

Appendix 3. Papers included in the review of leadership in the environmental sciences.

Environmental sector / field	Approach	Reference
Biodiversity Conservation	General review	Manolis JC, Chan KM, Finkelstein ME, Stephens S, Nelson CR, Grant JB and Domboeck MP. (2008) Leadership: a new frontier in conservation science. <i>Conservation Biology</i> 23 (4): 879-886
Biodiversity Conservation	Review of two case-studies	Black SA, Groombridge JJ and Jones CG. (2011) Leadership and conservation effectiveness: finding a better way to lead. <i>Conservation Letters</i> 4 (5): 329-339
Biodiversity Conservation	General review and expert elicitation	Lockwood M, Davidson J, Hockings M, Haward M and Kriwoken L. (2012) Marine biodiversity conservation governance and management: Regime requirements for global environmental change. <i>Ocean and Coastal Management</i> 69:160-172
Climate change policy	General review	Gupta J. (2010) A history of international climate change policy. <i>Wiley Interdisciplinary Review – Climate Change</i> 1 (5): 636-653; Gupta J, Termeer C, Klostermann J, Meijerink S, van den Brink M, Jong P, Nooteboom S and Bergsma E. (2010). The Adaptive Capacity Wheel: a method to assess the inherent characteristics of institutions to enable the adaptive capacity of society. <i>Environmental Science and Policy</i> 31(6): 459-471
Climate change policy	General review	Burch S. (2011) Sustainable development paths: Investigating the roots of local policy responses to climate change. <i>Sustainable Development</i> 19 (3): 176-188
Climate change adaptation	General review	Kates RW, Travis WR and Wilbanks TJ. (2012) Transformational adaptation when incremental adaptations to climate change are insufficient. <i>Proceedings of the National Academy of Science USA</i> 109 (19): 7156-7161
Common-pool resources	General review	Adams WM, Brockington D, Dyson J and Vira B. (2003) Managing tragedies: understanding conflict over common pool resources. <i>Science</i> 302 (5652): 1915-1916
Fisheries management	Review of 30 case-studies	Walters CJ. (2007) Is adaptive management helping to solve fisheries problems? <i>Ambio</i> 36 (4): 304-307
Marine ecosystem management	Review of eight case studies across four countries	Christie P, Pollnac RB, Fluharty DL, Hixon MA, Lowry GK, Mahon R, Pietri D, Tissot BN, White AT, Armada N and Eisma-Osorio R-L. (2009) Tropical Marine EBM Feasibility: A Synthesis of Case Studies and Comparative Analyses. <i>Coastal Management</i> 37 (3-4): 374-385
Natural resource management	Review of 47 case-studies	Gruber J. (2010) Key principles of community-based natural resource management: a synthesis and interpretation of identified effective approaches for managing the

Natural resource management	General review of positions in network structures	commons. <i>Environmental Management</i> 45 (1): 52-66 Bodin O, Beatrice C and Henrik E. (2006). Social networks in natural resource management: What is there to learn from a structural perspective? <i>Ecology and Society</i> 11 (2)
Natural resource management	Review of three case-studies	Biggs S. (2008) Learning from the positive to reduce rural poverty and increase social justice: Institutional innovations in agricultural and natural resources research and development. <i>Experimental Agriculture</i> 44 (1): 37-60
Social-ecological systems	Conceptual review	Scheffer M, Westley F and Brock W. (2003) Slow response of societies to new problems: causes and costs. <i>Ecosystems</i> 6 (5): 493-502
Social-ecological systems	Conceptual review	Folke C, Hahn T, Olsson P and Norberg J. (2005) Adaptive governance of social-ecological systems. <i>Annual Review of Environment and Resources</i> 30: 441-473
Social-ecological systems	Review of seven case-studies	Fabricius C, Folke C, Cundill G and Lisen S. (2007). Powerless spectators, coping actors, and adaptive comanagers: a synthesis of the role of communities in ecosystem management. <i>Ecology and Society</i> 12 (1)
Social-ecological systems	Review of five case-studies	Olsson P, Gunderson LH, Carpenter SR, Ryan P, Lebel L, Folke C, and Holling CS. (2006). Shooting the rapids: navigating transitions to adaptive governance of social-ecological systems. <i>Ecology and Society</i> 11(1)
Social-ecological systems	General review	Galaz V, Moberg F, Olsson E-K, Paglia E and Parker C. (2010). Institutional and political leadership dimensions of cascading ecological crises. <i>Public Administration</i> 89 (2): 361-380
Societal collapse	Historical review of 5 and 12 case-studies, respectively	Butzer KW. (2012) Collapse, environment, and society. <i>Proceedings of the National Academy of Sciences of the USA</i> 109 (10): 3632-3639; Butzer KW and Endfield GH. (2012) Critical perspectives on historical collapse. <i>Proceedings of the National Academy of Sciences of the USA</i> 109 (10): 3628-3631
Water management	Review of three case-studies	Biggs R, Westley FR and Carpenter SR (2010) Navigating the back loop: fostering social innovation and transformation in ecosystem management. <i>Ecology and Society</i> 15 (2)
Water management	Review of 16 case-studies	Huitema D and Meijerink S. (2010) Realizing water transitions: the role of policy entrepreneurs in water policy change. <i>Ecology and Society</i> 15(2); Meijerink S and Huitema D. (2010) Policy entrepreneurs and change strategies: lessons from sixteen case studies of water transitions around the globe. <i>Ecology and Society</i> 15(2)
Water management	Review of 10 case-studies	Pahl-Wostl C, Craps M, Dewulf A, Mostert E, Tabara D and Taillieu T. (2007). Social learning and water resources management. <i>Ecology and Society</i> 12(2)

Biodiversity conservation	Large-N study of 34 biodiversity projects	Kenward RE, Whittingham MJ, Arampatzis S, Manos BD, Hahn T, et al. (2011) Identifying governance strategies that effectively support ecosystem services, resource sustainability, and biodiversity. <i>Proceedings of the National Academy of Science USA</i> 108 (13): 5308-5312
Biodiversity conservation	Global study of protected area designation	Zimmerer KS, Galt RE and Buck MV. (2004). Globalization and multi-spatial trends in the coverage of protected-area conservation (1980-2000). <i>Ambio</i> 33(8): 520-529.
Fisheries management	Large-N study of 42 co-managed fisheries	Cinner JE, McClanahan TR, MacNeil MA, Graham NAJ, Daw TM, Mukminin A, Feary DA, Rabearisoa AL, Wamukota A, Jiddawi N, Campbell SJ, Baird AF, Januchowski-Hartley FA, Hamed S, Lahari R, Morove T and Kuange J. (2012) Co-management of coral reef social-ecological systems. <i>Proceedings of the National Academy of Science USA</i> 109 (14): 5219-5222
Fisheries management	Meta-analysis of 130 cases of fisheries co-management	Gutierrez NL, Hilborn R and Defeo O. (2011) Leadership, social capital and incentives promote successful fisheries. <i>Nature</i> 470: 386–389
Forest management	Meta-analysis of 69 cases of community forestry management	Pagdee A, Kim YS and Daugherty PJ. (2006) What makes community forest management successful: A meta-study from community forests throughout the world. <i>Society & Natural Resources</i> 19 (1): 33-52
Forest management	Large-N study of 240 community forests	Van Laerhoven F. (2010) Governing community forests and the challenge of solving two-level collective action dilemmas-A large-N perspective. <i>Global Environmental Change – Human and Policy Dimensions</i> 20 (3) SI: 539-546
Fisheries and water management	Large-N study of 40 fisheries and 54 irrigation studies	Ruttan LM. (2006) Sociocultural heterogeneity and the commons. <i>Current Anthropology</i> 47 (5): 843-853.
Natural resource management	Large-N study of 115 villages in China	Pesqué-cela V, Tao R, Liu YD and Sun LX. (2009) Challenging, complementing or assuming 'the Mandate of Heaven'? Political distrust and the rise of self-governing social organizations in rural China. <i>Journal of Comparative Economics</i> 37 (1): 151-168
Biodiversity conservation	Qualitative investigation of participatory policy processes of the Genetic Resources Policy Initiative	Wale E, Chishakwe N and Lewis-Lettington R. (2009) Cultivating participatory policy processes for genetic resources policy: lessons from the Genetic Resources Policy Initiative (GRPI) project. <i>Biodiversity Conservation</i> 18: 1–18
Climate Change	A social constructivist take on leaders as representations / positions	Lansing DM. (2012) Performing carbon's materiality: the production of carbon offsets and the framing of exchange. <i>Environment and Planning A</i> 44(1): 204-220
Fisheries management	Qualitative and quantitative investigation of social capital and leadership (as individuals who mediate agency) in	Bodin O, and Crona B. (2008). Management of Natural Resources at the Community Level: Exploring the role of social capital and leadership in a rural fishing community. <i>World</i>

	resource management in Kenya.	<i>Development</i> 36 (12): 2763-2779
Fisheries management	Qualitative and quantitative investigation of social capital in fisheries co-management in Chile	Marín A, Gelcich S, Castilla JC and Berkes F (2012) Exploring social capital in Chile's coastal benthic comanagement system using a network approach. <i>Ecology and Society</i> 17(1)
Fisheries management	Qualitative investigation of co-management arrangements in Malawi	Njaya F. (2009). Governance of Lake Chilwa common pool resources: evolution and conflicts. <i>Development Southern Africa</i> 26 (4): 663-676; Njaya F, Donda S and Béné C. (2012) Analysis of power in fisheries co-management: experiences from Malawi. <i>Society & Natural Resources</i> 25 (7): 652-666
Fisheries management	Qualitative investigation of co-management arrangements in Malawi across 10 fisheries	Russell AJM and Dobson T. (2011). Chiefs as critical partners for decentralized governance of fisheries: An analysis of co-management case studies in Malawi. <i>Society and Natural Resources</i> 24 (7): 734-750
Forestry	Qualitative and quantitative investigation of the factors influencing 5 communities' adaptive responses to disturbances in USA.	Fleischman FD, Boenning K, Garcia-Lopez GA, Mincey S, Schmitt-Harsh M, Daedlow K, Lopez MC, Basurto X, Fischer B and Ostrom E. (2010) Disturbance, response, and persistence in self-organized forested communities: analysis of robustness and resilience in five communities in southern Indiana. <i>Ecology and Society</i> 15 (4)
Forestry	Qualitative and quantitative investigation of decentralised natural resource management in two communities in Ethiopia.	Mohammed AJ and Inoue M. (2008) Drawbacks of decentralized natural resource management: experience from Chilimo Participatory Forest Management project, Ethiopia. <i>Journal of Forest Research</i> 17 (1): 30-36
Forestry	Quantitative examination of power distribution in local common property forest governance in Mexico	Perez-Cirera V and Lovett JC. (2006) Power distribution, the external environment and common property forest governance: a local user groups model. <i>Ecological Economics</i> 59: 34 – 352
Forestry	Quantitative investigation of the performance of committee led natural resource management in 58 villages in Malawi.	Zulu LC. (2008) Community forest management in southern Malawi: Solution or part of the problem? <i>Society and Natural Resources</i> 21 (8): 687-703
Mangroves	Qualitative examination of mangrove forest management in Thailand	Sudtongkong C and Webb EL. (2008). Outcomes of state- vs. community-based mangrove management in southern Thailand. <i>Ecology and Society</i> 13(2)
Marine ecosystems	Qualitative investigation of pre-conditions for fisheries co-management in seven countries	Chuenpagdee R, and Jentoft S. (2007) Step zero for fisheries co-management: What precedes implementation. <i>Marine Policy</i> 31 (6): 657-668
Marine ecosystems	Qualitative investigation of re-zoning of the Great Barrier Reef Marine Park	Olsson P, Folke C and Hughes TP. (2008) Navigating the transition to ecosystem-based management of the Great Barrier Reef, Australia. <i>Proceedings of the National Academy of Science USA</i> 105 (28): 9489-9494
Marine ecosystems	Qualitative investigation of institutional entrepreneurship	Rosen F and Olsson P. (2013) Institutional entrepreneurs, global networks, and the

	in emergence of the Coral Triangle Initiative	emergence of international institutions for ecosystem-based management: The Coral Triangle Initiative. <i>Marine Policy</i> 38: 195-204. Banks SA, and Skilleter GA. (2010). Implementing marine reserve networks: A comparison of approaches in New South Wales (Australia) and New Zealand. <i>Marine Policy</i> 34: 197-207
Marine protected areas	Qualitative analysis of two marine protected area networks	Carruthers D and Rodriguez P. (2009). Mapuche protest, environmental conflict and social movement linkage in Chile. <i>Third World Quarterly</i> 30(4): 743-760
Natural resource management	Review of environmental conflict and activism in Chile	Marschke M and Berkes F. (2005) Local level sustainability planning for livelihoods: A Cambodian experience. <i>International Journal of Sustainable Development and World Ecology</i> 12 (1): 21-33
Natural resource management	Qualitative and quantitative investigation of the roles and responsibilities of two natural resource management committees in Cambodia.	McKeever M. (2008). Regional institutions and social development in Southern Africa. <i>Annual Review of Sociology</i> 34: 453-473
Natural resource management	Review of regional co-operation in Southern Africa	Hahn T. (2011) Self-Organized Governance Networks for Ecosystem Management: Who Is Accountable? <i>Ecology and Society</i> 16 (2)
Social-ecological systems	Qualitative study of governance networks for ecosystem management	Morgan CR. (2007) Property of spirits: Hereditary and global value of sea turtles in Fiji. <i>Human Organisation</i> 66 (1): 60-68
Turtles	Qualitative investigation of turtles in political and cultural identity in Fiji	Ernstson H. (2013). The social production of ecosystem services: a framework for studying environmental justice and ecological complexity in urbanised landscapes. <i>Landscape and Urban Planning</i> 209: 7-17
Urban ecosystem services	Actor-network analysis of urban land-use in Cape Town and Stockholm	Agyenim JB and Gupta J (2012) IWRM and developing countries: Implementation challenges in Ghana. <i>Physics and Chemistry of the Earth</i> 47-48: 46-57
Water management	Qualitative investigation of the failure of an IWRM concept in a new area (Ghana) and the influence of cultural and political fit.	Hu Z (2011) The travails of the ninth dragon god: the struggle for water, worship, and the politics of getting by in a North China village. <i>Human Ecology</i> 39 (1): 81-91
Water management	Qualitative investigation of the influence of politics on religious beliefs and its role in water management in China	Scholten P. (2010). Leadership in Policy Innovation: A conceptual map. <i>Nature and Culture</i> 5(1): 31-48
Climate change or water management	A grounded theory empirical investigation of the relationship of “daring decision making/makers” in Dutch municipalities to theoretical leadership types	