Incorporating Climate Change into Cumulative Effects Assessment

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- Recent Developments
- Lessons from Canada's North
- Survey Results
- How to Move Ahead

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From the Plenary

- Climate Change is the BIG cumulative impact of our time
- Climate change is a Tragedy of the Commons
- Focus themes of this conference:
  - Uncertainty (a focus on science)
  - Institutional Integration
  - Practice versus Theory

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Recent Developments

Predictions

EIA Guide Development

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IPCC Report #4

- It is "very likely" that precipitation will increase at high latitudes and ice melt (floods) will begin earlier
- Large areas of the Arctic Ocean could lose year-round ice cover by the end of the 21st century
- Best estimates for sea-level rise by the end of the century have narrowed to 28-58 cm

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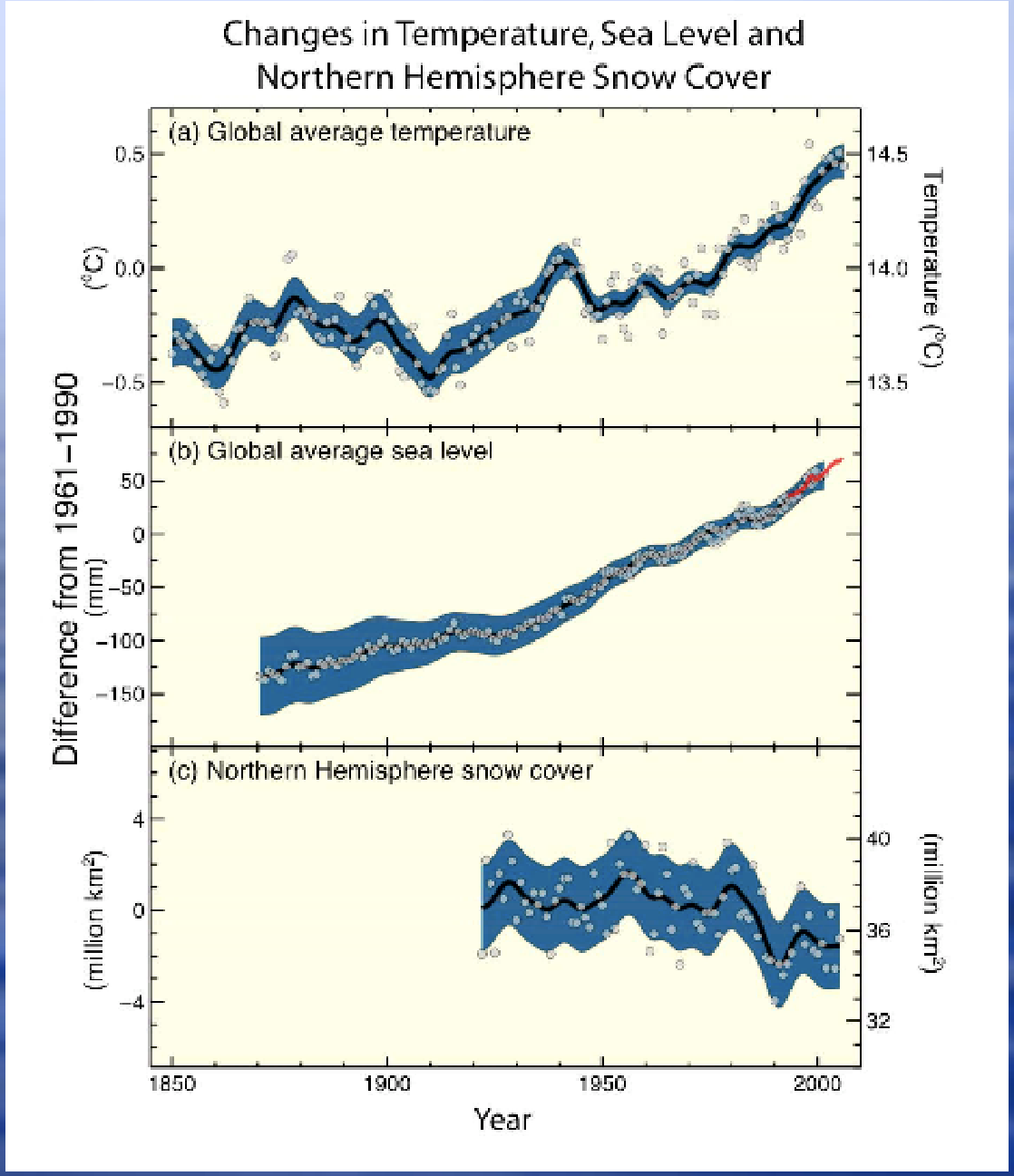
Observed Changes



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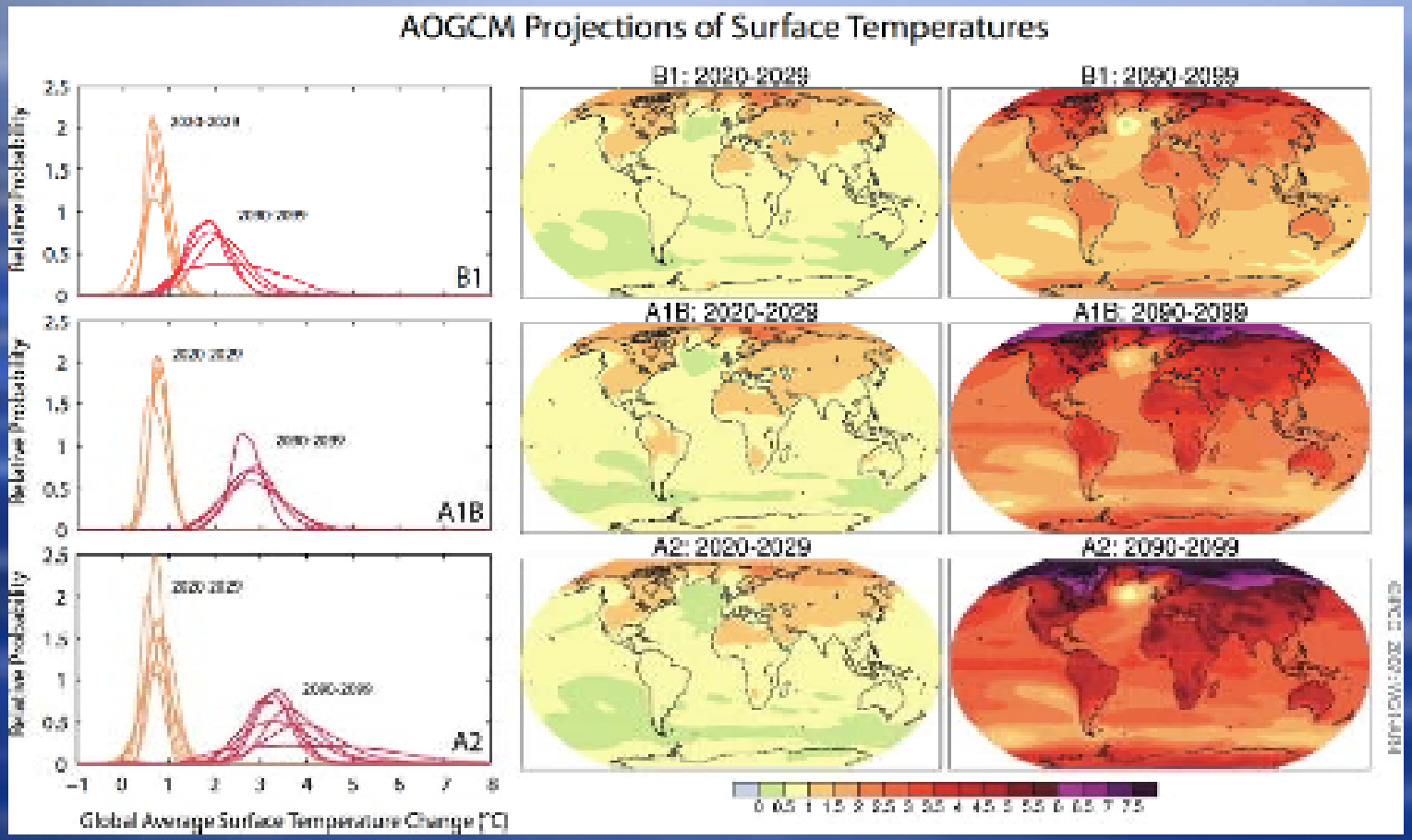
Predicted Changes to 2099



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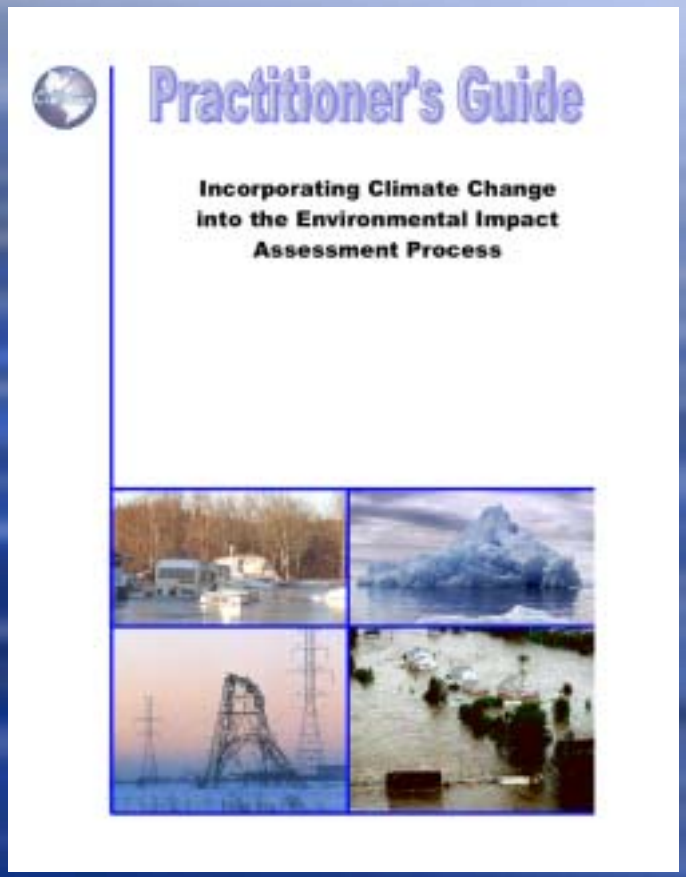
EIA Guide



- A draft guide was developed, applied to 6 case studies, peer reviewed, and revised based on application and comment
- Guide was introduced at IAIA'03 in June of 2003

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ClimAdapt EIA Guide

The guide provided:

- an understanding of the implications of climate change in relation to the preparation of an EIA
- direction to determine, on a project- specific basis, whether climate change needs to be considered
- sources of information for use in assessing climate change implications, and
- guidance in incorporation climate change consideration into the EIA process

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Project Specific Connections

Extreme events are getting more frequent – EIA helps on a project-specific basis

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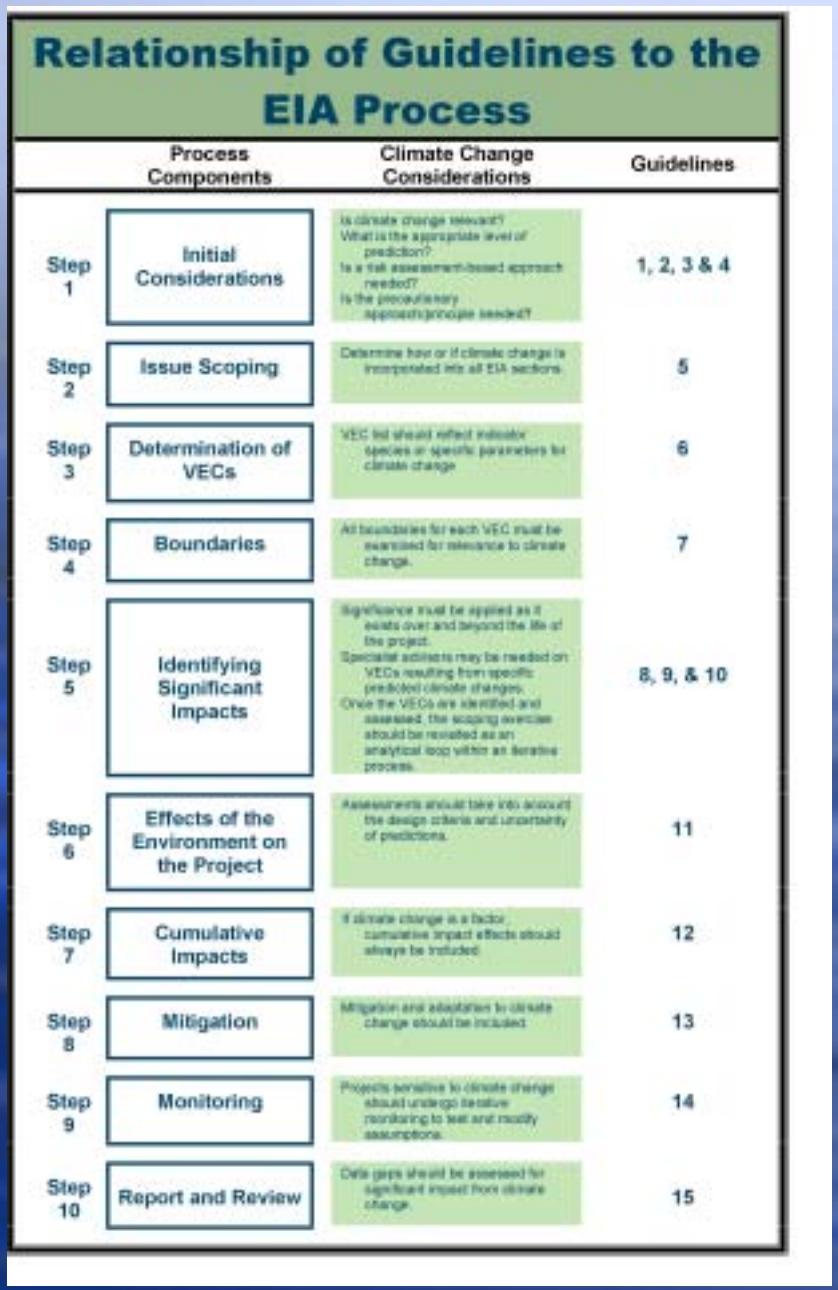

Relationship of Guidelines to the EIA Process

	Process Components	Climate Change Considerations	Guidelines
Step 1	Initial Considerations	Is climate change relevant? What is the appropriate level of prediction? Is a risk assessment-based approach needed? Is the precautionary approach/principle needed?	1, 2, 3 & 4
Step 2	Issue Scoping	Determine how or if climate change is incorporated into all EIA sections.	5
Step 3	Determination of VECs	VEC list should reflect indicator species or specific parameters for climate change	6
Step 4	Boundaries	All boundaries for each VEC must be examined for relevance to climate change.	7
Step 5	Identifying Significant Impacts	Significance must be applied as it exists over and beyond the life of the project. Specialist advisors may be needed on VECs resulting from specific predicted climate changes. Once the VECs are identified and assessed, the scoping exercise should be revisited as an analytical loop within an iterative process.	8, 9, & 10
Step 6	Effects of the Environment on the Project	Assessments should take into account the design criteria and uncertainty of predictions.	11
Step 7	Cumulative Impacts	If climate change is a factor, cumulative impact effects should always be included.	12
Step 8	Mitigation	Mitigation and adaptation to climate change should be included.	13
Step 9	Monitoring	Projects sensitive to climate change should undergo iterative monitoring to test and modify assumptions.	14
Step 10	Report and Review	Data gaps should be assessed for significant impact from climate change.	15

- 15 guidelines identified key issues for each step in the EIA process
- The Guide tried to give someone the equivalent of 6 months experience working with Climate Change

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Overarching Considerations

- Climate changes may occur over the life span of the project or the life span of its impacts;
- Impacts on Valued Environmental Components (VECs) may change, and
- The project may be changed over its life, altering its impact characteristics.

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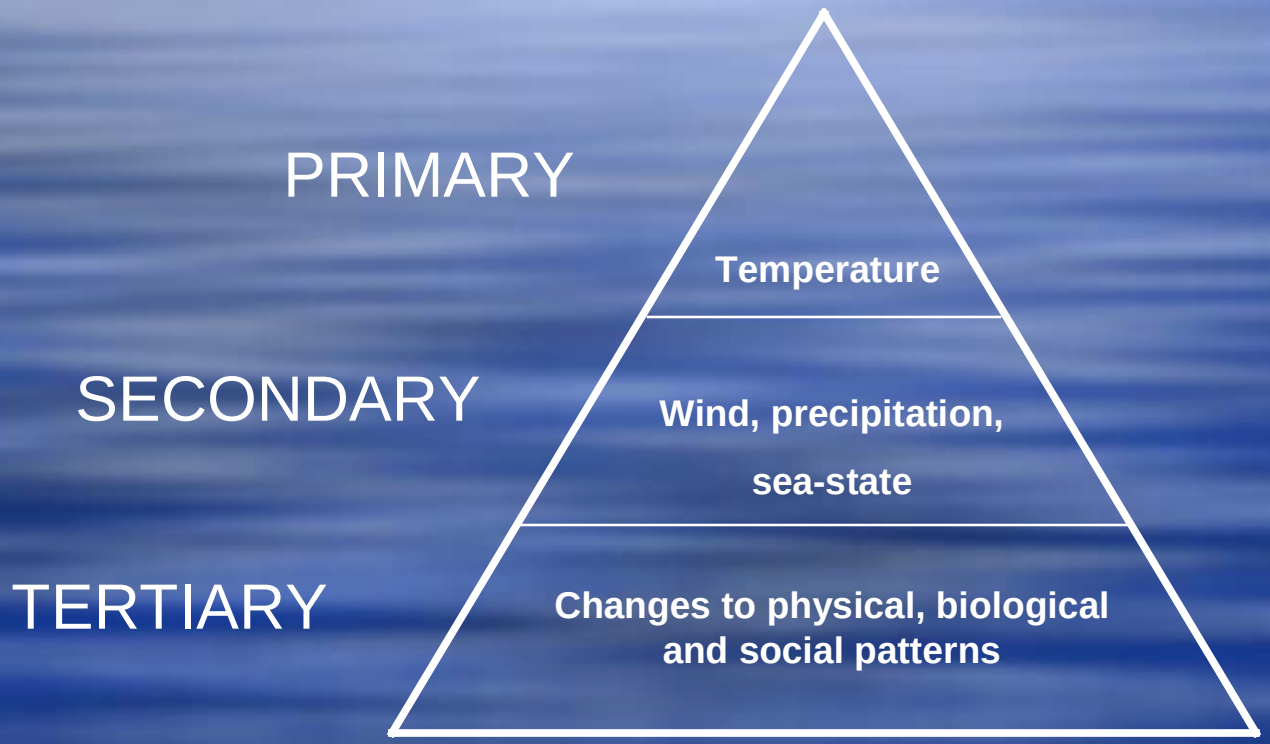
Predictability Hierarchy



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Effects of the Environment on the Project

- Emphasis should be on human health and safety
- Operation and productivity of the project may be adversely affected
- Cost of development may rise and project design may need to be modified
- Maintenance requirements may increase
- Monitoring may be more important

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Cumulative Effects

- Always considered if climate change is important
- Increased transport of physical or chemical constituents
- An increase or decrease in habitat area for a species or species group that is already affected by the project
- Secondary effects related to climate-change modification to the environment or its effects on the project

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Testing of the Guide

- The Guide was peer reviewed at the advance draft stage and revised accordingly
- Under a contract with Canadian Environmental Assessment Agency (CEAA), the Guide was applied to six existing EIAs in Canada
- After the case study application, the guide was revised and a final peer review completed

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EIA Case Studies

Case studies included:

1. **Beaufort Sea Gas Development**, Canadian Arctic
2. **Voisey Bay Mine**, Newfoundland and Labrador

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Predicting Climate Change

Predicted Change in Average Temperatures by 2040 – 2069 (°C)

Time of Year	Weather Sites Nearest the Locations of the ClimAdapt Case Studies						
	#1	#2	#3	#4	#5	#6	
	Shearwater Nova Scotia	Sable Island NS	Charlottetown Prince Edward Island	Fredericton New Brunswick	Cartwright Newfoundland and Labrador	Cambridge Bay Nunavut	Clyde Nunavut
January-March	3.1	1.7	3.2	3.3	-0.6	5.9	6.5
April-October	2.2	1.5	2.3	2.3	2.9	2.8	3.1
November-December	1.5	1.8	1.6	1.0	-0.6	5.1	3.9
Annual Average	2.4	1.6	2.4	2.3	-1.8	3.9	4.2

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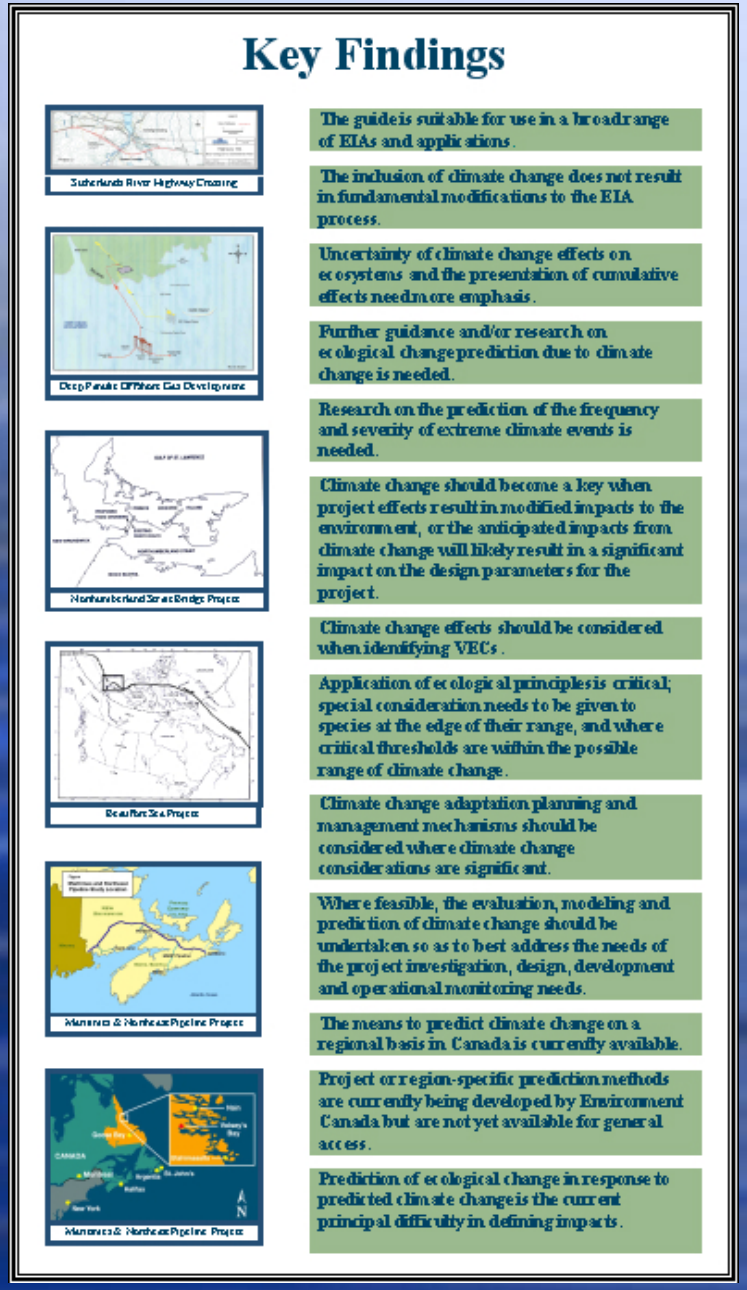

Findings

- Regional predictions of climate change are now readily available
- Understanding local and microclimate effects are still difficult
- Balance is needed between risks and detailed climate projections

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The Canadian Situation

From: NTREE Advice on a Long-term Strategy on Energy and Climate Change – June 2006

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Canada's National Roundtable on the Environment and the Economy

Two special features of Canada's national interest are directly relevant to the question of climate change:

1. As a major consumer, producer and exporter of energy, Canada is unique among the highly industrialized countries and the signatories to Kyoto. In essence, Canada faces the climate change challenge from both the energy-producing and energy-consuming perspectives.

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Canada's National Roundtable on the Environment and the Economy

2. Canada is likely to experience greater impacts than any other industrialized nation, given its northern continent-wide geography and resource-based economy. For these reasons, Canada is uniquely motivated to mitigate its contribution to climate change and to take advantage of the real economic opportunities that will arise from a strategic response.

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Examples from Canada's North

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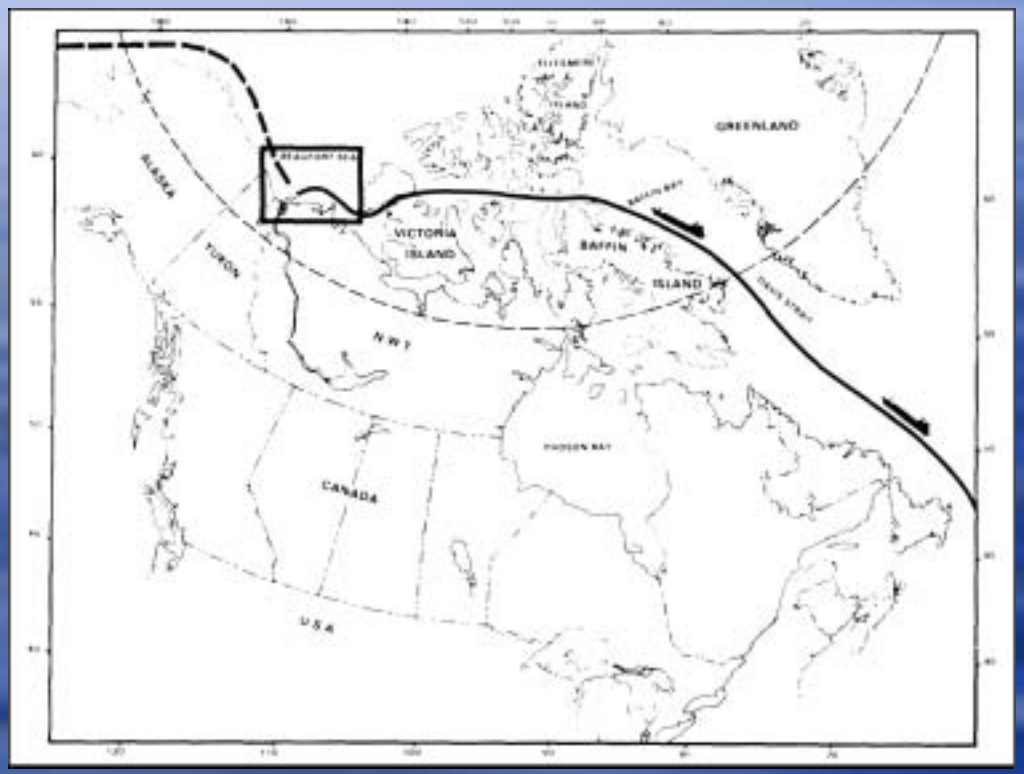
Beaufort Sea Project - 1982

In 1982, a detailed Environmental Impact Statement described impacts of a project to recover Arctic oil and gas and deliver it to southern marks by a MacKenzie River pipeline or by tanker.



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Beaufort Sea Project - 1982

- While current and historic climate conditions were reviewed in detail in the EIA, there was no consideration or integration of climate change into the assessment. The Panel did, however, recommend the possibility of climate change be considered in the design and construction of a pipeline and other fixed facilities in areas of permafrost.

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Voisey's Bay Nickel Mine - 1997

The project was located in Labrador where climate change predictions are for reductions in temperatures rather than increases

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Voisey's Bay Nickel Mine - 1997

- Our assessment was that VECs warranting ongoing monitoring and observation, or risk assessment, would likely be:
  - caribou;
  - birds;
  - Arctic char;
  - sea ice with respect to shipping and its interaction to local coastal activity, and
  - changes to social activities of local Aboriginal peoples.
- The last two of the above are possibly the most likely to involve interactions of both the project and the effects of climate changes.

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Gahcho Kué Diamond Mine - 2007

The MacKenzie Valley Review Board has jurisdiction for EIA in a large portion of Canada's Northwest. This direction was provided in a recent terms of reference for new proposed Debeers diamond mine:

- The scientific consensus is that the North is particularly vulnerable to impacts from a changing climate. The EIS must examine and evaluate the development as a potential greenhouse gas contributor. It must also examine potential climate change effects on the proposed development.

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So Where Are We?

- Little has changed in EIA since the landmark rejection of the Beaufort Sea project
- Emphasis on climate change remains on GHG emissions and potential effects of change on the project
- Can we agree that climate change is the largest global cumulative impact we need to begin to address?

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Survey Results

IAIA List Serve

IAIA Washington Branch

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Survey of IAIA members

- Short survey of Climate Change and Washington Branch list serve members conducted in the last few months
- Questions aimed at use of cumulative effects assessment to address mitigation and adaptation of climate change issues
- Between 8 and 10 members responded in each group, but representation is diverse

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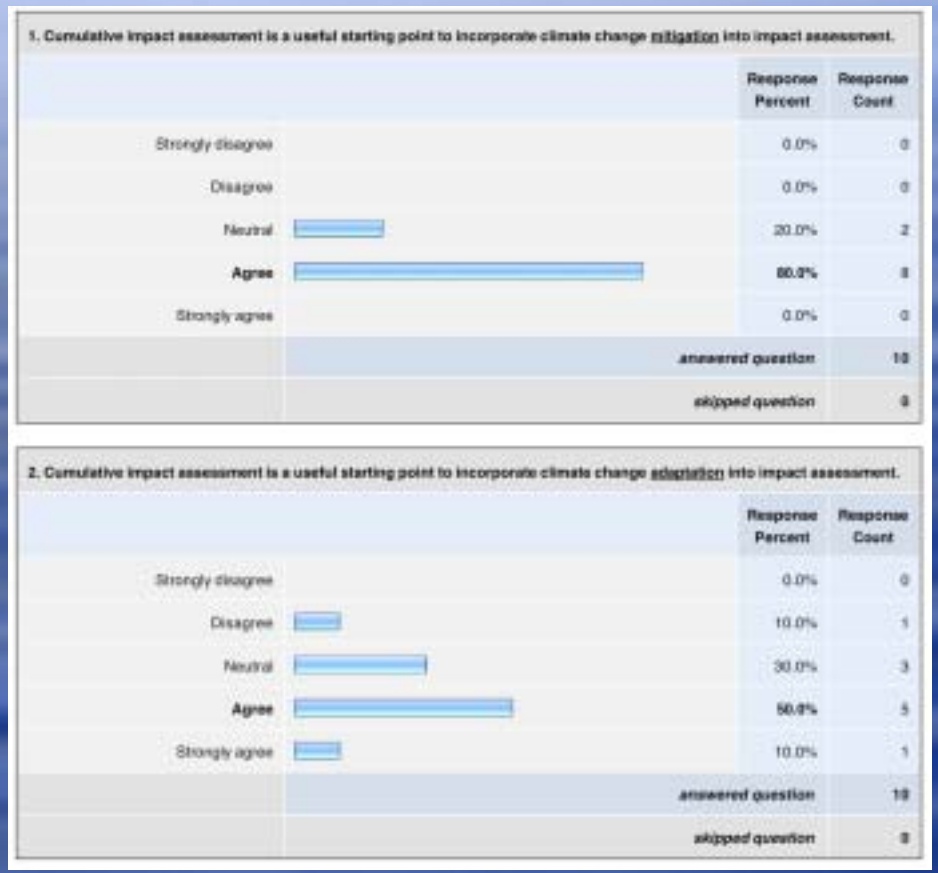
CC list: Useful Starting Point?

Mitigation

Adaptation



1. Cumulative impact assessment is a useful starting point to incorporate climate change mitigation into impact assessment.

	Response Percent	Response Count
Strongly disagree	0.0%	0
Disagree	0.0%	0
Neutral	20.0%	2
Agree	**80.0%**	**8**
Strongly agree	0.0%	0
	answered question	**10**
	skipped question	**0**

2. Cumulative impact assessment is a useful starting point to incorporate climate change adaptation into impact assessment.

	Response Percent	Response Count
Strongly disagree	0.0%	0
Disagree	10.0%	1
Neutral	30.0%	3
Agree	**50.0%**	**5**
Strongly agree	10.0%	1
	answered question	**10**
	skipped question	**0**

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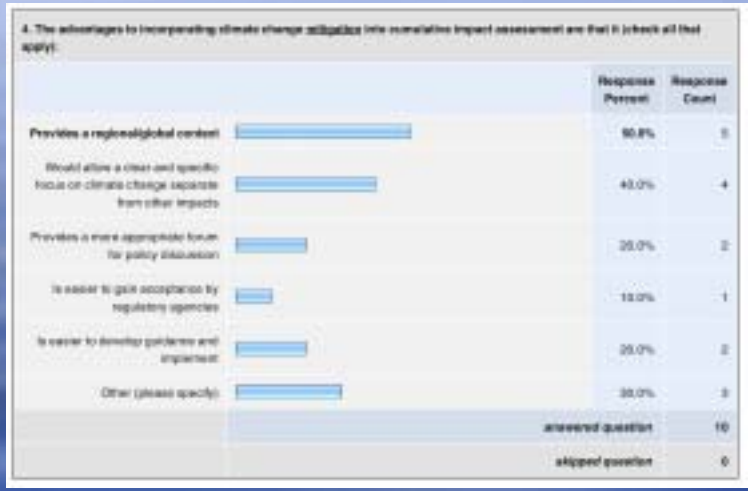
Mitigation Advantages and Disadvantages

Advantages for Mitigation



	Response Percent	Response Count
Provides a regional/global context	90.0%	9
Would allow a clear and specific focus on climate change separate from other impacts	40.0%	4
Provides a more appropriate forum for policy discussion	20.0%	2
Is easier to gain acceptance by regulatory agencies	10.0%	1
Is easier to develop guidance and implement	20.0%	2
Other (please specify)	30.0%	3
answered question		10
skipped question		0

Disadvantages for Mitigation

	Response Percent	Response Count
Is too removed from the project description	37.5%	3
May avoid appropriate mitigation	37.5%	3
Reduces the perceived importance of the issue	50.0%	4
Other (please specify)	25.0%	2
answered question		8
skipped question		2

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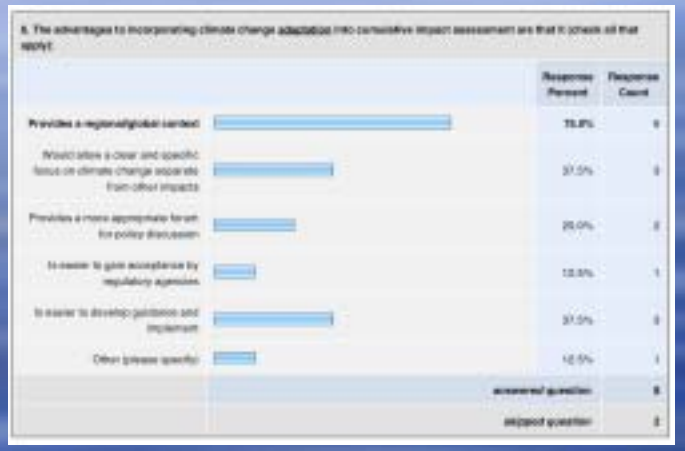
Adaptation Advantages and Disadvantages

Advantages for Adaptation



Disadvantages for Adaptation

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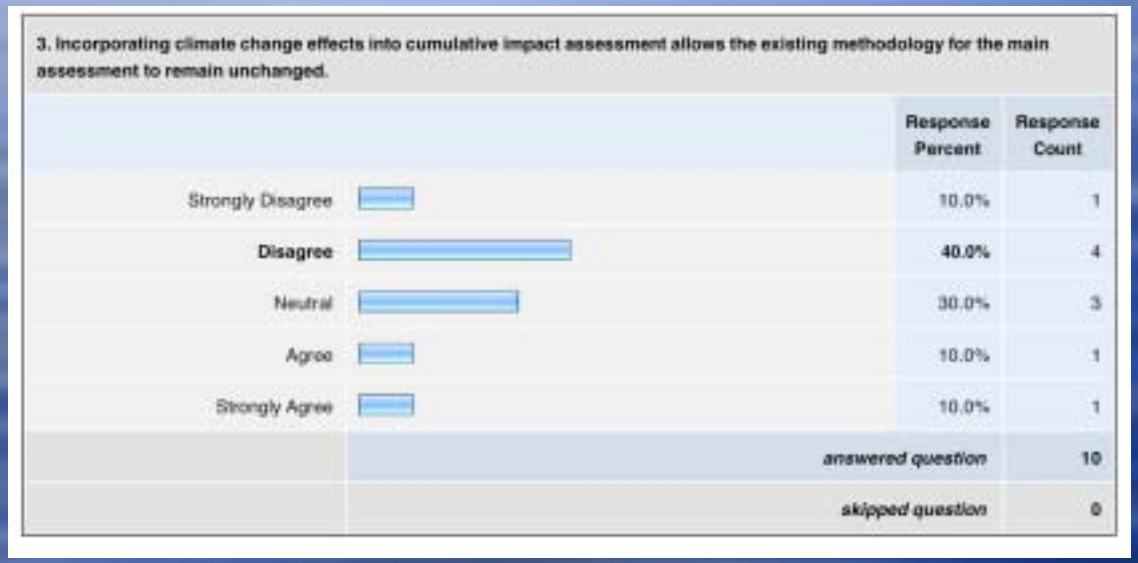
Change in Main EIA Required?

Change not required in main document



3. Incorporating climate change effects into cumulative impact assessment allows the existing methodology for the main assessment to remain unchanged.

	Response Percent	Response Count
Strongly Disagree	10.0%	1
Disagree	40.0%	4
Neutral	30.0%	3
Agree	10.0%	1
Strongly Agree	10.0%	1
answered question		10
skipped question		0

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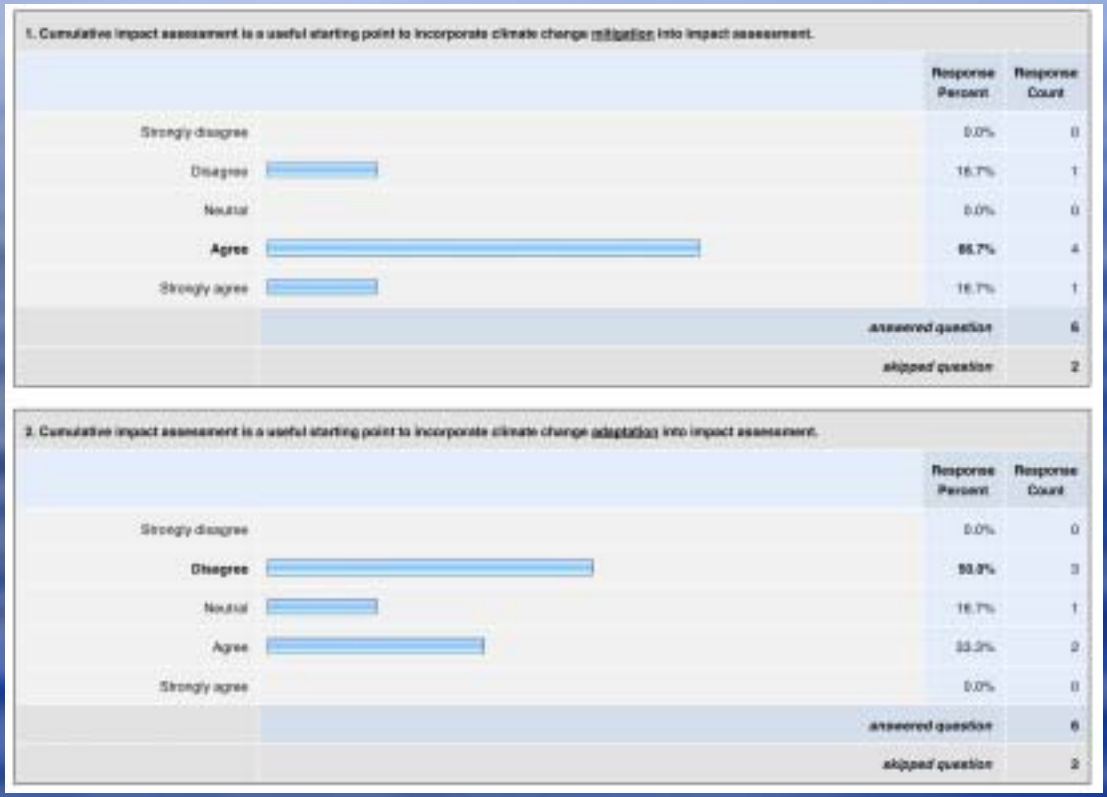
DC List: Useful Starting Point?

Mitigation

Adaptation



1. Cumulative impact assessment is a useful starting point to incorporate climate change mitigation into impact assessment.

	Response Percent	Response Count
Strongly disagree	0.0%	0
Disagree	16.7%	1
Neutral	0.0%	0
Agree	**66.7%**	4
Strongly agree	16.7%	1
	answered question	6
	skipped question	2

2. Cumulative impact assessment is a useful starting point to incorporate climate change adaptation into impact assessment.

	Response Percent	Response Count
Strongly disagree	0.0%	0
Disagree	**50.0%**	3
Neutral	16.7%	1
Agree	33.3%	2
Strongly agree	0.0%	0
	answered question	6
	skipped question	2

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Mitigation Advantages and Disadvantages

Advantages for Mitigation

4. The advantages to incorporating climate change mitigation into cumulative impact assessment are that it (check all that apply):		Response Percent	Response Count
Provides a regional/global context		57.1%	4
Would allow a clear and specific focus on climate change separate from other impacts		14.3%	1
Provides a more appropriate forum for policy discussion		28.6%	2
Is easier to gain acceptance by regulatory agencies		14.3%	1
Is easier to develop guidance and implement		14.3%	1
Other (please specify)		42.9%	3
	answered question		7
	skipped question		1

Disadvantages for Mitigation

5. The disadvantages to incorporating climate change mitigation into cumulative impact assessment are that it (check all that apply):		Response Percent	Response Count
Is too removed from the project description		50.0%	3
May avoid appropriate mitigation		16.7%	1
Reduces the perceived importance of the issue		16.7%	1
Other (please specify)		50.0%	3
	answered question		6
	skipped question		2

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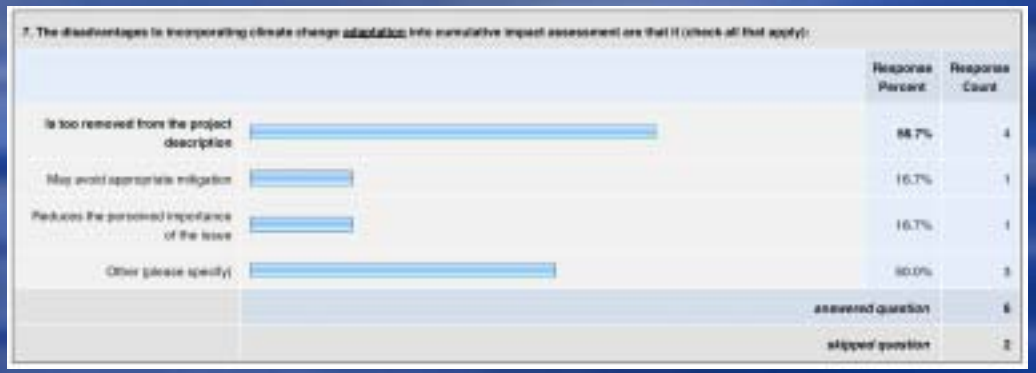
Adaptation Advantages and Disadvantages

Advantages for Adaptation

Disadvantages for Adaptation



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Change in Main EIA Required?

Change not required in main document

3. Incorporating climate change effects into cumulative impact assessment allows the existing methodology for the main assessment to remain unchanged.

	Response Percent	Response Count
Strongly Disagree	0.0%	0
Disagree	33.3%	2
Neutral	16.7%	1
Agree	50.0%	3
Strongly Agree	0.0%	0
answered question		6
skipped question		2

Survey Responses

Concern about incorporating adaptation issues into even cumulative impact assessment is best summarized by this response:

- It is too difficult to predict future changes, thus accuracy of adaptation strategies may be flawed. Also, not enough people trained in managing adaptation.

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What’s Next?
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World Bank Emphasis

A Strategic Framework for the World Bank Group (August 2008) identified the need for new instruments and approaches to address climate change in two areas.

- The first one relates to taking better account of climate risk and vulnerabilities.
- The second area is linked to the need to better understand the impacts of the WBG's activities on GHG emissions.

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Conclusion

- Effort is increasing to mainstream climate change into existing sustainable development management processes
- Integration in EIA has been largely limited to GHG contributions and effects on the project
- A simple next step is needed

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From the Plenary

- Climate Change is the BIG cumulative impact of our time
- Climate change is a Tragedy of the Commons
- Focus themes of this conference:
  - Uncertainty (a focus on science)
  - Institutional Integration
  - Practice versus Theory

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Next Steps

- EIAs have gone through expansion and contraction as issues emerge and focus develops
- Cumulative effects assessment is a realistic and practical next step in the integration process
- We need to Keep it Simple to allow integration and adaptation as experience grows

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Next Step

1. Focus on Environmental Sustainability
2. Use Minimum and Maximum Scenarios
3. Review the magnitude and uncertainty of the potential impacts in the main impact analysis on VECs
4. Summarize the potential impact on environmental sustainability of current systems and the project itself

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Thank You
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