School of Environment, Resources and Sustainability, University of Waterloo

ERS 415 Environmental Assessment III
Advanced Environmental and Sustainability Assessment
Winter 2017

Time and location: Mondays 11:30-2:20, AL124
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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 reviews and synthesizes 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 and the most pressing stresses today, especially in Canada. 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 competing pressures for more streamlined decision making.

While environmental assessments have improved over the years with greater practitioner experience and higher public expectations, they have also proved to have serious limitations In Canada and elsewhere, most assessment processes have focused on individual proposed projects and have aimed to identify and mitigate their significant adverse effects. Some jurisdictions give serious consideration only to predicted negative effects on the biophysical environment. We have learned, however, that the most serious concerns are often about the combined social and biophysical effects of multiple undertakings, and the public expectations are increasingly that project deliver positive contributions to lasting wellbeing rather than merely avoid serious negative effects.

Consequently, environmental assessments have been pushed to be more comprehensive (covering the complex interactions of cumulative as well as individual social and biophysical effects), more ambitious (aiming for positive contributions to sustainability as well as mitigation serious adverse effects), more far-sighted (especially where climate changes issues are raised), more broadly applied (to strategic level undertakings as well as individual projects), more transparent and credible (including more open and responsive to public engagement and more forthright about the reasoning behind recommendations and decisions). Also, environmental assessment in Canada has been affected by expanding understanding of complex socio-ecological systems, greater recognition of Indigenous rights, and evident tensions about the distribution of benefits and risks (e.g., from transboundary hydrocarbon pipelines).

The usual approaches to addressing all of these considerations might make environmental assessments better, but also more difficult, maybe more expensive and possibly slower as well. A major question for the future of environmental assessment therefore is how to design and apply environmental assessments more creatively so they can meet rising needs and expectations while also being manageable, affordable and timely.

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.

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 actual cases.

As well the course will take advantage of the current federal environmental assessment processes review, which began in the summer of 2016 and is likely to continue at least through 2017. While the federal process applies only to matters under federal jurisdiction, many assessment cases and issues involve the overlapping interests and responsibilities of two or more jurisdictions (federal, provincial, Indigenous, territorial, even municipal). As a result the scope of the federal review implications extends across the country.

Readings

The course will rely heavily on individual readings that are or will be available on the course UW Learn website plus other materials available on the internet (see the schedule of events and readings). Users can login to UW Learn via http://learn.uwaterloo.ca/. Use your WatIAM/Quest username and password.

The sustainability assessment discussions will draw chiefly from two texts:

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

Robert B. Gibson, editor, *Sustainability Assessment: applications and opportunities* (London: Routledge/Earthscan, 2017).

Key excerpts will be posted in the UW Learn site.

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 in the second half covering 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 and some big issue cases to which we will be referring throughout the course. The next two consider sustainability assessment practice and issues and a third case that we will also be discussing in subsequent classes. Sessions 6-11 will address particular areas of innovation. The final session will be about employment and other activities in the environmental assessment field, broadly defined.

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 panel presentations
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 assistants. In weeks 3-10, the discussions will be initiated by four or five 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 assistants will be the moderators of these discussions.

To initiate the discussion of a question, each of the four (or five) panelists assigned to the question will make a brief opening statement (maximum three minutes) setting out what

are in his or her view the most important matters and how they should be addressed as the answer to the question. Each panelist will be assigned to represent the interests of one (or a combination of two) of the following eight categories:

1.1 public sector proponents
1.2 private sector proponents
2.1 the federal government as a responsible authority (reviewer, decision maker, etc.)
2.2 provincial and territorial governments as responsible authorities
3.1 Aboriginal governments as responsible and affected authorities
3.2 municipal governments and community organizations as affected interests
4.1 non-government organizations focusing on ecological and social justice issues
4.2 future generations (and those advocating for their interests.

The panelists will be expected play their roles professionally and realistically. Their positions should draw from the readings and from material discussed in previous weeks (and previous courses) as well as from general knowledge of the key concerns of the interests being represented. The positions presented should be well informed and enlightened.

The rest of the class will act as groups of commentators with assigned perspectives. After the panel presentations on each question, we have a short break for the groups to consolidate responses to the question and the panel views. One group member from each group (a different presenter each week) will present (very briefly) the group's contribution. *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 "415w17 participant assignments" on the course UW Learn site. The teams have eight or nine members and will be the sets of panelists for one of the weeks 3-10. For the weeks when they are not the panelists, each team has been assigned to think from the perspective of an interest from one of the eight categories (it's a little more complicated for group H). Each week, the group members will take on a different role and on the basis of that role they will develop a group response to the presentations on each of the two questions.

The assignment of individuals to groups and panel presentation weeks and questions will be announced at the first class and posted on the course UW Learn site (the "415w17 participant assignments" document mentioned above). The assignment of individuals to rotating interest perspectives when they are not panelists for weeks 2-10 will also be announced at the first class and posted on the course UW Learn site (same document).

One week prior to the presentation week, students in each panel should meet with the instructor or a teaching assistant during the class break at the session 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;
- careful listening and thoughtful reflection before making comments;
- communication skills (clear, constructive, etc.);
- synthesis, integration and drawing connections between and among the 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 address the questions posed for the week, but should be based on the course readings for that week (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;
- should not be limited to the perspective you are to represent in class that week (except for the week when you are a panelist*);
- 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;
- should demonstrate familiarity with at least two of the week's readings
- 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, post your preparation notes in the notes dropbox on the course UW Learn site before the class begins and provide a paper copy to Bob Gibson'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 briefing papers:
Submission of two papers is required. Both are to be in the form of briefing notes and appendices to relevant individuals or organizations. These writing assignments have two purposes. The main purpose 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. The second purpose is to provide experience in a style of writing you are likely to use as a professional.

Both papers should incorporate

- a professional approach to writing;
- 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. Always 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. Typically, the people who read briefing papers are very busy. They need the key information that is presented in a format designed to facilitate a quick grasp of the material, but that also includes necessary clarifications and evidence (or references 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 major points. In addition to the considerations noted above, grading of the papers 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 (15/20 one day late becomes 14.5/20).

Briefing paper #1

The first paper focuses mostly on ERS 415 materials from weeks 1-5. It is a briefing paper that you must prepare for the federal government Expert Panel in the review of federal environmental assessment processes. The chair is Johanne Gélinas; you can address the report to her.

The Panel has an open mandate to advise the government on what changes should be made to the federal environmental assessment processes. Among the possibilities it is considering is a shift from a focus on mitigating adverse environmental effects to promoting positive contributions to sustainability. One major submission to the Panel in this process is the report prepared by the Multi-Interest Advisory Committee (MIAC), which was appointed by the government to provide recommendations to the Expert Panel. MIAC members represent industry, Indigenous and environmental organizations and also include appointees from the Canadian Environmental Assessment Agency, the National Energy Board and the Canadian Nuclear Safety Commission.

The MIAC report is provided in the readings for week 2. In the introductory chapter, MIAC supports a sustainability-based approach to environmental assessment, but provides few details. It then addresses a diversity of topics that are related to federal environmental assessment reform, but that do not cover all important issues concerning federal environmental assessment, in part because the MIAC members chose to focus on issues upon which they were likely to reach some agreement. The report is therefore more useful on some matters than others.

Your assigned briefing paper for the Expert Panel is to review the MIAC report, paying particular attention to implications for establishing effective, efficient and fair provisions for sustainability-based federal environmental assessment law, policy and application. Ensure that your briefing paper does the following:

- set out the most important issues and opportunities related to federal environmental assessment reform (presuming a shift to a sustainability-based approach);
- identify which of these issues and opportunities the MIAC report did or did not address and report on how comprehensively MIAC covered the main issues and opportunities were addressed;
- provide your assessment of the main strengths and limitations of the MIAC report and its recommendations (focusing on the substance of the MIAC report, rather than its literary merits, etc.);
- draw concise conclusions, including what are in your view the three most useful points that the Expert Panel should draw from the MIAC report, and the three most serious gaps or other deficiencies that the Expert Panel should provide proper references to your sources.

The briefing paper should

- draw from the course materials so far (you may find the Gibson, Doelle and Sinclair paper useful as a presentation of many key assessment design issues, but it is only one available source and is not aimed particularly at federal application);
- provide persuasive evidence, arguments and suitable examples to justify your selections of the most important issues and opportunities;
- use (flexibly) the standard format for briefing notes prepared for a senior official [Briefing notes are designed to get key information across as quickly as possible. Usually they put the key conclusions at the beginning. The main body of the note rarely exceeds two pages, and is followed by appendices on the key details. Some examples of real briefing notes (mostly without the appendices) are posted on the course UW Learn site along with some generic briefing note information from Rob Parkinson at http://writingforresults.net/. The examples do not all use the standard format, and you can diverge from the standard too, if you think an adjusted approach will work better for the purposes. But remember that real officials will rarely have time to read (skim) more than two pages.]

Requirements:
This second briefing paper is to be no longer than 2500 words, not including references. The paper is to be submitted electronically to the course Learn website before midnight on Friday, February 17.

Briefing paper # 2: a collaborative assessment
The second briefing paper will cover material from the whole course, but with some emphasis on the material for weeks 6-11. This briefing paper is to outline the core characteristics of a collaborative assessment process or set of processes involving two or more jurisdictions, and to summarize the main benefits and potential difficulties involved. The collaborative process that you will describe will address the problems and opportunities in a big issue area that involves needs for both strategic and project level assessments (e.g., see the big issues areas discussed in week 3). You will choose the big issue to address and determine which jurisdictions will be involved.

The briefing paper is to be addressed to the authorities that would be leading the assessment. One of the authorities must be the Canadian federal government, as represented by the Canadian Environmental Assessment Agency. Therefore, some matter(s) under federal jurisdiction must be involved. The other authority or authorities could include one or more provincial governments, one or more Indigenous governments/authorities, and/or one or more territorial governments/authorities. Other participants could include municipal and regional bodies, public and/or private sector project proponents and their consultants, public interest organizations (national, regional and community scale), individual citizens, expert advisors, etc.

Your assigned briefing paper is meant to give the authorities in your big issue case the following key information:

- a summary outline of the big strategic issue (nature, location/extent, historical and existing conditions, potential new effects, etc.), the kinds of particular projects and other activities that are now or may in the future be involved, and the key

problems and opportunities surrounding the strategic options and the particular projects that are or may be involved (we will discuss some examples in class);
- set out the general structure of a collaborative approach to strategic and project level assessment in this case, identifying the key roles for each of the authorities in the collaboration agreement;
- show how a sustainability-based approach to assessment would be applied;
- show how attention to system complexities, cumulative effects, future scenarios, broad alternatives and other major considerations in advanced assessment would be incorporated in the collaborative processes;
- show how Indigenous rights would be respected (to the extent that they are involved in your case);
- provide your assessment of the main strengths and limitations of the collaborative approach that you have set out, considering both the overall interests of the authorities involved and the individual interests of each participating jurisdiction;
- draw brief conclusions about the three most important benefits that the participating jurisdictions should gain for engaging in the collaborative process, and the three most difficult aspects of the proposed processes that the participating jurisdictions should monitor most carefully.

As with the first briefing paper, this one should
- draw from the course materials so far (though you are welcome to consult and reference other sources and may need to do some for some specifics of your big issue case);
- provide persuasive evidence, arguments and suitable examples to justify your points and arguments; and
- use (flexibly) the standard format for briefing notes prepared for a senior official.

Requirements:
This second briefing paper is to be no longer than 2500 words, excluding references. It is to be submitted electronically to the course Learn website before midnight on Monday, April 3.

Summary of the course schedule
1. January 9 Introduction to the course: scope, aims, participants, activities
2. January 16 From the past to the future: history, needs, prospects and agenda for next generation environmental and sustainability assessment
3. January 23 Big issue cases: dilbit pipelines, area-opening mines and roads, and the plans and projects of booming cities
4. January 30 Sustainability assessment
5. February 6 The Mackenzie Gas Project case
6. February 13 Complex ecological, social and socio-ecological systems and the ecosystem approach
7. March 6 Complexity, uncertainty and precaution
8. March 13 Cumulative effects assessment
9. March 20 Strategic environmental assessment
10. March 27 Tiered strategic and project assessment

11. March 27: Cooperation and collaboration: multi-jurisdictional assessments, scenarios and alternatives, public involvement, modern science and traditional knowledge
12. April 3: Onwards from here: course summary, opportunities for application and implications for professional practice

Important UW policies and services on key course-related topics

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. See http://www.uwaterloo.ca/academicintegrity/. Every student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his or 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), should visit the on-line tutorial at http://www.lib.uwaterloo.ca/ait/ and seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean.

When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline, http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm Within the Faculty of Environment, those committing academic offences (e.g. cheating, plagiarism) will be placed on disciplinary probation and will be subject to penalties that may include a grade of 0 on affected course elements, 0 on the course, suspension, and expulsion.

Grievances: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable has the right to grieve. See Policy 70 – Student Petitions and Grievances, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact your Undergraduate Advisor for details.

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 or she has a ground for an appeal should refer to Policy 72 – Student Appeals, www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Disabilities: The AccessAbility Office, 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 AccessAbility Office at the beginning of each academic term.

Mental Health: The University of Waterloo, the Faculty of Environment and our Departments consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges – physical and/or emotional. Mental health is a serious issue for everyone and can affect your ability to do your best work. *Help is available*. Counselling Services (http://www.uwaterloo.ca/counselling-services) is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

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.
Unclaimed assignments: Assignments that are not picked up by students will be retained for four months after the course grades become official in Quest. After that time, they will be destroyed in compliance with UW's procedures for confidential shredding: https://uwaterloo.ca/central-stores/confidential-shredding.

Schedule of course sessions, issues and readings

1. **January 9 Introduction to course: scope, aims, participants, activities**
   - course scope, aims, participants
   - core elements of advanced environmental assessment and associated efficiency issues
   - course structure and assignments

2. **January 16 From the past to the future: history, prospects and agenda for next generation environmental and sustainability assessment**
   - the evolution of environmental assessment, esp. in Canada
   - federal, provincial, territorial and Indigenous law, policy and processes
   - assessments under other laws and processes
   - competing challenges (more effective, more efficient)
   - positive steps, limitations and retreats
   - the big issues for the next generation of assessment regimes: sustainability, complexity, cumulative effects, precaution, participation, cooperation/harmonization, links between strategic and project levels, dealing with long term effects (e.g., climate change), etc.
   - the current federal review of environmental assessment processes

Readings:
Robert B. Gibson, Meinhard Doelle and A. John Sinclair, "Fulfilling the promise: basic components of next generation environmental assessment, *Journal of Environmental Law and Practice,* 27:3 (2016); on course UW Learn site.
Multi-Interest Advisory Committee (MIAC), *Advice to the Expert Panel Reviewing Environmental Assessment Processes,* 9 December 2016, 64pp., on course UW Learn site and posted at http://eareview-examenee.ca/what-weve-heard/multi-interest-advisory-committee/
Paul Muldoon, Alastair Lucas Robert B. Gibson, Peter Pickfield and Julie Williams, Environmental assessment," in *An Introduction to Environmental Law and Policy in Canada,* second edn (Toronto: Emond, 2015), pp.223-248, on course UW Learn site.

Recommended background readings – international:
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.

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.

Recommended background readings – current Canadian assessment law:

Government of Canada, *Canadian Environmental Assessment Act 2012*; on course UW Learn site.

Meinhard Doelle, "CEAA 2012: the end of federal EA as we know it?" *Journal of Environmental Law and Practice* 24 (2013), pp.1-17; on course UW Learn site.

Robert B. Gibson, "In full retreat: the Canadian government's new environmental assessment law undoes decades of progress," *Impact Assessment and Project Appraisal* 30:3 (2012), pp.179-188; on course UW Learn site.

Government of Ontario, *Environmental Assessment Act;* 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

Government of Ontario, "Environmental assessments," https://www.ontario.ca/environment-and-energy/environmental-assessments

Discussion questions

Q2a: Recognizing the lessons from the history of environmental assessment in Canada so far, what have been the three most significant advances, and what have been the three most significant barriers to better assessment (from the perspective of your interest).

Q2b: From the perspective of the interests you are representing, what key changes need to be made to improve environmental assessment and do you think you could persuade the other interests represented here today to support those changes?

3. January 23 Big issue cases: dilbit pipelines, mines and roads, big dams, and the projects of booming cities

- major issues and opportunities involving environmental assessments in the last five years, including those surrounding new pipelines for diluted bitumen at a time of climate change mitigation commitments (Northern Gateway, Trans Mountain, Line 3, Energy East), mining projects that open new areas (northern Ontario's Ring of Fire) or add to existing regional cumulative effects concerns (northern British Columbia), big power dams adding to ecological disruptions (Lower Churchill, Keeyask, Site C), and growth servicing projects in booming metropolitan areas (Ontario Greater Golden Horseshoe and BC's lower mainland).
- associated big issues:
    - how best to deal with multiple projects with cumulative and legacy effects
    - how to ensure effective consultation and accommodation of the interests of multiple communities with Aboriginal and treaty rights
    - how to ensure effective engagement of all stakeholders
    - how to harmonize responsibilities of overlapping jurisdictions
    - how to deal for inter jurisdictional responsibilities, interregional implications, and regional/municipal requirements

- how to link planning and assessment
- where best to address alternatives
- how far to look ahead

Readings

Meinhard Doelle, "Integrating climate change into EA: thoughts on federal law reform," *Environmental Law News,* Dalhousie University Blogs, 18 October 2016, on course UW Learn site.

Multi-Interest Advisory Committee (MIAC), "Overarching policy Issues – climate change," in *Advice to the Expert Panel Reviewing Environmental Assessment Processes,* 9 December 2016, pp.18-33, on course UW Learn site with readings for week 2.

Cheryl Chetkiewicz and Anastasia Lintner, *Getting it Right in Ontario's Far North: the need for a regional strategic environmental assessment in the Ring of Fire (Wawangajing),* (World Conservation Society Canada and Ecojustice, May 2014), on course UW Learn site.

Robert B. Gibson, "Sustainability and the Greenbelt," *Plan Canada* 51:3 (2011), pp.38-41, on course UW Learn site.

Neptis Foundation, "The big picture about land use and why it matters," (October 2013), http://www.neptis.org/publications/big-picture-about-land-use-and-why-it-matters; on course UW Learn site; full report at http://www.neptis.org/publications/implementing-growth-plan-greater-golden-horseshoe

Meinhard Doelle, "The role of EA in achieving a sustainable energy future in Canada: a case study of the Lower Churchill Panel Review," *Journal of Environmental Law and Practice* 25: (2013), pp.113-133, on course UW Learn site.

Additional readings – Ring of Fire:

Ontario Ministry of Northern Development and Mines, Ring of Fire Secretariat, http://www.mndm.gov.on.ca/en/ring-fire-secretariat, see especially linked pages on "Environmental Assessment," and "First Nations Partnerships" both also on the course UW Learn site.

Mattawa First Nations, "Ring of Fire: your land is at risk," Four Rivers Information Newsletter, Fall 2011, on course UW Learn site.

Peter Gorrie, "The Ring of Fire," *Ontario Nature Magazine*, Fall 2010, http://onnaturemagazine.com/the-ring-of-fire.html/3; also on course UW Learn site.

Heather Scoffield, "'Ring of Fire' mining prospect empowers some of Canada's most downtrodden First Nations," *Vancouver Sun*, 20 December 2012, on course UW Learn site.

Cliffs Ferroalloys, *Amended Terms of Reference for Cliffs Chromite Project Individual Environmental Assessment*, November 2012; on course UW Learn site. See also http://www.ontario.ca/environment-and-energy/cliffs-chromite-project.

Noront Resources, *Eagle's Nest Project, Draft Federal/Provincial Environmental Impact Statement/Environmental Assessment Report – Executive Summary* (December 2013), http://norontresource.wpengine.com/wp-content/uploads/2014/10/pdf/Eagles%20Nest%20Project%20Draft%20EIS%20EA/Volume%201%20-%20Executive%20Summary.pdf, on course UW Learn site.

Additional readings – Greater Golden Horseshoe and the Greenbelt:

Government of Ontario, *The Greenbelt Plan (2005),* on course UW Learn site.

Government o Ontario *Place to Grow: Growth Plan for the Greater Golden Horseshoe (2006),* on course UW Learn site.

David Crombie, et al., *Planning for Health, Prosperity and Growth: Expert Panel Report,* (2015), on course UW Learn site.

John Barber, "Will Ontario's future be green?" *Toronto Star.*18 October 2014, final installment of a series of special report articles on the Greenbelt, on course UW Learn site; the whole set is available at http://www.greenbelt.ca/toronto_star_series.

Environmental Defence, "Ontario's Greenbelt under threat," (December 2014), on course UW Learn site.

Cheryl McNamara, "In Pickering, another (bigger) airport battle is reprised," *Now* 4 February 2014, on course UW Learn site.

D Kirchhoff, DDP McCarthy, D Crandall, L McDowell and GS Whitelaw, "Strategic environmental assessment and regional infrastructure planning: the case of York Region, Ontario," *Impact Assessment and Project Appraisa*l, 29:1 (2011), pp.11-26; on course UW Learn site.

York Region, *York Region Sustainability Strategy: Towards a Sustainable Region,* Newmarket: Regional Municipality of York, 2007), also on course UW Learn site.

Discussion questions

Q3a: What, from the perspective of your interest, are the main environment and sustainability related challenges facing regions and communities in rural and remote Canada where major resource extraction or harnessing projects (mining, hydrocarbon developments, and major hydropower dams) and associated infrastructure are proposed, and how might these challenges be addressed most usefully?

Q3b: What, from the perspective of your interest, would be the most useful role or roles for environmental assessments to play in cases where decision making on individual projects involves big policy issues (e.g., assessments of proposed new or expanded pipelines for diluted bitumen that affect prospects for meeting national commitments for mitigating global climate change, or assessments of major highway expansions that affect means of managing the expansion of booming cities)?

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, "Foundations: sustainability and the requirements for getting there," in Robert B. Gibson, editor, *Sustainability Assessment: Applications and Opportunities* (London: Routledge/Earthscan, 2017), pp. 1-15, on course UW Learn site.

Robert B. Gibson, "Criteria," in *Sustainability Assessment: Criteria and Processes* (London: Earthscan, 2005), chapter 5, pp.88-121, on course UW Learn site.

Robert B. Gibson, "Sustainability assessment in Canada," in Alan Bond, Angus Morrison-Saunders and Richard Howitt, editors, *Sustainability Assessment: Pluralism, practice and progress* (London: Routledge, 2013), pp. 167-183 (chapter 11), on course UW Learn site.

Theo Hacking and Peter Guthrie, "A framework for clarifying the meaning of Triple Bottom Line, Integrated and Sustainability Assessment," *Environmental Impact Assessment Review* 28 (2008), pp.73-89, on course UW Learn site.

Scan quickly:

Barry Dalal-Clayton and Barry Sadler, *Sustainability Appraisal: a sourcebook and reference guide to international experience* (London: Earthscan, 2014), encyclopaedic ebook in UW library.

Possible additional readings:

Robert B. Gibson, "Sustainability assessment: basic components of a practical approach," *Impact Assessment and Project Appraisal* 24:3 (2006), pp.170-182, on course UW Learn site.

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.

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.

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.uvic.ca/documents/Kemess-South-EA-Report-Sept2007.pdf; also on course UW Learn site.

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; on course UW Learn site.

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; on course UW Learn site.

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

Discussion questions

Q4a: From the perspective of your interest, what would be the main advantages of changing the Canadian federal assessment processes from a focus on mitigating

significant adverse environmental effects to a focus on delivering positive contributions to sustainability? Provide a practical example (historical or potential).

Q4b: From the perspective of your interest, what would be the main risks or other grounds for concern? Again, provide a practical example.

5. February 6 Sustainability assessment application: the Mackenzie Gas Project case

- the major innovations
- the limitations
- the responses

Readings:

Robert B. Gibson, "Applications: from generic criteria to assessments in particular places and cases," in Robert B. Gibson, editor, *Sustainability Assessment: Applications and Opportunities* (London: Routledge/Earthscan, 2017), pp. 16-41, on course UW Learn site.

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.

Mackenzie Gas Project Joint Review Panel 2009. *Foundation for a Sustainable Northern Future* (December 2009), chapter 19 (skim the rest), full report (volumes 1 and 2) available at http://www.acee-ceaa.gc.ca/default.asp?lang=En&n=155701CE-1, also on course UW Learn site.

Recommended background documents (skim):

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:

Q5a: The Joint Review Panel in the Mackenzie Gas Project case set the Canadian standard in establishing and applying sustainability-based criteria in its deliberations. What were the most important strengths of the Panel's criteria and its application of these criteria?

Q5b: The Mackenzie Panel's methods have not been applied since (at least not in the same way) in formal Canadian environmental assessments, in part because sustainability-based assessment is not clearly mandated in law. If the new federal assessment law is revised to adopt a clear sustainability-based approach, what lessons from the Mackenzie case should guide the drafting of the new law and associated regulations and policies?

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

- 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.

Lorne A. Greig and Peter N, Duinker, "A proposal for further strengthening science in environmental impact assessment in Canada," *Impact Assessment and Project Appraisal* 29:2 (2011), pp.159-165.

Jianguo Liu, et al., "Complexity of Coupled Human and Natural Systems," *Science* 317 (14 September 2007), pp.1513-1516.

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.

Carl Folke, Stephen R. Carpenter, Brian Walker, Marten Scheffer, Terry Chapin and Johan Rockström, "Resilience thinking: integrating resilience, adaptability and transformability," *Ecology and Society* 15:4 (2010) 20, http://www.ecologyandsociety.org/vol15/iss4/art20/, also on course UW Learn site.

Possible additional readings:

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

Gordon E. Beanlands and Peter N. Duinker, *An Ecological Framework for Environmental Impact Assessment in Canada* (Halifax: Institute for Resource and Environmental Studies, Dalhousie Univ., 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:

Q6a: What would be the most important considerations in applying an understanding of complex systems and use of an ecosystem approach to making decisions about how best to design an assessment of a project to rehabilitate a gravel pit or restore a wetland complex in southern Ontario or southern British Columbia were human activities are important factors and are still growing? Take into account the influence of regional planning and other decision making beyond the immediate scale of the project.

Q6b: What would be the most important considerations in applying an understanding of complex systems and use of an ecosystem approach to collecting data, doing impact predictions and making decisions of a proposed hydropower project, or mine or hydrocarbon development in a relatively non-industrialized and non-roaded part of Canada (e.g., northern Ontario or BC, or one of the territories) and what would be the most effective way of ensuring that these considerations are incorporated effectively and efficiently in the decision making? Take into account the influence of regional planning and other decision making beyond the immediate scale of the project.

7. February 27 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), http://www.elc.uvic.ca/associates/documents/Jun14.10-Precautionary-Principle-Backgrounder.pdf, also 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

Q7a: What are the most important ethical and practical considerations in deciding how to organize an assessment of a proposal for a major controversial activity that involves considerable uncertainty (pick one of the following: building a new dilbit pipeline, introducing genetically modified salmon for aquaculture, opening a new area for metal mining)?

Q7b: What are the most important ethical and practical considerations in deciding how to organize an assessment of a proposal for a major controversial activity (e.g. pick one of the following: a large commercial wind farming operation at the shore of one of the Great Lakes, phasing out fossil fuel powered vehicles in stages leading to a full ban in 2050, replacement of income taxes with revenue-equivalent taxes on resource extraction, consumer products and waste generation)?

8. March 6 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, *Technical Guidance for Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012 – draft* (December 2014), 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; on course UW Learn site for week 5.

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), available at http://www.carc.org/pdfs/A%20CHOICE%20OF%20FUTURES%20final.pdf; and 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:

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.

Monique G. Dubé, "Cumulative effect assessment in Canada: a regional framework for aquatic ecosystems," *Environmental Impact Assessment Review* 23 (2003), pp.723-745, on course UW Learn site.

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.

Discussion questions:

Q8a What are the major advantages and limitations of considering cumulative effects in assessments of individual projects? Illustrate with an example (e.g., a metal mine or aggregates extraction project).

Q8b What are the major advantages and limitations of considering cumulative effects in regional planning or other strategic level undertakings? Illustrate with an example (e.g., a regional plan for urban growth management, or plan for an offshore area with future oil and gas extraction potential).

9. March 13 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*; available at 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:

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," available at http://ontariosforests.mnr.gov.on.ca/timbereaoverview.cfm.

Ontario Minister of the Environment, "Forest Management Declaration Order," (July 2003), available at http://ontariosforests.mnr.gov.on.ca/timbereaoverview.cfm.

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), available at 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.; available at https://uwaterloo.ca/assessment-planning-project/sites/ca.assessment-planning-project/files/uploads/files/BC%202%20Davidson%20salmon%20aquaculture.pdf

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 course UW Learn site.

Discussion questions:
Q9a: Should the Canadian federal government introduce legal obligation for environmental assessment of strategic undertakings in Canada? What would be the main advantages and difficulties?
Q9b: What would be the main challenges of organizing a strategic assessment of a national park master plan in an area of high tourism potential, and how might those challenges be overcome?

10. March 20 Tiered strategic and project assessment

- general case example growth management planning: smart growth, identification and public assessment of alternative futures, use of scenarios, links to planning and assessment of particular projects
- interjurisdictional, regional/sectoral and multi-tier planning and assessment
- particular case examples: regional growth management planning (Greater Golden Horseshoe planning, Ontario's Greenbelt and the Oak Ridges Moraine, Waterloo Region, Greater Vancouver Regional District and Capital Regional District in BC); climate change mitigation, pipelines and other particular projects.

Readings:
Multi-Interest Advisory Committee (MIAC), *Advice to the Expert Panel Reviewing Environmental Assessment Processes,* 9 December 2016, especially "Overarching policy issues – climate change," (pp.18-33), on course UW Learn site and posted at http://eareview-examenee.ca/what-weve-heard/multi-interest-advisory-committee/.
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.
Region of Waterloo, "Transit Project Assessment Process Public Consultation January 2012," http://rapidtransit.regionofwaterloo.ca/en/multimedialibrary/resources/2012_rt_tpa_pchandout.pdf; also on course UW Learn site.
See also the Greater Golden Horseshoe and Greenbelt readings from week 3.

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:
Q10a: How might linked strategic and project assessments deliver both more effectiveness and more efficiency in environmental assessments? Provide an illustrative example.
Q10b: What interests would be most likely to benefit from and support the idea and which interests would be most likely to foresee problems and resist such initiatives?

11. March 27 Cooperation and collaboration: multi-jurisdictional assessments, scenarios and alternatives, public involvement, modern science and traditional knowledge

- inter-and multi-jurisdictional applications, project level and strategic level
    - challenges of wildly divergent laws, policies and practices
    - imperative for and barriers to cooperation and collaboration
    - case examples
- tools for cooperation and collaboration
    - scenario building, socio-ecological systems and public choices about alternatives
    - citizens and experts: combining conventional science and technical knowledge and public consultation, citizen experts, traditional knowledge
    - addressing equity effects, including gender equity
    - Indigenous rights, respect and reconciliation
- case examples: growth management in BC's Capital Regional District; community-based traditional expert monitoring in Lutsel 'Ke

Readings:
Multi-Interest Advisory Committee (MIAC), *Advice to the Expert Panel Reviewing Environmental Assessment Processes,* 9 December 2016, especially "Overarching policy issues - Indigenous Rights," (pp.8-17), "Principles of meaningful public participation," (pp.41-48), "Cooperation in a multi-jurisdictional context," (pp.49-52), on course UW Learn site and posted at http://eareview-examenee.ca/what-weve-heard/multi-interest-advisory-committee/.
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.
Patricia Fitzpatrick, P. and A.J. Sinclair, "Multi-jurisdictional environmental impact assessment: Canadian experiences," *EIA Review* 29:4 (2009), pp.252-260, on course UW Learn site.
Arlene Kwasniak, "Environmental assessment, overlap, duplication, harmonization, equivalency, and substitution: interpretation, misinterpretation, and a path forward,"

Journal of Environmental Law and Practice 20:1 (Oct 2009), pp.1-35, 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.

Peter N. Duinker and Lorne A Greig, "Scenario analysis in environmental impact assessment: improving exploration for the future," *Environmental Impact assessment Review* 27 (2007), pp.206-219, on course UW Learn site.

IAIA, "Public participation: international best practice principles," (August 2006), http://www.iaia.org/publicdocuments/special-publications/SP4 web.pdf; also on course UW Learn site.

Possible additional readings:

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), pp.465-483, 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

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.

Roger L. Caldwell, "Futures techniques," see http://ag.arizona.edu/futures/tou/sem2-techniques.html, also 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.

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.

Rolf Lidskog, "Scientised citizens and democratised science: re-assessing the expert-lay divide," *Journal of Risk Research* 11:1 (2008), pp. 69-86, on course UW Learn site.

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, on course UW Learn site.

John Sinclair, Alan Diduck, 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, on course UW Learn site.

Discussion questions:

Q11a: Could a sustainability-oriented future scenarios exercise be helpful determining how Canadian might best identify pathways to meeting our Paris Agreement commitments to mitigating climate change and determining implications for particular projects (e.g., to identify and compare policy and project alternatives and clarify assessment criteria)? How might it be organized? How should be involved? What major difficulties would you foresee and how would you address them?

Q11b: What would be the main challenges of organizing cooperative inter- or multi-jurisdictional assessment of a strategic undertaking in Canada (e.g., federal-provincial or inter-provincial) and how might they be overcome? Provide an illustrative example.

12. April 3 Onwards from here: course summary, opportunities for application and implications for professional practice

- what it's like working in environmental and sustainability 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

Discussion questions:

Q12a: What would be the most important and interesting environmental assessment improvement initiative(s) to be hired to work on for a future federal, provincial, territorial or aboriginal authority in Canada?

Q12b: Beyond environmental assessment law reform, what are the most significant needs (and attractive job opportunities) for improving the practice of planning, approving and implementing new undertakings in Canada and what are the most promising possible means of making these improvements?