

ERS 415 Environmental Assessment Planning and Design

Winter 2012

Time and location: Mondays 2:30-5:20, PAS 1241

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Roles and purposes of the course

As the final core course in the series for a Diploma in Environmental Assessment, ERS 415 is the culmination of a series of studies in the field. The course is meant to review and synthesize material from the preceding pre-requisite courses on environmental assessment principles and methodologies. But it focuses on the major current directions and trends in environmental assessment – the most advanced thinking and applications in the field. In particular, the course examines how new appreciation of complexities, uncertainties and new commitments to sustainability are affecting the evolution of environmental assessment thinking and application and how they are coming up against apparently competing pressures for more streamlined decision making.

While project-specific environmental assessments have improved over the years with greater practitioner experience, higher public expectations and stronger assessment laws and practices, they have also proved to have serious limitations as tools for advancing the environmental quality of decision making. In particular, project level environmental assessments have tended to be too narrow in scope and too late in decision making to address overall concerns about the integrity of ecosystems and communities or to introduce significantly more sensitive and sustainable approaches. Moreover, conventional project-based environmental assessments have tended to be inadequate means of ensuring properly integrated consideration of the interrelated ecological, social and economic factors that determine long term effects.

In response, various authorities have initiated more comprehensive and anticipatory assessments. These have included efforts

- to recognize effects on ecological and socio-ecological systems, rather than just individual receptors, and to respect the complexities of these systems;
- to identify and evaluate the cumulative effects of multiple projects;
- to consider ecological and community wellbeing factors more rigorously in land use planning and other area-based deliberations;
- to incorporate environmental considerations in evaluations of future options in whole sectors (e.g. mining, agriculture, energy);
- to give greater attention to uncertainties and to the associated need for precaution and public choice;
- to apply environmental assessment principles more generally at the strategic level of policies, programmes and plans, with particular attention to providing guidance for project-level undertaking; and
- to specify and apply sustainability-centred criteria for decision making.

Together these changes suggest the beginnings of a considerably more ambitious and promising, though also challenging, era in assessment.

At the same time, environmental assessment processes have been criticized and resisted as an apparent barrier to efficient decision making on undertakings that powerful interests consider desirable. While some of this may be explained as a cover for opposition to the substantive requirements of good assessment, there are evident needs for greater consistency and better coordination of the many assessment regimes in Canada.

The course will examine the nature, significance and application of these broader approaches to assessment, and accompanying efficiency issues, with emphasis on Canadian cases in various jurisdictions, within and beyond the usual realm of environmental assessment law. It will review the academic and professional literature on advanced assessment thinking and will emphasize critical examination of practical cases where advanced assessment initiatives have been proposed and/or undertaken. Participants in the course will be expected to become familiar with the main components of advanced environmental assessment, to see how they may be integrated in practical circumstances, and to show how this learning might be applied in an actual case.

Text and readings

There is one course text, available in the bookstore:

Robert B. Gibson (with Selma Hassan, Susan Holtz, James Tansey and Graham Whitelaw), *Sustainability Assessment: criteria and processes* (London: Earthscan, 2005)

Beyond that, the course will rely heavily on web-based sources (see the schedule of events and readings). Many of the readings will be available on the course UW Learn site. Users can login to LEARN via <http://learn.uwaterloo.ca/>. Use your WatIAM/Quest username and password. Documentation is available at http://av.uwaterloo.ca/uwace/training_documentation/index.html

Some of the readings on the course UW Learn site are long reports. You are not expected to read them through. Skim as needed.

Course structure, assignments and evaluation

After week one, each weekly session of the course will be divided into two parts, a lecture for the first half and discussion of weekly questions related to the lecture and the readings considered from the perspectives of various interests and the implications for various practical applications.

The lecture schedule is set out below. The first three weeks provide an overview and background to the main issues now facing environmental assessment in Canada. The next two consider sustainability assessment practice and issues. Sessions 6-11 will address particular areas of innovation. The final session will be about the working in

environmental assessment, including the potential future of work in the field for current participants in ERS 415.

Each student's work in the course will centre on five contributions:

- participation in the weekly discussions, including participation in leading one of the weekly discussions;
- class preparation notes for each week except the first week and the last week (to be graded in two sets – notes for weeks 2-6 and for weeks 7-11);
- two papers – one generally covering weeks 1-5 and one covering the whole course but with emphasis on weeks 6-11.

The evaluations will be weighted as follows:

- participation weeks 1-12 20% (includes panel presentation)
- class preparation notes weeks 2-6 15%
- class preparation notes weeks 7-11 15%
- paper 1 20%
- paper 2 30%

Participation and presentation

Each week the second half of the class will be devoted to discussion of two core questions related to the week's topic. The questions are included below in the section on the weekly topics, readings and questions. The discussions will consider implications for environmental assessment law and policy reform in Canada and implications for practical application in current or anticipated cases. As well, the discussions should be useful in preparing for the two papers.

In weeks 2, 11 and 12, the discussions will be led by the course instructor and teaching assistant. In weeks 3-10, the discussions will be initiated by four-member student panels, one panel for each discussion question. All other students in the class will have assignments as supporting commentators. The course instructor and/or teaching assistant will be the moderators of these discussions.

To initiate the discussion of a question, the four panelists will make a brief opening statement (maximum three minutes each) setting out what are in his or her view the most important matters and how they should be addressed in the answer to the question. To encourage appreciation of different perspectives, each panelist will be assigned to represent the (enlightened) interests of one of the following four categories:

1. proponents (public or private sector);
2. federal and provincial governments;
3. Aboriginal governments, municipalities and community organizations; and
4. non-government organizations focusing on ecological issues, social justice and/or the interests of future generations.

Each panelist will be supported by roughly a quarter of the rest of the class, who will act as a supporting team of commentators. After the opening presentations, the floor will be open to additional contributions from the groups of commentators. In each discussion,

we will aim to see what level of agreement can be reached among the different (but enlightened) interests.

To facilitate all this, the class has been divided into eight groups (A-H) that have been given rotating assignments through weeks 2-11. See the document “415w12 participant assignments” on the course UW Learn site. Each team has eight members and will be the set of panelists for one of the weeks 3-10. Each other week the team has been assigned to think from the perspective of an interest from one of the four categories (each of the categories have been subdivided into two sub categories so there are somewhat different interests for each of the eight groups. Each week, the group members will take on a different role.

The assignment of individuals to panel presentation weeks and questions will be announced at the first class and posted on the course UW Learn site (the document mentioned above). The assignment of individuals to rotating interest perspectives for weeks 2-10 will also be announced at the first class and posted on the course UW Learn site (same document).

Students in each panel should meet with the instructor or teaching assistant during the class break at the session one week prior to the presentation week to divide out representation responsibilities. Beyond that, there is no expectation that the panel members or the teams of commentators will need to meet to coordinate positions. The contributions of the panelists and commenting participants will be graded individually.

Recognizing the constraints of a large class, each student is encouraged and expected to participate thoughtfully in the class discussions as well as the panel presentations. Evaluation of participation will be based on the quality as well as the extent of contributions. Evaluation of participation quality will take the following criteria into account:

- understanding of the concepts and issues introduced and insight into their practical implications;
- evident familiarity with the readings (particularly the ones individually assigned)
- careful listening and thoughtful reflection before making comments;
- communication skills (clear, constructive, etc.);
- synthesis, integration and drawing connections between and among immediate subject matter and ideas, issues and insights from the course materials or elsewhere; and
- accuracy and creativity in illustrating implications.

There will be bonus marks for humour.

The class preparation notes

Each week from week 2 to week 11, inclusive, each participant must submit a one page set of class preparation notes. The notes

- should be based on the course readings for that week readings (and any additional readings or other research that the student may choose to consult);
- should anticipate and be useful for participation in the class discussion;

- must be prepared before the class and printed out, though you are encouraged to add further annotations in pen or pencil during the class (e.g. to include points from the lecture and discussions);
- should normally be in point form;
- must include proper references to your sources;
- should normally be one page, single spaced; and
- must be submitted at the end of the class on the relevant week (if you cannot attend the class, email the course notes to the instructor before the class begins and provide a paper copy to the instructor's mail slot in the ERS mail room, EV2 room 2028, as soon as possible thereafter).

For the week you are assigned to make a panel presentation, the submitted notes will be your panel presentation notes. These can be more than one page, may or may not be in point form, and still must include proper references to your sources.

The class preparation notes will be graded in two packages: weeks 2-6 and weeks 7-11. Late notes submissions will be accepted for two days following the class when submission was due, but will be treated as worth 0.50% of notes submitted on time.

The two papers:

Submission of two papers is required. Both are to be in the form of briefing papers to relevant individuals or organizations. The main purpose of the paper writing assignments is to encourage integration of understanding gained from the readings, lectures and discussions, with particular attention to the implications of what you are learning for practical application.

In every case the submission should include

- proper bibliographic references to written materials, or other sources you've used;
- evidence of familiarity (though not necessarily agreement) with the key points raised in the readings, lectures and discussions, though you are also encouraged to incorporate material from other sources;
- analysis of the significance and practical implications (directly and indirectly) of these points or questions for other jurisdictions and undertakings subject to assessment;
- attention to the perspectives of different interests; and
- consideration of how to ensure assessment is both more effective (as a means of contributing to sustainability) and more efficient (recognizing the diversity of interests and the multitude of jurisdictions involved).

Your papers should draw from the lectures, readings and discussions, and from any material you dig up that is relevant to the discussion. Be sure to provide proper references to your sources.

Given the complexities involved (many different applications, players, issues, possible responses, etc.), you cannot discuss everything. In choosing what to include in the briefing papers give particular attention to what you consider to be most significant for

improving assessment law, policy and practice. You will have to consider carefully what is and is not crucial here.

Be concise. These are short papers. The people who read briefing papers are very busy. They need concise information presented in a format designed for quick grasp of the material, but also including necessary clarifications and evidence or reference to evidence supporting the argument. Remember that you are, at least implicitly, making an argument. Remember also that these are scholarly papers, expected to meet the usual expectations for sound argument, proper references and reasonable adherence to the conventions of grammar, even if you choose to rely to some extent on bulleted lists of key points. In addition to the considerations noted above, grading of the essays will be based primarily on evidence of

- familiarity with (or mastery of) the concepts and sources, ideas and implications covered by the course;
- coherence (or brilliance) of argument; and
- clarity (or elegance) of writing.

Late penalties will be assessed for papers received after the due dates set out above. The standard penalty is 0.5% per day.

Briefing paper 1

For the first paper, covering weeks 1-5, you will be preparing a briefing document for the federal environment minister, Peter Kent, or for the environment critic of one of the opposition parties (Megan Lesley for the NDP, Kirsty Duncan for the Liberals, Maria Morani for the Bloc Québécois) or for Elizabeth May of the Green Party.

The question:

(i) What are the key design features of a new federal environmental assessment law that would centre on sustainability-based assessment and also address the evident problems of environmental assessment in Canada today (including concerns about process efficiency and fairness to all interests). Identify what are in your view the five most important components (design features of the desired assessment regime). Where appropriate provide illustrative examples of implications for particular kinds of undertakings that are or should be subject to assessment.

Background:

Early this year, perhaps in January, the House of Commons Standing Committee on Environment and Sustainable Development will be submitting its report reviewing the past application of the *Canadian Environmental Assessment Act*. Also, the Conservative government is thought to be planning to replace the *Canadian Environmental Assessment Act* with a new environmental assessment law. A bill to do that may also be presented to the House early in the new year. Both the Standing Committee report and the possible bill proposing a new assessment law are expected to emphasize the speedy decision making priorities of the majority Conservatives and the new bill may propose much more limited application and scope of federal assessments. Either or both will, however, open to public discussion the broad set of issues about how best to reform environmental assessment to

make it better suited to the challenges ahead and to enhance its effectiveness, efficiency and fairness. One of the key considerations will be application of assessment requirements to strategic level undertakings (policies, plans, programs, etc.) as well as projects.

Requirements:

The first briefing paper is to be no longer than 2000 words, not including references. It is to be submitted for evaluation at or before noon on Friday, February 17. A paper copy is required. Please submit it to the instructor's mail slot in the ERS mail room, EV2 room 2028.

Briefing paper 2

For the second paper, covering the whole course, but focusing on the material for weeks 6-11, you will be preparing a briefing document for the Standing Committee on Environment and Sustainable Development, or the equivalent in one of the provinces or territories.

The question:

What are the key characteristics of a law and policy regime that would ensure linked application of assessment requirements to strategic and project level undertakings and how should such a regime apply to an illustrative pair of undertakings – one at the strategic level and one at the project level or equivalent? Take into consideration overlapping federal, provincial/territorial and Aboriginal authority and the perspectives of other interests. Also, where appropriate, consider use of processes beyond environmental assessment law (e.g. laws related to urban planning or resource management for forest, fisheries, parks, etc.). At least half the paper should be devoted to discussion of application to the illustrative case. You will need to provide basic information on the strategic level undertaking's basic purpose, the nature of alternatives to be considered, and the main issues raised; the more specific level undertaking's purposes, alternatives and key issues; and the expected connections between the two undertakings (especially how the strategic level undertaking might guide or direct the more specific undertaking (or important aspects of it). Your focus, however, is on how the planning, evaluation, approval and implementation of the pair of undertakings ought to be linked, what benefits that linking should deliver and what problems will have to be faced.

Background:

One of the most promising ways of enhancing both the effectiveness and efficiency of environmental assessments (and associated planning and regulatory activities) is to establish better means of linking the preparation and approval of related strategic and project level undertakings. For the purposes of briefing paper 2, you must pick a pair of related strategic and project level undertakings. The strategic undertaking – the development of a major policy or plan or program, or a regional or sectoral cumulative effects study or the equivalent – will be one that is expected to inform the planning and assessment of certain kinds of project or more specific program undertakings, guiding or directing at least some important aspects of how the particular project-scale undertakings are to be conceived, designed and approved. The second undertaking is a proposed

project or more specific program that will be informed, guided and/or directed by your chosen strategic level undertaking. Examples are provided below. Each undertaking must have environmental significance, broadly defined, and the pair will be most suitable if they can illustrate application of the advanced assessment ideas discussed in the course.

Some illustrative examples of possible pairs of strategic/project undertakings are listed in the document “415w12 paired case examples” on the course UW Learn site. You may choose from this list or propose other options. You may wish to discuss your choice of paired undertakings with the course instructor or teaching assistant will before starting the assignment.

Requirements:

This second briefing paper is to be no longer than 2500 words, not including references. It is to be submitted for evaluation at the final class on Monday, April 2. A paper copy is required. Any late submissions should be submitted electronically, by email to the course instructor (email address above) and provided as soon as possible thereafter in a paper copy in the instructor’s mail slot in the ERS mail room, EV2 room 2028.

University of Waterloo policies on key course related matters

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trustworthiness, fairness, respect and responsibility. [Check www.uwaterloo.ca/academicintegrity/ for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact the department’s administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity [check www.uwaterloo.ca/academicintegrity/] to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties check Guidelines for the Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm.

Appeals: A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals), www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic

integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.

Religious Observances: A student needs to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

Schedule of events and readings

1. January 9 Introduction to course

core elements of advanced environmental assessment and associated efficiency issues
course structure and assignments:

2. January 16 The state of the art: history and trajectory

the evolution of environmental assessment, esp. in Canada
federal, provincial and territorial processes and legislation
assessments under other laws and processes
positive steps, limitations, retreats
the global context
implications for the future

Readings:

Robert B. Gibson, *Sustainability Assessment*, chapter 1, "Beginnings: stumbling towards sustainability assessment" and chapter 2, "Thirty-some years of environmental assessment"

Robert B. Gibson, "From Wreck Cove to Voisey's Bay: The evolution of federal environmental assessment in Canada," *Impact Assessment and Project Appraisal* 20:3 (September 2002), pp.151-159; on course UW Learn site.

International Association for Impact Assessment, "Principles of Environmental Impact Assessment Best Practice," (January 1999); www.iaia.org/ go to "publications"; also on course UW Learn site.

International Association for Impact Assessment, "Impact assessment, sound business operation, and corporate responsibility for sustainable development," (May 2002); on course UW Learn site.

Discussion questions

Qa: What have been the main accomplishments of environmental assessment advance, especially in Canada so far, and what are the greatest promises for your interest?

Qb: What have been the greatest limitations of environmental assessment in Canada so far and how may these limitations affect your interest?

3. January 23 The state of the art now: effectiveness and efficiency issues

proposals for and possible means of enhancing the scope and effectiveness of environmental assessment

proposals for and possible means of enhancing efficiencies (e.g. further harmonization, links between strategic and project levels

Readings:

House of Commons Standing Committee on Environment and Sustainable Development, *Report on the Statutory Review of the Canadian Environmental Assessment Act*, anticipated January 2012; to be posted on course UW Learn site when available.

Anonymous, "Commercial pressures accelerate moves to narrow focus of CEAA and streamline environmental assessment process," *Canadian Environmental Regulation and Compliance News* 22:12 (December 2011), p.1; on course UW Learn site.

Deborah Carver et al., *Interjurisdictional coordination of EA: challenges and opportunities arising from differences among provincial and territorial assessment requirements and processes* (Halifax: East Coast Environmental Law Association, November 2010), sections 1-4 and 7-8; on course UW Learn site.

Arlene Kwasniak, "Environmental assessment, overlap, duplication, harmonization, equivalency, and substitution: interpretation, misinterpretation, and a path forward. (Canada)," *Journal of Environmental Law and Practice* 20:1 (Oct, 2009), pp.1-35; on course UW Learn site.

Recommended background readings:

Government of Canada, *Canadian Environmental Assessment Act*; on course UW Learn site.

Government of Canada, *The Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*; on course UW Learn site.

Government of Ontario, *Environmental Assessment Act*; on course UW Learn site.

Other additional readings:

Canadian Environmental Assessment Agency, "Canadian Environmental Assessment Act: An Overview," (October 2003); on course UW Learn site

Canadian Environmental Assessment Agency, "Federal-provincial/territorial environmental assessment agreements";

<http://www.ceaa.gc.ca/default.asp?lang=En&n=CA03020B-1>.

House of Commons Standing Committee on Environment and Sustainable Development, *Sustainable Development and Environmental Assessment: Beyond C-9* (June 2003); <http://www.parl.gc.ca/InfoComDoc/37/2/ENVI/Studies/Reports/envirp02-e.htm>; also on course UW Learn site.

Elvis Au, International Association for Impact Assessment, "Impact assessment, sound business operation, and corporate responsibility for sustainable development," IAIA May 2002); on course UW Learn site.

Discussion questions

Qa: What are the most important elements to include a new federal environmental assessment law to establish a reformed regime that would be both more effective and more efficient than what we have now?

Qb: Beyond federal law reform, what are the most significant needs for improving environmental assessment in Canada and what are the most promising possible means of making these improvements? One key factor will be how best to establish a more harmonized set of assessment requirements and processes across Canada.

4. January 30 Sustainability assessment

international and Canadian developments

case examples: Voisey's Bay mine assessment, Tulsequah Chief mine, Mining, Minerals and Sustainable Development project, Mackenzie Gas Project, Ontario Power Authority Integrated Power Systems Plan, Kemess North Copper-Gold Mine Project, White's Point Quarry and Marine Terminal

Readings:

Robert B. Gibson, *Sustainability Assessment*, chapters 5-7, "Criteria," "Trade-offs," and "Processes".

Robert B. Gibson, "Why sustainability assessment?" introductory chapter to Alan Bond et al., *Sustainability Assessment: pluralism, practice and progress* to be published spring 2012 by Routledge; on course UW Learn site.

Possible additional readings:

Thomas L. Green, "Lasting Benefits from Beneath the Earth: Mining nickel from Voisey's Bay in a manner compatible with the requirements of sustainable development," report for the Environmental Assessment Hearings into the Proposed Voisey's Bay Nickel Mine, prepared for the Innu Nation, 5 October 1998; on course UW Learn site.

Kemess North Copper-Gold Mine Project, Joint Review Panel Report, British Columbia, 17 September 2007; www.elc.ubic.ca/documents/Kemess-South-EA-Report-Sept2007.pdf.

Environmental Assessment of the Whites Point Quarry And Marine Terminal Project, Joint Review Panel Report, Nova Scotia, October 2007; www.gov.ns.ca/nse/ea/whitespointquarry.asp

Mark Winfield, Robert B. Gibson, Tanya Markvart, Kyrke Gaudreau and Jenny Taylor, "Implications of sustainability assessment for electricity system design: the case of the Ontario Power Authority's Integrated Power System Plan," *Energy Policy* 38 (2010), pp.4115-4126.

Mining, Minerals and Sustainable Development Project, *Final Report: Breaking New Ground* (London: IISD, 2002); <http://www.iied.org/mmsd/finalreport/index.html>.

MMSD, North American Regional Report, *Seven Questions to Sustainability: How to Assess the Contribution of Mining and Minerals Activities*;

http://www.iied.org/mmsd/rrep/n_am.html; also on course UW Learn site.

Ontario Power Authority, *Ontario's Integrated Power System Plan, Discussion Paper 6: Sustainability* (10 November 2006), on course UW Learn site.

Voisey's Bay Mine and Mill Environmental Assessment Panel Report (March 1999) <http://www.ceaa.gc.ca/default.asp?lang=En&n=0a571a1a-1&xml=0a571a1a-84cd-496b-969e-7cf9cbea16ae&toc=show>.

Discussion questions

Qa: What would be the main differences between assessments focused on delivering most positive contributions to sustainability and assessments focused on mitigation of significant adverse environmental effects? Illustrate with practical examples (historical or potential).

Qb: What are likely to be the main challenges, potential weaknesses and grounds for opposition? Illustrate with practical examples (historical or potential).

5. February 6 The Mackenzie case

the major innovations
the limitations
the responses

Readings:

Robert B. Gibson, *Sustainability Assessment*, chapters 5-7, "Criteria," "Trade-offs," and "Processes"

Robert B. Gibson, "Application of a contribution to sustainability test by the Joint Review Panel for the Canadian Mackenzie Gas Project," *Impact Assessment and Project Appraisal* 29:3 (September 2011), pp.231-244; on course UW Learn site.

Recommended background documents (skim):

Mackenzie Gas Project Joint Review Panel 2009. *Foundation for a Sustainable Northern Future* (December 2009), especially chapter 19, available at <http://www.acee-ceaa.gc.ca/default.asp?lang=En&n=155701CE-1>; also on course UW Learn site.

Governments of Canada and of the Northwest Territories, *Final Response to the Mackenzie Gas Project Joint Review Panel Report for the Mackenzie Gas Project* (November 2010), available at <http://www.acee-ceaa.gc.ca/default.asp?lang=En&n=155701CE-1>, also on course UW Learn site.

Robert B. Gibson, *Sustainability-based assessment criteria and associated frameworks for evaluations and decisions: theory, practice and implications for the Mackenzie Gas Project Review*, a report commissioned and published by the Joint Review Panel for the Mackenzie Gas Project, 26 January 2006, 67pp. Available at <http://www.acee-ceaa.gc.ca/default.asp?lang=En&n=155701CE-1>; also on course UW Learn site.

Discussion questions:

Qa: What were the main strengths of the Mackenzie case as an example of how to do environmental assessment?

Qb: What were the main weaknesses of the Mackenzie example and how might they be corrected?

6. February 13 Complex ecological, social and socio-ecological systems and the ecosystem approach

complex systems theory
complex systems in resource management
ecosystem-based approaches
applications to socio-ecological systems
basic implications for environmental assessment research
implications for environmental assessment process design

Readings:

James Kay and Eric Schneider, "Embracing complexity: the challenge of the ecosystem approach", *Alternatives Journal*, 20:3 (1994), pp.32-38; on course UW Learn site. Convention on Biological Diversity (UNEP), "The Ecosystem Approach: Principles," (12 principles) available at <http://www.cbd.int/ecosystem/principles.shtml>, also on course UW Learn site.

Miriam Diamond, *et al.*, *Natural Heritage Systems in Urbanizing Settings: Sustainable Practices for the Oak Ridges Moraine* (City of Toronto and Save the Rouge Valley System Inc., July 2002), on course UW Learn site; also available at <http://www.city.toronto.on.ca/moraine/reports.htm>.

Lake Simcoe Region Conservation Authority, *The Uxbridge Brook Watershed Plan* (1997), on course UW Learn site; also available at www.lsrca.on.ca/pdf/reports/uxbridge_brook_watershed.pdf.

Possible additional readings:

Gordon E. Beanlands and Peter N. Duinker, *An Ecological Framework for Environmental Impact Assessment in Canada* (Halifax: Institute for Resource and Environmental Studies, Dalhousie University, 1983), pp.1-10, on course UW Learn site.

The Scottish Government, "Applying an ecosystems approach to land use," Information Note (March 2011), available at <http://www.scotland.gov.uk/Publications/2011/03/16083740/1>, also on course UW Learn site

Lora Flaherty, *Waterloo's West Side Story: planning for the Laurel Creek Watershed*, Ontario case report no. 4 (Waterloo: Environmental Assessment and Planning in Ontario Study, ERS/UWaterloo, 1995), 32pp., on course UW Learn site.

James Kay, Henry Regier, Michelle Boyle, and George Francis, "An Ecosystem Approach for Sustainability: Addressing the Challenge of Complexity," (the SOHO paper) *Futures* 31:7 (Sept 1999), pp.721-742, on course UW Learn site.

James Kay and Henry Regier, "Uncertainty, Complexity and Ecological Integrity: Insights from an Ecosystem Approach", in P. Crabbé, A. Holland, L. Ryszkowski and L. Westra (eds), *Implementing Ecological Integrity: Restoring Regional and Global Environmental and Human Health* (Kluwer, NATO Science Series, Environmental Security, 2000) pp.121-156, on course UW Learn site.

Discussion questions:

Qa: What would be the most important considerations in applying an ecosystem approach to making decisions about how best to design rehabilitation efforts to repair damage and strengthen the desirable qualities of a small urban river/stream (such as Laurel Creek)?

Qb: What would be the best ways to incorporate an understanding of complex systems and the ecosystem approach into environmental assessment law, policy and practice?

7. February 27 Tools for assessing complex socio-ecological systems: scenarios, public involvement, traditional knowledge and judgements about significance
socio-ecological systems and public choices
scenario building

citizens and experts: technical knowledge and public consultation, citizens experts,
traditional knowledge
equity effects, including gender equity
means of determining significance in advanced assessment practice
case examples: growth management in BC's Capital Regional District; community-based
traditional expert monitoring in Lutsel 'Ke

Readings:

- Robert B. Gibson, *Sustainability Assessment*, chapter 8, "Decisions"
IAIA, "Public participation: international best practice principles," (August 2006), on
course UW Learn site.
Stephen Whitfield, Helmut Geist, Antonio A.R. Ioris, "Deliberative assessment in
complex socioecological systems: recommendations for environmental assessment in
drylands," *Environmental Monitoring and Assessment* 183:1 (2011), p.465-483, on
course UW Learn site.
Jan Rotmans, *et al.*, "Visions for a Sustainable Europe," [re scenarios] International
Centre of Integrative Studies, Maastricht, The Netherlands April 2000, on course UW
Learn site.
Stephen Ellis, "Meaningful consideration? a review of traditional knowledge in
environmental decision making," *Arctic* 58:1 (March 2005), on course UW Learn site.
David Lawrence, *Significance criteria and determination in sustainability-based
environmental impact assessment*, a report commissioned and published by the Joint
Review Panel for the Mackenzie Gas Project, 30 November 2005, on course UW
Learn site.

Possible additional readings:

- Jennifer M.P. Stewart and A. John Sinclair, "Meaningful public participation in
environmental assessment: perspectives from Canadian participants, proponents and
government," *Journal of Environmental Assessment Policy and Management* 9:2
(June 2007), pp.161-183, on course UW Learn site.
Canadian Environmental Assessment Agency, "Considering Aboriginal traditional
knowledge in environmental assessments conducted under the Canadian
Environmental Assessment Act -- Interim Principles," on course UW Learn site.
Miriam Diamond, *et al.*, *Natural Heritage Systems in Urbanizing Settings: Sustainable
Practices for the Oak Ridges Moraine*, (City of Toronto and Save the Rouge Valley
System Inc., July 2002), on course UW Learn site, also available at
<http://www.city.toronto.on.ca/moraine/reports.htm>.
Frank Fischer, "Citizens and experts in risk assessment: technical knowledge in practical
deliberation," *Technikfolgenabschätzung* 2:13 (2004), pp.90-98.
"Futures techniques," [<http://ag.arizona.edu/futures/tou/sem2-techniques.html>]
Gilberto C. Gallopin, Silvio Funtowicz, Martin O'Connor, and Jerry Ravetz, "Science for
the twenty-first century: from social contract to the scientific core," *International
Journals of Social Science* 168 (2001), pp.219-229, on course UW Learn site
Sandra Greeuw, *et al.*, "Cloudy crystal balls: An assessment of recent European and
global scenario studies and models," (European Environmental Agency, November
2000), on course UW Learn site.

- C.S. Holling, "Understanding the complexity of economic, ecological and social systems," *Ecosystems* 4 (2001), pp.390-405, on course UW Learn site.
- Rolf Lidskog, "Scientised citizens and democratised science: re-assessing the expert-lay divide," *Journal of Risk Research* 11:1 (2008), pp. 69-86.
- Laura K. Schmitt Olabisi, *et al.*, "Using scenario visioning and participatory system dynamics modeling to investigate the future: lessons from Minnesota 2050," *Sustainability* 2:8 (2010), pp.2686-2706.
- John Sinclair, Alan Didck, Patricia Fitzpatrick, "Conceptualizing learning for sustainability through environmental assessment" critical reflections on 15 years of research," *Environmental Impact Assessment Review* 28 (2008), pp.415-428.
- R.J. Swart, P. Raskin and J. Robinson, "The problem of the future: sustainability science and scenario analysis," *Global Environmental Change* 14:2 (July 2004), pp.137-146.
- David Waltner-Toews, James Kay, Tamsyn P. Murray and Cynthia Neudoerffer, "Adaptive methodology for ecosystem sustainability and health (AMESH): an introduction," draft manuscript, on course UW Learn site.

Discussion questions:

- Qa: How should adopting a "contribution to sustainability" objective for environmental assessment affect how to make decisions about the significance of environmental effects?
- Qb: What tools would you use to develop an understanding of an existing community as a socio-ecological system, to identify desirable and undesirable qualities, and to initiate discussions about options for the future?

8. March 5 Complexity, uncertainty and precaution

- complexity and uncertainty: lessons from experience in Canada
- risk and precaution (risk assessment versus/plus precautionary approach)
- adaptive design and management
- implications for advanced assessment, planning and design

Readings:

- Mary O'Brien, "Alternatives assessment: part of operationalizing and institutionalizing the Precautionary Principle," paper prepared for the Wingspread Conference on "Implementing the Precautionary Principle," 23-25 January 1998, Racine, Wisconsin, on course UW Learn site.
- Royal Society of Canada Expert Panel on the Future of Food Biotechnology, Conrad Brunk and Brian Ellis, co-chairs, *Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada* prepared at the request of Health Canada, Canadian Food Inspection Agency and Environment Canada (Ottawa: Royal Society of Canada, 2001), on course UW Learn site, also available at <http://www.ic.gc.ca/app/oca/crd/dcmnt.do?id=65&lang=eng>.

Possible additional readings:

- Environmental Law Centre, University of Victoria, "The precautionary principle in Canada," (June 2010), on course UW Learn site.
- Robert B. Gibson, "We just don't know: lessons about complexity and uncertainty in Canadian environmental politics," in Robert Paehlke and Douglas Torgerson, editors,

- Managing Leviathan: Environmental Politics and the Administrative State*, second edition (Peterborough: Broadview Press, 2005), pp.145-170, on course UW Learn site.
- Mary O'Brien, "The essential features of an alternatives assessment" in *Making Better Environmental Decisions* (Cambridge: MIT Press, 2000), pp.191-201.
- Canadian Biotechnology Advisory Committee, *Improving the Regulation of Genetically Modified Foods and Other Novel Foods in Canada: report to the Government of Canada Biotechnology Ministerial Coordinating Committee* (Ottawa: CBAC, August 2002), on course UW Learn site.
- Michael McDonald, *Biotechnology, Ethics and Government: A Synthesis* prepared for the Canadian Biotechnology Advisory Committee, Project Steering committee on Incorporating Social and Ethical Considerations into Biotechnology (October 2000), on course UW Learn site.
- Susan Sherwin, *Towards an Adequate Ethical Framework for Setting Biotechnology Policy*, prepared for the Canadian Biotechnology Advisory Committee, Stewardship Standing Committee (Ottawa: CBAC, January 2001, on course UW Learn site.
- Canada, *A Canadian Perspective on the Precautionary Approach/Principle: Discussion Document* (Ottawa: September 2001), also on course UW Learn site.
- Stuart Lee and Katherine Barrett, "Comments on *A Canadian Perspective on the Precautionary Approach/Principle: Discussion Document*," (Science and Environmental Health Network, 28 March 2002), on course UW Learn site.

Discussion questions

- Qa: What are the most important ethical and practical considerations in deciding how to organize a public discussion of a proposal for a major controversial activity (pick one of the following: fracking, more bitumen extraction, uranium exploration/mining, new low density suburbs, giant gravel pits, food biotechnology)?
- Qb: What are the most important ethical and practical considerations in deciding how to organize a public discussion of a proposal for a major controversial activity (pick another of the following: fracking, more bitumen extraction, uranium exploration/mining, new low density suburbs, giant gravel pits, food biotechnology)?

9. March 12 Cumulative effects assessment

- principles and challenges
- guidance from the Canadian Environmental Assessment Agency
- case examples: Fort Liard, oil sands and Fort McMurray, Mackenzie Gas Project and induced development, Puslinch gravel

Readings:

- CEAA, *Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act* (November 2007), on course UW Learn site.
- Mackenzie Gas Project Joint Review Panel 2009. *Foundation for a Sustainable Northern Future* (December 2009), especially chapter 19, available at <http://www.acee-ceaa.gc.ca/default.asp?lang=En&n=155701CE-1>; also on course UW Learn site.
- Petr Cizek and Shelagh Montgomery, *A Choice of Futures: cumulative impact scenarios of the Mackenzie Gas Project Scoping and Development* (Yellowknife: Canadian Arctic Resources Committee, October 2005), on course UW Learn site.

Peter N. Duinker and Lorne A. Greig, "The impotence of cumulative effects assessment in Canada: Ailments and ideas for redeployment," *Environmental Management* 37:2 (2006), pp.153-161; on course UW Learn site.

Possible additional readings:

Mackenzie Gas Project Joint Review Panel 2009. *Foundation for a Sustainable Northern Future* (December 2009), especially chapter 19, available at <http://www.acee-ceaa.gc.ca/default.asp?lang=En&n=155701CE-1>; also on course UW Learn site.

Petr Cizek, et al., *Fort Liard Area Cumulative Impact Mapping Project: Technical Report* (Yellowknife: Canadian Arctic Resources Committee, May 2002); on course UW Learn site.

Lorne Greig and Peter Duinker, "Scenarios of future development in cumulative effects assessment: approaches for the Mackenzie Gas Project" (March 2007), on course UW Learn site.

CEAA, *Reference Guide: Addressing Cumulative Environmental Effects*, on course UW Learn site, also available at <http://www.ceaa.gc.ca/default.asp?lang=En&n=9742C481-1&offset=&toc=hide>.

Douglas Baker and Darryl Shoemaker, *Environmental Assessment and Aggregate Extraction in Southern Ontario: the Puslinch Case*, Ontario case report no. 3 (Waterloo: Environmental Assessment and Planning in Ontario Study, ERS/UWaterloo, 1995), 33pp., on course UW Learn site.

CEAA, *Cumulative Effects Assessment Practitioners Guide* (February 1999), on course UW Learn site.

CEAA, *Operational Policy Statement: Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act* (March 1999) OPS-EPO/3- 1999, on course UW Learn site.

Discussion questions:

Qa What were the key cumulative effects issues surrounding the Mackenzie Gas Project case and how well did the assessment address them?

Qb What are the major advantages and disadvantages of considering cumulative effects in project level assessments?

10. March 19 Strategic environmental assessment

principles and international and Canadian practice

case examples: salmon aquaculture in British Columbia, DFAIT assessment of trade agreements, growth management planning

introduction to linking strategic and project level assessments

Readings:

IAIA, *Strategic Environmental Assessment Performance Criteria* [<http://www.iaia.org/> go to "publications"; also on course UW Learn site]

Government of Canada, *The Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals* (2004); available at <http://www.acee-ceaa.gc.ca/default.asp?lang=En&n=B3186435-1>, also on course UW Learn site .

- Robert B. Gibson, Hugh Benevides, Meinhard Doelle and Denis Kirchhoff, "Strengthening strategic environmental assessment in Canada: an evaluation of three basic options," *Journal of Environmental Law and Practice*, 20:3 (2010), pp.175-211, on course UW Learn site.
- Government of British Columbia, Environmental Assessment Office, "Backgrounder: How the Salmon Aquaculture Review was conducted," (September 1997), on course UW Learn site.
- Ontario Ministry of the Environment, "Backgrounder: Declaration Order for Forest Management" (July 2003), on UW Learn site.

Possible additional readings:

- Hugh Benevides, Denis Kirchhoff, Robert Gibson and Meinhard Doelle, *Law and Policy Options for Strategic Environmental Assessment in Canada*, report commissioned by the Canadian Environmental Assessment Agency, December 2008.
- Bram Noble, "Strategic Environmental Assessment," in Kevin S. Hanna, editor, *Environmental Impact Assessment: Participation and Practice* (Toronto: Oxford University Press, 2005), chapter 6.
- Ontario Ministry of Natural Resources, "Forest Management Class Environmental Assessment," [<http://ontariosforests.mnr.gov.on.ca/timbereaoverview.cfm>]
- Ontario Minister of the Environment, "Forest Management Declaration Order," (July 2003), [<http://ontariosforests.mnr.gov.on.ca/timbereaoverview.cfm>]
- *Robert B. Gibson, "Ontario's class assessments: lessons for application to policies, plans and programs," in Steven A. Kennett, ed., *Law and Process in Environmental Management* (Calgary: Canadian Institute of Resources Law, 1994), pp.84-100.
- Tim Smith, "Reviews of the Canadian SEA System: Commissioner for Environment and Sustainable Development reports, 1998 and 2004," (CEAA, unpublished, March 2008); on course UW Learn site.
- British Columbia, Environmental Assessment Office, *Salmon Aquaculture Review Final Report, Summary* [on course UW Learn site; full report including the summary available at http://www.eao.gov.bc.ca/epic/output/html/deploy/epic_document_20_6045.html]
- British Columbia, Fisheries and Aquaculture, "Salmon Aquaculture Policy Framework (12 September 2002) [http://www.agf.gov.bc.ca/fisheries/salmon_aqua_policy.htm]
- Carla Davidson, *The Salmon Aquaculture Review: facing ecological complexity and scientific uncertainty in the first policy level assessment under British Columbia's Environmental Assessment Act*, British Columbia case report no. 2 (Waterloo: Integrating the Environment into Planning for Growth Study, ERS/UWaterloo, August 1999), 23pp. [<http://www.fes.uwaterloo.ca/research/asmtplan/bcmain.html>]
- Kirk Stinchcombe and Robert B. Gibson, "Strategic environmental assessment as a means of pursuing sustainability: ten advantages and ten challenges," *Journal of Environmental Assessment Policy and Management* 3:3 (2001), pp.343-372; on course UW Learn site.
- Robert B. Gibson, "Trading short-sightedly: DFAIT on the environment," [the Department of Foreign Affairs and International Trade is proposing to avoid considering sustainability in its environmental assessments of anticipated trade agreements] *Policy Options* (January-February 2001), pp.83-87 [on UW Learn site].

Discussion questions:

Qa: What would be the main advantages of introducing a legal obligation for environmental assessment of strategic undertakings in Canada at the federal level?

Qb: What would be the main challenges of introducing a legal obligation for environmental assessment of strategic undertakings in Canada at the federal level and how would you respond to them?

11. March 26 Links between strategic and project assessment

general case example growth management planning: smart growth, identification and public assessment of alternative futures, use of scenarios

interjurisdictional, regional/sectoral and multi-tier planning and assessment

particular case examples: Greater Golden Horseshoe planning, Ontario's Greenbelt and the Oak Ridges Moraine, Waterloo Region, Greater Vancouver Regional District and Capital Regional District in BC

Readings:

Michelle Boyle, Robert B. Gibson and Deborah Curran, "If not here, then perhaps not anywhere: urban growth management as a tool for sustainability planning in British Columbia's Capital Regional District," *Local Environment* 9:1 (2004), pp.21-43; on course UW Learn site.

Government of Ontario, *Oak Ridges Moraine Conservation Plan* (2002),

<http://www.mah.gov.on.ca/Page1707.aspx>; also on course UW Learn site

Region of Waterloo, *Planning our Future: Regional Growth Management Strategy* (June 2003),

<http://www.regionofwaterloo.ca/en/abouttheenvironment/growthmanagement.asp>; also on course UW Learn site.

Possible additional readings:

Ontario Ministry of Municipal Affairs and Housing, *Greenbelt Plan* (February 2005)

<http://www.mah.gov.on.ca/Page189.aspx#greenbelt>; on course UW Learn site.

Ontario Ministry of Public Infrastructure Renewal, *Places to Grow: Growth Plan for the Greater Golden Horseshoe* (2006), on course UW Learn site; documented at

https://www.placestogrow.ca/index.php?option=com_content&task=view&id=9&Itemid=14

Discussion questions:

Qa: How might linked strategic and project assessments deliver both more effectiveness and more efficiency in environmental assessments?

Qb: What interests would be most likely to benefit from and support the idea and which interest would be most likely to foresee problems and resist such initiatives?

Qc: What applications might be most promising?

12. April 2 Course summary: Opportunities for application and implications for professional practice

what it's like working in environmental assessment and related areas

where the biggest challenges and most attractive opportunities lie

Recommended reading:

IAIA Guidelines Standard for IA Professionals.; on course UW Learn site