



404.613 Environmental Decision Making – Syllabus

Thomas Brudermann, as of September 2022.

Content: This course addresses decision making in the context of sustainable development. The course will provide an introduction to current topics in environmental psychology and critical discussions of relevant insights from behavioral economics, economic psychology, neuroeconomics and game theory. No previous knowledge is required.

Objective: Participants will acquire a basic understanding of human decision making and apply it to sustainability issues. By this means participants will be able to add a psychological/behavioral perspective to the analysis of (un)sustainable behavioral patterns.

The course has an interactive nature; there will be lectures by the instructor, take-home assignments (mainly study of literature), student presentations, group work and discussions, as well as practical exercises.

The assessment is based on active participation in class (continuous assessment, 40-50%) and a written exam at the end of the semester (max. 100 minutes, mainly open format questions, 50-60%). Both parts have to be positively assessed for a positive overall assessment.

Recommended literature includes:

- Thomas Brudermann (2022). *Die Kunst der Ausrede. Warum wir uns lieber selbst täuschen statt klimafreundlich zu leben.* München: Oekom Verlag.
- Richard Thaler & Cass Sunstein (2008). *Nudge: Improving Decisions About Health, Wealth and Happiness.* New York: Penguin Books.
- Gerd Gigerenzer (2007). *Gut Feelings: The Intelligence of the Unconscious.* New York: Viking Penguin.
- Kahneman, Daniel (2011). *Thinking, Fast and Slow.* New York: Penguin Books.
- Gerd Gigerenzer (2014) *Risk Savvy: How To Make Good Decisions.* London: Penguin Books.
- Frank Beckenbach & Walter Kahlenborn (2016). *New Perspectives for Environmental Policies Through Behavioural Economics.*
- Yuval Noah Harari (2018). *21 Lessons for the 21st Century.* New York: Spiegel & Grau.
- Dan Ariely (2008). *Predictably irrational.* New York: Harper Collins.

Literature specifically relevant for the topical sessions is mentioned in the sections below. Please note that the order of sessions might vary in some semesters. Up-to-date literature will also be provided via Moodle.



Session 1: Course Organization and Introduction

This session provides an introduction to decision making, and motivation for the topic of environmental decision making.

- Impact of decisions on the environment
- Rational decision making models and their implications
- Cognitive capacity of human decision makers

The basic literature for the course will be introduced.

Session 2: Decision making – Insights from Behavioral Economics

This session introduces students to the field of behavioral economics.

- Concepts from behavioral economics: Framing, loss aversion, risk aversion, mental accounting, temporal discounting, sunk cost effect, decision biases, bounded rationality, behavioral decision theory.
- How can insights from behavioral economics be used in order to promote pro-environmental behaviors / more sustainable life styles?

(Camerer, Loewenstein, & Rabin, 2004; Gowdy, 2008; Lambert, 2006; OECD, 2017; Resnick, 2018)

Session 3: Decision Making Heuristics

This session addresses the topic of heuristic decision making:

- What are heuristics – examples from different fields of research (e.g. computer science and artificial intelligence)
- Examples for human decision heuristics
- Advantages and disadvantages of heuristics
- Heuristic decision making vs rational decision making

(Gigerenzer & Gaissmaier, 2011)



Session 4: Social dilemmas and human cooperation

This session addresses interconnections of the fields of game theory and behavioral/experimental economics. Topics to be discussed are:

- What are social dilemmas?
- Real-world examples of social dilemmas
- Game-theoretic structure of different dilemmas (e.g. public good dilemma)
- Common behaviors in social dilemmas
- Role of sanctioning mechanisms
- Motives for engaging in sanctioning others (in multi-person setting)
- Reciprocal fairness and inequity aversion manifest in lab experiments and in the real world

(Axelrod, 1984; Cohn, Maréchal, Tannenbaum, & Zünd, 2019; Fehr & Fischbacher, 2004; Herrmann, Thöni, & Gächter, 2008; Levitt & List, 2007; van den Assem, van Dolder, & Thaler, 2011)

Session 5: Social norms & social influence

The behaviors, attitudes and opinions of other people heavily impact individual decisions. In this session we learn about:

- Descriptive and injunctive norms
- Asch effect
- Formulation of norm-based persuasive appeals
- Role of social norms in environmentally significant behaviors
- Norms communicated by the shape of the environment

(Brudermann, Bartel, Fenzl, & Seebauer, 2015; Goldstein, Cialdini, & Griskevicius, 2008; Keizer, Lindenberg, & Steg, 2008; Levitt, 2006; Nyborg et al., 2016; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007; Thøgersen, 2008)

Session 6: Habits and social practices

This session will focus on how to overcome environmentally harmful habits and practices. We focus on two different perspectives on this matter. The first one originates from environmental psychology, here represented by the work of Graybiel, and the second one originates from sociology, here represented by the work of Elizabeth Shove. Topics thus include:

- 'Behavioral lock-ins' – breaking 'bad habits'
- Social practices
- Asymmetry between intention and impacts
- Learning environmental-friendly behavior
- Psychological perspective vs. practice theory perspective

(Arnott et al., 2014; Graybiel, 2008; Larsen, 2017; Schäfer, Jaeger-Erben, & Bamberg, 2012; Shove & Walker, 2010)



Session 7: Psychological variables (awareness, perception, knowledge, context)

In this session, the psychology of global & local environmental problems is discussed:

- Environmental hyperopia
- Psychological phenomena which are responsible for climate-change-related problems not reaching the public
- Influence of contextual factors (e.g. local weather) on perception and awareness of environmental problems
- Cognitive dissonance
- Moral licensing vs. spillovers
- "Simple, painless steps" to fight climate change and environmental problems

(Clayton et al., 2015; Kahan et al., 2012; Li, Johnson, & Zaval, 2011; Ölander & Thøgersen, 2014; Sörqvist & Langeborg, 2019; Thaller & Brudermann, 2020; Thaller, Fleiß, & Brudermann, 2020; Tobler, Visschers, & Siegrist, 2012; Uzzell, 2010); (Gillingham, Kotchen, Rapson, & Wagner, 2013; Lanzini & Thøgersen, 2014; Thøgersen & Crompton, 2009; Whitmarsh, 2009)

Session 8: Communicating climate change and environmental problems

This session addresses the topic climate change communication:

- Suggestions for climate change communication.
- Challenges and difficulties
- Examples for campaigns conforming to the suggested principles.
- Examples for campaigns violating these principles.

(Cook, 2010; Hornsey, Harris, Bain, & Fielding, 2016; Lucas, Brooks, Darnton, & Jones, 2008; Newell & Pitman, 2010; Pidgeon & Fischhoff, 2011; Ross, 2013; Shome & Marx, 2009)



Session 9: Decision making in complex systems

Decisions are tricky, especially when dealing with a complex system. In this session, we will discuss challenges for decisions in complex systems, address human decision making flaws, and play the cybernetic strategy game *Ecopolicy* to practically experience challenges and solutions.

(Dorner, Nixon, & Rosen, 1990)

Specific Literature

- Arnott, B., Rehackova, L., Errington, L., Sniehotta, F. F., Roberts, J., & Araujo-Soares, V. (2014). Efficacy of behavioural interventions for transport behaviour change: systematic review, meta-analysis and intervention coding. *The International Journal of Behavioral Nutrition and Physical Activity*, *11*, 133. <https://doi.org/10.1186/s12966-014-0133-9>
- Axelrod, R. (1984). *The evolution of cooperation*. New York: Basic Books.
- Brudermann, T., Bartel, G., Fenzl, T., & Seebauer, S. (2015). Eyes on social norms: A field study on an honor system for newspaper sale. *Theory and Decision*, *79*(2), 285–306. <https://doi.org/10.1007/s11238-014-9460-1>
- Camerer, C., Loewenstein, G., & Rabin, M. (2004). Behavioral Economics: Past, Present, Future. In *Advances in Behavioral Economics* (pp. 2–51).
- Clayton, S., Devine-Wright, P., Stern, P. C., Whitmarsh, L., Carrico, A., Steg, L., ... Bonnes, M. (2015). Psychological research and global climate change. *Nature Climate Change*, *5*(7), 640–646. <https://doi.org/10.1038/nclimate2622>
- Cohn, A., Maréchal, M. A., Tannenbaum, D., & Zünd, C. L. (2019). Civic honesty around the globe. *Science*, *365*(6448), 70–73. <https://doi.org/10.1126/science.aau8712>
- Cook, J. (2010). *The Scientific Guide to Global Warming Skepticism*. *skepticalscience.com*. Retrieved from http://www.skepticalscience.com/docs/Guide_to_Skepticism.pdf
- Dorner, D., Nixon, P., & Rosen, S. D. (1990). The Logic of Failure [and Discussion]. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, *327*(1241), 463–473.
- Fehr, E., & Fischbacher, U. (2004). Social norms and human cooperation. *Trends in Cognitive Sciences*, *8*(4), 185–190. <https://doi.org/10.1016/j.tics.2004.02.007>
- Fuentes, C. (2014). Green Materialities: Marketing and the Socio-material Construction of Green Products. *Business Strategy and the Environment*, *23*(2), 105–116. <https://doi.org/10.1002/bse.1768>
- Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic decision making. *Annual Review of Psychology*, *62*, 451–482. <https://doi.org/10.1146/annurev-psych-120709-145346>
- Gillingham, K., Kotchen, M. J., Rapson, D. S., & Wagner, G. (2013). Energy policy: The rebound effect is overplayed. *Nature*, *493*(7433), 475–476. <https://doi.org/10.1038/493475a>
- Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels. *Journal of Consumer Research*, *35*(3), 472–482. <https://doi.org/10.1086/586910>
- Gowdy, J. M. (2008). Behavioral economics and climate change policy. *Journal of Economic Behavior & Organization*, *68*, 632–644.
- Graybiel, A. M. (2008). Habits, Rituals, and the Evaluative Brain. *Annual Review of Neuroscience*, *31*(1), 359–387. <https://doi.org/10.1146/annurev.neuro.29.051605.112851>
- Herrmann, B., Thöni, C., & Gächter, S. (2008). Antisocial punishment across societies. *Science*, *319*(5868), 1362–1367. <https://doi.org/10.1126/science.1153808>
- Hornsey, M. J., Harris, E. A., Bain, P. G., & Fielding, K. S. (2016). Meta-analyses of the determinants and outcomes of belief in climate change. *Nature Climate Change*, *6*(6), 622–626. <https://doi.org/10.1038/nclimate2943>
- Kahan, D. M., Peters, E., Wittlin, M., Slovic, P., Ouellette, L. L., Braman, D., & Mandel, G. (2012). The polarizing



- impact of science literacy and numeracy on perceived climate change risks. *Nature Climate Change*, 2(10), 732–735. <https://doi.org/10.1038/nclimate1547>
- Keizer, K., Lindenberg, S., & Steg, L. (2008). The Spreading of Disorder. *Science*, 322(5908), 1681–1685. <https://doi.org/10.1126/science.1161405>
- Kotler, P. (2011). Reinventing Marketing to Manage the Environmental Imperative. *Journal of Marketing*, 75(4), 132–135. <https://doi.org/10.1509/jmkg.75.4.132>
- Lambert, C. (2006). The marketplace of perceptions. *Harvard Magazine*, (March-April), 50–95. Retrieved from [http://www.altruists.org/static/files/The Marketplace of Perceptions \(Craig Lambert\).pdf](http://www.altruists.org/static/files/The%20Marketplace%20of%20Perceptions%20(Craig%20Lambert).pdf)
- Lanzini, P., & Thøgersen, J. (2014). Behavioural spillover in the environmental domain: An intervention study. *Journal of Environmental Psychology*, 40, 381–390. <https://doi.org/10.1016/j.jenvp.2014.09.006>
- Larsen, J. (2017). The making of a pro-cycling city: Social practices and bicycle mobilities. *Environment and Planning A*, 49(4), 876–892. <https://doi.org/10.1177/0308518X16682732>
- Levitt, S. D. (2006). White-collar crime writ small: A case study of bagels, donuts, and the honor system. *The American Economic Review*, 96(2), 290–294.
- Levitt, S. D., & List, J. A. (2007). What Do Laboratory Experiments Measuring Social Preferences Reveal About the Real World? *Journal of Economic Perspectives*, 21(2), 153–174.
- Li, Y., Johnson, E. J., & Zaval, L. (2011). Local warming: daily temperature change influences belief in global warming. *Psychological Science*, 22(4), 454–459. <https://doi.org/10.1177/0956797611400913>
- Lucas, K., Brooks, M., Darnton, A., & Jones, J. E. (2008). Promoting pro-environmental behaviour: existing evidence and policy implications. *Environmental Science & Policy*, 11(5), 456–466. <https://doi.org/10.1016/j.envsci.2008.03.001>
- Mazar, N., & Zhong, C. B. (2010). Do green products make us better people? *Psychological Science*, 21(4), 494–498. <https://doi.org/10.1177/0956797610363538>
- Newell, B. R., & Pitman, A. J. (2010). The psychology of global warming: Improving the fit between the science and the message. *Bulletin of the American Meteorological Society*, 91, 1003–1014.
- Nyborg, K., Anderies, J. M., Dannenberg, A., Lindahl, T., Schill, C., Schluter, M., ... de Zeeuw, A. (2016). Social norms as solutions. *Science*, 354(6308), 42–43. <https://doi.org/10.1126/science.aaf8317>
- OECD. (2017). *Behavioural Insights and Public Policy. Behavioural Insights and Public Policy*. Paris: OECD Publishing. <https://doi.org/10.1787/9789264270480-en>
- Ölander, F., & Thøgersen, J. (2014). Informing Versus Nudging in Environmental Policy. *Journal of Consumer Policy*, 37(3), 341–356. <https://doi.org/10.1007/s10603-014-9256-2>
- Pidgeon, N., & Fischhoff, B. (2011). The role of social and decision sciences in communicating uncertain climate risks. *Nature Climate Change*, 1(1), 35–41. <https://doi.org/10.1038/nclimate1080>
- Resnick, B. (2018). The “marshmallow test” said patience was a key to success . A new replication tells us s’ more . *Vox*, 1–9.
- Rettie, R., Burchell, K., & Barnham, C. (2014). Social normalisation: Using marketing to make green normal. *Journal of Consumer Behaviour*, 13(1), 9–17. <https://doi.org/10.1002/cb.1439>
- Ross, D. G. (2013). *Common Topics and Commonplaces of Environmental Rhetoric. Written Communication* (Vol. 30). <https://doi.org/10.1177/0741088312465376>
- Schäfer, M., Jaeger-Erben, M., & Bamberg, S. (2012). Life Events as Windows of Opportunity for Changing Towards Sustainable Consumption Patterns? *Journal of Consumer Policy*, 35(1), 65–84. <https://doi.org/10.1007/s10603-011-9181-6>
- Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The Constructive, Destructive, and Reconstructive Power of Social Norms. *Psychological Science*, 18(5), 429–434. <https://doi.org/10.1111/j.1467-9280.2007.01917.x>
- Shome, D., & Marx, S. (2009). *The Psychology of Climate Change Communication: A Guide for Scientists, Journalists, Educators, Political Aides, and the Interested Public*. New York.
- Shove, E., & Walker, G. (2010). Governing transitions in the sustainability of everyday life. *Research Policy*, 39(4), 471–476. <https://doi.org/10.1016/j.respol.2010.01.019>



- Sörqvist, P., & Langeborg, L. (2019). Why People Harm the Environment Although They Try to Treat It Well: An Evolutionary-Cognitive Perspective on Climate Compensation. *Frontiers in Psychology, 10*, 348. <https://doi.org/10.3389/fpsyg.2019.00348>
- Thaller, A., & Brudermann, T. (2020). “You know nothing, John Doe” – Judgmental overconfidence in lay climate knowledge. *Journal of Environmental Psychology, 69*, 101427. <https://doi.org/10.1016/j.jenvp.2020.101427>
- Thaller, A., Fleiß, E., & Brudermann, T. (2020). No glory without sacrifice — drivers of climate (in)action in the general population. *Environmental Science & Policy, 114*, 7–13. <https://doi.org/10.1016/j.envsci.2020.07.014>
- Thøgersen, J. (2008). Social norms and cooperation in real-life social dilemmas. *Journal of Economic Psychology, 29*(4), 458–472. <https://doi.org/10.1016/j.joep.2007.12.004>
- Thøgersen, J., & Crompton, T. (2009). Simple and Painless? The Limitations of Spillover in Environmental Campaigning. *Journal of Consumer Policy, 32*(2), 141–163. Retrieved from <http://dx.doi.org/10.1007/s10603-009-9101-1> TS - EndNote
- Tobler, C., Visschers, V. H. M., & Siegrist, M. (2012). Consumers’ knowledge about climate change. *Climatic Change, 114*(2), 189–209. <https://doi.org/10.1007/s10584-011-0393-1>
- Uzzell, D. (2010). Psychology and climate change: collective solutions to a global problem. *British Academy Review, 16*(September), 15–16. Retrieved from <http://epubs.surrey.ac.uk/id/eprint/29729>
- van den Assem, M. J., van Dolder, D., & Thaler, R. H. (2011). Split or Steal? Cooperative Behavior When the Stakes Are Large. *Management Science, 58*(1), 2–20. <https://doi.org/10.1287/mnsc.1110.1413>
- Whitmarsh, L. (2009). Behavioural responses to climate change: Asymmetry of intentions and impacts. *Journal of Environmental Psychology, 29*(1), 13–23. <https://doi.org/10.1016/j.jenvp.2008.05.003>