WORKSHOP FOR EA ADMINISTRATORS ON CUMULATIVE ENVIRONMENTAL ASSESSMENT (CEA)

November 16-18, 1992, Toronto

Sponsored by
Ontario Ministry of the Environment (MOE) and
Federal Environmental Assessment Review Office (FEARO)

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Introduction

This report summarizes a two and one-half day workshop for Environmental Assessment (EA) administrators on Cumulative Environmental Assessment (CEA). The Workshop was held November 16-18, 1992 in Toronto, and was sponsored jointly by the Ontario Ministry of Environment (MOE) and the Federal Environmental Assessment Review Office (FEARO). Attendees included representatives from six provinces, two territories, the Department of Indian and Northern Affairs, the Inuvialuit Settlement Region, Environment Canada and FEARO (see list of participants, Appendix 1).

During the opening evening and the following morning sessions, prepared presentations were made by consultants Barry Sadler and Kate Davies, Pat LeBlanc (FEARO), Stewart Sears (Ontario Hydro), Ray Clark (Council on Environmental Quality, Washington, D.C.), David Neufeld (MOE-Ontario) and Bill Stevenson (MOE-Ontario).

Informal case studies were then provided by representatives of FEARO, New Brunswick, Quebec, Alberta and Newfoundland.

Subsequently, the participants were engaged in an exercise to focus discussion. A list of 15 issues was presented — issues noted during presentations and discussion by workshop planning committee members — and the facilitator assisted the participants to group these under seven general issue areas. The balance of the workshop was taken up with subgroup sessions and reports, in two rounds. Three subgroups were formed, each taking one issue in the first round of small group work, and a second issue in the second. In this way, intensive work was done on six of the seven issues, and following each report, all participants had an opportunity to comment on every issue. As expected, the seventh issue, "communications", was addressed within the other issue discussions. Subgroup reports and discussions are presented below.

Outcome. The workshop achieved a good measure of consensus. Subgroup work overlapped to a remarkable degree, and outright disagreement quite limited. Major themes were:

- CEA is critical because it addresses the ability of natural systems to continue to function.
- There is a high level of uncertainty over CEA.
- Present CEA theory has shortcomings for practitioners, but ecosystem and indicators approaches are promising.
- The integration, both in theory and practice, of EA, CEA, State of the Environment reporting (SOE) and land use planning will be very important.
- We should apply more resources to learning from past EA experience.
- CEA is required under the new federal Canadian Environmental Assessment Act, but expectations are limited by a number of factors.
- The CEA field is very active at present with numerous initiatives planned or ongoing.
- A major issue is the setting of temporal and spatial boundaries. A realistic, pragmatic temporal boundary will in most cases be ten years. Spatial boundaries will vary for different indicators and will frequently cross political boundaries.

- Data base development is a prerequisite for CEA. Data is needed for establishing baselines, thresholds, indicators and monitoring parameters.
- The proponent's responsibility for effects caused by the combination of its project's effects with the effects of other, past and present projects; and its responsibility for effects caused by future, "induced" projects, are major areas of concern. Baseline and threshold data are critical here. An emissions credit-type system whereby a new player could negotiate a reduction of existing stress should be tested.
- Long term planning must ensure that procedure maintains the sustainable development spirit.
- In the short term, the emphasis should be on indicator development that "nests" within SOE indicators, networking and communications initiatives, and collaboration.

The Gravity of the Issue

Lead-off speaker Barry Sadler emphasized the importance of CEA as an indicator of the scope and scale of environmental deterioration: "CEA", he said, "gets at the fundamental issue: the ability of natural systems to continue functioning." We are now seeing effects, such as ozone layer thinning, on a spatial order unimaginable just ten years ago. The limits of source and sink functions (the natural system's ability to regenerate and assimilate our waste products) is now being tested. Whether one looks at ozone, soil erosion, aquifer depletion, or many other problems, the issue is the same and the possibilities drastic: "The real magnitude of environmental changes is fundamentally worrying."

These large scale problems are frequently the result of insults that aggregate temporally and spatially. CEA addresses just this, and gets at the basic issue: the ability of natural systems to continue functioning.

Uncertainty

Many people at the workshop related their colleagues' concerns that CEA may be an impossibly difficult concept to put in practice. One referred to CEA as a "maze". A member of a committee trying do a cumulative effects assessment of a uranium mining project reported tremendous difficulty in actually using CEARC's CEA concepts. And a third, a FEARO representative currently doing CEA workshops with federal departments, said "There is great need to reduce the anxiety level, to show that CEA can be done... There's a huge gap here, almost a cultural gap, with a tremendous level of defensiveness, anxiety and misinformation." Some departments, she reported, really believe their activities, or small projects, have no cumulative effects. Others are overwhelmed with the prospect of doing CEA for small projects when resources to complete EAs for small projects are already inadequate for the task.

Barry Sadler noted several factors adding to uncertainty:

- Cumulative effects are difficult to assess through a conventional project focus since they cross boundaries and arise from an aggregate of activities. Because of complex

causality, cause/effect models don't generate good prediction.

- Often jurisdictional boundaries don't match natural boundaries, and effective environmental management must work within the natural boundaries.
- Because EA covers so much spatial and temporal territory, EA at the policy and program level may prove critical. But policy and program EA will likely prove politically problematic, as it intrudes on the traditional prerogatives of the most senior policy makers.

Speaker Ray Clark of the Council on Environmental Quality, Washington, D.C., observed that a major source of anxiety for proponents is the prospect of dealing with the impact of other, future activities: "How far in time and space do you go?" The U.S. Forest Service, for example, is asking why they should be responsible for dealing with the impact of other cutting operations.

The FEARO representative handling departmental workshops suggested that anxiety will be reduced by "drawing lines around CEA" and showing how CEA connects to what departments already know: "Sometimes they are doing CEA but not calling it that." Ray Clark suggested that anxiety will be reduced with training: "Once we know what we are doing, let's get that out into the educational institutions. Training takes the fear out of it. Then people can proceed and use their creativity." Optimistically, Ray noted that twenty years ago people had a similar level of anxiety over indirect impacts, and that issue is now in hand.

Status Report

Theory and Experience

Theory. In Barry Sadler's view, existing approaches for handling CEA are not very effective. We do have an evolving set of concepts, but there is a vast lack of basic knowledge. The upshot is that we don't have the scientific ability to make accurate projections on a particular site. And as Barry noted half-way through the workshop, the experience of workshop participants indicates that the theory developed to date is not particularly useful.

On the other hand, Barry pointed to a strong body of theory arguing that CEA should be approached as a planning problem, rather than as an assessment: "The best approach may be in the middle: planning with an attempt to zone on an impact basis." He also emphasized the ecosystem approach as promising, although "it is still not clear what an ecosystem approach means as a problem solving mechanism". But as a concept it appears attractive: look at the bioregion, see what natural features it has, and determine how we can maintain those features and monitor changes.

The ecosystem approach was supported by speaker Stewart Sears of Ontario Hydro. He argued that CEA in the past tended to be project driven, but that in the future it is likely to be more regionally driven. The Moose River basin project was moving in that direction (watershed-based resource planning) when it was put on hold.

Ontario's review of theoretical approaches to CEA includes the development of a discussion paper on an ecosystem approach to land use planning. The frame work is currently being testing for use as a cumulative effects monitoring system to assess the health of the ecosys-

tems falling within the Niagara Escarpment Plan area. Ontario is also testing an indicators approach to CEA. This approach identifies issues of immediate concern to EA administrators; it is a direct approach to goal setting, prediction and monitoring; and CEA indicators could be developed as a subset of State of the Environment (SOE) indicators.

Experience. A number of participants reported difficulties with the application of EA theory and the lack of emphasis on CEA in provincial legislation:

- As mentioned above, existing models proved inadequate in a uranium mining CEA... "We tried to test all conceptual methodologies, but the lack of baseline information made it very difficult."
- Quebec law permits examination of cumulative environmental effects (CEE), but on a discretionary basis. A review of existing reports and studies indicates that CEE is virtually absent, and where present, it is an unsatisfactory add-on at the end of the process.
- A Newfoundland representative indicated that CEA is not a provincial requirement in that province. But since it appears in the new federal Act, Newfoundland will inevitably become involved. There is concern about the impact on the private sector, which is already facing tough economic times. "We do expect proponents to carry the cost, but it is difficult to justify asking proponents in Newfoundland to evaluate the cumulative effects of prior or future projects."

More positive experiences were reported by New Brunswick and Alberta:

- New Brunswick is looking at cumulative effects in airsheds as part of its sustainable development initiative. Also, several projects involved CEA without calling it that. One of those involved an EA of a dam project on a river already dammed at six sites. The environment won a "moral victory" when the proponent dropped the project, but this raises another issue: "Killing development can be a cumulative effect."
- Alberta reported three projects involving CEE.
- A review of recreational development in the Canwell Corridor near Banff National Park was instructed to consider CEE, but the examination was limited to impacts already apparent.
- The provincial Clean Air Strategy, driven by international air quality agreements and concerns about the large provincial energy industry, deals with CEE. But is not so much a framework for CEE, as a strategic framework for achieving clean air. A major conclusion of the strategy is that to reduce cumulative effects a variety of tools are needed, not just CEA.
- The Northern Rivers Baseline Study is developing the data base needed for regional CEA. The study arose out of a panel review of a pulp mill proposal. The panel did address water quality cumulatively, but concluded that the data base was too limited. So a collaborative project to build a useful data base has been initiated. The project is overseen by a multi-stakeholder panel, which includes proponents, aboriginal peoples, and three levels of government. The study area includes 80% of northern Alberta and parts of Manitoba and Saskatchewan. The intent is to build baseline data and then do cumulative effects monitoring of effluent. Both a science approach and a planning approach are used.

Existing Requirements and Guidelines

Aside from Ontario's provision for Class EA, the only institutionalized requirement for CEA

mentioned at the workshop is under the new federal Act, the Canadian Environmental Assessment Act (CEAA).

Consultant Kate Davies has written a Reference Guide for CEA under the new federal Act, and she spoke about the Act's requirements in this area. She confirmed that the CEAA requires that every screening, comprehensive study, panel or mediation look at cumulative effects, and that "significant" cumulative effects must be assessed.

While this sounds sweeping, most of Kate's comments emphasized that in fact expectations are delimited in a number of respects:

- The only environmental effects to be addressed are those specifically defined in the Act.
- While the Act requires a CEA of actions that have been or will be carried out, the legal interpretation limits "will be" to projects already approved.
- The Act recognizes our limited ability to predict, and asks for a CEA of effects that are "likely".

In general, Kate's judgement is that the Act doesn't see CEA as a separate step, but a different way of thinking about CEA while doing an assessment: "To do a complete assessment of cumulative effects would be a separate exercise, and the Act's intent is not that ambitious."

The Reference Guide emphasizes the need to set limits in time and space; to take a holistic/ecosystem approach; and to recognize both the importance of thresholds and the fact that our ability to predict thresholds is very limited. The Guide presents CEA as a five step process:

1. Define temporal and spatial boundaries, considering factors such as the size and nature of the project, the availability of data, and ecological/jurisdictional boundaries.
2. Assess interactions among environmental effects of the project, including effects of the environment on the project (e.g., hurricanes, radon), and the social impact of physical effects.
3. Identify past and future projects and activities and their environmental effects. This might be handled by reference to land use planning, resource registers, etc.
4. Assess interactions among the environmental effects of the project, and those of past and future projects or activities. (Note that while "project" is defined in the Act, "activities" are not, so anything that affects the project could be included.)
5. Determine the significance of cumulative environmental effects: whether adverse, and if so, how much so. "Significance" is the central legal test under the Act. Criteria for determining significance include magnitude, geographical extent, duration and frequency, reversibility, familiarity, and ecological context. Criteria for likelihood include probability (e.g., quantitative risk assessment) and scientific (methodological) uncertainty.

In discussion, Kate clarified that the requirement to consider future projects includes those that result from a project that is "growth inducing". A new corridor from the sea to a mine makes the development of other mines along the corridor likely, so the effects of such developments would have to be considered: "Construction of utility or transport corridors are prime examples of growth inducement."

Izok Lake!

One participant asked if social impacts are to be considered under the Act. The answer here is a qualified yes. The legal interpretation of the Act is that environmental effects are physical environmental changes; but if those changes appear to affect health, socio-economic conditions,

cultural heritage and so on, then project impacts on those must be considered. For example, an assessment of a transport corridor that would fragment communities would need to consider the social impact of that change to the physical environment.

Details such as these will be clarified in the CEAA procedural manual now being prepared by FEARO. FEARO's intent is to define the minimum requirements, step by step, from a practitioner's point of view.

Overview of CEA Initiatives

An overview of past and current CEA initiatives was provided by Pat LeBlanc of FEARO. Activities mentioned include:

- a series of studies sponsored by CEARC since 1985 addressing the CEA concept;
- a collaborative project to establish a process for CEA in the Moose River basin, together with a research proposal (the project did not go through for a number of reasons);
- a FEARO study program on CEA looking at approaches across Canada and the US, to culminate in proposed guidelines and an international conference (conference on hold at present);
- initiatives related to the CEAA now in process or complete: a discussion paper, the Reference Guide by Kate Davies (complete); a CEA Sourcebook containing a primer, references, a contact list, and a list of initiatives; a CEA monitoring study using 7 cases in an attempt to draw up principles; a workshop in Vancouver for managers monitoring those cases; an Environmental Effects Monitoring Manual with a section on CEA; the CEAA procedural manual, covering the four tracks (screening, comprehensive study, panels, mediation); a series of screening workshops; and a CEA newsletter.
- panels set up under EARP, including Grande Baleine, Konawana, Low Level Flying
- the federal/provincial Northern Rivers study
- the CARC/Rawson Academy study of James Bay
- a workshop on CEA planned by the Canadian section of the Ontario Fisheries Society
- workshops planned by the Canadian Electrical Association and the Canadian Utilities Association

Stewart Sears provided additional information on Canadian Electrical Association activities. Draft principles for applying CEA by electrical utilities are presently under consideration. These principles are similar to those presented by Kate Davies. In addition, they emphasize the role of government and government/proponent partnerships in providing data for regional and ecosystem baseline and threshold data.

Issues Arising

Temporal and Spatial Boundaries

This subject arose repeatedly and was a subgroup discussion topic. Regarding temporal boundaries, the subgroup emphasized that judgements must be site and project specific, and be realistic with respect to indicators (e.g., regenerative capacity) and intervention/ remediation. The subgroup recommended a temporal boundary of ten years after the project is in place as a "reasonable" time frame. Points raised in discussion:

- An authority could specify a longer time frame on a case by case basis.
- In some cases, remediation provisions may reduce the need for prediction; if monitoring

indicates a problem, effects could be remediated.

> Regarding spatial boundaries, the subgroup emphasized that different indicators may have different spatial bounds; and that in many cases natural boundaries cross political boundaries. This will be problematic if the jurisdictions involved have different expectations. This subgroup was also very interested in stakeholder approaches that bring together the various users in a watershed. In small scale cases, they recommended testing a "sign-off" approach in which the proponent would get a permit if the downstream neighbours approved. Where this is done, the project's neighbours would obtain a letter to "save harmless", so if a problem arises they have a legal commitment to remediation.

This proposal generated considerable discussion. Some participants agreed that the sign-off approach may be attractive for small projects: "If you put in a little culvert on a stream, the public interest may be entirely represented by a few people downstream. But a large project would be quite different." Ray Clark, from the U.S., added that a backlash is developing there over such agreements. The feeling is that the person affected is paid off while the environment suffers.

Information

Information issues came up repeatedly and were seen as including baseline data, thresholds, monitoring and mitigation, and indicators. Discussion early in the workshop confirmed that comprehensive information systems providing data on any particular tract do not exist in either Canada or the US; and that much of the information gathered over the years may be neither good (it may not answer the right questions) nor compatible. Ray Clark noted that there is never time within an EA to develop a new data base, and that in his opinion, the development of an environmental baseline data base is the "biggest bang for the buck".

David Neufeld, in his presentation on ecosystem monitoring in the Niagara Escarpment, stressed that an information system should be "dynamic", moving from a feature-based approach to providing data on "how the system actually functions". In his opinion, the goal of ecosystem monitoring should be to provide information on the achievement of ecosystem objectives, to facilitate decision making, to check whether the standards set are adequate, and generally, to monitor the health of the entire ecosystem using indicators that track health and stress at that level.

The subgroup report on information considered monitoring, baseline data, indicators and thresholds/mitigation. With respect to *monitoring*, the subgroup emphasized collaboration and partnership; maintenance of data quality and data compatibility; clarity regarding roles, responsibilities, costs, timeframes and communication. Regarding partnership, it expected the key players to be the proponent and government, but recognized a significant role for the public.

Thoughts raised in discussion included:

- concern over responsibility for ongoing management/updating of a data base
- evidence that networks of separate data bases may work better than a single, central data base (with the advantage that each data base would be updated by the people that created it);
- information that DIAND is now identifying data bases to create such a network, and is finding electronic access to be the difficult element; and,

- the first step may be a data base of data bases.

Regarding *baseline data*, the subgroup again recommended partnerships to determine minimum needs, data standards for quality and accessibility, responsibility for collation and distribution, and cost-sharing arrangements. In the subgroup's view, while duplication of existing efforts is a concern, it may not be serious since most existing data will not be useful to CEA.

In discussion, several participants argued that as CEA is addressed, strategic baseline information becomes increasingly important, and therefore this should be an area of growing government responsibility. Also, small project CEA will be particularly dependent on government data. This may not involve new money, but a sharing of information and reorientation of data collection efforts. However, adequate co-operation across jurisdictions and institutions may require agreements at the political level.

The subgroup presentation and subsequent discussion on *indicators* focused on pragmatic issues such as cost, usefulness, reliability, sensitivity, and the ability of indicators to help the proponent and decision maker to address thresholds and assimilative capacity. One person emphasized the role of collaborative working groups, arguing that no one agency has all the needed expertise in-house. Another person agreed, and referred to the Northern Rivers project's science advisory panel by way of example. The balance of discussion on this topic centred on co-ordinating work on CEA indicators with work on SOE indicators, and nesting CEA indicators within SOE indicators.

Regarding *thresholds*, the subgroup recommended that EA administrators develop criteria for establishing thresholds. In discussion, one person commented that setting thresholds is a risky business — and that civil servants operate in a system that is very risk adverse. He recommended that the various jurisdictions and levels of government take that risk collectively.

The Proponent's Responsibility for "Other" and "Growth Inducing" Activities

Considerations identified by the subgroup working on this subject included the following:

- The level of difficulty in assessing effects is related to the understanding of the system within which the project takes place. Established thresholds and baselines make the task easier.
- Where thresholds are likely to be approached, two approaches are apparent. Either it is "tough luck" to the next proponent; or a emission credit-type system might permit a new player to negotiate a reduction of existing stress. A case study of the emission credit approach was recommended.
- Where no threshold exists, the proponent should be required to propose one, together with an appropriate ecosystem indicator. The proposed threshold and indicator would be critically reviewed, and subsequent monitoring would be put in place to ensure ecosystem health.

Assessments of growth inducing projects, in the subgroup's judgement, would be limited by the federal Act's restriction to "likely" or "reasonably foreseeable" events. It was expected that assessments of this nature would be qualitative. The subgroup recommended that proponents of growth inducing projects be responsible for providing baseline data. Controls could be enacted through land use planning.

Discussion here centred on proponent responsibility. One participant suggested that

baseline and threshold data should be developed jointly by government, the academic community and industry. Another disagreed strongly, arguing that, ethically, while the local people "own" the resource, the proponent will make money from a limited resource and move on, so they should be responsible: "I'm not convinced we should make the public pay for this." Other participants commented that proponents object when they feel they are doing the government's own management work; that some expensive research could be avoided by making use of professional judgement and local knowledge; and that a great deal of data already exists, but is unco-ordinated and hard to access. This was the most serious area of contention at the workshop. The two positions are summed up in these two comments: "The onus is on government to know something about the resources they manage." And conversely, "We can't know everything about all these huge areas, and if there wasn't a proposal, there wouldn't be a need for the information.

Additional issues that arose repeatedly

Harmonization. This refers to the need to harmonize CEA requirements across jurisdictions. A basic example is the definition of environment. Ontario legislation, for example, includes the socio-economic environment. Federal legislation defines environment as the physical environment, and only considers socio-economic impacts which are derivative to the biophysical impact.

Integration. This refers to the development of a model that includes EA, CEA, SOE reporting, and land use planning. These tools are all needed, and they are closely related. In some cases one will be more appropriate than the others, and in many cases the best solution will be to use two or more in combination. The integration of these tools should be explicitly addressed.

Partnership. Partnership was one of the dominant workshop themes, as is apparent from the text above. Frequently it was tied to democratization and empowerment. In many cases, the only workable approach seems to be collaborative, and the collaborative approach would seem to supplant the need for aggressive leadership — which in today's world would not likely be accepted anyway.

One concrete and general suggestion in this area was for regional linkages: "If all the agencies with informal contacts and relationships in a region could sit at one table and determine which are the sensitive environmental components, would they not have set the framework for doing CEA that region, for building baseline information, and for active collaboration? CEA would simplify as people become familiar with the sensitive components."

Of course, partnership is not necessarily easy, and it is a new game: "Things fall through the cracks. The various levels of government and other agencies are all present in each region, but who leads? And often, the one who leads pays, so everyone keeps a low profile." Partnership was recognized as a current buzzword and fad; making partnership work appears to be another matter.

Local involvement. The importance of local involvement in partnerships was a recurrent theme as well, particularly in monitoring. Said one participant, "CEA monitoring will only be effective with local involvement." Another participant, from New Brunswick, recounted a case in point. A multi-party monitoring committee, involving the local industry and the community, received a report from its Fisheries and Oceans member that lobster were being contaminated with cadmium. The local lobster fishery was closed, the industry found a way to reduce cadmium, the reduction showed up in the fishery within several years, and it was reopened. Without everyone at the table the entire scenario would have been more unpleasant and a much longer story.

Planning for CEA

The Long Term

In his presentation, Barry Sadler made two proposals best included in this section on long term planning. First, he strongly recommended that we invest more in monitoring and tracking. We have spent vastly more on prediction than on learning from our experience, and Barry argues that that is a big mistake. One approach would be to do an ecological audit of similar areas that have been handled differently. Another would be to review completed EAs. The latter seemed to encounter resistance; many of the EA administrators present felt funding requests for retrospective studies would not be well received.

Barry's other strategic observation was that there is a danger of procedure triumphing over purpose. The case in point here is the new federal Act. After being worked over intensively by the lawyers, in a legitimate attempt to avoid future court challenges, the body of the Act may have lost some of the broader SD spirit embodied in its preamble.

The long term was also a subgroup topic. This subgroup's task was to explore CEA vision, principles, and strategy in the larger sustainable development context. Their statement of long term direction is as follows:

"Ideally, governments should be in a position to understand the complexities of ecosystem dynamics to the extent that we can establish thresholds and assign assimilative capacities to valued ecosystems. Also, we must recognize CEA as a necessary component to EA, and a means of adopting sustainable development principles in ecosystem management."

Specifically, the subgroup felt that in the long term CEA should have:

- the capacity to plan and limit development;
- the ability to incorporate public vision into decision making; and
- access to information management systems to allow reasonably accurate prediction.

To get to this end, the subgroup recommended:

- communications, to promote the understanding that CEA is achievable;
- education, to achieve a level playing field;
- demonstration projects;
- building on successes through the use of case studies;
- developing long term goals and objectives for CEA;
- building consensus on indicators, principles, and criteria for establishing thresholds;
- an allocation policy for land use; and
- a good information management system.

The Short Term

Two other subgroups dealt with the short term. One proposed a short term action plan, and the other developed a specific proposal for a collaborative project.

The first of these two groups made the following recommendations:

- develop a discussion paper on biological, physical, social and economic indicators. This would promote indicators that use existing data sources and that "nest", that fit into SOE and other sets of indicators. Sector-specific indicators would be identified as well.
- have the paper reviewed by EA administrators and SOE staff
- develop a manual
- start a CEA newsletter;
- build linkages between CCME, EA administrators, people in the SOE area, and the Roundtables on the Environment
- prepare a CEA primer for native groups, the general public, proponents, etc. It would explain what CEA is, why it is important, and how to do it.
- conduct a retrospective review of CEE, based on completed EAs. The review would look at predicted effects vs. reality (an audit) and monitoring experience.
- prepare a guidance booklet on CEE monitoring, using the manual and retrospective study.
- from monitoring, work toward a second generation of indicators.

The subgroup working on a collaborative proposal proposed a project to develop criteria for selecting appropriate methods for doing CEA. The group made reference to Stewart Sears' presentation, in which he listed some ten tools for doing CEA; and the uranium CEA case presented by Hussein Sadar, which reviewed available tools as well: "We need to develop criteria that will help a proponent chose the appropriate method." Subsequent discussion revealed considerable semantic confusion between "methods", "approaches" and "procedures". In Pat LeBlanc's view, procedure refers to the toolbox, the entire CEA framework; while methods or methodology refers to the tools inside the toolbox. The subgroup was concerned with the latter.

While this proposal was not adopted as such, support for the concept was evident, and it appears that the need will be met through upcoming FEARO projects and ongoing academic work in Canada and beyond.

Action Commitments

- Bill Stevenson: expand the existing concept paper on the indicators approach to CEA, circulate it to this group for comment, and finalize for distribution: winter '93.
- David Neufeld: prepare and distribute a progress report on the Niagara Escarpment cumulative effects monitoring program: by summer '93.
- Pat LeBlanc: In co-operation with the Council on Environment Quality (Washington), complete a draft handbook for practitioners, by May '93, and a CEA newsletter/networking report, by Jan. '93
- Derek Doyle: complete and circulate the workshop proceedings
- Derek Doyle: provide an agenda for and coordinate a conference call among EA administrators. The conference call meeting would include such topics as:
- Your interest in CEA and how you would wish to contribute to the collective effort.
- How we might build support for a collaborative effort with each jurisdiction's senior executive.
- Whether an approach to CEA which is based on indicators which "nest" with those being developed in SOE research should be pursued collectively by administrators.
- Where you feel we should go from here and the relationship to CCME.

APPENDIX 1

ENVIRONMENTAL ASSESSMENT ADMINISTRATOR'S CONFERENCE
November 16, 17 & 18

List of Participants

Name	Agency
Bob Stone	Alberta Environment
Derek Doyle	MOE, Ontario
Bill Stevenson	MOE, Ontario
Lorrie Pella	MOE, Ontario
Darryl Shoemaker	MOE, Ontario
David Neufeld	MOE, Ontario
Angela Azzopardi	MOE, Ontario
Grace Patterson	Environmental Assessment Board, Ontario
Michel Germain	Bureau d'Audiences Publiques sur l'Énvironnement, Quebec
Richard Lecours	Department of Environment, NB
Patricia Hinch	Department of the Environment - Nova Scotia
Tony Blouin	Department of Environment and Lands, Newfoundland
Robert Walker	DIAND, Yellowknife
Marshall Netherwood	Inuvialuit Settlement Region, Inuvik
Alan Parkinson	Department of Renewable Resources, Whitehorse
Patrice LeBlanc	FEARO
David Barnes	FEARO
Husain Sadar	FEARO
Linda Jones	FEARO
Murray Clamen	Environment Canada-EA Branch
Barry Sadler (spkr)	Consultant, Victoria, B.C.
Kate Davies (spkr)	Ecosystems Consulting, Orleans, Ontario
Stewart Sears (spkr)	Ontario Hydro
Ray Clark (spkr)	Council on Environmental Quality, Washington, D.C.
Jeff Solway (recorder/facilitator)	Nashwaak Consulting, Toronto
Total 25	

APPENDIX 2

Agenda

EA ADMINISTRATOR'S WORKSHOP ON CUMULATIVE ENVIRONMENTAL ASSESSMENT NOVEMBER 16-18, 1992 HOLIDAY INN - CITY HALL, TORONTO, ONTARIO		
NOVEMBER 16		
6:30-7:30 p.m.	Registration	Derek Doyle Patrice LeBlanc
7:30-7:45	Welcome, objectives, agenda	Barry Sadler
7:45-8:15	Cumulative Environmental Effects: from Concept to Practice	
8:15-9:00	Around the room: - discussion - introductions - concerns about the agenda - key issues in understanding and applying CEE, from your professional experience, that you want to address.	
9:00	Hors d'oeuvres and refreshments	
NOVEMBER 17		
9:10 a.m.	Welcome, review agenda for late comers	
9:10	Current Initiatives in CEE: lessons for the EA practitioner	Patrice LeBlanc
9:30	Discussion	
9:40	An Approach to Addressing CEE under the CEAA	Kate Davies
10:00	Discussion	
10:15	**BREAK**	
10:30	CEE: A proponent's perspective (Ontario Hydro)	Stewart Sears
10:50	Discussion	
11:00	Lessons from NEPA and the American experience	Ray Clark
11:20	Discussion	
11:30-12:30	Case studies and approaches	Ontario and other Participants

EA ADMINISTRATOR'S WORKSHOP ON CUMULATIVE ENVIRONMENTAL ASSESSMENT NOVEMBER 16-18, 1992 HOLIDAY INN - CITY HALL, TORONTO, ONTARIO		
12:30-2:00	**LUNCH**	
2:00-2:15	Synopsis	Derek Doyle Patrice LeBlanc
2:15-3:00	Issue Selection and Priorize	
3:00	**BREAK**	
3:00-4:45	Working Groups	Participants
7:00	**DINNER**	
NOVEMBER 18		
9:00-10:30	Working Groups report back and discussion	Participants
10:30	**BREAK**	
10:30-12:00	Working Groups	Participants
12:00-1:30	**LUNCH**	
1:30-3:00	Working Groups report back and discussion	
3:00	**BREAK**	
3:15	Integrating discussion/Action proposals	
4:15	Closing remarks	
4:30	**Adjourn**	

APPENDIX 3

Session Notes: WORKSHOP FOR EA ADMINISTRATORS ON CUMULATIVE ENVIRONMENTAL ASSESSMENT (CEA)

November 16-18, 1992, Toronto

Sponsored by
Ontario Ministry of the Environment (MOE) and
Federal Environmental Assessment Review Office (FEARO)

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1. Introduction by Derek Doyle, MOE, Ontario:

The thought behind this workshop was that we would have to deal with CEA in Ontario but would certainly benefit by learning from as many colleagues as possible. It's a maze, but expect to learn a lot in next two days. Hopefully, by sharing and listening to initiatives and problems we will be able to sort out a direction that we are comfortable with — at least a near term destination — with some additional clarity for a long term destination. Hoping for some solid detail on the near term destination that will better equip each of us separately, and perhaps, give us a common protocol. If we start that process in these two days, the workshop will be a success.

The openness here is apparent already. The challenge will be to listen to each other's perspectives, for in bringing all perspectives together we each end up with more than we came with.

Success here will depend on focus; we don't have a rigid workplan, and will develop it as we move along.

2. Introduction by Patrice LeBlanc, FEARO:

Thanks to Derek and Bill Stevenson for putting this workshop together. Special welcome to Ray Clark from the U.S. Ray and I have been sharing information and experience on this for some time now.

CEA is important, and will shortly be enshrined in law federally under the Canadian Environmental Assessment Act (CEAA). Over the next two days we need to look at CEA from two points of view: administrators and practitioners. Some direction in terms of short and long term priorities, and next steps, would be very valuable. Workshop should be exciting and valuable.

3. Presentation by Barry Sadler:

I can't tell anyone how to do CEA. I'm not sure I'm any clearer than I was ten years ago. This is one of those simple subjects made complex, or the reverse. We've been struggling with this idea for ten years. So I want only to provide an aide memoir to discussion, an attempt to get the discussion rolling, particularly in a way that has not often been done: in a way that deals with real practical experiences in CEA.

The people who actually have to assess cumulative environmental effects have the really difficult job.

Three starting premises:

1. CEA is important because signposts the scope and the scale of environmental deterioration. We're seeing effects at a totally different spatial order than we could have imagined twenty years ago. From the point of view of sustainability, the question is how we assess and manage natural systems to maintain source and sink functions (to regenerate, and assimilate our waste products). In these respects we're seeing limits being tested, at all scales.

   E.g., thinning of ozone layer. Our awareness only ten years old. At first the people collecting the data thought it had to be a computer error. And now it is thinning at twice the rate. The implications for human health, crop regeneration, functioning of ecological food chains, could be drastic.

Soil erosion another example: 25 X rate of natural regeneration. 50% loss of natural biological content in some farm soils. Reaching limits.

CEA gets at this issue: the ability of natural systems to continue functioning. A sobering backstop to the kinds of discussions we have over particular projects, portfolios, programs. The real magnitude of environmental changes is fundamentally worrying.

2. How effective are existing approaches for handling CEA? Not very. Effects are defined variously. We do have a set of concepts that are evolving, but there is a vast lack of basic knowledge. Don't have the scientific ability to make accurate projections on a particular site. Likely to get it wrong. Pervasive uncertainty. More so, beyond a particular site. With respect to impact prediction, whether from best judgement or fancy models, the one thing we know is that we're not likely to get it right. But still, there's a difference between the impossible and the art of the possible.

3. Cumulative effects difficult to assess through conventional project focus. They cross boundaries, come from an aggregation of activities. Using cause/effect models doesn't produce good prediction.

   We can learn the most from the practitioners, the people that get their hands dirty. E.g., CEARC's work may have been too conceptual, too far from the field, from people who are trying to do CEA.

   Under the new federal Act, people will be asked to do CEA. Our best bet will be learning by doing; recording what works and doesn't work and why. So future CEAs won't have to reinvent the wheel.

Examples of ways it has been tried: Beaufort sea hydrocarbon study. The oil producers went to the feds and said we're ready to go. A "concept hearing" was held: part project specific (some infrastructure was in place and could be assessed) and part assessment of things at the conceptual level. One of the first attempts to come to grips with CEA.

Latest example, which may be an important test case of best practice is the Great Whale. Hoping the exchange over the next few days produces other concrete examples, which we can all learn from.

Problem areas: creeping incrementalism when many small projects and practices collectively have enormous environmental impact, e.g., wetlands drainage. We don't have any comprehensive approach that captures these incremental phenomena. Present problems of this nature are an indictment of past failures to deal with the phenomenon. Ontario has class assessment that tries to grapple with this, but that is not done in many jurisdictions.

Mismatched boundaries: administrative boundaries seldom match natural boundaries, but effective environmental management must work within natural boundaries.

Policies and programs: focus in EA has been large capital projects. Haven't had the tools to assess policies and programs. New federal Act requires policy and program EAs; will be interesting to watch. This turf is well guarded by senior

mandarins. But we do need more systematic approaches at that level.

Typology of approaches (see Barry's paper): 3 types. Not meant to be exclusive listing but to illustrate the types of options.

Strong body of theory that says approaching CEA as a planning problem, rather than an assessment, may help. The best approach may have both top-down and bottom-up components. Planning with an attempt to zone, on an impact basis. Alberta's eastern slopes policy a good model.

Bottom-up approach is proponent driven. Usually involves a series of multi-step procedures to project into the future, using "ecological value". More promising approach is to look at the bio-region and see what natural features it has and how can we maintain those, how can we monitor changes. The ecosystem approach. Favoured, in particular, by the IJC. But still not clear what an ecosystem approach means as a problem solving mechanism, as opposed to a conceptual model.

Since impact prediction is an inexact science, we need to do much more monitoring and tracking. We've spent vastly more on prediction than on tracking: a big mistake. We need to look back so we can look forward better. One way of doing that is doing ecological audits of similar areas that have been handled differently. Lots of methodological problems; despite huge budgets, data often cannot be compared.

Questions that you might want to consider:

- Are the "Central Elements" described in paper useful to practitioners? What is your advice?
- Would also be useful if you could clarify the nature of policy in your jurisdiction, with respect to CEA. What policy initiatives are needed?
- What can you as practitioners do to contribute to a more effective approach?
- What examples are out there that can be useful? What practical lessons can we share? How can you, as a group, collaborate to move CEA forward? Would a reference manual help?

Comment by Derek Doyle, Chair: Concurs with the need to ground truth the CEA experience. Can best be done by sharing our own experiences and viewpoints.

Discussion:

Husain Sader: When I was young, I was told a little knowledge is a dangerous thing. But even I can see what Barry says is important. CEA is the one thing that has been missing, in FEARO's experience with several panels... Documents from CEARC interesting, but in the real world, not so much so. We had tremendous difficulty taking any of CEARC's CEA concepts further in a committee of practitioners trying to introduce CEA into a uranium mining assessment. Went through fairness, do-ability, whether you can put all responsibility on developer... Over the last five months, that committee has made some progress. Panel instructed us to try to file a report that doesn't create more heat. Also was working on low level flying panel with a team of 22 EA practitioners from across the country. That study not completed either. But there are some modest steps in place.

Ray Clark: Re. biggest bang for the buck, and Barry's conclusion that the best bang comes from looking back. Don't disagree, though I've concluded the biggest bang for the buck is developing an environmental baseline data base. Solves two problems: being able to manage ecosystems with solid data, and being able to evaluate what worked and what didn't.

Barry: Agree. In this country we have had very limited research funding for monitoring, applied EA research. If we could get enough jurisdictions to sign on, we could build an experimental research design into all that is done. So we can reflect on what has been accomplished, and can pass on our experience.

Comment from floor: identifying the biggest bang for the buck can be politically useful too.

Question: difference between effects and impacts?

Barry: I tend to use both interchangeably, though inconsistently. Tend to see effects as the more sweeping.

Questioner: in my mind, effects are what is really happening. Impacts are what we see.

Question: one of the difficulties is that science in the context of EA is something different from physics, etc. We think of science as an integrative activity, a synthesis activity. That's why NSERC can't comprehend what we want. Their science is the science of taking things apart.

Pat LeBlanc: in US there is no comprehensive information system.

Ray Clark: We have macro data, but little on any particular tract.

Pat: that kind of data is basic to making good decisions. But much of the information we've gathered over the years may not be that good, may not answer the right questions.

Ray: time pressure to generate an EIA makes new data collection impossible. If there was some way we could develop a data base, it might be an answer

Bob Stone: I find that our decision makers will give you funding to help make decisions, but I don't think I'd get funds to look back. But we could improve the data base in current and future work.

Derek Doyle: other volunteers for sharing cases?

Richard Lecours: consulted with colleagues in NB, and found people very concerned about extending current concepts/definitions in EA to CEA. This workshop comes at a formative stage for us. Currently trying to put a discussion paper together for public distribution. Our problems with CEA same as with EA, only more so. EA looks at a project spatially; CEA looks in time as well. Expect a major issue will be CEA in forestry applications.

Linda Jones: a large part of my job is trying to operationalize the Canadian Environmental Assessment Act. Has resulted in Kate Davies writing reference manual on cumulative environmental effects (CEE). Working on an international conference on CEE. In the short term, looking at how departments are dealing with CEE in different departments. Its the big bogeyman in EA. There's a great need to talk to people who are doing CEAs, to

reduce the anxiety level, to show that it can be done. Doing a series of eight workshops with federal departments, about how they are doing screenings, how they would do it covering CEE. A tremendous gap here, almost a cultural gap. So much defensiveness, anxiety, misinformation. Some departments have been doing it and calling it something else.

4. Presentation by Pat LeBlanc: overview of initiatives in Canada and U.S.

CEARC work, beginning in 1985, addressed in a series of studies, the concept of CEA. In 1991, Moose River CEA demo project, with Ontario Hydro, tried to establish process for CEA in Moose River basin, together with research proposal. Didn't go through due to a number of problems

Also a study program on CEA: looking at approaches across Canada and US to draw up guidelines. Intention to hold a major conference; on hold at the moment.

CEA is in the new legislation. This has initiated several things:

- Discussion paper on CEA
- Extensive consultations with departments, consultants etc, to identify issues; resulted in a paper by Kate Davies
- Development of a sourcebook on CEA. Components: a primer, list of references, list of individuals with an interest in CEA, a list of initiatives ongoing (latter difficult since it kept changing)
- a study to look at monitoring for CEA (7 case studies) to draw principles
- workshop in Vancouver for managers monitoring those programs
- Environmental Effects Monitoring Manual with a section on CEA.

Then began developing a reference guide, which is part of procedural manual for the Act (CEAA). Manual intended to provide guidance to practitioners in four tracks: screening, comprehensive study, panel, and mediation. Will be presented at a series of workshops across Canada on screening, where the really struggle is. Case study approach. FEARO, with Environment Canada, will be putting out a CEA newsletter: expect first issue early '93.

Other proposal is to develop a sourcebook on CEA, to replace CEARC study program. CEARC planned a series of workshops, then to produce a document. Now planning to go at it the other way round: a set of booklets on the state of CEA practice, with case examples. Expect it will be very useful for both administrators and practitioners. One of our biggest initiatives. Hope to release it in early 1994.

Other initiatives not related to CEARC or FEARO. Norton River study, federal/provincial. CARC and Rawson Academy study of James Bay. Ontario Ministry of Natural Resources, Moose River study. Ontario section of American Fisheries Society convening workshop on CEA early December. Grande Baleine panel held recently on CEA. Niagara Escarpment Commission just awarded contract for CEA monitoring study. Canadian Electrical Association planning CEA workshop. Canadian Utilities association as well. A number of panels set up under EARP: low level flying, Conawapda, Grande Baleine, uranium. Several workshops in US.

Need to keep in mind 3 categories of issues:

1. Long term: state of the environment reporting, land use planning, etc.

2. Medium term: issues: data bases, ecosystem monitoring, indicators.
3. Short term: newsletter, networking, sourcebook, framework guideline (a generic guideline for helping administrators deal with CEA), scan of methods available

Derek Doyle: In addition to focusing on what's happening today, it's important to go back to earlier case studies; not just huge projects but these involving numerous small projects with undesirable effects in the aggregate.

Pat: these will be included in the casebook

Question: Why is the sourcebook separate from the framework.

Pat: Sourcebook is designed as a reference guide. Concept is to provide guidelines to respond to immediate needs of administrators: what are the basic principles and guidelines they need to take into account. Hopefully we can harmonize these across Canada. Hasn't been fully thought through. Needs thought in this workshop. Can EA administrators move on this?

5. Presentation by Kate Davies: Requirements of the CEAA

Heard a lot about the enormity of the problem from Barry and about the numerous initiatives from Pat. Issue: how to focus down on what can really be accomplished at project level assessment, recognizing this is only one tool. Maybe we should also be looking at other tools. We can only do so much at project level assessment. Meanwhile CEAA requires CEA in all assessments. CEAA requires that every screening, comprehensive study, panel or mediation consider cumulative effects. Reference guide I have drafted is drafted with Act's wording in mind.

Note: the only environmental effects that must be addressed cumulatively are those defined in the Act. Any change in the environment and effect of such changes on health and socio-economic conditions... land in traditional use by aboriginal peoples.... This specificity does narrow the scope somewhat. (See Kate's paper or the Act for exact requirements)

Act also requires CEA of your project in combination with projects that have been or will be carried out. The "will" suggests consideration only of future projects that have already been approved. So, although a new requirement, it does have limits.

Act recognizes that we can't know the future perfectly—focus is to be on effects that are "likely". Act provides considerable guidance on how to proceed, but obviously CEA under the Act will never be a precise exercise.

Don't see this as a separate step, but a different way of thinking about EA while doing assessment. To do a complete assessment of cumulative effects would be a separate exercise; federal EA Act not that ambitious.

Reference guide includes need to set limits in time and space; need to take holistic/ecosystem approach; recognition of threshold limits and that our ability to predict such thresholds very limited

Reference to Guide's framework, page 11.

First step: scoping, defining boundaries. Crucial. Temporal and spatial boundaries depend on size and nature of project, avail-

ability of data, ecological and jurisdictional boundaries...

Second step: assess interactions among environmental effects of the project. Proponent must consider changes project may cause, effects on changes to society, changes caused to the project by changes in the environment (e.g., hurricanes, radon..)

Step 3: identify past and future projects and activities and their environmental effects ... going to land use plans, resource managers, registries, etc.

Step 4: assess interactions among the environmental effects of the project and past and future projects and activities
- dealing with projects already approved.
- note project is defined in the Act, activities not: so anything that affects the project could be included...

Step 5: Determine the significance of cumulative environmental effects: whether adverse, significant, likely in stepwise progression. If one, then assess the next.

Suggested criteria for how to decide if adverse: in reference guide for FEARO, not in CEA guide. Note under the Act "significance" is the central legal test. So whether effects are of public concern is a separate consideration under the Act. Lawyers say public valuation not part of scientific valuation: a tough battle within FEARO

If adverse, there are criteria for deciding if significant, e.g., magnitude, geographical extent, duration and frequency, whether reversible, ecological context.

Criteria for likelihood include: probability of occurrence (e.g., quantitative risk assessment), scientific uncertainty (relates to methodology).

Summary:

- the approach we are working with is closely based on Act's wording, but in some respects it is generic: addresses what **can** be done at the project EA level. It is designed around an individual project proposal, though it could be adapted. It is generic in that we hope it covers all projects at the screening level, including small ones. We know the large ones will develop their own methodology, as will a series of small ones, where the problems become significant when aggregated.
- based on conceptual work and EA experience. Now testing/refining it through workshops with federal ministries

Questions for this workshop:
- What are the provinces doing with cumulative effects? What does your legislation allow you to do?
- What case studies can you provide? There are generic lessons to be learned. Assessing CEA could be nothing more than the best current practice.

Questions/comments:

Marshall Netherwood: Re. projects that will be carried out. We have a project now that involves driving a transportation corridor to the coast that may pick up several ore bodies along the route...

Kate: Construction of utility or transport corridors are prime examples of growth inducement. I'm asked, how can you assess environmental effects when the projects that will create the "induced effects" haven't even been proposed. Must be a balance between the ideal and what is practical. Reference guide suggestions are a minimum only.

Ray Clark: Are social impacts required in the Act?

Kate: Yes, under environmental effects. Part of that definition is to consider changes in the environment and effect of those changes on health and socio-economic conditions, cultural heritage.... i.e., If your effect does not relate to environmental change, you don't have to consider it.

Ray Clark: New U.S. transportation bill talks about highways, the cumulative effect of which will fragment communities. Would Canadian Act cover that?

Kate: Absolutely. Must look at socio-economic impacts of changes in physical environment.

Question: So environment is described in Act as physical environment.

Derek: In Ontario our legislation defines environment as including socio-economic environment. So a project that would likely bring in-migration of people would need to be assessed. Federal bill would not require such an assessment, because it is not connected to a biophysical effect.

Kate: Strictly speaking, I think you are right. But in practice, any project that involved a large influx of workers would require an assessment.

Pat: Act very clear. Socio-economic impacts must be connected to a biophysical effect.

Comment: no requirement under Act, but if you asked and proponent was willing it would be addressed

Derek: Ontario legislation definitely requires it... So a huge issue here: how to harmonize. May have to gravitate to the highest common denominator

Comment: I don't know if we actually do it in Ontario. Concept was a good one, to define environment broadly, but seems to create confusion. Perhaps federal approach may prove more functional.

Barry: Preamble to Bill very much in sustainable development language. Act itself has some sustainable development language. But when you get into it, it has obviously been worked over by the lawyers: the triumph of procedure over purpose? You tend to lose the broader spirit and purpose of the Act. Does the wording bring the Act down to the legalistics of project EAs, and not up to the principles of sustainable development?

Pat: True. Preamble differs considerably in spirit from the body. Body has been worked over heavily by the lawyers; otherwise, see you in court.

Kate: Agree, very much so. But it's a question of do-ability, one step at a time, given our sights are set on a more encompassing approach in the future.

6. Presentation by Stewart Sears, Ontario Hydro; A Proponent's Perspective

Struggling with this at Ontario Hydro too, though talk will be my own opinions.

There are features of Ontario Hydro that make it unique as a proponent - often used as a catalyst for regional economic development

- may be better able to meet environmental requirements
- a lot of in-house expertise in EA.

Why is CEA important to Hydro?

- very sensitive to public demands and concerns, and have heard much on CEA
- agree it's a natural evolution of EA
- advocated by Province
- opportunity to influence thinking and demonstrate environmental leadership

How proponents see CEA fitting into EA lifecycle

- throughout, but primarily at front end; at back end, CEA will likely extend monitoring beyond that done under EA.

A good definition of CEA: the process of systematically analyzing and evaluating cumulative environmental change.

- In the past tended to be project driven; in future likely to be more regionally driven.

Two approaches 1. Scientific (EA driven); 2) planning (management driven).

Ontario experience in CEA: Moose River Basin program

- Ontario Hydro proposed 25 year program for developing 12 hydroelectric sites in this basin. Recognized need to develop holistic approach to the assessment of these projects. Whole project put on hold in '91, because of aboriginal concerns. Hired a co-ordinator to talk to the native people. Quote from his report:

  "In a watershed, the cumulative effects of development affecting the water must be determined to have a complete understanding of the environmental impacts. A provincial approach to cumulative impacts is needed as soon as possible... An approach to implementation should be worked out with Ontario Hydro, federal and provincial governments and local residents, particularly Aboriginals..."

Inter-ministerial committee set up as a result of that report, looking at resource planning in Moose River basin. CEA Included as an area of focus. Assessment of the cumulative impacts on the environment of development (not just Hydro's) in the basin.

Utility concerns with CEA:

- should address only significant CEEs
- should it apply only to the preferred undertaking, or the alternatives as well (latter next to impossible)?
- harmonization: really needed between feds and provinces
- important role for government in providing policy and planning direction and baseline data
- comprehensive CEE analysis not immediately achievable
- no need for CEE analysis of past projects: past activities should be factored into baseline environment data
- 20 yr+ prediction horizon unrealistic
- definitions/criteria/examples extremely helpful
- danger that guidelines become "near-law", as strong a legislation as the Act itself.

Principles of application for electric utilities in Canada: draft principles under consideration by Canadian Electrical Association.

With input from utilities, they are developing principles of application. Main points:

Goals:

1. Committed to comprehensive assessment
2. EA to include project and combination effects
3. Utilities will strive for partnerships with government and industry

Scoping:

4. Existing plus committed future development
5. Spatial bounds
6. Temporal bounds
7. Analysis of current environmental /social trends; objective to forecast into the future

Assessment:

8. Development profile and environment profile
9. Development/environment interactions and comparison with environment without project
10. Public consultation/involvement
11. Describe cumulative effects in combination with existing and subsequent developments

Re. #11, see Ken Adams at Manitoba Hydro.

Hopefully, when this document is complete, it will represent a common approach by Canadian utilities

Key messages
- need for harmonization
- need for timely, cost effective approvals: CEE must be efficient
- need for guidelines on methods; good work by FEARO and Ontario, but partnerships and memos of understanding also useful; we can't afford to just "give CEE our best shot"... Need for agreement in principle on methods
- key role for government: regional data supply, resource management on ecosystem basis, thresholds
- recognition that CEA is evolving

Discussion:

Question: any reasons why several of the elements you've talked about including principles of application could not go beyond utilities? May be of more general application

Response: hopefully

Comment: if we imagined ourselves 10-15 years from now, what would we need to do comprehensive forecasting? Is it tools, new institutional arrangements...?

Comment: Re. role of government. You mentioned data. Role of feds to help, but a problem that keeps coming up is leadership. Things fall through the cracks. The various levels of government and other agencies are all present in each region. Who leads? Often, who leads, pays. So everyone keeps a low profile.

Sears: agree. I have no answers. But important we make a start.

Question: institutional issue fundamental. Feds must think carefully about a leadership role. Who has more jurisdiction? My case study of uranium mining will address this. If we talk about cumulative effects, we also talk about cumulative responsibility. Assessing is not an end in itself.

Derek Doyle: There is a tendency in our culture that we look to leadership. But there is also a process of democratization, empowerment. Old idea of leadership may no longer be appropriate. What we need is to build a collective vision of CEA, and see how that nests with other elements. Don't need driving leadership if you have a shared vision.

Sears: good point. May be well illustrated in Moose River basin. Spending a lot of time on collaboration.

7. Ray Clark, A US Perspective on CEA

One of the things we need to look at is democratization. Differences between Canadian constitution and ours. Yours calls for peace, order and good government; ours is life, liberty and pursuit of happiness. People always think we are interfering. When you do, people think you are promoting collective benefits.

About procedure triumphing over purpose. Has been a difficulty with NEPA. It has been very successful legislation, but there are pieces of it are hard to get hold of.

Our experience with CEA better described as struggle. Tons of paper out there on CEA, but not satisfying, so I got involved last spring to try to get at the basic systemic issues. Held workshop, how should we proceed. Had people from field come in and talk about how they do it.

Council on Environmental Quality (CEQ) definition includes "past, present and reasonably foreseeable"; and regardless of whether federal or otherwise, it is the effects you are after. Impacts don't stop anywhere: biological, social... We don't have a list. Though direct and indirect impacts been very difficult, have got some handle on that. What we're hearing about CEA is what we heard about indirect impacts 20 years ago. We're in pretty good shape with respect to our ability to analyze, but other problems (e.g., when to do it, data..)

Cumulative effects equation for actions both federal and on-federal: Past actions + proposed action + present actions + reasonably foreseeable actions (e.g., 20 year logging plan) = cumulative effects

Forest service is saying, why to we have to deal with the impacts of everyone else? Must they mitigate, in their cut, all the other cuts around them?... How far in space do you go. Other question is how far in time do you go? One position: if you go back, you have to go back 170,000 years. What's reasonable, what's necessary? E.g., TVA proposed to issue a dock permit for a chip mill. Asking, do we need to address the devastation of the forest for permission to build a dock?

One study approach

- scoping
- establish temporal and spatial boundaries
- define substantive issues
- determine area of influence for each issue
- develop list of potential past, present and future actions that will be analyzed
- develop an environmental baseline data base
- identify significance thresholds: get agreement on this before study starts
- determine regional and agency goals (federal and non-federal): different governments have different goals... co-ordinate first
- analyze impacts of proposals and alternatives

- determine if effects significant.

Two leading cases in U.S.

- Fritiofson V. Alexander 1985: A Corps of Engineers project. Court held you must take account of reasonably foreseeable additional housing that would be built if project goes ahead.
- Sierra Club v. Kleppe: Question of whether Department of Interior had to look at all possible coal mining proposals. Court held Interior needed only to look at existing proposals.

Issues to be resolved:

- environmental baseline database... Critical for optimal CEA
- scientifically accepted methodologies
- eco-region co-ordination (my vision is some council so that we know what all agencies in an eco-region are doing and planning)
- training: once we know what we are doing, get that out into educational institutions... Takes the fear out of it; then people proceed and are creative.
- level at which analysis occurs: when the project person is addressing the impacts of a highway its a little late to look at alternative of mass transport. Better addressed at level of national transportation strategy; similarly, national energy strategy.

Conclude: working with Pat on idea of CEA workbook or sourcebook. The science is the same on both sides of the border.

Discussion:

Question: Under NEPA do you assess programs?

Response: Yes, we encourage it.

Question: Policy?

Response: Don't have experience with that, though we should. Best policy impact work done by Port of Seattle under state Environmental Policy Act. Port Authority said we'll have to change in response to new shipping patterns around the Pacific Rim. So did policy EA. It was done by port people who really knew shipping, and where they wanted to go.

Question: I'm fascinated by the timeframe for CEE. Conundrum for me is that if we look at a short timeframe we expect precision of prediction and worry about detailed methods. If we look 30, 50 years, 7 generations, and are more sensitive to the strategic and catalytic, the need for precise methods and data are reduced; but more emphasis on sensitivity and direction. Which do you lean toward?

Response: Before I got into this I was thinking about transgenerational effects. Then began to think what if Queen Ferdinand had asked Columbus for a CEA; no way we could have guessed the pace of technological development, so the CEA wouldn't have made any difference. We don't even have any sense of what technology will be available over even two generations. I would focus on 20 year plan.

Question: re study approach and roles of various levels of government. Where is role of the public?

Response: agree with Derek's comments about democratization. Would assume that municipal planners facing the same issue, and that they will develop municipal plans

with their publics; also regional plans. If not, we at the federal level have the obligation to talk with the folks about whether our project conflicts with their goals.

Question: How do you determine what is significant? And where do you put the main effort?

Response: if you can only do one thing, my own view is you develop environmental baseline databases. Expensive, but more value in the end.

8. Ontario Case 1, Toward an ecosystem approach to land use planning: David Neufeld

In Ontario "greening the planning process" has many proponents. Our approach brought people within the ministry together to talk about what it means. Discussion paper available. Identified 5 interrelated components:

- boundaries, with nested spatial components; promote use of watersheds as primary boundaries.
- ecosystem objectives: maintaining or restoring some level of ecosystem health... Derived from a participatory process. Expressed through indicators, other expressions; but whatever, must be translated into targets.
- information: examine structural and functional relationships between components of ecosystem. Moving from a component approach to planning to a dynamic approach: how the system actually lives.... And need some way of integrating all these streams of data like GIS.
- ecosystem monitoring: goal should be to provide information on achievement of ecosystem objectives, facilitating decision making, to check whether the standards you decided on are good. Important to monitor health of system using indicators of ecosystem health, and monitor stress we are putting on system.
- cumulative effects: CEA is built upon and depends upon all other components. Need sense of how ecosystem is functioning etc. Orientation of existing planning system parallels EA process in that site specific and development driven, though a long term aspect. Compounds challenge of broadening focus. Clear our understanding of ecosystems needs improvement. But we in this room can move on a framework. We're aware of the key elements needed.

What we've done is work these components into terms of reference for a project in the Niagara Escarpment. 700km long, 183,000 hectares, covered by a unique environmental plan (1985). Some attributes that lend themselves to dealing with CEE: e.g., governed by a farsighted plan. Objective is to develop a cumulative effects monitoring system so we can tell whether goals being met

Goals of monitoring system:

- monitor state and functioning of the ecosystems
- assess short and long term effects

Scope of phase 1:

- analysis of CEA techniques useful for the escarpment
- mapping of ecosystem units
- ecosystem objectives/components to be monitored
- mix of cumulative effects assessment techniques
- information requirements and information management necessary

Several attributes that suggest a CEA application:

- Area wide plan
- Objectives laid out in plan and Act
- Working with stakeholder advisory group at all stages: looking for partners in delivery. This phase is just sketching out what monitoring might look like. Phase 2 is how we would manage this, link to partners, develop participation in data collection etc...

Discussion:

Comment: article in the Globe yesterday. Article questioned government controlling what a person can to do on his land. Obviously high profile. Good luck. Will likely end up in the courts.

Comment: there is a legislative scheme. It's just that people don't like that

Response: only 10% of Commission's decisions are appealed. Also makes me wonder if we are really different from Americans with respect to individual rights.

Question: role of Commission?

Response: we see Commission taking ownership of this. At this point they are one member on team. Within ministry, a small group of 5 concerned with administration and appeal, and we are spearheading the project.

Question: we're finding in Alberta that citizens are calling on the province for help with requirements laid on at the municipal level. Will you have capability?

Response: want to have something solid; still a VW approach, but something you can build on.

Derek: if you can do this in a site where supports are already in place, maybe it can work elsewhere.

9. Ontario Case 2, An indicators approach to CEA: Bill Stevenson

Looked at definition of CEE, and asked if it covered CEA, assessment aspect. Found it helpful to look at CEA in terms of the process.

Our sampling of relevant concepts includes many elements brought up here. Also emphasis on functional pathways by which effects accumulate, and catastrophic flips in state predicted by chaos theory.

How to get started at the administrative level? Need for short-term response strategy.

Long-term research agenda must continue, even as we work on short term response.

An indicators approach: a possible place for big payoff, particularly since so much invested in indicators for SOE reporting:

- indicators puts emphasis where EA administrators work: e.g., issue identification
- fits with need to forecast.

Basis for indicator use (what to think about in selecting indicators):

- must capture the significant effects of development on people, their values, and environment so that decisions which

affect them are acceptable, responsive and responsible
- must involve public in deciding which environmental aspects are valued
- must provide a role for scientists and experts to explain relationship between contemplated actions and valued ecosystem components.

Criteria for selection of environmental indicators: ... Note the importance of choosing indicators that facilitate "nesting" of data from global, national, regional and local levels.

Benefits of indicators approach

- focuses on goal setting; permits nesting; builds on indicators in SOE, evaluates contribution of rehabilitation etc, discerns thresholds...

Some examples of cumulative environmental effects indicators:

- social/cultural: welfare rates, crime rates, stability of communities, housing and apartment vacancies, aboriginal land claims, population changes
- health: hospital beds, physicians per '000 populated
- economic indicators: property tax rates, average family income...
- human resources: education and skill levels of workers...
- technology, efficiency in resource use (emphasis on sustainable development): utilization of clean, efficient technology

Natural resources:
- in forestry: % allowable cut; agriculture: decline in foodlands; fish: decline in fish habitat; water: % of aquifer depleted...

Environment Canada's contribution to how to apply the indicators approach:

- analyze existing multiple stresses
- scope issues and valued ecosystem components
- predict project stresses on VECs
- evaluate whether unacceptable degradation will occur
- if effects predicted within tolerance limits, develop conditions of approval/ mitigation
- follow-up monitoring.

Contribution of indicators approach to major CEA issues: does not solve issues of boundaries, institutional roles, methods, information requirements... but could help establish planning thresholds based on "acceptable" changes to land uses or socio/economic cultural conditions, rather than ecosystem thresholds.

Where could we go from here with indicators approach? Not a freestanding methodology. But could:

- pursue indicators approach in concert other planning approaches
- develop appropriate indicators collaboratively with stakeholders
- establish case studies of CEA using indicators
- prepare handbook with cases and guidelines on CEA, obtain feedback, then perfect.

Discussion:

Question: in indicators approach, do you provide for feedback? Science and values change over time, so indicators must evolve.

Response: criteria must be "adaptable". The biggest issue is uncertainty; we must be able to learn from experience.

Comment: seems to me that this may be painting us into a corner. Develop a threshold, and people will try to push in their project before limit met. Then what? Notwithstanding, I support the approach. Would put money on it, but not all of it.

Response: this is the allocation issue; becoming a big societal question.

Comment: every day I have people in my office saying I'm doing an assessment now, and when it is ready in 3 years it will be critiqued, but against criteria that will evolve between now and then. I'll do whatever you want, but tell me. Hopefully, we're not painting ourselves into a corner, but into a window.

10. N.B. Case, Richard Lecours

We're looking at cumulative effects on river systems from a sustainable development point of view. The only formal look at cumulative effects regionally has been an airsheds study.

A Commission on rural land use took a deliberate planning perspective.

In last couple of years we had two projects where we tried to implement CEA without calling it that: a dam project on a river with six other dams owned by the proponent. A moral victory on our part but proponent dropped the project, which raises the spectre of killing development as a cumulative effect. CEA can be the straw that breaks the camel's back.

Second example. We have many communities on the coast. Issue is fresh water: for every foot of head you take off the water table you have a 40-fold impact on seawater intrusion.

11. Uranium Case, Husain Sadar, FEARO

We have spent $100,000 on ten people working for six months to complete a CEA study on uranium mining. Couldn't find any case study in literature done in such a systematic fashion.

First, we put all the methods and conceptual models on the wall, to see what would work. The ten people covered many fields, from health practitioner to native people. Had five EISs produced by proponents. Had public meetings. Also, have tried to learn from the process to pave the road for whoever comes next. Great concern about fairness. Is it fair to ask the proponent to do something when we don't know how to do it? Fair to ask them for baseline information? They say, what has Saskatchewan DOE been doing?

Report will be released by the panel December 1992. Has been educational for me. Three big assets:

1. Collective thinking of a range of stakeholders
2. Good cost benefit analysis
3. List of issues in 3 categories: jurisdictional/institutional, legal, ecological.

Big issue is impact of other development.

Practical decision re ecosystem boundaries: if effects are not picked up x kms downstream, then is that the boundary?

Tried to test all conceptual methodologies. Lack of baseline information made it very difficult to follow those methods.

- Five mines in area under either federal or provincial review. Native issues there. Very complex.

Question: any effort on FEARO's part to look at consistency across panels?

Response: not at all. Inconsistency from FEARO here.

12. FEARO Case: Interdepartmental work, Linda Jones

FEARO now, with the new legislation coming, busy preparing procedural manual on the new Act: what are the minimum requirements? Writing from the practitioners point of view, step by step.

What's come home to me is the enormous task of reducing anxiety. Doing workshops with eight federal departments, how can they incorporate CEA in EAs of small projects. Not tough for some, like CIDA; those departments are experienced, it's not scary. But it is for others, like National Defense, which says, "we don't cause environmental effects". We have people who really believe they,- and/or small projects do not cause adverse environmental effects. And these are practitioners, people who screen projects. Process for us to reduce anxiety is drawing lines around it, showing how it connects to what they know. Sometimes they are doing it but not calling it CEA. Basically, exercise is to make CEA doable for the practitioner. I'm particularly interested in small project assessment. Hopefully we at FEARO will be able to generate some material on this. which will ultimately be incorporated into the procedural manual.

E.g., Seems to be many informal links among stakeholders along a particular stream. But they don't see getting together as part of the process of assessing cumulative effects.

Question: Are you seeking comments from provincial agencies for procedural manual?

Response: This manual relates only to the federal Act.

Pat LeBlanc: have been developing manual for some time, involved considerable interaction with the lawyers. Only now have the first good draft. Our process of review: first to senior managers' environmental assessment committee, then to the Review Committees (RAC), then release to provinces and others for comment. It is considered an evolving document. Will be in a binder so it can easily be updated.

Question: re. Regional linkages. If those agencies with informal contacts and relationships on a regional level could sit at one table and determine which are the sensitive environmental components, they could set the framework for doing cumulative effects in that region and for building the baseline information; CEA would simplify as people become familiar with sensitive components.

Linda: issue is getting the right people around the table. A long way off for most of the cases I've encountered. E.g., Coast Guard is the land manager around a harbour. They say, how can we be responsible for what our tenants do? By the end of the workshop we were talking about the need for them to sit down with their tenants and develop a 20 year plan.

Comment: it's the bureaucrats that have been dragging their feet. People in a watershed come and say this should be done. Where it works, stakeholders come together (democratization) and make it happen. My feeling is that we should reduce resources at the federal and provincial levels, and put them at the local level.

Response: If any CEA monitoring is recommended, only will be effective with local involvement. In monitoring you will have to have heavy public involvement to be effective.

Comment: In Bellevue N.B. there is a monitoring committee involving community stakeholders that makes recommendations to Provincial Minister of Environment. E.g., Fisheries and Oceans found cadmium in lobster and brought it to committee. Industry (which is on committee) found a way to reduce cadmium. Several years later, lobster fishery reopened.

13. A regulator's perspective, Grace Patterson, Chair, Environmental Assessment Board, Ontario

We're trying to deal with CEE as a landscape feature; trying to put more science into our reviews. A miniature cumulative effects feature that we deal with is in Water Resource Act hearings, re effluent; in many cases some data base exists for rivers, also parameters for water quality objectives. If parameters exceed objectives, then no more effluent can be added.

EA Act allows for an argument that there should be CEA by proponent. We had it over hydraulic power proposals. Proponent said they were attempting to do it, so we didn't order it. In some respects it seems easier to do CEA on basis of projects rather than plans, because you've got a specific project data base. A plan analysis is more speculative.

There is an argument that Ontario doesn't have a requirement for CEA. The counter-argument is that Section 5.3, the core of our legislation, says proponent must provide a description of the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly, and of the effects on the environment; and alternatives must be presented.

This broad scope language underlines a dilemma the Board has. We come in at the end of the process, when all the work has been done. MOE has done its review, and we may argue that CEA should have been done, so we turn down the application. That has happened.

Also, we have had to say no on the basis of changes in requirements that came down after the environmental assessment was prepared. The big problem for proponents is keeping up with state of the art, being flexible, so that when they get to the decision-making stage they can't be turned down on basis of some new requirement.

Question of who pays is always a big issue. Having a data basis very important since you can't measure changes without it. In some cases can get proponent to provide it. But not in smaller scale, private situations as in Niagara Escarpment. So governments need to deal with this issue.

Discussion

Question: how much freedom does EA Board have to ask proponent to do CEA?

Response: we've asked for changes to legislation; put our views forward in various hearings; provided information that might help future proponents.

Comment: few mediating agencies that stand above the fray. The Board has that status to a degree, a special status.

Derek: difference between Board Grace chairs and others is that others are advisory. In this case, decision is made by the Board.

Grace: Except subject to cabinet appeal.

Question: in case of joint federal/provincial reviews, only advisory at the federal level, but might be more so at provincial. How much should be spent on providing advice? What is reasonable in providing advice to an elected official.

Response: we've suggested there might be some limit, or intervenor entitled to some percentage. Doesn't get at total effort. Relates to perceived significance.

Question: earlier comment on triumph of process over purpose. Has that happened, in your perspective?

Response: some people would say that Board has been too legalistic because we have turned down two major landfill applications due to failures to meet the Act's requirements. Board's justification would be that there is a learning process going on, but we can't approve where requirement are not met. Still doesn't grapple with issue that some proponents don't like the Act and don't intend to meet it's requirements.

14. Quebec Presentation, Michel Germain

BAPE acts only at request of Minister of Environment. No difference between private and public sector proponents. Law permits examination of CEE, but on discretionary basis. A project comes to attention of the Board when minister accepts a study as complete and there is substantial public interest. Statutory time frame: four months to act. So we can only deal with CEA. CEA on a general basis, and then only at the end. Not able to catch up with public concerns about CEA. CEA is virtually absent to date in our reports and studies.

Question: is there sufficient interest in Quebec that CEA might get more explicitly into legislation as mandatory?

Response: not a big issue currently. Main concerns are:

1) widening of range of projects considered: 20 classes of projects (highways, gas, incineration, wetlands, etc.) Public wants list expanded.
2) desire that public consultation occur before report completed.

Question: Is there much consultation on guidelines for the BAPE panel?

Response: No. The Department writes them.

Comment: In Alberta we find a lot of public input on CEA concerns at the hearings stage, and try to build that into EA terms of reference.

15. Alberta Case, Bob Stone:

We have new environmental legislation that consolidates all older acts into one, that, for the first time, gives us a legislated EA requirement. EAs are to address "cumulative considerations". Avoids terms "effects", too scary.

Concern about CEA arose out of EA process and reviews of that process. We have two hearing bodies, one for energy projects, one for natural resources. Both issue approvals, and one criteria is "public interest".

Several projects explicitly concerned with CEA: Canwell corridor on recreational development near Banff national park. Government instructed Board to consider effects cumulatively. But to only deal with things they know about...

Clean air strategy: in response to feds signing international agreements committing to reducing emissions of ozone depleting and greenhouse gases. Of concern to large energy industries. Not so much a framework for CEA, but a strategic framework for giving us clean air in Alberta. Conclusion is that to reduce cumulative effects you need a variety of tools, not just CEA.

Northern rivers study. Seven pulp mills approved in last few years. All went through EAP; only one through public review. One issue that was addressed cumulatively was water quality. Didn't have great baseline data at first, improved over course of EAs, but EAs concluded not enough information. But did come to agreements with proponents during EAs especially re dissolved oxygen: common methods, specific model for dissolved oxygen. So ultimately we had a good idea of impact on that. But only after doing two of these EAs did dioxin and furan concerns come up. The joint EA did deal with cumulative effects, but concluded we needed more information to address impacts and deal with them. Intent of northern river baseline study was to be able to do cumulative effects monitoring of effluent. Scope since expanded to include human health. Includes 80% of northern Alberta and parts of Manitoba and Saskatchewan. Overseen by multi-stakeholder panel, including aboriginal peoples, municipalities, three levels of government. Have initiated several research studies. Seems well accepted by people in the area.

Trying to deal with CEA issue not only from planning perspective, but also from science perspective. Still issue specific. Not doing it on logging practices, soil erosion, but only where the issue has cropped up.

Questions: Does the monitoring system involve all parties?

Response: that's one of the results. Was some monitoring in place, expect study will want it beefed up.

Question: under impression you had a succession of mills of different efficiencies, and the camel's back broke only with the last mill, which was in fact the most efficient in terms of dissolved oxygen.

Response: true, basically. Though there was extra pressure on it, in part because the public felt the others had been slipped by them.

16. Newfoundland Case, Tony Blouin

CEA not a requirement of provincial legislation, though we will see it in the context of the federal Act and it will be an element in joint EAs. But want to raise cautions:

Re. resources. Our proponents don't say, just tell us what to do. We do expect proponent to carry the cost. Problem is that I operate within a very resource limited economy, so very difficult to justify asking proponents to evaluate cumulative effects of prior or future projects. In a joint EA, maybe we could turn the CEA aspect over to the feds though that

would be contrary to harmonization efforts. Don't see how we can add another level to the assessment process: quite an educational exercise to get proponents on side. But resources will be limited.

Need for a good environmental data base is true for us too. We have agencies responsible for doing that, but again, limited resources. So frequently its made a requirement for proponent. Cumulative assessment will add even more load in this area.

Comment: For a resource-strapped province like Newfoundland and Labrador, ever were important that provincial data bases are comparable with federal data bases. Issue: methods change, and data no longer compatible.

17. Derek Doyle: Presentation of two models that emerged today

Chart 1 (see next page): sustainable development at centre surrounded by several realities: linkages, incremental destruction, integrated approaches, time frames, others. Sustainable development affected by all those. Then, outside that are three elements, SOE, land use planning, CEA. Out beyond that are two classes of activities: projects; and plans, policies, and programs. For the purposes of EA administrators, will be projects in the near term, but policies and programs in mid and longer term. And those plans, policies and programs may connect well with land planning and SOE.

Chart 2: if we put CEA in the centre, we can see spokes coming off, issues that arise, boundaries, consultation, partnerships, data, information, knowledge, monitoring/indicators, political realities

Comments/concerns with these context setting models?

18. Issue Selection

Master Issues List:

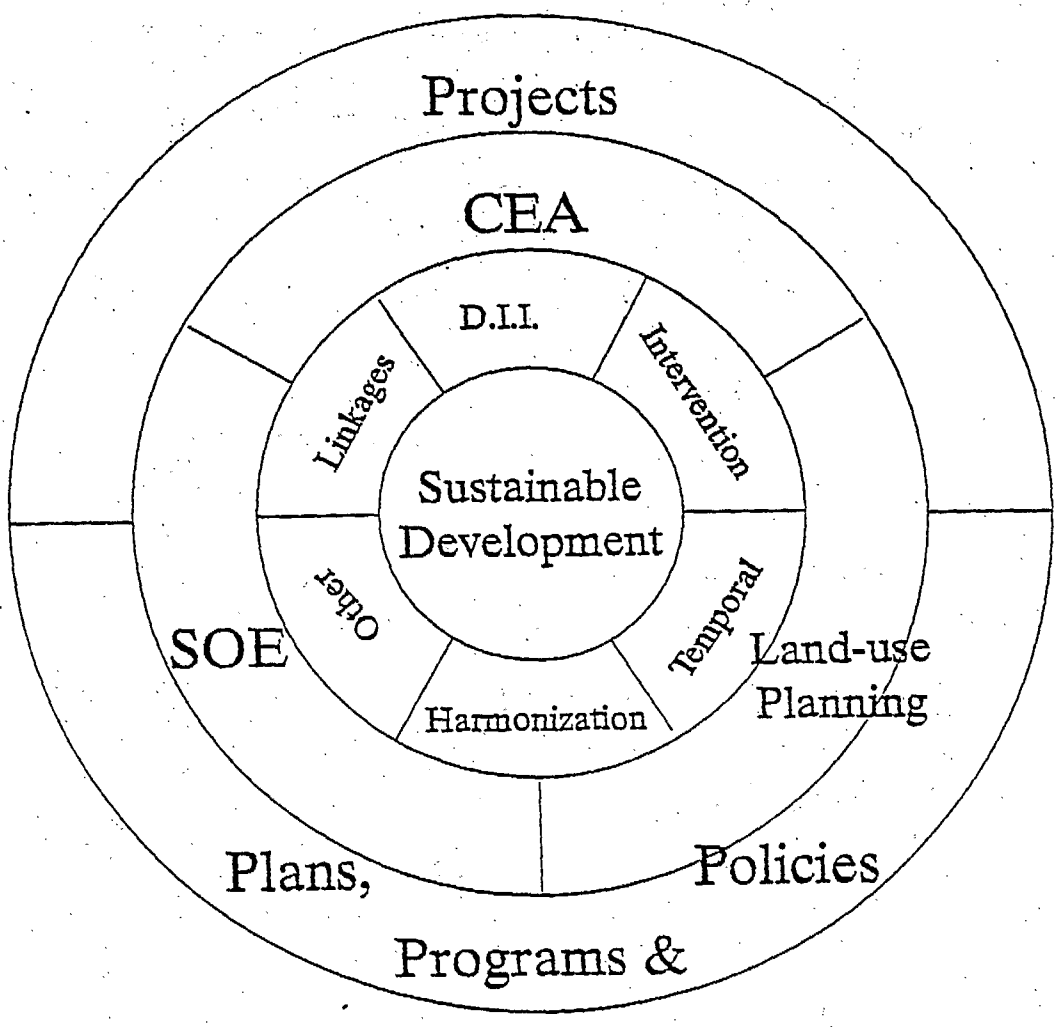
1 monitoring
2 baseline data
3 bang for the buck: short term options >>> priorities
4 long term strategy: vision, principles, sustainable development
5 dealing with the temporal aspect
6 partnerships
7 spatial boundaries: meshing biological boundaries with jurisdictional boundaries
8 collaborative demo of CEA methods/generic methodology
9 communications and training: dealing with overload
10 lessons from today for practitioners
11 handbook: recommendations
12 indicators
13 growth inducing projects
14 proponent responsibility for other activities
15 threshold, mitigation

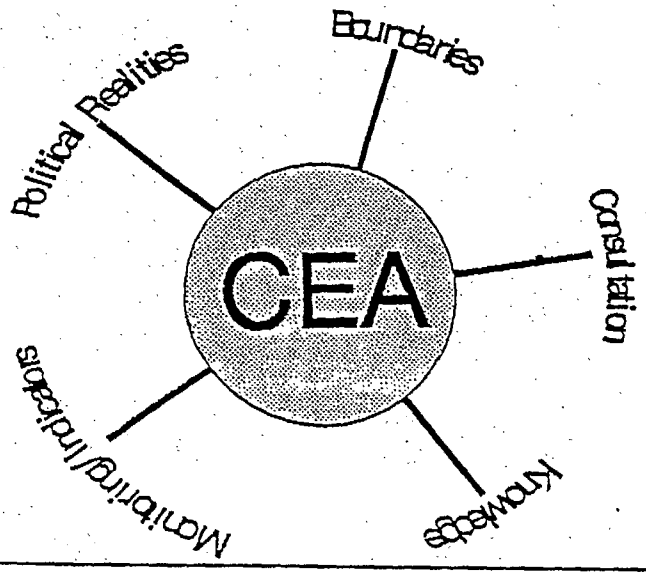
Merged Issues:

1 RESPONSIBILITY FOR EFFECTS EXTERNAL TO THE PROJECT UNDER CEA
- "growth inducing projects"
- "proponent's responsibility for other activities"

2 BOUNDARIES
- "dealing with the temporal aspect"
- "spatial boundaries: meshing biological boundaries with jurisdictional boundaries"

Chart 1


Projects
CEA
D.I.I.
Intervention
Linkages
Sustainable Development
Other
Temporal
Harmonization
SOE
Land-use Planning
Plans,
Policies
Programs &


Boundaries
Political Realities
CEA
Consultation
Monitoring/Indicators
Knowledge

3 INFORMATION
- monitoring,
- baseline data
- indicators
- thresholds/mitigation

4. SHORT TERM:
- "bang for the buck: short term options/priorities"

5. LONG TERM:
- "long term strategy: vision, principles, sustainable development"'

6. COLLABORATION TOWARD A USABLE METHODOLOGY BASED:
- "collaborative demo of CEA methods/generic methodology"

Small Group Task

1. Explore and develop an understanding of the issue so you can explain it to the group

2. Develop recommendations for EA administrators, bearing in mind the following considerations:

- fiscal considerations
- partnerships/roles
- harmonization
- communications
- action orientation

3. Write up your presentation on overheads

Derek Doyle: Encourage us all to make a commitment for action, individually or collectively, rather than make recommendations for someone else to do. E.g., commitment to write up something alluded to here for presentation to the EA administrators conference in August.

19. Barry Sadler's summary:

1. Theory vs practice. Many intellectual frameworks don't actually work. How to bridge the gap between theory and practice.
2. Relationship between science and negotiation. CEA is barely into best guess science, let alone peer review science. Solution is to negotiate between them. What is the most practical approach? Maybe we could get further by thinking in terms of negotiation — goes with partnership and collaboration.
3. Where next in terms of R and D? What are the real priorities on a work-a-day basis? Can't think of a better group to deal with that than people charged with administering EA.

20. Subgroup 1: Proponent's responsibility for effects external to the project and how to deal with growth-inducing activities

Issue: what is proponent's responsibility to deal with impacts external to the project: activities in past, current, proposed, or "induced" by his projects. How is he affected by CEA requirements?

Identified several difficulties facing proponent. Easier to deal with effects existing or from past; more difficult to deal with effects in future or induced by project. Also, level of understanding of system within which project occurs affects assessment. If established thresholds must e.g., for BOD, aquifer recharge, the task is easier. Also more options for large projects than small projects.

At simpler end: systems where there are set limits, thresholds for effects: If the limits or thresholds are established and limits are

almost reached, then tough luck for next proponent.

As an alternative, introduce market or economic regulation. Let the proponent strike a deal with the existing players to make room for effects of his proposal (e.g., compensate an existing player for reducing an existing stressor to allow the new entrant some headroom). An emission trading approach. The regulator then amends existing permits to reflect the deal.

In a system near its limits, the opportunity for a proponent to expand will be restricted by the environmental effects or other activities in the system.

If no threshold:
- have proponent propose a threshold
- critically review proposed threshold
- identify an ecosystem indicator
- monitor indicator and ecosystem health in partnership with industry and public.

Future projects/growth inducing projects (e.g., roads, other infrastructure):
- CEAA restricts to likely or reasonably foreseeable events. Recognize this kind of assessment likely to be largely qualitative. If proponent is going to induce further development, maybe they should be responsible for providing baseline data, perhaps in partnership with government. Could be done through land use planning; another process that can set limits on development in area.

Large projects more easily addressed because more often involved in assessment and more resources to study them.

Multiple small projects (e.g., benzene emissions from gasoline stations):
- difficult to address CEA at screening level
- little money
- could perhaps be dealt with through class EA
- piggyback on the ongoing workshop on screening.

Recommendations:

1. Prepare case study on the emission trading approach; see how could be applied in Canadian context;
2. Require baseline data to be provided by proponents of growth inducing projects;
3. Use ongoing screening workshops to give guidance on CEA for small projects (class EA).

Comments from group members: surprised how much we talked about using economic mechanisms, pollution credits. As we discussed the problem of the new entrant to an airshed that has reached its limits, we talked about ways in which the proponent could buy in. Raises a host of social questions: licenses to pollute which you pay for, vs licenses that you receive through the certification process. Emissions trading concept hasn't taken hold in Canada yet, though may be worth a case study.

Discussion:

Question: you seem to be shifting a lot of responsibility to the proponent. What will that mean in consistency and validity of data? If more than one proponent in area, will both define baselines and thresholds?

Response: didn't really discuss making data bases compatible. Nice if they independently came up with the same thresholds, would make us more confident. Obviously lots of

opportunities for it not being fair. Ability to be able to negotiate with others in place may make it more equitable.

Partnerships and joint ventures make me comfortable. Shifting all weight to proponent is problematic for me. Focus on scoping, setting thresholds and ecosystem indicators jointly will serve us both well.

Could have regional assessment done, as in James Bay. Would require collection of information and identification of indicators. A good backdrop for future projects. Should be a partnership.

Suggest change to recommendation 2: require baseline and threshold data to be developed jointly with government, academics, and industry...

In some cases in the past we would require the proponent to develop a baseline (e.g., for size of aquifer), that would be developed and refined by subsequent proponents.

I disagree. The proponent should be responsible. Who owns the resource? In northern Saskatchewan the people who live there feel they own it. Any company that comes in will leave when resource exhausted. Partnership is an out, and in the real world, people don't accept it. The proponent will make money out of this, they should be responsible. Not convinced that we should be making the public pay for this.

Proponent: its true. In the past we have absorbed the cost, but our attitude is changing. Personally I feel the way to go is partnerships, but I'm not sure how willing some proponents will be to enter into partnerships. Certain agreements may reduce the need for data e.g., avoid stream bed disturbance in spawning season so fish run data less needed.

Response: In our discussion of growth-inducing undertakings, we spent a bit of time on multiple impacts. Inevitably, especially in remote areas, there will be more pressure on proponents to think laterally about the implications of their development.

We've generally found proponents not unwilling to provide information, but will object when asked to do work they feel government should do for it's own management purposes.

Governments own most parts of Canada, e.g., 95% of Quebec. So maybe the first responsibility is on government.

We frequently look for numbers neatly on pages, rather than relying on professional judgement as we would have 20 years ago, going to regional biologist or local people for traditional ecological knowledge. We frequently ignore that knowledge baseline and instead expect stats and numbers

Need more co-ordination between governments too.

Part of onus if for government to know something about the resources they manage.

Counter argument from government is that they can't know all about all areas. And if there wasn't a proposal, they wouldn't need the information.

I agree, but you generalize the information to assess impacts.

Not necessarily asking for a lot of new money. There is a lot of information floating around. People aren't aware of what's there. Related information that governments, universities, industries. Pulling that together should be encouraged by EA administrators.

21. Subgroup 2: Temporal and Spatial Boundaries

A: Temporal boundaries:

Considerations in setting temporal boundaries and timelines:

- site specific: is it pristine, what kind of watershed?
- project: size, type... FEARO suggesting level of effort relate to size of project.
- indicators: e.g., regenerative capacity/timescale for regeneration
- intervention/remediation

Recommendation: +/- 10 years after project in place—a "reasonable" time frame.

Discussion:

Question: why 10 years and not 20?

Response: Predictive ability for 20 questionable. Too much uncertainty.
If we go back and look at past EAs, most grossly inaccurate after five years.
No reason the approving authority couldn't say look at a longer period on a case specific basis.

Re. Intervention/remediation. Say issue is reforestation, if you have remediation and monitoring commitment, you have less need to project cumulative environmental effects because you can fix problems as they come up. Fertilize, replant. Where effects are longer, and/or where opportunities aren't there for course correction, needs to be more emphasis on CEA projection.

Like radioactive waste disposal? 30,000 years not too doable either.

B. Spatial Boundaries:

- political boundaries okay if expectations on both sides of boundary match, but if expectations differ—negotiations and hassles. Biological boundaries may be better.
- work on a system of incentives: e.g., get various users of a watershed to the table, get some funds for flood control, or rules for co-ordination for spring release; can be quite effective in resolving problems.
- for small projects, can't review all, can only police. Ask, have they looked at the space around their project. What have they done to deal with cumulative effects around their small project?

Recommendation: ask proponents to get "sign-off" from their immediate neighbours; in Manitoba proponent needs sign-off of 4 or 5 downstream neighbours or e.g., I can take water as long as my downstream neighbours say OK. Allows a small agency to control the resource: if you can't persuade your neighbours, you don't get a permit. In many case, neighbours will get their lawyers to get a letter to "save harmless". They can then go back and require the pump be turned off if problems arise.

Discussion:

Eco-boundaries can define issues, but solutions are generally reached around political boundaries.

Spatial distribution expands or contracts depending on the indicator you use: social,

economic, physical, e.g., downstream where no effect shown, you are at the boundary. A moving boundary depending on the indicator.

For small projects a more effective way to deal with CEA is a land use planning stage. Though a lot of barriers to that now. Need to break down those institutional barriers. If you can bring it up to the watershed or town council level you can get somewhere.

Sat on a watershed plan committee doing that. Collaborative. In this case a downstream municipality built up but did little to control impacts. Then an upstream municipality expecting growth finds downstream municipality saying you can't make it worse. So we set out long term goals for watershed; as downstream remediation took place, it allowed more development upstream.

Always a temptation to pass off responsibility to another program, but planning approach has shortcomings too. Can't just say lets let planning solve our CEA problems. Need both.

Intent of sign-off is to limit the boundary?

Made to acknowledge realities of smaller projects

What position does that put government in? E.g., If Ontario Hydro tries to pay off the neighbours.

Wouldn't apply for larger projects. Have to factor in the public interest. If you put in a little culvert on a stream, the public interest may be entirely represented by a few people downstream. But a large project quite different.

Recommendation came from the thousands of screening applications. 90%+ of applications don't go to panel, so how to you deal with CEA in all those projects that don't go to panel, at the screening level?

Re. recommendation: trend in U.S. alternative dispute resolution... Backlash developing over agreements reached. Feeling that the person affected is paid off, while environment suffers. A down side here?

22. **Subgroup 3: Information — monitoring, baseline data, indicators, thresholds/ mitigation**

A: Monitoring

Types identified:

- compliance, most common, for enforcement
- effectiveness
- ambient
- effects

Latter 3 all related to CEA

Issue: what is the appropriate approach to monitoring with respect to CEA?

Why monitor? It serves as an early warning system, a means for verifying predicted effects; a means to develop a better data base etc.; in order to have better (more informed) decisions and/or management/protection responses; to track ecosystem changes over time in the impacted area.

Monitor what? Biophysical and socio-economic changes, as appropriate.

Recommendations:

1. Strive to ensure compatibility within areas of responsibility; maintain quality assur-

ance and control and ability to exchange monitoring information on a timely basis;
2. Ensure roles and responsibilities reasonably well defined re. tasks, costs, timeframe and communications. Expect key players to be proponent plus government;
3. Encourage development of innovative techniques for unique situations;
4. Ensure information must be available to meet international obligations;
5. Recognize significant, separate role for public.

Discussion:

A lot of ideas here that I can pick up and use in my shop. With ideas like these I feel I can develop a pilot monitoring program and test it.

Management of information. Who is responsible to keep information up to date? Question of ownership important.

Did discuss that, but no specific ideas except that it should be part of the project. Some monitoring programs may last a long time.

My belief is that the people who collect the information should make it available. My experience is that central data bases don't work. Need access, a network. Best person to manage information is who develops it.

DIAND identifying data bases, creating network. Now working on electronic access. That's the difficult part.

CEAA requires that data logged in government registry.

Just finding where the information is is a big challenge. In B.C. some years ago we got some summer students to find out what is available and catalogue it.

B: Baseline data

Issue: the nature of baseline information needed to address impacts in a cumulative fashion. Three components:

1. Identification of appropriate baseline conditions for CEA (i.e, pristine, existing, past). Focus on limits to assessment (level of detail), focus (biophysical, valued ecosystem, socio-economic) and area (boundaries);
2. Who should provide and in what time frame? Associated matters: accessibility, storage, quality control. Acquisition of information costly; support essential from proponent and governments;
3. Existing data collection by agencies for their own (other) purposes may not facilitate CEA.

Recommendations:

1. Encourage partnerships to determine:
- minimum needs
- requirements for adequacy, quality, accessibility and storage of information
- responsibility for collection and distribution (government, proponent, public)
- cost sharing;

2. Need to avoid duplication and fill gaps, but few precedents (data not gathered today to facilitate CEA);

3. Conceptualize and communicate information-related issues and needs; promote public involvement in CEA.

Discussion

Agree with most. Consider Ontario Hydro experience in Moose River basin as a supporting example. A number of stakeholders came together. Just got going on baseline data collection when project shelved; but a good effort.

As you address CEA, role of governments increases: role of strategic information increasingly important. May not always involve new money; rather sharing of information, reorientation of data collection efforts.

Also, greater government role in small projects.

Several points need to be considered at the political level. E.g., institutions of government, universities have not developed in a cumulative fashion. Separate, don't share. Second, cumulative effects are those most likely to have cross-boundary implications. Third, unless there is a political decision it will be difficult to have agency and institutional co-operation: should be dealt with at the Council of Ministers of the Environment. We can identify issues, but some will require a political directive and new resources.

Derek Doyle: Valid observation. Very important that we understand, know and share that global picture. But as per Brundtland, once we understand the global message, must do something at the level that we actually work. The more I act myself, the more it helps the message percolate up. We should push the message up, but I personally feel it's more important for us to apply these lessons in our own work. Willing to take the message up if recommendation this afternoon. If we can agree, I'll draft a letter.

We can do much directly. But there are some issues that need to go up, and it's our responsibility to send them up.

C: Indicators:

Issue: identification of critical environmental issues and choice of appropriate indicators to use for cumulative assessment and monitoring purposes.

Recommendations:

1. Consider cost implications for applicable resources (implications for methodology, funds, staff capability);
2. Selection of indicators should be on basis of their relevance and usefulness to decision makers to achieve goals and sustainability of ecosystem. Should also facilitate work by proponent and decision maker to address thresholds and assimilative capacity - should help CEA;
3. Consider the reliability, sensitivity and numbers of indicators to ensure effectiveness.

Discussion:

Role of expert working groups. No agency has all expertise in-house. A real advantage to setting up these groups to advise the administrator. Groups would include proponent.

Agree. Northern Rivers program has a science advisory panel.

Indicators a big topic these days. Kate Davies co-authored a paper on this. A complicated subject.

Work done by Dalhousie in N.S. On monitoring for sustainable development.

An Ontario university professor has contract with Maitland Conservation Authority to develop SOE indicators to track development. Testing indicators now, sensitivity, cost.

Science forum being held in December by Environment Canada includes ecosystem monitoring and indicators: future priorities. Ecosystem research program funding a lot of initiatives in these areas.

Question: nesting cumulative effects indicators within SOE reporting mentioned in a paper heard earlier is a good idea.

D. Thresholds/Mitigation

Issue: our experience in using thresholds and mitigation with respect to CEA is limited. Responsibilities are compartmentalized in various departments. Information gathered separately. Seems to be a perception that we need more integration, and that we should not allow administrative difficulties to hinder our addressing CEA.

Recommendations:

1. Administrators should act as an advocate of this concept to encourage awareness. E.g.,
   - develop criteria for establishing thresholds (as our knowledge increases)
   - research and recognize historical examples;

2. Encourage implementation of appropriate mechanisms to use (and where necessary enforce) these standards.

Discussion:

In long term integration will be important. In short term, we should learn from history.

Some ideas here sound simple, but involve great risks for civil servants. We operate in a system that is very risk adverse. The risk side of setting thresholds is very difficult for individual EA administrators, but if we take risks collectively; if we all agree to promote something, less risk.

23. Subgroup 4: The Short Term ("bang for the buck: short term options/priorities")

Issue: saw topic as "quick start" hit list.

Recommendations:

Four items seem related and doable:

1. Develop discussion paper on indicators: biological, physical social and economic. Based on indicators available from existing data sources. And nesting: to fit into SOE and other sets of indicators.
   - identify sector specific indicators
   - develop a manual (March '93)
   - review by EA administrators, and meet with SOE expects to review discussion paper;

2. CEA newsletter/networking - develop linkages between CCME, EA administrators, SOE people, Roundtables on the Environment (Jan 93);

3. CEA primer: for native groups, general public, proponents...: what is CEA, how do you do it, why important, how to do it. An education initiatives. (early Feb. '93);

4a. Conduct retrospective review of CEE, based on completed EAs looking at
- predicted effects vs reality (an audit)
- subsequent monitoring experience;

4b. Prepare guidance booklet on CEE monitoring
- using 1 and 4a
- both 1 and 4a should have sectoral examples: what indicators have been important by sector, and what is monitoring experience by sector
- monitoring should lead to a second generation of indicators; all this is first generation. Once out, it can be refined and expanded, more useful.

24. Subgroup 5: The Long Term ("long term strategy: vision, principles, strategy in sustainable development context")

Issue: where do we want to go? Ideally, governments should be in a position to understand the complexities of ecosystem dynamics to the extent that we can establish thresholds and assign assimilative capacities to valued ecosystems. Also recognize that CEA is a necessary component to EA and a means of achieving sustainability. Should adopt sustainable development principles in ecosystem management. Also should have:

- the capacity to plan and limit development,
- the ability to incorporate public vision into decision making,
- access to information management systems to allow reasonably accurate prediction.

Means to get there:

1. Communication
   - communication plan
   - promote and develop a common understanding that CEA is achievable
   - education to achieve a level playing field
2. Demonstration projects
3. Build on successes/case histories
4. Promote establishment of goals and objectives
5. Develop consensus on indicators
6. Develop consensus on CEA principles
7. Develop consensus on criteria for establishing thresholds/allocation policy for land use
8. Develop mechanisms to develop good information management systems.

Discussion:

Derek Doyle: Amazing the connection between these groups. Almost like there were leaks or secret collaboration. We share a lot of similarities in our thinking. A good place to be at this stage in a workshop.

25. Subgroup 6: Collaboration on Project Towards a Useable Generic Methodology

Issue: saw topic as: "collaboration on project to develop (criteria for selecting) CEA methodology". Bracketed comment indicates our thought that there will be no single methodology. Need criteria for selecting a method.

Wanted to develop principles for a project proposal (minimum critical specifications):

partnerships, cost-effective, timely, deliverable, democratic.

- if we can't work together its a lost cause
- deliverables here are criteria for selecting EA methodology.

Project proposal	Cost	Time	Who
1. Identify CEA methodologies	0	✓	✓
2. Review past studies and recommended approaches. Start with FEARO's "uranium mining"	0	✓	✓
3. Develop "generic" approach (i.e, criteria for selecting appropriate CEA methodology) and test by case studies. Our preference was to do this as a contract, perhaps by this group collectively	50k	3-5 mo. (Mar.'93)	contract
4. Provinces "experiment" with criteria, which would then feed back into project.			
5. Workshops to involve stakeholders (by sector?); then combined workshop. Reason for this is democratization principle and reality check. Vital to develop something for people to react to.			
6. Combined workshop	50k	Summer '93 Fall '93	✓

Immediate Need

- steering committee to flesh out proposal; establish budgets; provide documentation for requisite approvals... Might be $100,000; approx 10,000 per contributor.

Related issues/overlaps

- sourcebook proposal? Might involve methods;
- communication with stakeholders? Announce early, or bring them in later?
- quick start: is this a short term project?

Discussion:

Pat LeBlanc: important that we have common understanding of terms. Methodologies for assessing cumulative environmental effects not same as procedures. My definitions:

- procedures: your toolbox
- methods: how you do it, the tools inside.

Uranium team mostly looked at the procedural aspect, the approach to dealing with CEA, but not assessment tools like a model, a GIS, matrix, scoping groups or checklists.

Subgroup reporter: Stewart Sears' overhead summarized ten or eleven methods. We assumed that the uranium group had reflected on those methods and perhaps looked at other things and came up an approach. Our group's concern was about the methods. Not the approach, but the specific tools.

Part of our discussion linked the two. CEA is a scientific exercise within a broader planning process. There is no single CEA methodology. A range of approaches. We were talking about helping a proponent chose the appropriate method. We don't need to invent the science, but want to marry the science with the process. We assumed the science was well developed. We assumed that the CEA tool kit existed because the tool kit of EA is pretty well complete.

Pat: Should mention our two initiatives that will help us here. Spauling, at University of Guelph, has looked at different methods. Done some preliminary work. And Jenny Dixon from New Zealand is looking at methods for CEA. So hopefully they will be able to tell you that in this situation, this is the method, or these two or three may be appropriate, depending on project size, etc.

Derek: Group was suggesting that uranium mine exercise would be translatable.

Pat: Yes. We can draw from that experience, and hopefully apply in other areas.

Comment: Would think that the knowledge base they accumulated prior to coming to a recommendation for uranium is the identical base to examine other sectors. Why reinvent the wheel?

26. Integrating Discussion

Derek Doyle: I sense a lot of comfort with these reports. But sensitive about three things:

- what have we left out?
- are there global issues, actions, beyond what we can do directly?
- can we clarify actions/commitments?

First, what have we left out?

This is all geared to decision making, projects...But what about ethics, values, spiritual component. We mentioned sustainable development. I see it as a social commitment. Implications for education.

Pat: ties into long-term agenda. Long-term initiatives should tie in the values that people hold. Not just based on science.

Another issue—it may be possible for EA administrators to get ahead of other very interested stakeholders. Must keep in mind how and when and who should be invited to the table.

Pat: a couple of ways we can do that:

- might want to put out a report of this workshop for distribution: put into a nice format; may want to go beyond Jeff's notes and summary
- a series of workshop on related subjects: perhaps people here should get to those and pass on what we've done and bring input back.

i.e., sharing the vision, building coalitions of support.

At least, provide information from here.

Re. Sharing vision, part of long-term group report. We included consultation, and we were referring to our own clients, internal or external... Shouldn't go forward without consultation.

Second, are there big global principles actions, beyond what we can do directly that we should consider?

- Think about applying concept of CEA to plans, programs and policies

Philosophically no one would disagree, but reality is that we're immersed in projects and still don't know how to do that. Can we go further?

There is a danger in trying to influence our ministers' agendas too profoundly; EA Administrators group has been very successful at helping ourselves; wouldn't want to do ourselves harm.

Derek: I could write letters on this group's behalf to NGOs etc... If there are things that we've come up with that we should promote elsewhere.

Pat: policy and program EA required federally now, and both will require CEA. What does it means in terms of sustainability?

- Think about **assumptions, principles** that underlie CEA, how the same, how different, from sustainable development...list concepts, assumptions in primer.

Principles different than EA? E.g., Ecologically based concepts, that there are environmental limits, that we have to be aware of multiple assumptions...

My feeling is that CEA and sustainable development so closely linked we need to bring them together. Primer a good place to do that.

Would include guiding principles that would apply in any jurisdiction.

- Need concept map of relationship between EA, CEA, ecosystem approach, land use planning, SOE, tying all five areas together.

Three, actions/commitments

Bill Stevenson: I will flesh out our concept paper on the indicators approach to CEA and share with this group, finalize for distribution.

David Neufeld: Progress report on cumulative effects monitoring project. Hope to have it completed by summer '93.

Pat: handbook for practitioners, the five volume one, in co-operation with U.S. Council on Environmental Quality. Can circulate proposal to this group. Rescheduled for draft by May 93.

Richard Lecours: look at existing projects and see what they might have looked like in CEA context; try mini-version of pollution credits; re data base, involved with GIS, could steer them toward CEA.

Pat: series of workshops on CEA, then a final workshop?

Derek: use newsletter as vehicle for those that want to test concepts.

I have a problem with retrospective studies, politically.

Do it as a workshop topic, rather than a published paper that can get people in trouble. Could learn a lot by running a few projects through a workshop. Helps demystify as well.

Derek's wrap:

Thanks to Angela Azzopardi for conference arrangements.

Didn't hear one negative comment, or view that there is only one way.

When Barry started, he talked about destruction of environment by increments, about project focus, about political boundary problems. Have dealt with all those, including setting some things aside as not on our own immediate agenda. Also picked up on his general sustainability approach, notion of source and sink.. Idea of mapping relationships between SOE, CEA and land use planning. He talked about pre and post-diction, and emphasis on prediction in past.

emphasis here has picked up on that, in a strong focus on monitoring. He talked about bottom-up approaches, and that has been big focus here (democratization), eg in developing environmentally valued indicators. Raised issue of relationship between science and negotiation: interesting to hear Hussein talk about marrying of those two in his project. Mentioned R and D, and we've dealt with that.

Astounded that the feedback from the six groups meshed, didn't conflict. Union of concept here. So much here I'll wonder if we've fallen into group think, but given diversity of people here, not likely. Amazing that this issue, which has been around so long with so little progress, that we have come so far.

Commitments for actions tremendous. Something real will be produced following on this very unusual for a workshop.

My responsibility is to get Jeff's summary and notes, mould that into a concise proceedings, with some direct quotes. Try to boil down the ideas into an easy to read format, and get it out within a month. Will write to EA administrators that didn't come, share proceedings, have a conference call with respect to next steps: try to build a stronger effort for collective effort. Then I'll try to get Deputy awareness, build executive support to carry any developing consensus into CCME.

Feel now the ship is adequately provisioned, short term destination clear. No doubt that there will be adversity and changes that require course adjustments.