

Cunningham et al. Environmental Science: A Global Concern 11e  
Further readings for Chapter 20 (renewable energy)

*Italics for titles*

Appleby, A. J. 1999. "The Electrochemical Engine for Vehicles," *Scientific American* 281(1): 74-79. First in a series on advances in fuel cell technology.

Ashley, Steven. 2007. "Diesels Come Clean." *Scientific American* 269 (3): 80-89. Improved engines and exhaust scrubbers, combined with new fuel, will make energy-efficient diesels nearly as green as hybrids.

Asmus, Peter. 2000. "You say you want a revolution." [Green@work](#) November/December 2000: 28-32. Outrage at rising energy prices is prompting a closer look at smarter, cleaner energy source.

Asmus, Peter. 2000. *Reaping the Wind : How Mechanical Wizards, Visionaries, & Profiteers Helped Shape Our Energy Future*. Island Press. The history of commercial wind power in the U. S.

Ayres, Robert U. 2001. "The energy we overlook." *World Watch* 14 (6): 30-39. We waste a vast amount of energy. Conservation and efficiency could free us of fossil fuels completely.

Biswas, Wahidul K., Paul Bryce and Mark Diesendorf. 2001. "Model for empowering rural poor through renewable energy technologies in Bangladesh" *Environmental Science and Policy*. 4 (6): 333-344. Renewable energy technologies could help create income-generating activities for landless and marginal farmers and for women while reducing environmental problems, like deforestation and indoor air pollution.

Blair, Tony. 2003. "Meeting the Sustainable Development Challenge." *Environment* 45 (4): 20-28. The British Prime Minister argues that we haven't been bold enough in addressing poverty and environmental degradation and pledges a 60% reduction in greenhouse gases at a reasonable cost.

Bosshard, Peter. 2003. *Karahnjukar – a Project on Thin Ice*. International Rivers Network. An Analysis of the Karahnjukar Hydropower and Reydaral Aluminum Smelter Project in Iceland. Not all renewable energy projects are environmentally benign.

Bradford, Travis. 2006. *Solar Revolution: The Economic Transformation of the Global Energy Industry*. MIT Press. Argues that over the next 20 years, solar energy will increasingly become the best and cheapest choice for most electricity and energy applications

Brower, M. 1992. *Cool Energy*. MIT Press. A dated but still valuable review of renewable energy alternatives.

Burns, L. D., et al. 2002. "Vehicle of Change." *Scientific American* 2887 (4): 64-73. Fuel cell cars could transform our energy use.

Callaway, Ewen. 2007. "To catch a wave." *Nature* 450 (7167): 156-159. Ocean wave energy is trying to break into the renewable-energy market, but many challenges remain.

Cavallo, A. J., et al. 1993. "Wind energy: Technology and Economics," in *Renewable Energy: sources for fuels and Electricity*. T. B. Johansson, et al (eds). Island Press. See also excellent articles in this volume on hydropower, biomass, and photovoltaic solar energy.

Chiras, Daniel D. 2000. *The Natural House: A Complete Guide to Healthy, Energy-Efficient, Environmental Homes* Chelsea Green Pub. A sourcebook examines the options for economical, energy-efficient, nontoxic homes.

Cole, Nancy and P. J. Skerrett. 1995. *Renewables Are Ready: People Creating renewable Energy solutions*. The Union of Concerned Scientists. Examples of people who have made renewables a reality.

Davis, G. R. 1990. "Energy for Planet Earth," *Scientific American* 263 (3): 54-64. An excellent overview of our global energy resources and how we can achieve a sustainable relationship between energy use and the environment.

Davis, Jill. 2005. "Alexander's Marvelous Machine." *OnEarth* 27 (1): 34-37. Describes the potential of free-flow, or run-of-the-river turbines for generating electricity.

Decicco, John. 2001. *Aceee's Green Book: The Environmental Guide to Cars and Trucks*. American Council for an Energy-Efficient Economy. Compares all makes and models of cars, vans, and light trucks for fuel efficiency and emissions.

Deluga, G. A., et al. 2004. "Renewable Hydrogen from Ethanol by Autothermal Reforming" *Science*, Vol 303, Issue 5660: 993-997. (13 February 2004). A small, portable device makes hydrogen from ethanol using a rhodium, cerium oxide catalyst.

Dias de Oliveira, M.E., et al. 2005. "Ethanol as fuel: Energy, carbon dioxide balances, and ecological footprint." *BioScience* 55(July):593-602. Ethanol production could lessen CO2 emissions.

Dunn, Seth. 1997. "Power of Choice," *World Watch* 10 (5): 30-35. Consumers have a new opportunity to tell electricity suppliers how they want their power produced.

Dunn, Seth. 2000. "The Hydrogen Experiment." *World Watch* 13 (6): 14-25. Iceland has committed to becoming the world's first hydrogen economy.

Ehsani, M ; Rahman, K M ; Toliyat, H A. 1997 “Propulsion System Design of Electric and Hybrid Vehicles” IEEE transactions on industrial electronics 44: (1) – 19 -25. New York: Institute of Electrical and Electronics Engineers.

Elliot, David. 1997. Energy, Society and Environment: Technology for a Sustainable Future. New York: Routledge.

Evens, R. L. 2008 Fuelling the Future: An Introduction to Sustainable Energy. Cambridge University Press.

Ewing, Rex A. 2003. Power with Nature. PixyJack Press. A practical handbook of renewable energy.

Fulkerson, W., M. D. Levine, J. Sinton and A. J. 2005 Gadgil, Sustainable, efficient electricity service for one billion people, Energy for Sustainable Development, 2005, IX (2), 26-34.

Flavin, Christopher and Seth Dunn. 1999. “A new energy paradigm for the 21<sup>st</sup> century.” Journal of International Affairs 53: 167-190. Renewable energy sources offer options for the future.

Flavin, Christopher. 1999. “Bull Market in Wind Energy.” World Watch. 10 (2): 24-27. Many countries are finding that wind energy makes the most sense.

Friedman, T. L. 2008 *Hot, Flat, and Crowded: Why We Need a Green Revolution--and How It Can Renew America*. Farrar, Straus and Giroux. Argues that moving to renewable, sustainable energy will not only solve the climate crisis, but also revitalize our economy.

Geller, Howard. 2002. Energy Revolution: Policies for a Sustainable Future. Island Press. Shows how a transformation from a carbon-based world economy to one based on high efficiency and renewables is a necessary step if we are to achieve sustainability.

Gipe, Paul. 2004. Wind Power: Renewable Energy for Home, Farm, and Business. Green Press. A practical guide to wind energy.

Gipe, Paul 1999. Wind Energy Basics : A Guide to Small and Micro Wind Systems Real Goods Solar Living Books. Everything you need to know about wind power.

Gloaguen, F., Lawrence, J. D. & Rauchfuss, T. B. 2001. “Biomimetic hydrogen evolution catalyzed by an iron carbonyl thiolate. Journal of the American Chemical Society 123: 9476 - 9477. Using hydrogenase enzymes from bacteria, German chemists have found a way to generate clean-burning hydrogen gas from acids.

Goettemoeller, Jeffrey and Adrian Goettemoeller 2007, *Sustainable Ethanol: Biofuels, Biorefineries, Cellulosic Biomass, Flex-Fuel Vehicles, and Sustainable Farming for*

*Energy Independence*, Praire Oak Publishing,. Brief and comprehensive account of the history, evolution and future of ethanol.

Greene, N., and Y. Mugica. 2005. *Bringing Biofuels to the Pump: An Aggressive Plan for ending America's Oil Dependence*. Washington, D.C.: Natural Resources Defense Council. Concludes that energy crops could boost farm income, save consumers money, and reduce greenhouse gas emissions.

Greene, Nathanael, et al. 2004. *Growing Energy: How Biofuels Can Help End America's Oil Dependence*. Natural Resources Defense Council. Concludes that energy crops could boost farm income, save consumers money, and reduce greenhouse gas emissions.

Haile, S. M., et al. 2001. "Solid acids as fuel cell electrolytes." *Nature* 410: 910 - 913. This new type of fuel cell may offer greater efficiency at lower cost than others now being tested.

Hamakawa, Y. 1987. "Photovoltaic Power." *Scientific American* 256 (4): 86-93. A good description of photovoltaic power and how it works.

Hermance, David and Sasaki, Shoichi. 1998. "Special report on electric vehicles - Hybrid electric vehicles take to the streets" - *IEEE spectrum*. 35 (11): 48-53. New York: Institute of Electrical and Electronics Engineers.

Herzog, Antonia V. et al. 2001. "Renewable Energy: A Viable Choice." *Environment* (December 2001) pp 8-20. An interesting comparison of operating and environmental costs of different options.

Hill, J., et al. 2009. "Climate change and health costs of air emissions from biofuels and gasoline." *PNAS* 106: 6: 2077-2082. A combined life-cycle, climate-change, and health effects analysis calculates that corn ethanol (depending on biorefinery type) can be as much as twice as costly as gasoline, while cellulosic ethanol (depending on the feedstock) could cost only about half as much as gasoline.

Hill, J. et al. 2006. "Environmental, economic, and energetic costs and benefits of biodiesel and ethanol biofuels." *Proceedings of the National Academy of Science* 103 (30): 11206-11210. Biofuels produced from low-input biomass grown on agriculturally marginal land could provide more net energy with lower environmental and social costs than food-based biofuels.

Hoagland, William. 1995. "Solar Energy," *Scientific American* 273( 3): 170-173. Explains how solar power works.

Hodkinson, Ron and John Fenton. 2001. *Lightweight Electric/Hybrid Vehicle Design*. Society of Automotive Engineers.

Hoffmann, Peter. 2001. *Tomorrow's Energy: Hydrogen, fuel Cells, and the Prospects for a Cleaner Planet*. MIT Press. A review of clean energy options.

Holmes, H. 1993. "Unplugged," *Sierra* 78 (5): 23-27. What would it be like to live "off-grid"? Some good examples of how people are using energy conservation and alternative sources to free themselves from dependence on utilities.

Jenkins, Nick and J. F. Walker. 1997. *Wind Energy Technology*. Blackwell Scientific. A primer for wind energy.

Jones, M. 1995, Hybrid vehicles - the best of both worlds? *Chemistry and Industry*. no. 15,: 589

Jurgen., Ronald K. (ed). 2002. *Electric and hybrid-electric vehicles*. Warrendale, PA : Society of Automotive Engineers.

Kachadorian, James. 1997. *The Passive Solar House*. Real Goods Independent Living Books. Practical directions for building a solar house.

Kammen, Daniel. 1995 "Cookstoves for the Developing World," *Scientific American* 273 (1): 72-75. Inexpensive but efficient cookstoves could cut air pollution and save energy for billions of people.

Kennedy, Donald. 2004. "The Hydrogen Solution." *Science* 305 (5686): 917. Introduction to a special issue on hydrogen fuel.

Komp, Richard J. 2001. *Practical Photovoltaics : Electricity from Solar Cells*. Aatec Pub. How photovoltaic systems work.

Koppel, Tom. 1999. *Powering the Future: The Ballard Fuel Cell and the Race to Change the World*. John Wiley & Sons.

Kunz, T.H., et al. 2007. "Ecological impacts of wind energy development on bats: questions, research needs, and hypotheses." *Frontiers in Ecology and the Environment* 5 (6): 315-324. In some areas wind turbines are a threat to bats.

LaDuke, Winona. 2004. "Lakota Winds" *Orion* 23 (6): 62-69. Indian reservations on the Great Plains are among the poorest places in America, but they have a wealth of wind energy. Native people are beginning to develop that potential.

Lawrence, Robyn Griggs. 2000. "Comfortably Off The Grid." *Natural Home*. July/August 2000. A wildfire clears the way for a couple to put their principles into practice in this solar, straw bale home and office.

Liska, A. J., et al, 2009 "Improvements in Life Cycle Energy Efficiency and Greenhouse Gas Emissions of Corn-Ethanol." *J. Industrial Ecology* 13 (1): 58-74. The authors dispute

claims that corn-ethanol is environmentally worse than gasoline. They argue that previous studies used out-dated data on corn fermentation, but they fail to consider land-use questions.

Lehman, Peter and Christine Para. 1994. "Hydrogen Fuel from the Sun." *Solar Today* 8: 20-25. Hydrogen gas produced electrolytically with photovoltaic energy could substitute for natural gas in many applications.

Kim, S.; Dale, B. E. 2004. "Global Potential Bioethanol Production from Wasted Crops and Crop Residues," *Biomass and Bioenergy*. 26, 361-375. We have enough land to produce food and fuel.

Kim, S.; Dale, B. E. 2004. "Cumulative Energy and Global Warming Impact from the Production of Biomass for Biobased Products," *Journal of Industrial Ecology*. 7 (3-4), 147-162. The authors contend that biofuels, especially cellulose-based ethanol provides a net positive energy gain.

Knight, Jonathan. 2004. "Urban wind power: Breezing into town." *Nature* 430 : 12-13. Wind turbines proposed for New York City's Freedom Tower would make it the highest urban wind farm in the world.

Liu, H., et a. 2004. "Production of electricity during wastewater treatment using a single chamber microbial fuel cell." *Environmental Science and Technology*, published online, doi:10.1021/es034923g (2004). Microbes in wastewater could produce useful energy.

Lofstedt, R. E. 1993. "Hard Habits to Break: Energy Conservation Patterns in Sweden," *Environment* 35(2): 10-20. Sweden uses much less energy per person than the U.S. How do they do it?

Lovins, Amory B. 1976. *The Energy Controversy: Soft Path Questions and Answers*. Brick House Pub Co. A classic argument for renewable energy and conservation.

Lovins, Amory B. 2002. "Who Needs a Furnace?" *Orion Afield*" 6 (3): 16-18. Energy efficiency can make us independent.

Lovins, Amory B., et al. 2001. *Global Energy: Challenges and Priorities*. Council on Foreign Relations Press. Data on energy markets and futures.

Maggetto, G ; Mierlo, J Van 2000. "Fuel cells: Systems and applications - Electric vehicles, hybrid vehicles and fuel cell electric vehicles : State of the art and perspectives" *Annales de chimie--science des matériaux*. 26 (4): 9-12.

Markvart, Tomas. 2000. *Solar Electricity* 2<sup>nd</sup> ed. John Wiley & Sons. The history and promise of solar energy, focusing on the practical aspects of photovoltaics.

Marris, Emma. 2006. "Sugar cane and ethanol: Drink the best and drive the rest." *Nature* 444: 670-672. A summary of net energy yields from biomass.

McBride, Peter. 2002. "Hard-Core Wind Advocates." *Orion* Afield 6 (3): 10-15. How activists are working for renewable energy.

McKibben, Bill. 2003. "Serious Wind: Why environmentalists should be careful what they wish for." *Orion*. 22 (4): 14-15. An interesting perspective on the Nantucket Sound wind farm.

Mierlo, J. V. et al 2003. "Models of energy sources for EV and HEV: fuel cells, batteries, ultracapacitors, flywheels and engine-generators". *Journal of Power Sources* Volume 128, Issue 1, 29 March 2004, Pages 76-89

Moreira, Naila. 2005. "Growing Expectations: New technology could turn fuel into a bumper crop." *Science News* 168 (14):218-220. A good summary of the biofuel debate.

National Renewable Energy Lab (NREL). 2004. 21st Century Complete Guide to Solar Energy and Photovoltaics - Solar Power, Solar Cell Research, Silicon and Solid State Materials Research and Development. An eBook collection of official federal documents on solar energy development (CD-ROM).

Pahl, Greg. 2005. *Biodiesel: Growing a New Energy Economy*. Chelsea Green. Reviews the potential for crop-derived liquid fuel.

Pahl, Greg. 2003. *Natural Home Heating*: Chelsea Green. A guide to renewable energy heating options.

Parks, Noreen. 1996. "Bounty from the Sea: A Visionary's Quest to Tap Vast Reservoirs of Energy Stored in the Oceans has Finally -- and Literally -- Borne Fruit," *Earth* 5(4):50-55.

Patel, Mukund R. 1999. *Wind and Solar Power Systems*. CRC Press. An up-to-date reference on alternative energy sources.

Patterson, W. 1994. *Power from Plants: The global Implications of New Technologies for Electricity from Biomass*. Earthscan Publications. A good review of biomass potential.

Pearson, David (Editor). 1996. *The Natural House Catalog : Everything You Need to Create an Environmentally Friendly Home*. Fireside Press. All the materials, products, and services you need to create and maintain an ideal living space.

Penney, T. and D. Bharathan. 1987. "Power from the Sea." *Scientific American* 256 (1): 86-92. A good discussion of ocean thermal electric conversion (OTEC).

Pernick, Ron and Clint Wilder. 2007. *The Clean Tech Revolution: The Next Big Growth and Investment Opportunity*. Collins. Describes how green technology is becoming cost-effective and good business.

Pimental, David and Tad W. Patzek. 2005. "Ethanol Production Using Corn, Switchgrass, and Wood; Biodiesel Production Using Soybean and Sunflower." *Natural Resources Research* 14 (1): 65-76. Calculates that both crop-based ethanol and biodiesel take more energy to produce than they yield.

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Randerson, James. 2003. "The clean green energy dream." *New Scientist*, August 16, 2003 p. 8-11. Renewables are here.

Rembert, Tracey C. 1997. "Energy for the Next Century," *E Magazine* 8(6):28-31. Renewable energy is making a dramatic comeback.

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Reynolds, Michael. 1993. *Earthship III*. Taos, NM: Earthship Publications. Detailed instructions for building rammed earth and tire construction houses.

Roberts, Carolyn. 2002. *A House of Straw*. Chelsea Green. An excellent, illustrated diary of the process of designing and building a straw bale house using mostly volunteer labor.

Rosen, Harold A. and Deborah R. Castleman. 1997. "Flywheels in Hybrid Vehicles," *Scientific American* 277 (4): 75-79. New technologies offer promise for clean, efficient transportation.

Sandalow, David. 2007. *Ending Oil Dependence*. The Brookings Institution. Plug-in hybrid engines, biofuels and other technologies can help end the United States' oil dependence in a generation.

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Sastry, Anjali M. and Ashok J. Gadgil. 1996. "Bombay Efficient Lighting Large-scale Experiment (BELLE): Blueprint for improving energy efficiency and reducing peak electric demand in a developing country," *Atmospheric Environment* 30(5): 803-808. A plan for energy conservation in India.



Schaeffer, J. and D. Pratt. 1999. *Solar Living Sourcebook* (10th ed.) Chelsea Green Publishers. A comprehensive "do-it-yourself" book for sustainable energy and independent living.

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Schröder, U., Niesen, J. & Scholz, F. 2003. "A generation of microbial fuel cells with current outputs boosted by more than one order of magnitude." *Angewandte Chemie International Edition* 42: 2880 – 2883. A prototype microbial fuel cell captures the energy produced by *Escherichia coli* as it feeds on sugar

Scigliano, Eric. 2005. "Wave Energy: Can a mechanical snake that surfs the ocean squeeze enough watts from water?" *Discover* 26 (12): 42-45. Describes the Pelamis wave converter.

Service, Robert F. 2004. "The Hydrogen Backlash." *Science* 305 (5686): 958-961. As policymakers around the world evoke grand visions of a hydrogen- fueled future, many experts say that a broader-based, nearer-term energy policy would mark a surer route to the same goals

Shao, Zongping and Sossina M. Haile. 2004. "A high-performance cathode for the next generation of solid-oxide fuel cells." *Nature* 431: 170-173. A new cathode composition may allow lower temperature solid-oxide fuel cells.

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Snell, Marilyn B. 2003. "Power Lunch" *Sierra* 87 (4): 28-39. a group of energy experts discuss the potential for renewable energy.

Stang, Alanna and Christopher Hawthorne. 2005. *The Green House: New Directions in Sustainable Architecture*. Princeton Architectural Press. Innovative ideas for conserving energy and using recycled, non-toxic materials in home construction.

Steen, Athena S. et al. 1994. *The Straw Bale House*. Hopewell, CA: Real Goods Publishers. Practical directions and inspiring case studies of straw bale construction.

Stone, R. and P. Szuromi. 1999. "Powering the Next Century." *Science (US)* 285:677, July 30, 1999. Introduction to a special issue on fuel cells.

Strong, Steven J. 1994. *The Solar Electric House : Energy for the Environmentally-Responsive, Energy-Independent Home*. Chelsea Green Publishers. How to live independently with solar energy.

Tickell, Joshua, et al. 2000. *From the Fryer to the Fuel Tank: The Complete Guide to Using Vegetable Oil as an Alternative Fuel*. Tickell Energy Consultants 3rd ed. Information on how to convert ordinary vehicles to run on biodiesel fuel.

Tilman, D. et al., 2009. "Beneficial Biofuels—The Food, Energy, and Environment Trilemma." *Science* **325** (5938), 270-277 Exploiting multiple feedstocks, under new policies and accounting rules, to balance biofuel production, food security, and greenhouse-gas reduction.

Tilman, D., et al. 2006. "Carbon-Negative Biofuels from Low-Input High-Diversity Grassland Biomass." *Science* 314. (5805): 1598-1600. Biofuels derived from low-input high-diversity (LIHD) mixtures of native grassland perennials can provide more usable energy, greater greenhouse gas reductions, and less agrichemical pollution per hectare than can corn grain ethanol or soybean biodiesel

Tromp, Tracey K., et al. 2003. "Potential Environmental Impact of a Hydrogen Economy on the Stratosphere." *Science*. 300 (5626): 1740-1742. If hydrogen becomes widespread as a fuel, escaped gas could cool the stratosphere and lead to increased ozone depletion.

Udall, J. R. 1990. "Conservation Profile: Amory Lovins," *Sierra* 75 (1): 128-132. An interview with the guru of energy efficiency and soft paths to energy independence.

Vaitheeswaran, Vijay. 2003. *Power to the People: How the Coming Energy Revolution Will Transform an Industry, Change Our Lives, and Maybe Even Save the Planet*. Farrar, Straus and Giroux. The author, a correspondent for *The Economist* magazine, argues that our current energy polities are both environmentally and economically destructive.

Van Dresser, Peter. 1996. *Passive Solar House Basics*. Ancient City Press. How to build a solar adobe home.

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Weisman, Alan. 1998. *Gaviotas: A village to reinvent the world*. Chelsea Green Publishing. Renewable energy in the developing world.

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Yago, Jeffrey R. 1999. *Achieving Energy Independence - One Step at a Time*. Dunimis Technology. Living off the grid.

Zhang, Y.-H.P., and L.R. Lynd. 2005. Cellulose utilization by *Clostridium thermocellum*: Bioenergetics and hydrolysis product assimilation. *Proceedings of the National Academy of Sciences* 102(May 17):7321-7325. This system may have a higher energy yield than other fermentation processes.

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