental and economic impacts on developing country Parties'.
- Article 12.3(a): 'Parties included in Annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments'.
- Article 12.5: 'Emission reductions resulting from each project activity shall be certified by operational entities to be designated by the Conference of the Parties serving as the meeting of the Parties to this Protocol'.
- Article 13.4(a): 'Assess, on the basis of all information made available.... the overall effects of the measures taken pursuant to this Protocol, in particular environmental, economic and social effects'.

Previous studies suggest that mitigation and/or adaptation to climate change could focus on a broad range of issues such as political commitment, policy, regulation, institutional roles and responsibility, stakeholder capacity, guidelines, enforcement, incentive schemes and data management (Smith *et al*, 2003; Neil *et al*, 2005). Some of these approaches for addressing climate change operate outside and typically 'upstream' from the formal EIA system itself. As Morgan (1998: 22) reminds us, EIA processes are 'formally sanctioned by a legislative or bureaucratic procedural framework set within a wider political/decision-making framework, set within a national and local policy context [which]...influence the character and direction of the EIA process in a given country and a given setting'. Having a formal mechanism for addressing climate change issues outside EIA may remove consideration of that issue in the EIA process. For example, if a carbon tax were to be established in a country, there might not be a need to address greenhouse gas emissions at the project level because the financial mechanism should theoretically cover that sufficiently (notwithstanding that other aspects of climate change, such as adaptation to sea level rise might be something that an EIA for coastal developments could or should address).

Where and how climate change issues are addressed in EIA processes is unclear, the question being whether or not these should be explicitly prescribed. On the one hand it could be argued that climate change should be treated simply as one of any number of environmental and project related issues that EIA can address as part of ordinary practice. For example, greenhouse gas emissions can be considered to be no different from any other pollutant or cumulative environmental effect and therefore are treated accordingly (e.g. subject to a test of significance at the screening and scoping stages of EIA). Alternatively, on the basis that climate change represents the single greatest threat to life systems on planet Earth that humans have unleased (e.g. Hamilton, 2010), it could be argued that explicit requirements to address climate change issues in EIA are warranted.

We decided to resolve this dilemma by seeking the perspectives of international impact assessment practitioners via a short survey of members of the International Association for Impact Assessment (IAIA). Our overall aim is encapsulated in the question: What is the best way to address climate change through EIA? We first present our survey instrument designed to unpack this research question, followed by a brief account of the results and subsequent implications for future practice.

Methods

The IAIA has more than 1,600 members consisting of researchers, practitioners and users of various types of impact assessment and representing more than 120 countries worldwide (http://www.iaia.org/aboutiaia.aspx). We initially distributed copies of a printed questionnaire survey to delegates attending IAIA's 2010 annual conference (IAIA10 *Transitioning to the Green Economy*, 30th Annual Conference of IAIA, 6–11 April 2010, Geneva, Switzerland). In the weeks following this event, delegates of the Geneva conference were emailed questionnaires, as were delegates of each of several previous IAIA annual conferences (2007, 2008 and 2009). Additionally, an online version of the questionnaire was distributed using SurveyGizmo and was subsequently advertised on the IAIA's Facebook page, listserve, and in an edition of the quarterly IAIA newsletter.

The questionnaire used in the survey (reproduced in Box 2) was divided into three components. A

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Box 2. Survey questions

EIA practices for effectively addressing climate change

Project based EIA provides a potential tool for addressing greenhouse gas emissions and other environmental catalysts of climate change. However, to move forward, understanding how a project based EIA approach can be strengthened to address climate change is essential.

Demographic Questions
1. What best describes your involvement in EIA and/or climate change? (Academic research, government agency, consultant, proponent, NGOs, international aid/lending organisation, and affected/local community/people)
2. How long have you been involved in EIA? (1–5, 5–10, 10–15, >15 years)
3. Approximately how many EIA projects have you been involved in? (1–10, 10–50, 50–100, >100)
4. In which country have you mostly been involved in EIA? _____

Closed/Quantitative Questions
To what extent do you agree or disagree with the following statements concerning the project based EIA and climate change issues?
[Options: strongly agree, agree, disagree, strongly disagree, unable to judge]
An EIA that effectively addresses climate change should:
5. Be backed by regulations for addressing climate change issues.
6. Have guidelines for addressing climate change issues.
7. Clearly state stakeholder roles and responsibilities for addressing climate change issues.
8. Centralise project data for all to access, in order to consider cumulative effects of climate change.
9. Incorporate regional and/or national model outputs of future climate scenarios.
10. Incorporate climate change issues in public discussion and/or negotiation of all proposals.
11. Provide stakeholders with training on EIA-climate change integration methods and procedures.
12. Have a coordinating mechanism for climate change issues in the EIA process.
13. Be backed by incentives to encourage a project to address climate change issues, e.g. greening project, or adaption project etc.
14. Enforce implementation of approved projects on mitigation and adaption to climate change.
15. Other: _____

Open/Qualitative Questions
In your experience of project based EIA, what is the best way for climate change issues to be addressed during (the):
16. Screening step? (please indicate why) _____
17. Scoping step? (please indicate why) _____
18. EIS step? (please indicate why) _____
19. Evaluation and approval? (please indicate why) _____
20. Implementation and follow-up? (please indicate why) _____
21. Public engagement? (please indicate why) _____
22. Do you have any further comments concerning how EIA should address climate change issues?

series of demographic questions (Qu1–4) addressed survey participants' role in EIA, years of experience working in EIA-related activities, number of EIA projects engaged with and country of origin, using the same categories as in previous surveys of IAIA members (e.g. Morrison-Saunders and Sadler, 2010).

A series of closed questions (Qu 5–15) were administered using a Likert based scale ranging from 1 to 5 (1=strongly agree, 5=strongly disagree). The quantitative results obtained were analysed using SPSS (Byrne, 2002: 96) in order to enable statistical analysis of the frequency of responses, and examine variance within and between groups (ANOVA). Relationships between demographics and quantitative survey results were analysed with the first as dependent variables and the second as independents. Skewness and Kurtosis were used to test for normality of distribution (+/-1), and homogeneity of variances was examined using Levene test (Sig<0.05).

The final component of the survey featured a series of open questions (Qu 16–22) asking respondents to indicate how they believe each step in the EIA process could best address climate change issues, with the final survey question to capture any further comments that respondents wished to include regarding EIA and climate change. The textual results were structured for analysis in NVivo (Richards, 1999: 53; Auerbach and Silverstein,

2002: 104) and coded to examine the richness of response from the population of respondents as well as by demographics.

Survey results and key findings

A total of 164 surveys were returned (i.e. around 9% of survey participants, and 10% of the IAIA membership). Not all survey respondents answered each question. In presenting the results for each question we indicate the number of responses received for that question and also express this amount as a percentage of the total number of responses (n=164, 100%) received.

Demographic characteristics of respondents

Responses were received from representatives of 45 countries, which were categorised into the following regions: Africa, Asia, Europe, Oceania and the Americas (Table 1). The greatest number of individual country responses were received from Australia (n=18, 11%), followed by Canada and Ghana (n=9, 5%). On a regional basis, responses from Africa were most frequent (n=40, 24%) with responses from other regions approximately evenly spread (n=20–24, 12–15%). Some respondents indicated

Table 1. Country, region and frequency of respondents

Country (no. of responses)	Region (no. of countries and responses)
Benin (1), Ethiopia (2), Ghana (9), Ivory Coast (1), Madagascar (2), Morocco (1), Mozambique (1), Nigeria (7), Rwanda (1), South Africa (6), Tanzania (3), Uganda (6)	Africa (12 countries — 40 responses)
Argentina (2), Brazil (2), Costa Rica (1), Canada (9), Ecuador (1), Mexico (3), United States (2)	America (7 countries — 20 responses)
Bhutan (1), Cambodia (2), China (4), Indonesia (2), Iran (2), Japan (1), Korea (6), Lao PDR (2), Philippines (2), Vietnam (2)	Asia (10 countries — 24 responses)
Albania (1), Austria (1), Estonia (1), Greece (1), Iceland (1), Ireland (1), Italy (1), Poland (1), Portugal (2), Spain (2), Sweden (2), Switzerland (1), The Netherlands (4), United Kingdom (4)	Europe (14 countries — 23 responses)
Australia (18), New Zealand (2)	Oceania (2 countries — 20 responses)
Multiple countries (21)	Multiple countries (21 responses)
Don't know (16)	Don't know (16 responses)

that they work in multiple countries rather than being based in only one and this was therefore analysed as a separate category.

The roles of respondents represent a cross-section of involvement in the EIA system, with the majority from governmental agencies (n=48, 29%), EIA consultancies (n=44, 27%) and academia (n=29, 18%) (Table 2). The remaining respondents were split between international aid agencies, community representatives, NGOs, developers, and respondents with multiple roles. The majority of respondents (n=113, 70%) indicated that they had been involved in ten or more EIA projects, and had more than five years' experience (n=130, 80%). A similar demographic profile was obtained by Morrison-Saunders and Sadler (2010) in their survey of IAIA members.

Quantitative responses: EIA and climate change

Figure 1 shows results obtained for the quantitative survey questions, which were completed by all survey respondents (n=164). Overall there was a high level of agreement with each of the survey statements (range n=155–157, 82–96%). In particular Questions 5 and 6 pertaining to the need for EIA regulations and guidelines that address climate change issues returned the highest levels of agreement. Of all the quantitative questions, the largest per cent and the highest mean of respondents 'agreed' or 'strongly agreed' that regulations and guidelines are needed in order for EIA systems to effectively address climate change (93% and 96% of responses respectively). In particular, the responses

of 'strongly agree' stand out for questions 6 (n=95, 61%) and 5 (n=84, 54%) relative to the other questions (n=57–77, 41–50%).

Close behind the regulation and guidelines related questions were the responses to Question 7 in relation to clearly stating stakeholder roles and responsibilities for addressing climate change (n=141, 90%). This question simultaneously invokes the importance of stakeholder roles in EIA (an example might be public participation) and having a clear position on what those roles and responsibilities should be, which is similar to the sentiment embodied in the notion of regulations and guidelines. Similarly the question on implementation and follow-up (Qu 14) returned high levels of agreement (n=137, 88%).

Interestingly we found only one statistically significant relationship between the frequency of responses to the quantitative questions when matched with the demographic questions and this pertained to the regional classification of respondents. People from the regions encompassing mostly developing countries (i.e. Africa Region and Asian) were more likely to agree or strongly agree that an EIA that effectively addresses climate change should be backed by regulations and guidelines (i.e. $F_{(5,138)}$ = 3.207, *p=0.009<0.05* and $F_{(5,138)}$ = 2.988, *p=0.014<0.05*) respectively). EIA systems are generally older and more established in developed countries relative to developing countries (Bekhechi and Mercier, 2002; Wood, 2003; United Nations Economic Commission for Africa 2005), implying

Table 2. Demographic characteristics of survey respondents

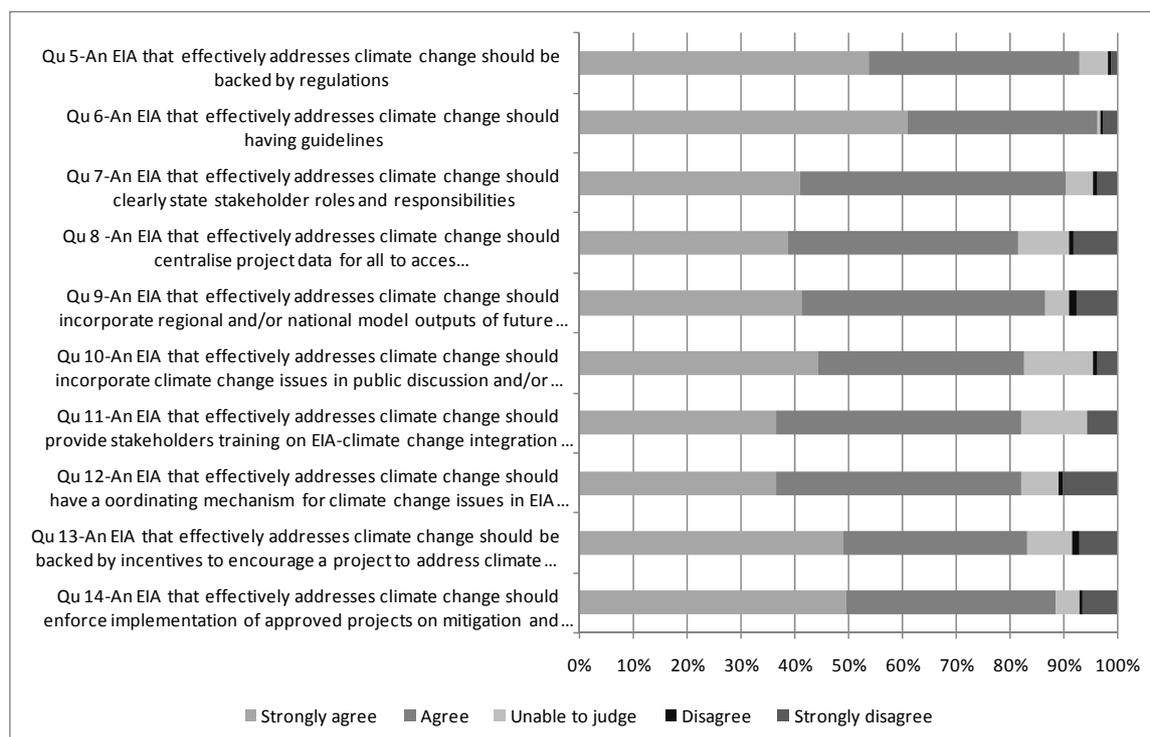| Respondents		No. (%)
Role in EIA	Academic	29 (18%)
	Community	8 (5%)
	Consultant	44 (27%)
	Government	48 (29%)
	Int. aid/lending agency	10 (6%)
	NGOs	4 (2%)
	Proponent	3 (2%)
	Multiple roles	6 (4%)
	[no response]	12 (7%)
Number of EIA projects	1–10	37 (23%)
	10–50	59 (36%)
	50–100	23 (14%)
	>100	31 (19%)
	[no response]	14 (8%)
Years of EIA experience	1–5	18 (11%)
	5–10	34 (21%)
	10–15	35 (21%)
	15–20	28 (17%)
	>20	33 (20%)
	[no response]	18 (10%)

Figure 1. The degree of agreement (strongly agree, agree, unable to judge, disagree, and strongly disagree) for each question in Part II of the survey

that such systems may have more potential for incorporating and addressing climate change issues; thus this finding might be expected.

Qualitative responses: What is the best way for EIA to address climate change?

We used the keywords encompassed in the quantitative questions as the starting point for coding the open-ended or qualitative survey questions which focus on the best way for climate change issues to be addressed in each of the major steps in an EIA process. In light of the previously discussed results, we sought to understand how survey respondents believed that regulations and guidelines should be used to direct screening, scoping, EIS, evaluation and approval, implementation and follow-up and public engagement activities in project based EIA in relation to climate change issues. We did this by examining specific comments on this issue and present our analysis on a question-by-question basis.

What is the best way for screening to address climate change? (Question 16) The majority of the 140 respondents answering this question indicated that there was a need for regulations (n=70, 50%) or guidelines (n=35, 25%) that address climate change during the screening phase of EIA, with some suggesting both (n=5, 8%), (where a respondent identified regulations and guidelines, they were included in the numbers for both categories). A number of these respondents (n=11, 8%) indicated that regulations at a higher level than EIA systems are necessary in order to best address climate change issues.

Some examples include:

- Legislation on climate change needs global support, especially from various governments.
- A national target to reduce CO_2 emission.
- Environmental policy or SEA incorporates issues of climate change, which are referred to during the screening phase.

Most, however, implied that regulations should be developed within the EIA system and these could include inclusion/exclusion lists of project types, checklists of environmental triggers for EIA, specific criteria for climatically sensitive areas and/or specified climate thresholds for projects/activities. Some respondents simply suggested that all EIA projects should be required to address climate change; a position that effectively combines the screening and scoping stages. Some examples include:

- All projects are likely to have impact in terms of GHG emissions (even wind farm etc. projects) or require EIA for all projects.
- Climate change is one of the issues of the project, so EIA is required.

Similarly the calls for EIA guidelines pertaining to the screening step in relation to climate change issues included how a proposal is screened for climate change effects, identifying methods for calculating GHG emissions, and describing the best practice for mobilising stakeholders.

In addition to the respondents focusing on regulations and guidelines, a small percentage of

respondents (n=13, 9%) indicated that the screening phase should also incorporate stakeholder's knowledge especially when considering options for climate change adaptation. Examples include:

- This is where real choices can be made; options are still open; public can see trade-offs.
- It is important to include multi-stakeholders and see how they are hastening the perils of and mitigate the impacts of climate change.
- Stakeholders are interested in the changes that may occur to the climate during life time of a project and even after its decommissioning.

What is the best way for scoping to address climate change? (Question 17) The responses (n=136) to this question were split nearly evenly among a focus on public participation (n=23, 17%), regulations (n=20, 15%) and guidelines (n=22, 16%). In terms of public participation, respondents suggested regulations and guidelines are needed to legislate and direct the input of local knowledge as well as public involvement during the scoping process. Having formal EIA regulations regarding scoping for climate change issues was advocated by 15 respondents (11%) and it was suggested that these should address all elements of a project that link to GHG emissions; however, some respondents indicated that the scoping of a project needs to include other regulations than just those that address only GHG emissions. Other responses provided general suggestions on how the scoping phase could incorporate climate change issues such as identifying the effects and/or emissions of a project. Exactly how the scoping phase should address climate change was not specified, but some respondents suggested that a focus on data and information about the impact of the project on climate change, and subsequent mitigation and/or adaptation options are important.

What is the best way for the EIS to address climate change? (Question 18) The majority of the responses (n=125) obtained here indicated a need for guidelines to direct how an EIS should address climate change (n=59, 47%) with less indicating a need for regulations (n=18, 14%). Respondents identified three main areas upon which guidelines should focus: (1) identification of specific climate change content to incorporate in an EIS and its subsequent reporting (n= 31, 25%), (2) communicate methods for prediction and evaluation of climate change (n=12, 10%), and (3) identify adaption and mitigation measures on a project by project basis (n=15, 12%). In terms of regulations, respondents indicated that legislation needs to require an EIS to address climate change in the reporting process and provide a detailed analysis of climate change effects including a combination of adaptation and mitigation options. What this indicates is a need for the methodological redevelopment of EIA so that climate change is addressed from the start of the process to the end. This could include the identification of appropriate climate data or climate change scenarios, techniques for analysing project impacts on the climate (or vice versa), mitigation options, and a backing legal framework.

What is the best way for EIA to address climate change during evaluation and approval? (Question 19) The 123 responses regarding the evaluation and approval stage of EIA indicated that regulations could play a strong role in addressing climate change (n=38, 31%). A further 13 (11%) called for guidelines and 2 (2%), indicated both approaches. Perhaps this implies that it is EIA regulators and decision-makers in particular who should be directly bound by formal legal instruments in comparison to other stakeholders in the EIA process. Respondents suggested that this aspect could be addressed through approval criteria and conditions, national/ international level regulations, and/or a need for an independent climate change expert to evaluate each project prior to approval. From a national/ international perspective respondents indicated that regulations should focus on national regulatory frameworks or require international commitments such as that proposed by the UNFCCC. Additionally, having expert input from an independent third party could provide an important step before an EIA authority reviews and rules on a proposal.

Fourteen respondents (11%) indicated a need for guidelines to assist the evaluation and approval stage. Responses concerning 'how' this should be done included a necessity for general guidelines to direct the inclusion of climate change issues in the evaluation phase and in the approval phase, and/or identify best practices for dealing with climate change (on a project by project basis).

What is the best way for EIA to address climate change during implementation and follow-up? (Question 20) Compared to all other steps in the EIA process, the 127 responses to the question of the role of follow-up returned the highest proportion of answers calling for either regulations (n=54, 43%) or guidelines (n=11, 9%). In particular respondents emphasised the need for regulations that would provide for project monitoring, auditing and compliance (n=45, 35%), while a number of others indicated that strict legislation should direct both the development of a project's environmental management plan and the approval conditions. Suggestions for 'how' this could be facilitated included use of a watchdog group, or an independent monitoring agency to enforce responsibility of the project proponent and/or the local governing authority. This process could include the verification of compliance of proponent performance with other national climate change related standards or policies. To enforce these regulations, respondents identified a need for fines, financial resources, and/or an empowered regulatory agency.

What is the best way for climate change issues to be addressed during public engagement? (Question 21) Compared to the other questions, fewer responses (n = 33) were received regarding public engagement. Of these several identified a need for regulations (n=4, 3%) and for guidelines (n=17, 13%). With respect to guidelines, it was suggested that general directives for public engagement are needed, as well as timeframes for engagement and the identification of climate change as a point of discussion.

Interestingly, responses concerning the involvement of participants fell into two camps: those that identified the need for local knowledge as input and those that identified a lack of climate change knowledge by stakeholders. Some respondents indicated that local stakeholders need to be educated on climate change before they can engage in the conversation, specifically in regard to the effects of climate change and types of adaptation measures needed. Conversely, others suggested that local knowledge on climate change characteristics need to be captured in the EIA process in terms of identifying local impacts and project-specific adaptation measures.

Discussion

The level of participation and thoughtful responses obtained from this survey emphasise the potential for EIA to address climate change issues and to mitigate further environmental impacts. In general, and especially in developing nations, our results identified a need for more formalised regulations and guidelines to help direct EIA in addressing climate change issues. This may be a product of a more systemic lack of regulatory frameworks and guidelines in developing countries, as previously noted by Wood (2003), Owen (2008: 118) and Agrawala *et al* (2010: 32). To date, however, only a limited number of nations have developed a plan to adopt a legal framework and/or guidelines to address climate change issues within their EIA processes (Agrawala *et al*, 2010: 32), further highlighting the gap between aspiration and practice.

Regardless of how the EIA process addresses climate change, an underlying theme in the qualitative responses to our survey was a need for immediate action; many of these were expressed in the final question of the survey asking for any further comments (Qu 22). Respondents recognised the threat of climate change on world health and development suggesting a need to 'act now'. Examples of responses highlighting this sentiment include:

- [Climate change] should be addressed as part of all steps below and starting at the earliest possible stage.
- Guidelines and cases for addressing climate change issues should be provided as quickly as possible.

- The conception of guidelines to incorporate climate change issues (impacts and measures and monitoring) will be an urgent initiative. It should be adopted at the national and international level.
- GHG should be our top priority given the world context.
- To reduce time for climate change in EIA, climate change assessment of projects should be part of national EIA processes. We should not create another EIA for climate change. If it is required to have a new legislation [this will just] take more time.
- We must not wait for regulatory guidance, but as IA professionals develop (best) practice now. We must acknowledge that some projects' EIAs do address GHG emissions, and learn from those.

Interestingly, in terms of addressing climate change through the EIA process, the last two responses above identify the conundrum faced with rapidly addressing environmental issues through legislative processes. In many cases regulations take years to develop, implement and enforce, and without higher level political commitment the process can be extremely slow.

Urgency and the temporal deficiencies of political processes are sentiments mirrored in the literature. As Caleb (2008: 605) stated:

> However flawed the EIA process, it nonetheless can immediately address climate change on a project-specific basis without waiting for the slow wheels of diplomatic politics. In that sense, the application of climate change to the EIA process is truly 'the art of the possible'.

To move the process forward member states of the European Commission (EC) have called for the development of assessment tools to aid in the integration of climate change issues in the EIA process and the Commission has responded by developing a set of guidelines that will be released in 2011 (European Commission, 2009: 10). While the EC's actions provide an example for other regions, EIAs are still being approved on a daily basis without a formal requirement to address issues associated with climate change.

While temporal variation exists in the implementation of guidelines and regulations, responses from our survey point to a key set of specific guidelines and regulations which could be implemented in each phase of the EIA process (Box 3). Given the recognition of a need to 'act now' by respondents, guidelines (and to a lesser extent regulations) may provide the most rapid approach for addressing climate change within the EIA system. The highest level of agreement in terms of using guidelines to facilitate this approach was during the scoping, EIS and public participation phases. Interestingly, many of the suggestions directed at these phases were focused on a need for technical and methodological direction as

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Box 3. Key approaches for addressing climate change using regulations and guidelines specific to each phase of the EIA system

Screening

- regulations prescribing screening lists to address climate change (whether environment-centred, development-centred, or a combination of both approaches)

Scoping

- regulation requiring that climate change is addressed in all aspects of assessed projects
- guidelines identifying climate change issues which should be considered at the scoping stage

EIS

- guidelines identifying specific climate change content, methods for prediction and evaluation and climate change adaptation and mitigation measures, including commitments to follow-up reporting and verification on each of these

Public Engagement

- guidelines identifying and directing the involvement of local and expert stakeholders
- guidelines identifying climate change issues which should be discussed with stakeholders
- regulations requiring independent climate change experts to peer-review the content of EISs prior to the approval stage
- regulations requiring monitoring and follow-up by independent third parties

Evaluation and Approval

- regulations specifying approval criteria and conditions
- guidelines for evaluation and approval to benefit all stakeholders (public, proponent, regulators)

Implementation and Follow-up

- regulations for monitoring and auditing the compliance of climate change mitigation and adaptation measures
- regulations for enforcement of climate change mitigation and adaptation measures
- guidelines or other mechanisms that will enhance monitoring and enforcement of climate change mitigation and adaptation measures

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well as assistance in facilitating communication and coordination, pointing to an overall need for capacity building in dealing with climate change issues in EIA. ClimAdapt (2003: ii) similarly draws attention to this issue, highlighting the need for guidelines to address difficulties in the prediction of environmental impacts resulting from changes in the climate.

Conclusions: key findings and next steps

Through a survey of international EIA practitioners, our research examined opinions on the best ways to address climate change through the EIA process. A strong theme has emerged around the need for regulations and guidelines to legislate and direct this process.

> **Generally speaking, the majority of respondents suggested that regulations and guidelines were important for every phase of the EIA process and it became evident that this need is especially prevalent in developing countries**

Generally speaking, the majority of respondents suggested that regulations and guidelines were important for every phase of the EIA process and it became evident that this need is especially prevalent in developing countries. More specifically, what IAIA members are telling us is that the best way for EIA to address climate change is to have regulations that initially trigger EIA operations and provide a clear basis for enforcement, supported by the development of guidelines for the scoping, EIS preparation and public participation stages. It was only in relation to the screening phase that respondents identified the role and importance of higher level regulations and guidelines (outside the formal EIA system) to legislate and direct how climate change is addressed; such upstream initiatives would obviously have bearing on the nature and extent to which EIA should address climate change on a project by project basis. These other mechanisms could or should include the use of strategic environmental assessments, sustainability assessments, economic analysis, and in general significantly increase forward thinking in terms of climate change.

At the same time, it is important for these changes to take place as quickly as possible as every new development has the potential to impact the climate. Survey respondents underscored the need for urgent action. If there is insufficient time to wait for the establishment of formal EIA regulations or higher level policies and legislation concerning climate change, then our findings might be interpreted as a 'call to arms' on behalf of EIA practitioners worldwide to initiate and implement better accounting for climate change issues in their EIA practice.

Notes

1. The UNFCCC was opened for signature on May 9, 1992, and entered into force on 21 March 1994. As of December 2009, UNFCCC had 192 parties.
2. The Protocol was initially adopted on 11 December 1997, and entered into force on 16 February 2005. As of November 2009, 187 states had signed and ratified the protocol.

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