

PROJECT RESOURCES

The papers listed below have been suggested by project participants and leaders as useful background on topics and issues that our project and workshop touches on. They are meant as resources for a multi-disciplinary project where none of the project participants has expertise in every relevant aspect.

We do not claim to be comprehensive or even to be knowledgeable about all the “classics” that should be included in this selection. Thus, additional suggestions for critical readings can be sent to the project leaders.

Readings organized by topic:

1. Climate Science and Solutions

Burroughs, W. (2003). *Climate into the 21st Century*. Cambridge University Press, Cambridge UK. Selected sections.

Selected sections from an easy to read, well-illustrated book on current knowledge of climate change, climate variability, societal coping strategies, adaptation, vulnerability, and future evolution of the climate, earth system and human society. (Note: Mickey Glantz, Advisory Committee member and workshop participant, is a co-author of this book).

- * What is climate?
- * Changing sensitivity to climate
- * Where people live
- * What people think about their climate
- * The possible impact of human activities
- * Our increasing vulnerability
- * 20th century climate change
- * Climate variations with altitude
- * Variations in the cryosphere
- * The effect of volcanoes on climate
- * Solar influences
- * Human influences on climate - Urbanization
- * Human influences on climate - Greenhouse gases
- * Human influences on climate - Particulates in the atmosphere
- * Human influences on climate - Deforestation and desertification
- * Human influences on climate - Stratospheric ozone depletion
- * Natural variations in the climate
- * Where do we stand now?
- * Global warming in the 21st century
- * Scenarios
- * The uncertainty factor
- * Immediate challenges
- * Future technologies

- * Adapting to future change
- * Protecting the planet and its people
- * Future surprises?

Karl, T. R. and K. E. Trenberth (2003). "Modern global climate change." *Science* 302 (5 December): 1719-1723.

A concise summary of current scientific understanding of climate change, human influences, system feedbacks and prediction capabilities by two leading climate scientists.

McKibben, Bill (2004). "Crossing the Red Line." *The New York Review of Books*. 51(10), June 10, 2004

This is a tour de force book review of 10 recent books discussing the challenges of global environmental and climate change before us. The reviewed books come down pretty heavily on one side of the political spectrum, but include optimist and pessimist, techno-fix as well as soul-searching treatises, all concerned with the options we have for reducing humankind's impact on the environment (not to speak of our habits of mind, heart, and behavior that cause it). Definitely adds to that sense of urgency. For a more technical analysis of some of the potential emission reduction options, see the Hoffert piece.

Hoffert, M.I. et al (2002). "Advanced Technology Paths to Global Climate Stability: Energy for a Greenhouse Planet." *Science* 298 (November 1): 981-987.

2. Framing and Agenda-Setting

Bales, Susan. *The FrameWorks Perspective: Strategic Frame Analysis*.

Available at: <http://www.frameworksinstitute.org/strategicanalysis/perspective.shtml>

Explains what framing is and how to analyze and improve a communications strategy in order to maximize the likelihood that what is said actually matches and fosters a desired policy or campaign outcome.

Bales, S. (2003). *Basic Principles of Media Advocacy*. Washington, DC, The FrameWorks Institute. Available from the FrameWorks Institute website.

How does framing play out in the media and what are the results of particular frames frequently repeated in the news? Very short overview. Nicely distinguishes episodic versus thematic frames, and the messages each conveys.

Gilliam, Franklin and Susan Bales. 2003. *Communications for Social Good*.

Available at: <http://uclaccc.ucla.edu/studies.php>

This is a great overview (albeit directed toward philanthropists) about different approaches toward communication geared toward mobilizing individuals or collectives and policy-makers for social change. A critical review with pros and cons of all discussed approaches.

Mooney, C. (2003). "Breaking the Frame." *The American Prospect* 14 (4): 8 pp. (based on an interview with Susan Bales)

This is an "expose" on The FrameWorks Institute – underlying concepts and ideas and how that relates to environmental or social advocacy campaigns. Easy introduction and overview.

3. Communicating to Diverse Audiences

Vaughan, E. (1993). "Individual and cultural differences in adaptation to environmental risks." *American Psychologist* 48(6): 673-680.

Vaughan, E. (1995). "The significance of socioeconomic and ethnic diversity for the risk communication process." *Risk Analysis* 15(2): 169-180.

Elaine Vaughan, one of this project's advisory committee members, can't join us at the conference, but one of her contributions relates to how different audiences hear communicated messages. Climate change will have to be communicated to all kinds of people – what do we need to know, pay attention to, alter to reach them? These two articles help raise our awareness for these sorts of questions.

4. The Psychology of Risk, Risk Perception, Emotional Responses

Bray, D. and S. Shackley (in review process) "The Alchemy of Experience: Modelling the Social Construction of Quasi-Reality."

This article develops a theoretical model that examines the interaction between individual beliefs and experience of direct weather events and the framing of the issue of global warming or climate change through science or narrative.

Kahneman, D. (2003). "Maps of bounded rationality: Psychology for behavioral economics." *The American Economic Review* 93(5): 1449-1475.

Dan Kahneman, Nobel Prize recipient for his work on "bounded rationality," offers a handy review of the major tenets of risk perception, biases and heuristics in our thinking about risk, and decision-making under conditions of risk and uncertainty. It's the shortest summary of a huge body of work we could find.

Macy, Joanna and Molly Young Brown (1998). *Coming Back To Life: Practices to Reconnect Our Lives, Our World*. New Society Publishers, Gabriola Island, British Columbia (Chapter 2: The Greatest Danger: Apatheia, The Deadening of Mind & Heart, pp. 25-38).

Ecophilosopher, systems thinker, Buddhist scholar, and social activist Joanna Macy describes in highly accessible language how and why we react to overwhelming problems the way we do. While based on a vast body of scholarly work, you won't find that cited here. This chapter is taken from a sort of "handbook for activists" describing the work she facilitates -- all geared toward mobilizing people to be agents of change. Sorry for a marked up chapter!

Nicholsen, Shierry Weber (2003). "The Future and the Possible." Chapter 6 in: *The Love of Nature and the End of the World: The Unspoken Dimensions of Environmental Concern*. MIT Press

A very interesting book situated at the intersection of ecophilosophy and ecopsychology. This chapter looks at how people feel about and deal with the future - the possible good and the possible bad, and how that affects what they do in the present.

Slovic, P., M. L. Finucane, et al. (2003). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. Paper presented at the Annual Meeting of the Society for Risk Analysis, New Orleans, LA.

Paul Slovic, maybe the best-known expert on risk perception and what's known as the "psychometric paradigm" in risk studies – also a member of our Advisory Committee – is increasingly interested in people's emotional responses to risk and risk information. Here he lays out the recent advances in this area of research. He argues convincingly that we cannot ignore the affect side of information reception and response if we want to communicate effectively.

5. Public Attitudes, Opinions and Understanding of Climate Change

Bostrom, A., M.G. Morgan, et al. (1994). "What do people know about climate change? 1. Mental Models." *Risk Analysis* 14(6): 959-970.

The classic piece on mental models related to climate change. This is the theoretical background to the piece by Read et al. below.

Brechin, S. R. (2003). "Comparative public opinion and knowledge on global climatic change and the Kyoto Protocol: The US versus the world?" *International Journal of Sociology and Social Policy* 23(10): 106-134.

A sociological study, in which residents of numerous countries were surveyed regarding their awareness, understanding and attitude about climate change and selected policy solutions. It raises interesting questions (but doesn't offer full explanations) as to why Americans stand out in their deep misunderstanding of the causes and solutions to this global problem.

Fischhoff, B. (yr.?). *Hot Air: The Psychology of CO2-induced climatic change*: 163-184.

This book chapter from one of the fathers of mental model work as related to environmental issues and climate change in particular dates back to the early 1990s, but -- strangely -- reads like the justification for our project. Obviously, the issues have not gone away. In addition, the paper discusses the important contributions the social sciences can make to finding climate change solutions.

Immerwahr, J. (1999). *Waiting for a signal: Public attitudes toward global warming, the environment and geophysical research*, AGU: 18pp.

This review of public understanding of climate change was undertaken/commissioned by the American Geophysical Union (AGU). Raises

very similar issues to other recent research, but emphasizes some interesting moral dimensions not typically found in other work.

Kempton, W. (1993) "Will Public Environmental Concern Lead to Action on Global Warming?" *Ann. Rev. Energy Environ.* 18: 217-245.

This article discusses the recent increase in Americans' concern for the environment and whether or not that concern translates into action, in particular into support for climate change policies. In a detailed and sophisticated analysis, the conclusions point to the many barriers that interfere between concern and behavior.

Kempton, W. (1997). "How the public views climate change." *Environment* 39(9): 12-21, 41.

Long known for his seminal work on public attitudes toward the environment and on mental models, Willett Kempton here explores the models people carry in their heads about climate change, and how these affect their understanding of what ought to be done about the problem (whether or not those "solutions" would be effective in addressing climate change). He discusses implications for better communication programs.

Leiserowitz, A. (2003). *American opinions on global warming: Project results.* Eugene, OR, University of Oregon: 14 pp.

This project summary is one of the most thorough, most recent scientific surveys of Americans' awareness, opinion and understanding of climate change.

O'Connor, R.E., R.J. Bord, et al. (1999). "Risk perceptions, general environmental beliefs and willingness to address climate change." *Risk Analysis* 19(3): 461-471.

This article by one of our Advisory Committee members explores the complex relationship between knowledge, risk perception and behavioral intentions with respect to actions addressing climate change. Interestingly, risk perceptions are not a surrogate for general environmental beliefs but have their own power to account for behavioral intentions.

Read, D., A. Bostrom, et al. (1994). "What do people know about climate change? 2. Survey studies of educated laypeople." *Risk Analysis* 14(6): 971-982.

The empirical case examining people's understanding of climate change, the underlying mental models, and the implications for climate change communication. (See also Bostrom et al. above)

Sterman, J.D. and L.B. Sweeney (2002). "Cloudy skies: Assessing public understanding of global warming." *System Dynamics Review* 18 (2 (Special Issue))

An interesting experimental study with university students examining their ability to understand the climate system. It reiterates some of the findings about lay people's (mis)understanding of the problem, but also raises some additional issues about people's inability to think in systems terms.

Trumbo, C.W. and J. Shanahan (2000). "Social research on climate change: Where we have been, where we are, and where we might go." *Public Understanding of Science* 9: 199-204.

The overview article/editorial for a special issue of Public Understanding of Science which was all focused on people's understanding of climate change.

Ungar, S. (2000). "Knowledge, ignorance and the popular culture: Climate change versus ozone hole." *Public Understanding of Science* 9: 297-312.

This piece by one of our Advisory Committee members examines public understanding of science, and in particular of climate change in the context of larger cultural tendencies and changes. The particular focus is on the common confusion of global warming and stratospheric ozone depletion.

6. Media Coverage/ Journalistic Perspectives

Boykoff, M.T. and J.M. Boykoff (forthcoming). "Balance as bias: Global warming and the U.S. prestige press." *Global Environmental Change*.

This forthcoming article reviews the coverage of climate change in several elite newspapers in the U.S. and examines the ways in which these newspapers try to achieve balance in their coverage of the issue. Given the shifting scientific consensus, this search for balance now amounts to a biased reporting.

Dunwoody, S. (1996). "What's a journalist to do? Challenges and approaches to reporting scientific assessment". *Elements of Change '96: AGCI Session II: Characterizing and Communicating Scientific Uncertainty*. S. Hassol and J. Katzenberger. Aspen, CO, Aspen Global Change Institute: 147-152.

This short piece by one of our Advisory Committee members (a workshop presentation summary) discusses the challenges journalists face in reporting uncertain scientific issues, such as climate change.

Marshall, George and Mark Lynas. (2003). "Why we don't give a damn". *New Statesman*, UK. (www.newstatesman.co.uk/nscoverstory.htm)

This British newspaper cover story is not only a good example of talking about climate change, but also an interesting examination of why people don't respond to the problem.

Stamm, K.R., F. Clark, et al. (2000). "Mass communication and public understanding of environmental problems: The case of global warming." *Public Understanding of Science* 9: 219-237.

This interesting study teases apart the issue of awareness of the problem of climate change and the issue of understanding the causes, and therefore, appropriate solutions. It outlines the stages along the problem path and provides data on public understanding in each stage. Comes from the perspective of greenhouse gases as the main issue in global warming, rather than vulnerability to impacts.

Stocking, S.H. (1996). "How journalists deal with scientific uncertainty". Elements of Change '96: AGCI Session II: Characterizing and Communicating Scientific Uncertainty. S. Hassol and J. Katzenberger. Aspen, CO, Aspen Global Change Institute: 234-238.

With many aspects of climate change being uncertain, and the issue having been portrayed in the press as highly uncertain, it is good to get an insider's view on how the press deals with uncertainty in science stories. Is there anything special about uncertainty in climate change (versus other environmental problems)? What's the impact on people's understanding, on public policy? All interesting questions we will need to think about.

7. Behavior Change of Individuals

Center for Communication Programs, Johns Hopkins University (2003). Steps to Behavior Change. Available at the CCP website at Johns Hopkins.

A one-page overview of the ingredients to behavior change found useful in public health contexts. Do they translate to the environmental arena?

Clayton, S. and S. Opatow (2003). "Introduction: Identity and the Natural Environment". Chapter 1 in: Identity and the Natural Environment: The Psychological Significance of Nature. S. Clayton and S. Opatow (eds.), MIT Press, Cambridge, MA, 1-24.

Kempton, W. and D.C. Holland (2003). "Identity and Sustained Environmental Practice". Chapter 15 in: Identity and the Natural Environment: The Psychological Significance of Nature. S. Clayton and S. Opatow (eds.), MIT Press, Cambridge, MA, 317-341.

These two chapters are from a recent book on the relationship between people's self-conception and aspiration on the one hand and how they act in the world - specifically their environmentally significant behavior - on the other. Clayton and Opatow give the overview, and workshop participant Willett Kempton follows with an empirical study. They make a strong case for the need to pay attention to how people's actions relate to how they see themselves and want to be seen by others.

Frahm, A., D. Glavin, et al. (1995). Changing Behavior: Insights and Applications. Behavior Change Project - Final Report. Seattle, WA, King County Water Pollution Control Division : 20 pp.

This project report came out of a water pollution/management case, but quickly summarizes and reiterates key findings from other behavior change experts, and from social marketing.

Halpern, D., C. Bates, et al. (2004). Personal responsibility and changing behaviour: The state of knowledge and its implications for public policy. Discussion Paper. London, U.K. Cabinet Office, Prime Ministers' Strategy Unit: 70pp.

An interesting review of behavior/social change theories and the role of individual responsibility. Not directly speaking to the issue of climate change, but rather drawing on many different realms for examples, it still is a useful overview.

Kollmuss, A. and J. Agyeman (2002). "Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior?" *Environmental Education Review* 8(3): 239-260.

Why is there so often a gap between people's pro-environmental attitudes and their actual behavior? How can we explain what happens between values/attitudes and what we do in our daily lives? This article reviews a range of explanations and discusses their limitations/usefulness, and then proposes an alternative, more complex way of thinking about this gap.

McKenzie-Mohr, D. (2000). "Fostering sustainable behavior through community-based social marketing." *American Psychologist* 55(5): 531-537.

Doug McKenzie-Mohr, another member of our Advisory Committee who couldn't come to the workshop, is maybe the person introducing the ideas of social marketing into the environmental arena. Early applications have focused on waste and recycling behavior, but more recently he and others have tried to apply the ideas to energy consumption, travel behavior, and other climate-relevant personal behaviors.

Michaelis, L. (2003). "Sustainable consumption and greenhouse gas mitigation." *Climate Policy* 3 (SI): S135-S146.

This article speaks to the role of personal consumption behavior as related to climate change, why it is so hard to change, and what may or may not work in achieving behavior change. Laurie decided not to attend our workshop to reduce his personal emissions of heat-trapping greenhouse gases...

8. Institutional, Organizational, Policy and Collective Social Change

Breit, Keiko et al. (eds.) (2003). *How Institutions Change: Perspectives on Social Learning in Global and Local Environmental Contexts.* (Sections from chapter 1 and the concluding chapter). Leske & Budrich: Opladen, Germany.

The "book end" chapters of this recent anthology give an interesting overview of current state-of-the-art thinking about institutional change. Their argument starts out from the observation that "individual action is of course needed to attain the objectives of a more sustainable world. However, individual action without institutional support remains powerless in the face of the multiple barriers that render unsustainable so many aspects of human life." Read on....

Claussen, E. (2004). *The 10-50 Solution: A decade-by-decade approach to climate change.* Speech, EnvironDesign Conference, Pew Center for Global Climate Change. Available at the Pew Center's Press Room website.

Eileen Claussen, Director of the Pew Center for Global Climate Change, has dedicated her work to helping the business community to address the climate change issue. In this speech, she outlines numerous pioneering examples and their work with industry and businesses. Note that Vicki Arroyo from the Pew Center is on our Advisory Committee and Ben Preston is attending.

Claussen, E. (2004). Climate change: Overcoming the barriers to action. Earth Day Speech, Columbia University, New York, Pew Center for Global Climate Change. Available at the Pew Center's Press Room website.

In this Earth Day speech, Eileen Claussen lays out the most commonly heard excuses for not acting on behalf of climate change, debunks them one by one, and suggests what approach America, and especially the business world, can take to move forward. She calls herself genetically wired to be optimistic, and from that can-do optimism she is incredibly encouraging.

Dietz, T., E. Ostrom, et al. (2003). "The struggle to govern the commons." Science 302 (12 December): 1907-1912.

Climate and the atmosphere are global commons. Why is it so hard to govern them? What have we learned over the past few decades since the "Tragedy of the Commons" by Hardin on what it takes to govern them sustainably? What can we learn from looking at climate change as a collective action challenge?

Doppelt, R. (2003). Leading Change Toward Sustainability: A Change Management Guide for Business, Government, and Civil Society. Greenleaf Publishing, UK.

The book from workshop participant Bob Doppelt is the result of three years of research and outlines a systems approach to organizational change toward sustainability. It is available through the publisher, or any local or online bookstore.

Gladwell, M. (2000). The Tipping Point: How Little Things Can Make a Big Difference . Boston, New York, Back Bay Books.

This New York Bestseller speaks to the phenomenon of "social epidemics" -- an example-rich, popular treatment on how certain phenomena suddenly spread like wildfire through society. In this context he discusses the importance of different kinds of change agents and communication strategies. (Overview chapters)

Loorbach, D. and J. Rotmans (forthcoming). Managing Transitions for Sustainable Development. Transformation Research: A Disciplinary Review. A. Wicczorek and X. Oltshoorn. Amsterdam, Kluwer: 22 pp.

In a relatively new subfield of science called Sustainability Science, people speak of the process of getting from where we are now to a more sustainable world as the "sustainability transition." How to initiate that transition, how to move it along, and how to guide it in a desirable direction is the subject of this forthcoming book chapter. Note also that the idea of a sustainability transition management come mostly out of The Netherlands -- where they are already involved in state-supported pilot experiments with this approach.

Marcell, K., J. Agyeman, and A. Rappaport (2004). Cooling the campus: Experiences from a pilot study to reduce electricity use at Tufts University, USA, using social marketing methods. International Journal of Sustainability in Higher Education, 5(2): 169-189.

This article recounts the experience of using social marketing methods to reduce energy use on a university campus.

Rogers, E.M. (2003). Diffusion of Innovations. New York, Free Press.

This is the "innovation bible" from the grandfather of innovation studies. An interdisciplinary review and synthesis of all the factors that contribute to or hinder the innovation process -- from invention to widespread adoption of new ideas, technologies or social practices. (Overview chapters)

Senge, P.M. (1990). The Fifth Discipline: The Art and Practice of the Learning Organization. New York, Currency Doubleday.

This is the best-known introduction to organizational change -- what it takes for organizations and institutions to move from one way of doing things to another - with plenty of examples from industry and the business/management world. (Selected chapters)

Weatherhead School of Management, Case Western Reserve University and The Natural Step (2004). Effecting Change in Complex Social Systems: Examining dynamics and identifying leverage points.

We've recently connected with other researchers interested in how to build a climate change social movement. From their first conference comes this short summary, background, and social change principles.

9. "Just do it!" – People/Communities/States/Regions Implementing Change

Kousky, C. and S.H. Schneider (2003). "Global climate policy: Will cities lead the way?" Climate Policy 3: 359-372.

This article is a generic overview of what local communities here in the US and elsewhere are doing to begin reducing their emissions.

Kates, R.W. and T.J. Wilbanks (2003). "Making the global local: Responding to climate change concerns from the ground up." Environment 45 (3): 12-23.

Kates and Wilbanks led several large regional teams to examine the issue of how local actions and responses are related to global climate change. Understanding climate change, responses and impacts across multiple scales is an important area of research, and this study focused in on the challenge of making a global issue -- climate change -- local.

Sarewitz, D. and R.A. Pielke Jr. (2000). "Breaking the global warming gridlock." The Atlantic Monthly (July): 55-64.

Climate change will require action to reduce emissions (the front end of the problem - mitigation) and to adapt to inevitable changes (the back end of the problem -- adaptation). This article lays out some "no-regrets" approaches to addressing both sides, suggesting that they could get us out of the stifling debate over whether global warming is happening and "who done it". A provocative read.

Selin, H. and S. D. VanDeveer (forthcoming in 2004). "Canadian-U.S. cooperation: Regional climate change action in the Northeast". Canadian-United States Environmental Relations. P. Le Prestre and P. Stoett. Aldershot, UK, Ashgate: 19 pp.

This forthcoming book chapter gives an overview of what is happening in the Northamerican Northeast in terms of regional, state, and local action on climate change. As the pioneering region on this continent, the Northeast is setting precedent for other states and regions. Good background for the work some of our participants are involved in "on the ground."

10. Social Movements and Counter-Movements (Climate Contrarians)

Bosso, C. and D.L. Guber (2003). "The boundaries and contours of American environmental activism". In: Environmental Policy: New Directions for the Twenty-First Century. N. J. Vig and M. E. Kraft. Washington, DC, CQ Press: 79-101.

This article gives an overview of the current political context (since September 11, 2001) in which environmental issues - climate change and energy in particular - are currently pursued by environmental and grassroots organizations. It also tries to explain why people show "diffuse issue support" but little "crystallized issue concern."

McCright, A.M. and R.E. Dunlap (2001). "Challenging global warming as a social problem: An analysis of the conservative movement's counter-claims." Social Problems 47(4): 499-522.

McCright, A.M. and R.E. Dunlap (2003). "Defeating Kyoto: The conservative movement's impact on U.S. climate change policy." Social Problems 50.

These two articles by McCright and Dunlap discuss the role that climate skeptics and the associated conservative movement play in framing/reframing the public debate about climate change. Interesting purely on the substance, it also is an important balancing contribution to the notion that a social movement is needed to engage the public around climate change.

Hansen, J. (no date). The Global Warming Debate. Available at: <http://www.giss.nasa.gov/edu/gwdebate/>

This is a good example of a scientist (a highly credible one, though not necessarily always a consistent or strategic messenger himself) engaging in debate with some of the most vocal "climate skeptics." It lays out key "skeptics" arguments and the scientific rebuttles - as such very helpful.