

LECTURE 1:
MAY 5, 2014

ENVIRONMENT, RESOURCES & SOCIETY

DEFINING ENVIRONMENT AND
RESOURCES; **MAP QUIZ #1**

Text Reference: Dearden and Mitchell (2012), Ch. 1, pp.

Outline

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Source: Dearden and Mitchell (2012)

- Upcoming:
 - May 6: Introduction to Library Research Paper

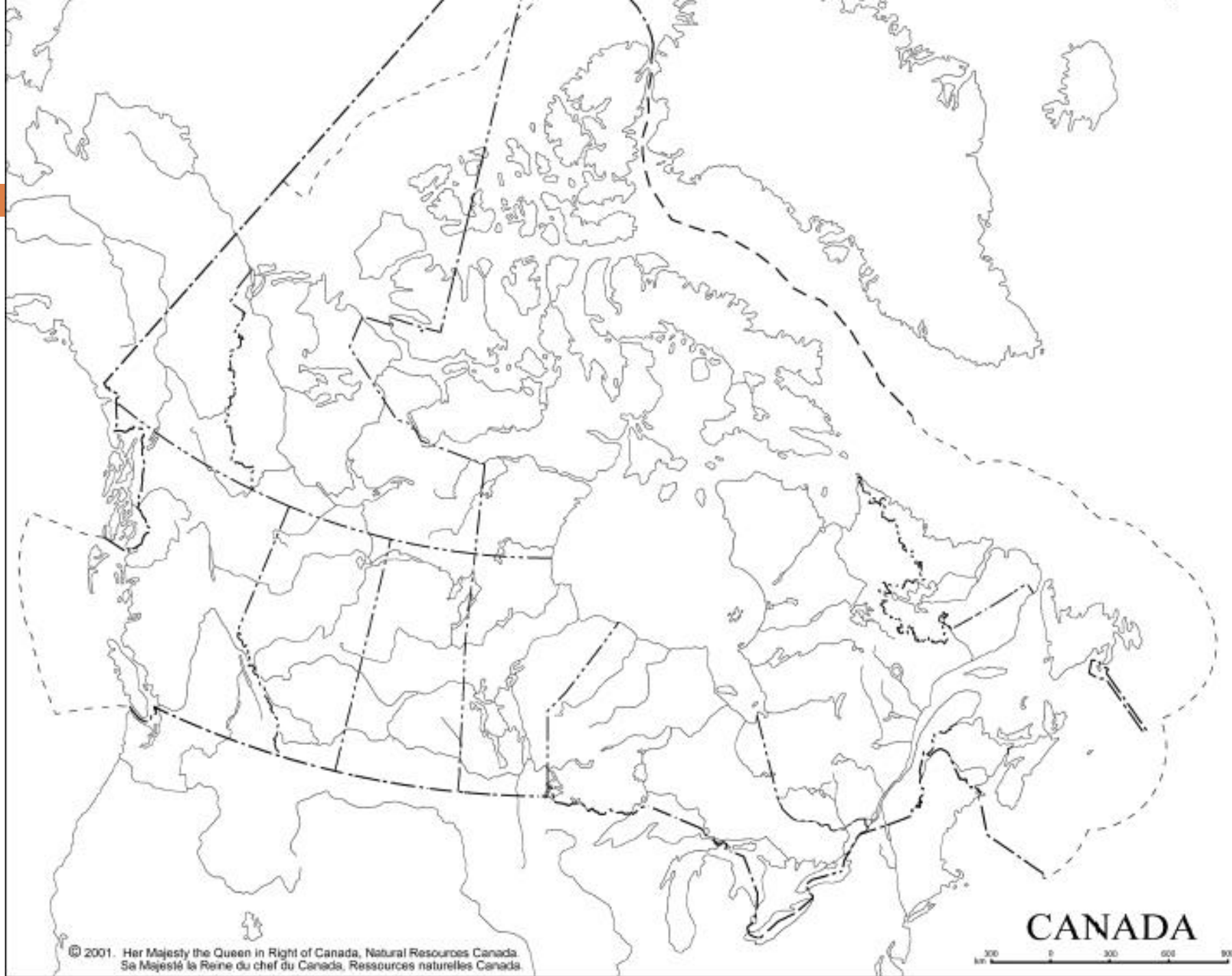
- Today:
 - Waves of Environmental Movement
 - Defining Environment and Resources
 - **Map Quiz #1 (baseline)**

Map Quiz (baseline)

Week 1, Geography 1120

Spring 2014

***** Print copies of the following blank map
for subsequent Map Literacy classes***



CANADA

Map Quiz (baseline, May 5, 2014)

Capitals

1. Edmonton
2. Fredericton
3. Halifax
4. Inuvik
5. Iqaluit
6. Quebec City
7. Regina
8. St John's
9. Toronto
10. Victoria
11. Whitehorse
12. Winnipeg
13. Yellowknife

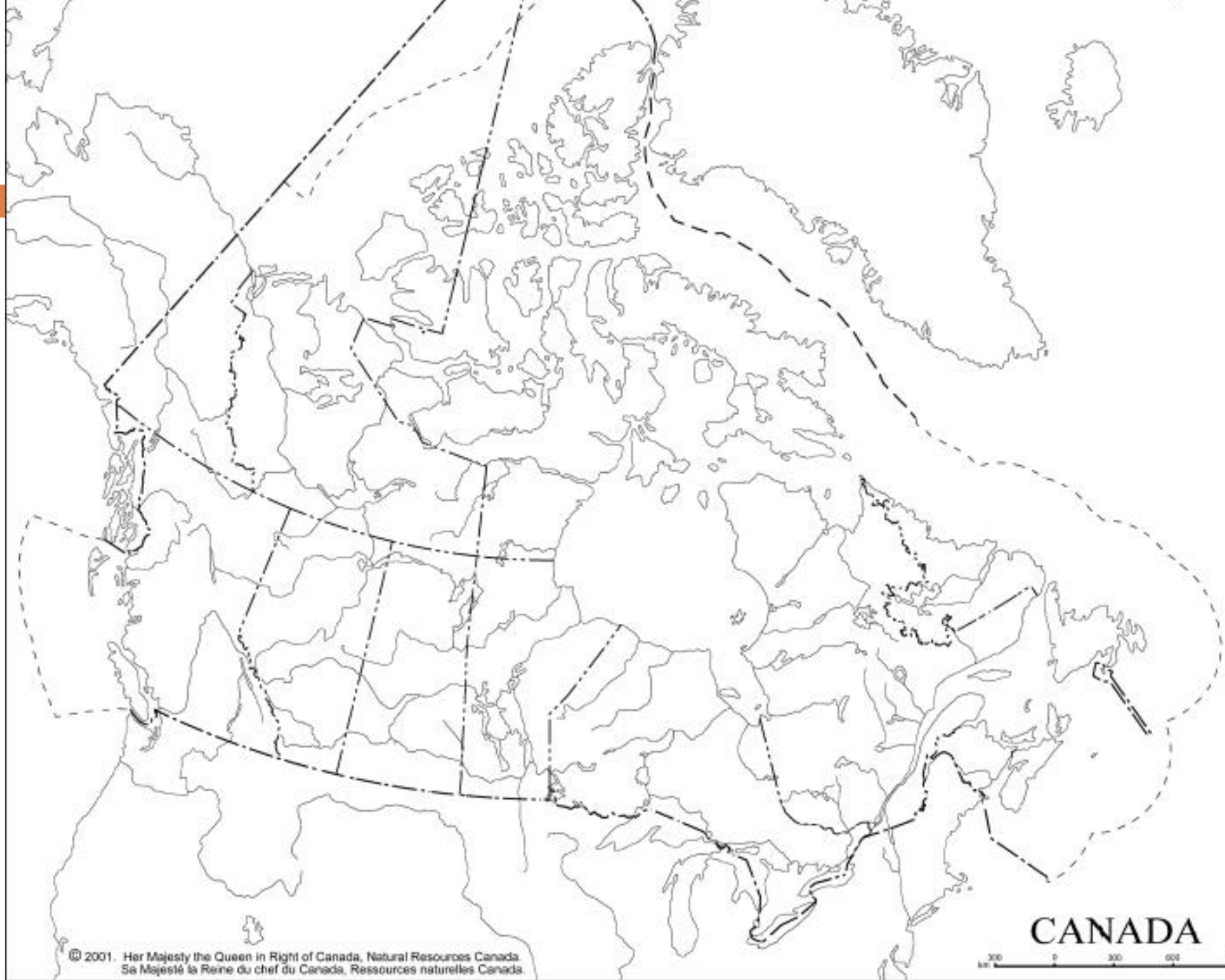
Provinces, Territories

1. Alberta
2. British Columbia
3. Manitoba
4. New Brunswick
5. Newfoundland
6. Northwest Territories
7. Nova Scotia
8. Nunavut
9. Ontario
10. Prince Edward Island
11. Quebec
12. Saskatchewan
13. Yukon

Map Quiz (baseline, May 5, 2014)

Other Basics (9):

- Great Lakes
 - Lake Erie
 - Lake Huron
 - Lake Michigan
 - Lake Ontario
 - Lake Superior
- Montreal
- Saskatoon
- Vancouver
- Calgary



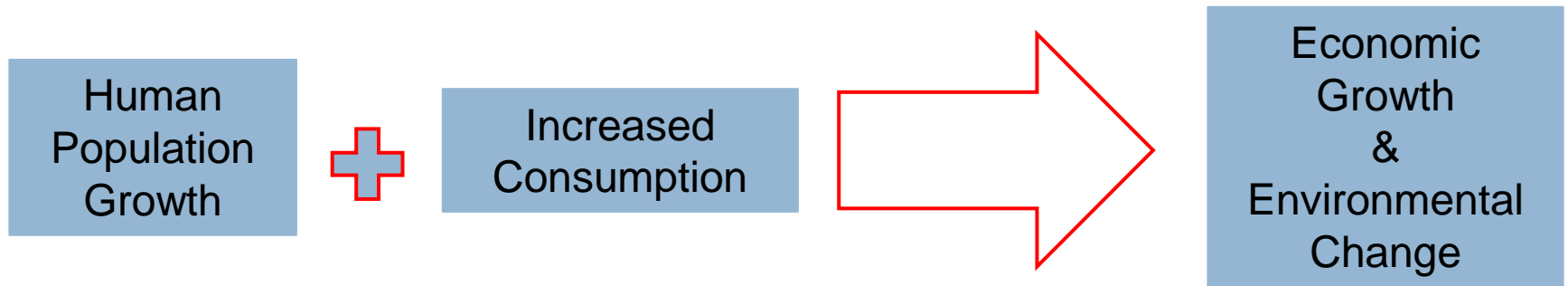
Preamble: Environmental Change and Challenge

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- Earth's climate is changing, and so is our environment
- Strong evidence that human activities are a key driving force behind environmental change
- Changes are occurring more rapidly (than ever before) and with greater magnitude
- Changes threaten well-being of society and the ecosystems that sustain it
- ...a response must be forthcoming soon....

Preamble: Environmental Change and Challenge (2)

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- Human values, expectations, perceptions, and attitudes influence these changes
- Changes in natural and human systems force us to think about present and future conditions
- How do we meet basic human needs and protect integrity of biophysical systems?

Environment & Resources

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- The **environment** is the combination of the atmosphere, hydrosphere, cryosphere, lithosphere, and biosphere in which humans, other living species, and non-animate phenomena exist
- **Resources** are specific components of the environment such as forests, wildlife, oceans, rivers and lakes, and minerals and petroleum
- **Perspectives on Resources:**
 1. Anthropocentric View: when value is defined relative to human interests, wants and needs
 2. Ecocentric or Biocentric View: resources seen to have value independent of human wants or needs (their “intrinsic value”)

Approaches to understanding complex natural and socio-economic systems

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- **Disciplinary**: organized around the concepts, theories, assumptions, and methods associated with one academic discipline
- **Multidisciplinary**: different specialists examine an issue from their disciplinary perspectives, then provide reports, which are submitted to a person or group, who then draws upon them to synthesize the findings and insights;
- **Interdisciplinary**: involve disciplinary specialists crossing other disciplinary boundaries and interacting with other specialists from the beginning of a project

Science-Based Management of Resources and Environment

Guidelines:

1. Focus the science on key issues, and communicate it in a policy-relevant form
2. Use scientific information to clarify issues, identify potential management options, and estimate consequences of actions
3. Clearly and simply communicate key scientific findings to all participants
4. Evaluate whether or not the final decision is consistent with scientific information
5. Avoid advocacy of any particular solution



Explore with the case study of the Sydney Tar Ponds

Case Study: The Sydney Tar Ponds

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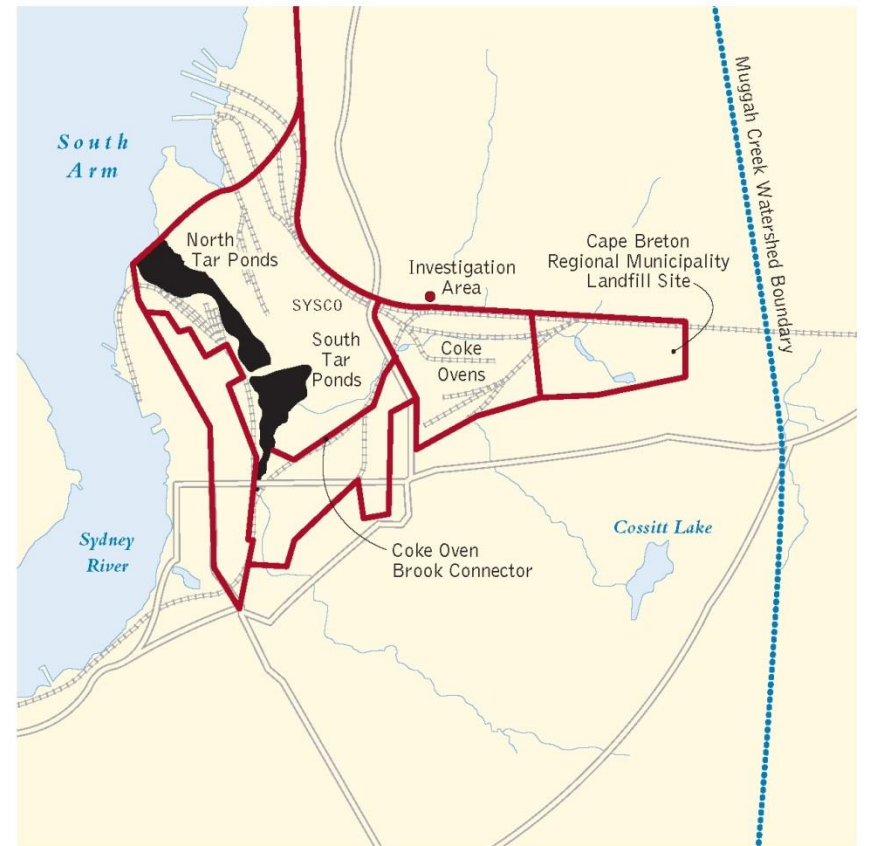


Figure 1.1 | On the detailed map (right), the highway that curves around Cossitt Lake and meets the Glace Bay Highway, which bisects the figure horizontally, now extends onward and links up with a road, SPAR (an acronym for Sydney Port Authority Road), on the other side of the CBRM landfill site. It then continues past the coke ovens site and into the main cleanup area. This link was created to facilitate easier access to the cleaned-up area for industrial and commercial purposes. Source: Rainham (2002: 27) from Joint Action

Background: Sydney Tar Ponds

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- community located in the northern part of Cape Breton Island
- community has a history of coal mining, steel production, fishing, and forestry since late 1800s
- In 1899 a steel plant was built (by DISCO, Dominion Iron and Steel Company) that processed iron ore and coal into coke and then refined coke into steel
- Making high-quality steel requires high-quality iron ore, processed with coal without too much sulphur
- DISCO management did not test the quality of their ingredients, leading to poor products and large amounts of toxic slag waste
- The steel plant closed in 2001 ...a serious blow to Sydney's economy

1987 - Coke ovens and quenching plant (left), coal pocket and batteries between exhaust stacks, conveyor leading to blending plant. By-products building is large brick structure (foreground) (Photo: G. Langille)



The outcome (tar ponds) was a chemical and bacteria-laden river system, including the estuary full of contaminated sediments. Federal officials refer to this 2 km stretch as the largest chemical waste site in Canada



(left) Aerial view of the clean up site

Environmental and Human Health legacy of the Tar Pond

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- decades of air pollution and millions of tonnes of toxic sludge into the Muggah creek watershed
- Tar Ponds is a chemical and bacteria-laden river system and estuary full of contaminated sediments from:
 - ▣ Deposition of coking chemical by-products
 - ▣ Water runoff from coke oven and steel mill cooling
 - ▣ Contaminated soil leachate (PCBs, PAHs, metals)
 - ▣ A garbage dump in the upper watershed
 - ▣ Raw sewage discharge from the city
 - ▣ Other industrial contaminants from the area

Human Health Effects – Tar Ponds

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- Cancer rates far above national average and higher than in nearby Glace Bay & New and New Waterford
- Cervical cancer in women 134% higher than the provincial rate
- All cancers in men and women are higher (brain cancer, breast cancer, stomach cancer, lung cancer, salivary cancer)
- Alzheimer's, multiple sclerosis, heart disease and birth defects all much higher
- Source: May and Barlow (2001)



Problems When Science is Not Used to Inform Decisions

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- Basic science was not used in sourcing or processing raw materials for the steel mill
- In 1980 Environment Canada confirmed that the source of PAHs and PCBs was the steel mill
- In 1984, consulting firm Acres International was hired to determine the scope of pollution and recommended three options: cap it, store it elsewhere, or incinerate it
- The government chose to remove the sludge and incinerate it, but a plan to begin by 1990 was delayed by further testing and discovery of a PCB 'hot spot' in the south tar pond and other factors ...

Lessons from the Sydney Tar Ponds

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- When basic science is not used from the start to inform policy decisions related to environmental issues, there is a good chance that money will not be allocated to effective solutions
- Even when science is used, understanding can be incomplete, and decisions will have to be made in the face of uncertainty
- Local stakeholders are important; without their support, there likely will be challenges to the proposed solutions

Sustainable Developments, Sustainable Livelihoods and Resilience

- **Sustainable development** involves 3 strategic aspects:
 1. It represents a *philosophy* in that it presents a vision or direction regarding the nature of future societies;
 2. As a process, it emphasizes a system of governance and management characterized by openness, transparency, decentralization, and accessibility
 3. As a *product* related to specific places or resource sectors, it aims to ensure that economic, environmental, and social aspects are considered together, and that trade-offs are made in a way that are visible and transparent to those affected

Sustainable Developments, Sustainable Livelihoods and Resilience

- **Sustainable livelihoods** emphasize the conditions necessary to ensure that basic human needs are satisfied
 - This concept is not without its critics as well, who see the concept as being too anthropocentric, however addressing poverty is a priority that can be addressed alongside environmental priorities

- **Resilience** is the ability of a system to absorb disturbance and still retain its basic function and structure
 - Resource management that enhances resilience of social-ecological systems is more sustainable than the traditional approach, which focuses on optimizing output of goods and services from a natural resource system

Looking Ahead to the next lectures

Tuesday May 6th:

“Environment, Resources and Society: The Global Picture”

Read ahead (Chpt. 1, pp. 16 →)

Library Research Paper

References

- May, Elizabeth and Barlow 2001.
- Dearden, P and Mitchell, B. 2012. *Environmental Change and Challenge*, Fourth Edition, Don Mills, Ontario: Oxford University Press {Chapter 1: 'Environment, Society and Resources'}