

**Economics for the Anthropocene:
Economics and Finance Graduate Seminar – Fall 2015**

Course Title: Economic and Financial Decision-Making in the Anthropocene

Time and Location: 2:30-5:30 on Tuesdays

Course Description:

The tools used by governments and public institutions to compare and decide about alternative projects, policies, and courses of action represent particular worldviews and sets of values that frequently remain implicit and unquestioned. Many of these tools – cost-benefit analysis chief among them – perpetuate an ideology in line with the basic tenets of neoclassical economics. In both orthodox and heterodox economics, critics have called into question the assumptions underlying neoclassical theory. These theoretical challenges are underscored by new, unprecedented realities emerging from the Anthropocene, such as human-induced climate change and economic globalization, which underscore the complexity facing decision-makers. Both theory and empirical evidence suggest that new tools are needed to facilitate robust, comprehensive analysis of alternative public choices.

In this course, we will combine a deep and critical analysis of the tools of traditional economic decision-making with an exploration of new tools and analytical frameworks, drawing from a diverse literature. By looking to fields outside the realm of traditional economic and policy literature, such as ecological economics, we hope to expand the toolbox available to governments, corporations, and non-governmental organizations seeking to choose among competing alternative paths. Critically, we hope to spark a broader discussion of the moral underpinnings of our decision-making paradigm, challenging the hegemony of maximum efficiency or profit as the only rational criterion for decision-making about collective choices.

Central Question:

- Given the critique ecological economics has levied upon the conventional cost-benefit analysis (CBA) decision-making paradigm, what are the possible options to either a) improve CBA as a tool, or b) replace CBA with a decision-making framework that better aligns with the worldview of ecological economics as well as empirical study of human behaviour.

Learning Objectives:

- Understand and critique the theory and application of cost-benefit analysis (CBA)
- Review attempts to “improve” CBA, such as deliberative monetary valuation
- Explore and engage with alternative analytical methodologies such as multi-criteria decision analysis, structured decision-making, fuzzy decision analysis, and more

Course Outcomes:

A group paper presenting a synthesis of the topic or proposing a novel contribution to the field. The group paper shall be suitable for publication as an article in a respected peer-reviewed journal or as a chapter in a book.

Course Structure:

The course will be structured as a graduate seminar. Weekly reading assignments will typically consist of 2-4 journal articles, book chapters, or similar material. A student will be tasked with leading each week's discussion. The week's discussant shall lead the group in critically interrogating the material, drawing upon additional research and literature as appropriate. All students will be expected to carefully review each assigned reading and come to class with questions, observations, etc.

Course Plan:

Week 1-2: Social vs. individual decision-making and choice in economics

Readings/authors:

Bromley, Daniel W. 1990. "The Ideology of Efficiency: Searching for a Theory of Policy Analysis." *Journal of Environmental Economics and Management* 19(1): 86–107.

Chris Williams (Ed.) (April 2013). *Economics in Policy-Making – Briefings*. Published by New Economics Foundation. Available online from <http://www.neweconomics.org/publications/entry/economics-in-policy-making>

Richardson, Jeff, and John McKie. "Empiricism, Ethics and Orthodox Economic Theory: What Is the Appropriate Basis for Decision-Making in the Health Sector?" *Social Science & Medicine* 60.2 (2005): 265–275. *ScienceDirect*. Web. 23 June 2015. Equity, Capabilities and Health.

Simon, Herbert A. "Theories of Decision-Making in Economics and Behavioral Science." *The American Economic Review* 49.3 (1959): 253–283. Print.

Nick D. Hanley and Clive L. Spash (1993) Cost-Benefit Analysis and the Environment. *Chapter 1*. Cheltenham: Edward Elgar Publishing Ltd. <http://www.ima.kth.se/utb/mj2694/pdf/CBA.pdf>

Week 3-4: Cost-Benefit Analysis (CBA)

History and details of the concept and its application – week 3 (MIKE)

Readings/authors:

Hansjürgens, Bernd. 2004. “Economic Valuation through Cost-Benefit Analysis-- Possibilities and Limitations.” *Toxicology* 205(3):241–52. Retrieved September 4, 2015 (<http://www.sciencedirect.com/science/article/pii/S0300483X04003853>).

Treasury Board Secrariat of Canada. 2007. Canadian Cost-Benefit Analysis Guide Regulatory Proposals.

Prakel, John V. Farr and Mary. 2013. Methodology for Conducting Cost Benefit Analysis to Support Energy Security Investments.

Guest speaker: Peter Victor

Criticisms: practical and ethical – week 4 (ANNA)

Readings/authors:

Gowdy, John M. 2007. “Toward an Experimental Foundation for Benefit-Cost Analysis.” *Ecological Economics* 63(4):649–55.

Nyborg, Karine. 2014. “Project Evaluation with Democratic Decision-Making: What Does Cost-Benefit Analysis Really Measure?” *Ecological Economics* 106:124–31.

Robinson, Lisa A., and James K. Hammitt. "Behavioral economics and the conduct of benefit-cost analysis: towards principles and standards." *Journal of Benefit-Cost Analysis* 2.02 (2011): 1-51.

Tol, Richard S. J. “Is the Uncertainty about Climate Change Too Large for Expected Cost-Benefit Analysis?” *Climatic Change* 56.3 (2003): 265–289. link.springer.com. Web. 23 June 2015.

Week 5-12: Alternatives and improvements to CBA

Ethical and normative foundations for decision-making – week 5 (JAMES)

Readings/authors:

Kelman, Steven. “Cost-Benefit Analysis: An Ethical Critique.” *Regulation* 5 (1981): 33. Print.

Vatn, Arild and Daniel W. Bromley. 1994. “Choices without Prices without Apologies.” *Journal of Environmental Economics & Management* 26(2):129–48.

Martens, Karel. "Substance precedes methodology: on cost–benefit analysis and equity." *Transportation* 38.6 (2011): 959-974.

Tenbrunsel, Ann E., and Kristin Smith-Crowe. “13 Ethical Decision Making: Where We’ve Been and Where We’re Going.” *The Academy of Management Annals* 2.1 (2008): 545–607. *Taylor and Francis+NEJM*. Web. 23 June 2015.

---. “Rethinking Cost-Benefit Analysis.” *The Yale Law Journal* 109.2 (1999): 165–247. *JSTOR*. Web. 23 June 2015.

Amartya Sen, By. “The Discipline of Cost-Benefit Analysis.” *The Journal of Legal Studies* 29.S2 (2000): 931–952. *JSTOR*. Web. 23 June 2015.

Environmental – multiple ways of valuing and understanding nature – week 6-7 (ALVIE)

Readings/authors:

Farley, Joshua. 2012. “Ecosystem Services: The Economics Debate.” *Ecosystem Services* 1(1):40–49. Retrieved (<http://dx.doi.org/10.1016/j.ecoser.2012.07.002>).

Lo, Alex Y., and Clive L. Spash. "Deliberative monetary valuation: in search of a democratic and value plural approach to environmental policy." *Journal of economic surveys* 27.4 (2013): 768-789.

Wegner, Giulia, and Unai Pascual. "Cost-benefit analysis in the context of ecosystem services for human well-being: A multidisciplinary critique." *Global Environmental Change* 21.2 (2011): 492-504.

Nyborg, Karine. "Project analysis as input to public debate: Environmental valuation versus physical unit indicators." *Ecological Economics* 34.3 (2000): 393-408.

Ascough, J. C., et al. "Future research challenges for incorporation of uncertainty in environmental and ecological decision-making." *Ecological modelling* 219.3 (2008): 383-399.

Lockwood, Michael. "Humans Valuing Nature: Synthesising Insights from Philosophy, Psychology and Economics." *Environmental Values* 8.3 (1999): 381–401. Print.

Parks, Sarah, and John Gowdy. "What Have Economists Learned about Valuing Nature? A Review Essay." *Ecosystem Services* 3 (2013): e1–e10. ScienceDirect. Web. 23 June 2015.

Nyborg, Karine. "Homo economicus and homo politicus: interpretation and aggregation of environmental values." *Journal of Economic Behavior & Organization* 42.3 (2000): 305-322.

Harrison, Carolyn, and Jacquelin Burgess. "Valuing Nature in Context: The Contribution of Common-Good Approaches." *Biodiversity & Conservation* 9.8 (2000): 1115–1130. link.springer.com. Web. 23 June 2015.

Turner, R. Kerry et al. "Valuing Nature: Lessons Learned and Future Research Directions." *Ecological Economics* 46.3 (2003): 493–510. *Science Direct*. Web. 23 June 2015.

Guest speaker: Taylor Ricketts

Social/democratic decision-making – deliberative processes for collective choices – week 8 (MIKE)

Readings/authors:

Nyborg, Karine, and Inger Spangen. 1997 "Cost-benefit analysis and the democratic ideal." Statistics Norway, Research Department.
<http://brage.bibsys.no/xmlui/bitstream/handle/11250/180769/dp205.pdf?sequence=1&isAllowed=y>

Wilson, Matthew A., and Richard B. Howarth. "Discourse-based valuation of ecosystem services: establishing fair outcomes through group deliberation." *Ecological economics* 41.3 (2002): 431-443.

Chambers, Simone. "Deliberative democratic theory." *Annual review of political science* 6.1 (2003): 307-326.

Dryzek, John S., and Christian List. "Social choice theory and deliberative democracy: a reconciliation." *British Journal of Political Science* 33.01 (2003): 1-28.

Guest speaker: Robert Bartlett

Multidisciplinary decision-making frameworks and tools, including integrated assessments, MCDA – week 9-12 (NICK)

Readings/authors:

Aldred, J. (2006). Incommensurability and monetary valuation. *Land Economics*, 82(2), 141-161

Martin, Julien, et al. "Structured decision making as a proactive approach to dealing with sea level rise in Florida." *Climatic Change* 107.1-2 (2011): 185-202.

Peterman, Randall M., and Judith L. Anderson. "Decision analysis: a method for taking uncertainties into account in risk-based decision making." *Human and Ecological Risk Assessment: An International Journal* 5.2 (1999): 231-244.

Hajkovicz, S., & Higgins, A. (2008). A comparison of multiple criteria analysis techniques for water resource management. *European Journal of Operational Research*, 184(1), 255–265. <http://doi.org/10.1016/j.ejor.2006.10.045>

Wallenius, Jyrki, et al. "Multiple criteria decision making, multiattribute utility theory: recent accomplishments and what lies ahead." *Management science* 54.7 (2008): 1336-1349.

Ananda, Jayanath, and Gamini Herath. "A critical review of multi-criteria decision making methods with special reference to forest management and planning." *Ecological economics* 68.10 (2009): 2535-2548.

Huang, I. B., Keisler, J., & Linkov, I. (2011). Multi-criteria decision analysis in environmental sciences: Ten years of applications and trends. *Science of the Total Environment*, 409(19), 3578–3594.
<http://doi.org/10.1016/j.scitotenv.2011.06.022>

Kiker, G. a, Bridges, T. S., Varghese, A., Seager, P. T. P., & Linkov, I. (2005). Application of multicriteria decision analysis in environmental decision making. *Integrated Environmental Assessment and Management*, 1(2), 95–108.
http://doi.org/10.1897/IEAM_2004a-015.1

Linkov, I., Satterstrom, F. K., Kiker, G., Batchelor, C., Bridges, T., & Ferguson, E. (2006). From comparative risk assessment to multi-criteria decision analysis and adaptive management: Recent developments and applications. *Environment International*, 32(8), 1072–1093. <http://doi.org/10.1016/j.envint.2006.06.013>

Chung, E. S., & Lee, K. S. (2009). Prioritization of water management for sustainability using hydrologic simulation model and multicriteria decision making techniques. *Journal of Environmental Management*, 90(3), 1502–1511. <http://doi.org/10.1016/j.jenvman.2008.10.008>

Dodgson, J., Spackman, M., Pearman, a, & Phillips, L. (2009). *Multi-criteria analysis: a manual*. <http://doi.org/10.1002/mcda.399>

Fontana, V., Radtke, A., Bossi Fedrigotti, V., Tappeiner, U., Tasser, E., Zerbe, S., & Buchholz, T. (2013). Comparing land-use alternatives: Using the ecosystem services concept to define a multi-criteria decision analysis. *Ecological Economics*, 93, 128–136. <http://doi.org/10.1016/j.ecolecon.2013.05.007>

Gibson, Robert B. “Beyond the Pillars: Sustainability Assessment as a Framework for Effective Integration of Social, Economic and Ecological Considerations in Significant Decision-Making.” *Journal of Environmental Assessment Policy and Management* 08.03 (2006): 259–280. *worldscientific.com (Atypon)*. Web. 23 June 2015.

Mendoza, G. a., & Martins, H. (2006). Multi-criteria decision analysis in natural resource management: A critical review of methods and new modelling paradigms. *Forest Ecology and Management*, 230(1-3), 1–22. <http://doi.org/10.1016/j.foreco.2006.03.023>

Liu, S., Hurley, M., Lowell, K. E., Siddique, A. B. M., Diggle, A., & Cook, D. C. (2011). An integrated decision-support approach in prioritizing risks of non-indigenous species in the face of high uncertainty. *Ecological Economics*, 70(11), 1924–1930. <http://doi.org/10.1016/j.ecolecon.2011.05.021>

Guest speaker: Jon D. Erickson

Week 13-14: Analysis and synthesis workshop

Readings/authors:

To Be Determined

Guest speaker: None

Other Papers (May be Used)

Tiwari, D. N, R Loof, and G. N Paudyal. "Environmental–economic Decision-Making in Lowland Irrigated Agriculture Using Multi-Criteria Analysis Techniques." *Agricultural Systems* 60.2 (1999): 99–112. *ScienceDirect*. Web. 23 June 2015.

Xenarios, S., & Tziritis, I. (2007). Improving pluralism in Multi Criteria Decision Aid approach through Focus Group technique and Content Analysis. *Ecological Economics*, 62(3-4), 692–703. <http://doi.org/10.1016/j.ecolecon.2006.08.017>

Joubert, A. R., Leiman, A., De Klerk, H. M., Katua, S., & Aggenbach, J. C. (1997). Fynbos (fine bush) vegetation and the supply of water: A comparison of multi-criteria decision analysis and cost-benefit analysis. *Ecological Economics*, 22(2), 123–140. [http://doi.org/10.1016/S0921-8009\(97\)00573-9](http://doi.org/10.1016/S0921-8009(97)00573-9)

Khadam, I. M., & Kaluarachchi, J. J. (2003). Multi-criteria decision analysis with probabilistic risk assessment for the management of contaminated ground water. *Environmental Impact Assessment Review*, 23(6), 683–721. [http://doi.org/10.1016/S0195-9255\(03\)00117-3](http://doi.org/10.1016/S0195-9255(03)00117-3)

Linkov, I., Varghese, a, Jamil, S., Seager, T. ., Kiker, G., & Bridges, T. (2004). Multi-Criteria Decision Analysis: A Framework for Structuring Remedial Decisions at Contaminated Sites. *Nato Science Series: IV: Earth and Environmental Sciences*, 38, 15–54. http://doi.org/10.1007/1-4020-2243-3_2

Pohekar, S. D., & Ramachandran, M. (2004). Application of multi-criteria decision making to sustainable energy planning - A review. *Renewable and Sustainable Energy Reviews*, 8(4), 365–381. <http://doi.org/10.1016/j.rser.2003.12.007>

Martin, Julien, et al. "Structured decision making as a conceptual framework to identify thresholds for conservation and management." *Ecological Applications* 19.5 (2009): 1079-1090

Wang, Jiang-Jiang, et al. "Review on multi-criteria decision analysis aid in sustainable energy decision-making." *Renewable and Sustainable Energy Reviews* 13.9 (2009): 2263-2278.

Janssen, Ron, et al. "Multiobjective decision support for land-use planning." *Environment and planning. B, Planning & design* 35.4 (2008): 740.

Klein, Tommy, et al. "Adapting agricultural land management to climate change: a regional multi-objective optimization approach." *Landscape ecology* 28.10 (2013): 2029-2047.

Ackerman, Frank, and Lisa Heinzerling. "Priceless." *ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING* 38 (2004).

Turner, R. K. 2006. "Limits to CBA in UK and European Environmental Policy: Retrospects & Future Prospects." Working Paper - Centre for Social and Economic Research on the Global Environment (1): 1–19.

Turner, R. K., D. Burgess, D. Hadley, E. Coombes, and N. Jackson. 2007. "A Cost-Benefit Appraisal of Coastal Managed Realignment Policy." *Global Environmental Change* 17(3-4): 397–407.

Medvecky, Fabien. n.d. "Valuing the Environment in Conservation Economics: Conceptual and Structural Barriers." *Ethics & the Environment* 19(2):39–55. Retrieved August 31, 2015 (https://muse.jhu.edu/journals/ethics_and_the_environment/v019/19.2.medvecky.html).

Adler, Matthew D., and Eric A. Posner. *Cost-Benefit Analysis: Legal, Economic and Philosophical Perspectives*. Rochester, NY: Social Science Research Network, 2001. *papers.ssrn.com*. Web. 23 June 2015.

W.E. Diewert, Cost-benefit analysis and project evaluation: A comparison of alternative approaches, *Journal of Public Economics*, Volume 22, Issue 3, December 1983, Pages 265-302

Ray, A. "COST-BENEFIT ANALYSIS : ISSUES AND METHODOLOGIES." (1984): n. pag. *trid.trb.org*. Web. 23 June 2015.

Mishan, E. J. (2007). *Cost Benefit Analysis*. New York, NY: Routledge.