

Climate Change in Impact Assessment

International Best Practice Principles

PURPOSE

These Best Practice Principles are intended to lead to better consideration of climate change in decisions and render them more sustainable. In particular, they are intended to help practitioners integrate climate change considerations into both project-level and strategic-level impact assessments (IA). By doing so, they will also help decision-makers to commission and review IAs and stakeholders to ensure that climate change concerns are addressed in development planning and analysis.

The systematic application of IA alerts decision makers to risks, to actions required to maintain local, regional and global ecosystems, and to steps needed to ensure the long-term success of development activities.

BACKGROUND

These Best Practice Principles were developed by an international group of IAIA members following two special symposia on climate change and impact assessment organized by the IAIA and held in Aalborg, Denmark and Washington, D.C. in 2010.

Comments are welcome at any time and should be forwarded to info@iaia.org.

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AUTHORS

Principal Author: Philip Byer.
Co-authors: Rita Cestti, Peter Croal, Weston Fisher, Stephen Hazell, Arend Kolhoff, and Lone Kørnøv.

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INTERNATIONAL ASSOCIATION for IMPACT ASSESSMENT

- Headquarters
1330 23rd Street South, Suite C
Fargo, ND 58103-3705 USA
Phone +1.701.297.7908
Fax +1.701.297.7917
info@iaia.org
www.iaia.org

IAIA statement on climate change and impact assessment

According to the Intergovernmental Panel on Climate Change 2007, variations of the climate system are unequivocal and very likely due to the observed increase in anthropogenic greenhouse gas concentrations. Climate change represents a key challenge to the sustainability of global ecosystems and human prosperity in the twenty-first century. The impacts of climate change combined with natural climate variability are predominantly negative, and often exacerbate other environmental challenges such as degradation of ecosystems, loss of biodiversity, and air, water and land pollution.

Climate change is a **development** issue: it diminishes stocks of natural capital and undermines efforts to alleviate poverty. Climate change is a **security** issue: it threatens food production and water supplies and thereby potentially destabilizes the most severely affected states. Climate change is a **health** issue: rising temperatures, changes in precipitation, and altered coastlines affect the presence and spread of diseases. Climate change is also an **equity** issue: it primarily affects the livelihood of the poorest in developing countries and diminishes the ability of future generations to meet their basic needs.

Impact assessment (IA) has much to contribute in assisting governments to meet their international commitments to addressing human-induced climate change and understanding uncertainties relating to climate change effects. IA can also assist industry and the public in understanding climate change and its effects. IA tools and methodologies for evaluating the environmental and social consequences of proposed policies, programs, plans, and projects can be useful in formulating appropriate mitigation measures to reduce greenhouse gas emissions and resilient adaptation measures to reduce and manage the negative effects of climate change and enhance any positive effects. Strategic environmental assessment (SEA) in particular is a critical IA tool to integrate adaptation to climate change into policy-making.

To properly address climate change, IA practitioners should address the following for every IA of a proposed policy, program, plan or project (hereafter "proposal"). Some of these principles apply to all IAs; other principles are applicable to those addressing either mitigation or adaptation.

Best practice principles

Screening and scoping

As a first step in an IA, it is necessary to identify whether and to what extent:

- i) The proposal will, directly or indirectly, increase or decrease greenhouse gas (GHG) emissions.
- ii) The proposal may be beneficially or adversely affected by, and vulnerable to, climate change either directly or indirectly.
- iii) Climate change may affect other aspects of the environment that are potentially affected by the impacts of the proposal.
- iv) An objective of the proposal is to use IA to identify alternatives and measures to mitigate and/or to adapt to climate change.

IA should explicitly address potentially significant effects in each of the above areas, with the level of detail consistent with the potential significance of the effects.

Mitigation

Where the proposal will, directly or indirectly, increase or decrease greenhouse gas (GHG) emissions, the following should also be addressed in the IA:

Mitigation objectives: Where the country has national or relevant sectoral climate change plans in which objectives for GHG emissions have been set, these objectives should be clearly identified and used in the IA. Where such objectives are not available, the IA should clearly define the objectives that the proposal is seeking to meet.

Greenhouse gas emissions: The IA should estimate the composition, magnitude and intensity of GHG emissions for each relevant element and phase of the proposal. This should be estimated by using a life-cycle approach and should include any effects of the proposal on carbon sinks. The estimate of the proposal's net emissions should be evaluated in the context of any government or industry best practices and reduction targets or objectives.

Mitigation measures: Alternative measures should be identified to reduce GHG emissions directly or indirectly, for example, by expanding the proposal or choosing different technologies or designs. The IA should explicitly identify and evaluate alternative ways to reduce GHG emissions for all elements and phases of the proposal.

Cumulative effects: The effects on climate change of any single proposal may be insignificant, but not when considered together with numerous other past, current and future projects. GHG emissions should therefore also be considered at a level (typically policy, plan or program) that addresses the cumulative effects of groups of communities or individual projects. More significant GHG reductions can be achieved through such policies, programs and plans, and strategic environmental assessments (SEA) of them, rather than through individual projects.

Adaptation

Nearly all proposals will in the long run be sensitive to climate variables and therefore be affected by and vulnerable to climate change. IA can provide information on the magnitude of those impacts and can provide alternative ways to lessen such impacts. In addition, IA may be carried out on proposals whose main purpose is to help adapt to climate change.

Adaptation objectives: Where the country has national or relevant sectoral climate change plans in which objectives for climate change adaptation have been set, these objectives should be clearly identified and used in the IA. Where such objectives are not available, the IA should clearly define the objectives that the proposal is seeking to meet.

Vulnerability assessment: The degree to which a natural or social and economic system is susceptible to climate change can be determined at different levels. The IA should assess to what extent areas, water resources, land use types, communities and socio-economic groups are vulnerable or at risk to climate change.

Refining the baseline: A changed climate and local weather affects the baseline environment against which impacts are assessed. Therefore, for those elements of the environment that are potentially affected by the proposal, the IA should identify how the baseline environment will be affected by climate change, and assess impacts against this changed baseline. At least three climate change scenarios should be addressed: minimum change, intermediate change and maximum change. Programs and reports on how to estimate climate parameters for these scenarios are available and should be consulted-see section below on Resources. For proposals where the effects of climate change on the baseline environment are a minor issue, refining the baseline may require only the intermediate climate change to be evaluated. Alternatively, where climate change is an important issue relative to the proposal, all three scenarios should be considered.

Adaptation measures: The IA should explicitly identify, evaluate and select feasible ways that the proposal can be modified now and in the future to adapt to the effects of a changing climate. Such adaptation measures aim to increase resistance to withstand climate change, increase resilience to recover from the effects of climate change, and strengthen the capacity to adapt to climate change. IA can also be used to help recognize and strengthen coping strategies and the knowledge systems that provide support for adaptation. They should also be used to identify, for the range of potential climate change scenarios, feasible *no regret* measures that generate net social and/or economic benefits irrespective of whether or not anthropogenic climate change occurs. Adaptation measures should also recognize that climate change is expected to continue over many decades.

Equity

Consideration of different socio-cultural and socio-economic vulnerabilities and adaptive capacities within societal groups is an important component of IA. For example, climate change can affect men's and women's roles and activities in agriculture, water management, land tenure and livelihoods in new, unplanned ways. Gender issues related to climate change should therefore be assessed and measures identified to lessen inequities. Particular attention should also be paid to potentially disproportionate adverse effects on poor populations in drought-prone, flood-prone, and coastal areas subject to potential climate change impacts.

Synergies between adaptation and mitigation

Mitigation and adaptation may have different and conflicting goals, and each can have consequences that interact in both positive and negative ways. The IA should assess the interactions of mitigation and adaptation consequences and measures. Likewise, mitigation and adaptation have potential synergies with other environmental and social concerns that need to be addressed in order not to make suboptimal decisions.

Scientific information

Information about climate change is rapidly developing. Any assessment should use the latest, most credible scientific information and climate projections.

Addressing uncertainties

Broad scientific consensus exists that the climate is changing; however, there is significant uncertainty about the precise nature (degree, timing, etc.) of these changes. The IA should address this uncertainty by explicitly:

- Considering a reasonable, credible range of possible future climate scenarios.
- Assessing the effects of climate change on impact predictions.
- Assessing the effects of climate change on the proposal.

Confidence in the analysis

For each climate change analysis, the IA should provide an explanation and justification for how the results were obtained (the choices of models and methodologies and sources of data) and the degree of confidence that can be placed on the models and data and on the results. It is recognized that while quantitative estimates are generally desired, quantitative analyses may not be feasible or cost-effective and qualitative analyses must be used; in such cases, the qualitative descriptors should be fully explained and the predictions justified.

Decision-making

Making decisions about proposals that affect and/or are affected by climate change presents significant challenges, particularly since the implications are often long-term and uncertain. Once the climate change implications, including the uncertainties, are understood, decisions about the proposal (accept, modify or reject) should be based on the precautionary principle of "do no harm" and the principles of sustainable development.

Follow-up

Once a proposal has been implemented, the actual outcomes may be different from those that were predicted in the IA. The IA should therefore identify the impact monitoring, evaluation, management and communication measures that will be carried out for unanticipated impacts after the proposal has been implemented. This should include an adaptive management plan to be able to respond to changing climate conditions. IAIA's *EIA Follow-Up International Best Practice Principles* should be consulted for more information.

Transparency and stakeholder participation

All people who are potentially affected by the proposal and would like to participate in the assessment process should be able to understand how climate change has been addressed. Each aspect of the IA, based on the principles outlined above from screening through decision-making and plans for follow-up, should be communicated and explained in clear, easy-to-read language, and the relevant documents should be readily accessible to those interested. IAIA's *Public Participation Best Practice Principles* should be consulted for more information.

Operationalizing these principles

These Best Practice Principles provide a starting point for ensuring that this critical environmental issue is properly addressed in impact assessments. The following will be needed to implement these principles effectively:

- Commitments by governments and businesses to addressing climate change before making decisions about proposed policies, plans, programs, and projects.
- Cross-disciplinary and cross-sectoral coordination that often cuts across existing organizational structures.
- Use of the knowledge held by local and Indigenous people who have lived on or near the land that could be affected by climate change; such knowledge can be extremely useful in establishing the baseline, conducting trends analysis and identifying and evaluating mitigation and adaptation measures.
- Education and targeted capacity-building of IA practitioners on ways to address climate change in IA, and more detailed guidelines developed with input from the broad range of stakeholders interested in climate change.
- Assistance by experienced communication specialists to help inform decision-makers of the relevance and implications of climate change to the proposal.

Glossary

Adopted from the Intergovernmental Panel on Climate Change, IPCC 2007, and Framework Convention on Climate Change, UNFCCC 1992.

Adaptation: Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. (IPCC)

Adaptive capacity: The ability of a system to adjust to climate change to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. (IPCC)

Climate change: A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. (UNFCCC). A change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. (IPCC)

Mitigation: Technological change and substitution that reduce resource inputs and emissions per unit of output.... Implementing policies to reduce greenhouse gas emissions and enhance sinks. (IPCC)

Uncertainty: An expression of the degree to which a value (e.g., the future state of the climate system) is unknown. Uncertainty can result from lack of information or from disagreement about what is known or even knowable. It may have many types of sources, from quantifiable errors in the data to ambiguously defined concepts or terminology, or uncertain projections of human behaviour. (IPCC)

Vulnerability: The degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity. (IPCC)

Resources

A growing body of information is available on climate change and IA, including guidelines and web-based tools developed by other groups, to help understand, predict and address future climate change in impact assessments. Listed below are some of the guidelines and best practice documents that have been developed by other organizations. These, as well as other documents and links to internet websites, are available through IAIA's web site (www.iaia.org). IAIA encourages others to contribute information to this site by contacting IAIA.

Guidelines developed by other organizations

1. Canadian Environmental Assessment Agency, "Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners," prepared by The Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment, 2003.
2. Institute of Environmental Management & Assessment, "Principles Series: Climate Change Adaptation & EIA," and "Principles Series: Climate Change Mitigation & EIA," 2010.
3. Netherlands Commission for Environmental Assessment, "NCEA's Recommendations on Climate Change in Environmental Assessment," 2007.
4. Nova Scotia Environment (Canada), "Guide to Considering Climate Change in Environmental Assessments in Nova Scotia," and "Guide to Considering Climate Change in Project Development in Nova Scotia," 2011.
5. OECD Development Assistance Committee (DAC), "Strategic Environmental Assessment and Adaptation to Climate Change," 2010.
6. Scottish Government, Environmental Assessment Team, "Consideration of Climate Factors within Strategic Environmental Assessment (SEA)," 2010.