
404.613 Decision Making for Sustainable Development – Syllabus

Thomas Brudermann, as of September 2025.

Content: This course addresses human behavior and decision making in the context of sustainable development. Participants will critically engage with insights from scientific disciplines such as economic and environmental psychology, behavioral and experimental economics, and sociology. No prior knowledge is required, but familiarity with the concepts of sustainability and sustainable development is expected (and should be caught up on if necessary).

Objective: Participants will acquire a solid understanding of human decision making and apply it to issues related to environment, climate, and sustainability. They will be able to analyze sustainability problems from a psychological and behavioral perspective.

Teaching and learning method: The course has an interactive nature. There will be lectures by the instructor, take-home assignments (mainly study of literature and search for examples/cases), student presentations, discussions, as well as group exercises. Please note that this is a master level course which requires reading of articles published in international journals (1-2 per week). The expected workload to pass the course is 100 hours.

Assessment: The assessment is based on

- 1) Active participation in class (continuous assessment, 40-50%):
 - Presentation (max. 10 minutes + two-pager) & participation in a panel discussion.
 - Participation in discussions and Moodle posts (quality over quantity).
 - Learning diary
- 2) Written exam (at the end of the semester, 50-60%).
 - max. 100 minutes, 100 points.
 - Contents: mandatory readings, slides, handouts; focus on understanding and application.
 - Format: to be announced; most likely open book, mainly open format questions.

Both parts have to be positively assessed for a positive overall assessment. A drop will result in a negative grading.



Recommended literature:

- Thomas Brudermann (2022). Die Kunst der Ausrede. 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.
- 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 Organisation and Introduction

Introduction to decision making:

- Impact and difficulty of different types of decisions on environment and sustainability
- Rational decision making models and their implications
- Cognitive capacity of human decision makers

Session 2: Insights from Behavioral Economics

Introduction to the field of behavioral economics:

- Concepts from behavioral economics: Framing, loss aversion, risk aversion, mental accounting, temporal discounting, sunk cost effect
- Cognitive biases in human decision making, bounded rationality, behavioral decision theory
- Introduction to “nudging” as a tool for influencing decisions

(Camerer et al., 2004; Gifford et al., 2018; Gowdy, 2008; Lambert, 2006; OECD, 2017; Resnick, 2018)

Session 3: Nudges, Heuristics & Intuition

This session addresses the following topics:



- Further discussion of the concept of “nudging”: Strengths and weaknesses, limitations
- Understanding of “heuristics”: Examples for human decision heuristics, strengths and weaknesses of heuristic decision making
- Heuristic decision making vs. rational decision making – when can we make rational decisions, when do we rely on heuristics?

We will also discuss how human tendencies to rely on heuristics makes it difficult to deal with sustainability challenges.

(Dale, 2015; Gigerenzer & Gaissmaier, 2011; Hjeij, 2023)

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 (e.g. freeriding)
- Role of sanctioning mechanisms
- Motives for engaging in sanctioning others (in multi-person setting)
- Limitations to laboratory experiments
- Cultural differences to cooperation

(Axelrod, 1984; Cohn, Maréchal, Tannenbaum, & Zünd, 2019; Fehr & Fischbacher, 2004; Goís et al., 2019; Herrmann, Thöni, & Gächter, 2008; Levitt & List, 2007; Ostrom, 1990; van den Assem, van Dolder, & Thaler, 2012; van Lange et al., 2013)

Session 5a: Humans on Auto-Pilot – Social Norms

This session consists of two parts: a) Social norms and b) Habits and Social practices

In the first part of the session we learn about:

- Descriptive and injunctive norms
- Asch effect
- Formulation of norm-based persuasive appeals
- Role of social norms in sustainability related issues (e.g. energy consumption, travelling)
- How the environment communicates norms (Broken Window Theory)



We also discuss how social norms facilitate and hinder more sustainable lifestyles.

(Brudermann, Bartel, Fenzl, & Seebauer, 2015; Goldstein, Cialdini, & Griskevicius, 2008; Keizer, Lindenberg, & Steg, 2008; Levitt, 2006; Nyborg et al., 2016; Raux et al., 2021; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007; Thøgersen, 2008)

Session 5b: Humans on Auto-Pilot – Habits and Social Practices

The second part of the 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:

- How do habits form, how are they broken? ('Behavioral lock-ins')
- Social practices
- Psychological perspective vs. practice theory perspective

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

Session 6: The psychology of climate change and sustainability

Topics covered are:

- The psychological perspective on climate change
- Psychological barriers to sustainability transitions
- Climate anxiety and eco-worry
- Cognitive dissonance
- The psychology of climate inaction: The role of beliefs and concerns, Moral licensing vs. positive spillover, Knowledge gaps and misunderstandings

(Clayton et al., 2015; Kahan et al., 2012; Li, Johnson, & Zaval, 2011; Hickman et al., 2021; Lacroix et al., 2020; McCarthy et al., 2023; Sörqvist & Langeborg, 2019; Schneider et al., 2021; Thaller & Brudermann, 2020; Thaller, Fleiß, & Brudermann, 2020; Tobler, Visschers, & Siegrist, 2012; Thøgersen & Crompton, 2009; Uzzell, 2010);

Session 7: 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.
- Climate change denial

(Cook, 2010; Hornsey, Harris, Bain, & Fielding, 2016; CRED, 2014; Jylhä & Hellmer, 2020; Lucas, Brooks, Darnton, & Jones, 2008; Moreno et al., 2022; Newell & Pitman, 2010; Ölander & Thøgersen, 2014; Pidgeon & Fischhoff, 2011; Ross, 2013; Shome & Marx, 2009; Sparkman & Attari, 2020; Steinberger, 2024; Stoetzer & Zimmermann, 2024)

Session 8: Decision making in complex systems (Ecopolity Game)

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 *Ecopolity* 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).

Center for Research on Environmental Decisions and ecoAmerica. (2014). *Connecting on Climate: A Guide to Effective Climate Change Communication*. New York and Washington, D.C.

[ecoAmerica-CRED-2014-Connecting-on-Climate.pdf](#)

Clayton, S., Devine-Wright, P., Stern, P. C., Whitmarsh, L., Carrico, A., Steg, L., ... Bonne, 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](http://www.skepticalscience.com/docs/Guide_to_Skepticism.pdf). Retrieved from http://www.skepticalscience.com/docs/Guide_to_Skepticism.pdf

Dale, S. (2015). Heuristics and biases. *Business Information Review*, 32(2), 93–99.

<https://doi.org/10.1177/0266382115592536>

- 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>
- Gifford, R., Lacroix, K., & Chen, A. (2018). Understanding responses to climate change. In *Psychology and Climate Change* (pp. 161–183). Elsevier. <https://doi.org/10.1016/B978-0-12-813130-5.00006-0>
- 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>
- Góis, A. R., Santos, F. P., Pacheco, J. M., & Santos, F. C. (2019). Reward and punishment in climate change dilemmas. *Scientific Reports*, 9(1), 16193. <https://doi.org/10.1038/s41598-019-52524-8>
- 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>
- Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. *The Lancet. Planetary Health*, 5(12), e863–e873. [https://doi.org/10.1016/S2542-5196\(21\)00278-3](https://doi.org/10.1016/S2542-5196(21)00278-3)
- Hjeij, M., & Vilks, A. (2023). A brief history of heuristics: how did research on heuristics evolve? *Humanities and Social Sciences Communications*, 10(1). <https://doi.org/10.1057/s41599-023-01542-z>
- 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>
- Jylhä, K. M., & Hellmer, K. (2020). Right-Wing Populism and Climate Change Denial: The Roles of Exclusionary and Anti-Egalitarian Preferences, Conservative Ideology, and Antiestablishment Attitudes. *Analyses of Social Issues and Public Policy*, 20(1), 315–335. <https://doi.org/10.1111/asap.12203>
- 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>
- Lacroix, K., Gifford, R., & Rush, J. (2020). Climate change beliefs shape the interpretation of forest fire events. *Climatic Change*, 159(1), 103–120. <https://doi.org/10.1007/s10584-019-02584-6>
- 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_Marketplace_of_Perceptions_(Craig_Lambert).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>
- McCarthy, L., Delbosc, A., Kroesen, M., & Haas, M. de (2023). Travel attitudes or behaviours: Which one changes when they conflict? *Transportation*, 50(1), 25–42. <https://doi.org/10.1007/s11116-021-10236-x>
- Moreno, J. A., Kinn, M., & Narberhaus, M. (2022). A Stronghold of Climate Change Denialism in Germany: Case Study of the Output and Press Representation of the Think Tank EIKE. *International Journal of Communication*, 16, 267–288.
- 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>
- Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.
- 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>
- Raux, C., Chevalier, A., Bougna, E., & Hilton, D. (2021). Mobility choices and climate change: Assessing the effects of social norms, emissions information and economic incentives. *Research in Transportation Economics*, 90, 101007. <https://doi.org/10.1016/j.retrec.2020.101007>



- 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>
- Schneider, C. R., Zaval, L., & Markowitz, E. M. (2021). Positive emotions and climate change. *Current Opinion in Behavioral Sciences*, 42, 114–120. <https://doi.org/10.1016/j.cobeha.2021.04.009>
- 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>
- Sparkman, G., & Attari, S. Z. (2020). Credibility, communication, and climate change: How lifestyle inconsistency and do-gooder derogation impact decarbonization advocacy. *Energy Research & Social Science*, 59, 101290. <https://doi.org/10.1016/j.erss.2019.101290>
- Steinberger, J. (2024). What we are up against. Exposing the secret history of the... | by Julia Steinberger | Medium. <https://jksteinberger.medium.com/what-we-are-up-against-2290ba8c4b5c>
- Stoetzer, L. S., & Zimmermann, F. (2024). A representative survey experiment of motivated climate change denial. *Nature Climate Change*, 14(2), 198–204.
- 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. (2012). Split or Steal? Cooperative Behavior When the Stakes Are Large. *Management Science*, 58(1), 2–20. <https://doi.org/10.1287/mnsc.1110.1413>
- van Lange, P. A., Joireman, J., Parks, C. D., & van Dijk, E. (2013). The psychology of social dilemmas: A review. *Organizational Behavior and Human Decision Processes*, 120(2), 125–141. <https://doi.org/10.1016/j.obhdp.2012.11.003>
- 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>