

Water & Biofuels Resources

Scarcity/Trends

Papers

Understanding water risks: A primer on the consequences of water scarcity for government and business (2009) Stuart Orr, Anton Cartwright & Dave Tickner. WWF Water Security Series, retrieved from: http://assets.wwf.org.uk/downloads/understanding_water_risk.pdf

Report Finds Water Stress Rapidly Becoming Key Strategic Risk to Commerce; Impending Water/Energy Collision (March 2009) Rosebro, Jack Green Car Congress Blog retrieved from: <http://www.greencarcongress.com/2009/03/report-finds-wa.html>

Water and Biofuels in 2030 (2009) Bonnet, Jean-François, Daphné Lorne. IDDRI Cahier du CLIP N° 19, retrieved from: <http://www.iddri.org/Publications/Les-cahiers-du-CLIP/Water-and-Biofuels-in-2030>

Water for Food, Water for Life: A Comprehensive Assessment of Water Management in Agriculture (2007) London: Earthscan, and Colombo: International Water Management Institute, retrieved from: http://www.iwmi.cgiar.org/assessment/files_new/synthesis/Summary_SynthesisBook.pdf

Water Scarcity and Climate Change: Growing Risks for Businesses and Investors (2009) Morrison et al, retrieved from: http://www.pacinst.org/reports/business_water_climate/full_report.pdf

Articles

As Supplies Dry Up, Growers Pass On Farming and Sell Water (January 2008) Associated Press, retrieved from: <http://www.ewg.org/node/25893>

Drought Tightens Grip on Southeast (2007) Associated Press, retrieved from: <http://www.msnbc.msn.com/id/21312383/>

March 2007 Monthly Update: Global Biofuel Trends, (Apr 2007) Davis, Chrystal, retrieved from <http://earthtrends.wri.org/updates/node/180>

How Ethanol is Making the Farm Belt Thirsty (September 2007) Wall Street Journal, retrieved from: <http://online.wsj.com/article/SB118895453134517631.html>

The Future Is Drying Up (October 2007) New York Times, retrieved from: <http://www.nytimes.com/2007/10/21/magazine/21water-t.html>

Great Lakes Key Front in Water Wars, (October 2007) Chicago Tribune, retrieved from: <http://www.midwestadvocates.org/advocacy/water/annex/GLmedia/10-28-07%20ChicagoTribune%20Great%20Lakes%20Key%20Front%20In%20Water%20Wars.story.htm>

Water Governance and Policies

Papers

Fundamentals of a Sustainable US Biofuels Policy (January 2010) Baker Institute Policy Report, retrieved from: <http://www.bakerinstitute.org/programs/energy-forum/publications/energy-studies/the-fundamentals-of-a-sustainable-u.s.-biofuels-policy>

International Trade in Biofuels: Good for Development? And Good for Environment? (2006) London: IIED, IIED Briefing. European Commission, retrieved from www.iied.org/pubs/pdfs/11068IIED.pdf

Thirst for Corn: What 2007 Plantings Could Mean for the Environment (2007) Marshall, Liz. WRI Policy Note World Resources Institute, Washington, DC, retrieved from: <http://www.wri.org/publication/thirst-for-corn>

Water Intensity of Transportation Fuels (July 2008) King, Carey W. and Michael E. Webber. Environ.Sci Technol, retrieved from: <http://www.circleofblue.org/waternews/wp-content/uploads/2010/08/Webber-water-in-transportation.pdf>.

Water Footprint of Biofuels

Another Biofuels Drawback: The Demand for Irrigation (October 2009) Science 326 Vol. 326. no.5952, pp. 516 – 517 DOI: 10.1126/science.326_516 retrieved from: www.sciencemag.org/cgi/content/summary/326/5952/516

Assessing the Environmental Impacts of Freshwater Consumption in LCA (April 2009) Pfister,Stephan Annette Koehler and Stefanie Hellweg. Environ. Sci. Technol, retrieved from: <http://www.ifu.ethz.ch/ESD/publications/2009/es802423e>

Biofuels and Water: An Exploration (2008) Meijerink,Gerdien, Hans Langeveld, & Petra Hellegers. An EU Strategy for Biofuels: Impact Assessment, Brussels, Belgium (Commission of the European Community), retrieved from: www.boci.wur.nl/.../Fullreport1_Water_Meijerink_Hellegers_Langeveld.pdf

Bioenergy and water—the implications of large-scale bioenergy production for water use and supply (Dec. 2002) Berndes, Göran. Global Environmental Change Volume 12, Issue 4, December 2002, pp. 253 –271 DOI:10.1016/S0959-3780(02)00040-7 (need to purchase).

Bioenergy and Water Paper (2009) UNEP, Issue Paper Series, retrieved from: http://www.unep.fr/energy/activities/water/pdf/Issue%20Paper%20No.2_FINAL.pdf

The Water Footprint of Biofuels: A Drink or Drive Issue? (May 2009) R. Dominguez-Faus, Susan E. Powers, Joel G. Burken, and Pedro J. Alvarez. Environ. Sci. Technol., 43 (9), 3005-3010 DOI: 10.1021/es802162x, retrieved from: <http://cohesion.rice.edu/engineering/pedroalvarez/emplibrary/103.pdf>

The Water Footprint of Biofuel Production in the USA (2010) Powers, Susan E. Rosa Dominguez-Faus and Pedro JJ Alvarez. Biofuels 1(2),255-260, retrieved from: <http://www.future-science.com/doi/abs/10.4155/bfs.09.20>

Water Footprint of Biofuels cont'd

Water footprint of bio-energy and other primary energy carriers (2008) Gerbens-Leenes, Winnie. Arjen Y. Hoekstra, and Theo H. van der Meer, retrieved from: <http://www.waterfootprint.org/?page=files/Publications>

Water Implications of Biofuels Production in the United States (2008) Water Science and Technology Board (WSTB), retrieved from: http://books.nap.edu/openbook.php?record_id=12039&page=1

Water Embodied in Bioethanol in the United States (2009) Suh et al. Environ. Science Technology Aug. 2009 43 (8), 2688-2692 • DOI: 10.1021/es8031067, retrieved from: <http://www.unep.fr/energy/activities/water/index.htm>

Bioenergy and Water: the Implications of Large-Scale Bioenergy Production for Water Use and Supply (December 2002) Global Environmental Change, 2002 Global Environmental Change Volume 12, Issue 4, December 2002, pp 253-271 (need to purchase)

Ethanol Craze Endangers U.S. Plains Water: Report (September 2007) Carey Gillam. Reuters, retrieved from <http://uk.reuters.com/article/idUKN2044379220070920>

Preliminary Observations on the Links between Water and Biofuels and Electricity Production: Testimony Before the Subcommittee on Energy and Environment, Committee on Science and Technology, House of Representatives Statement of Anu Mittal, Director, Natural Resources and Environment (July 9, 2009), retrieved from: www.gao.gov/new.items/d09862t.pdf

Energy-Water Nexus: Many Uncertainties Remain about National and Regional Effects of Increased Biofuel Production on Water Resources (November 2009) Government Accounting Organization, retrieved from: www.gao.gov/new.items/d10116.pdf

Water Use by Ethanol Plants: Potential Challenges (October 2006) Keeney, Dennis and Mark Muller. Institute for Agriculture and Trade Policy, retrieved from: www.agobservatory.org/library.cfm?refid=89449

Articles

Ethanol Faces Big Hurdle: Water Use the Plants Consume Hundreds of Thousands of Gallons of Water Daily (2007) St Peterburg Times, retrieved from: http://www.sptimes.com/2007/05/28/Hillsborough/Ethanol_faces_big_hur.shtml

Modeling, Metrics and Certification

Accounting for the Water Impacts of Ethanol Production (2010) Fingerman, Kevin R et al. Environ. Res. Lett. 5 014020 DOI: 10.1088/1748-9326/5/1/014020, retrieved from: <http://iopscience.iop.org/1748-9326/5/1/014020/>

Biomass Certification: Focus on Water (2009) Roth, Elvira, Horst Fehrenbach and Kirsten Wiegmann. IFEU and Öko-Institut, retrieved from: [www.unep.fr/.../water/.../IFEU_OEKO\(2009\)%20%20Biomass%20certification_Focus%20on%20Water.pdf](http://www.unep.fr/.../water/.../IFEU_OEKO(2009)%20%20Biomass%20certification_Focus%20on%20Water.pdf)

Consumptive Water Use in the Production of Ethanol and Petroleum Gasoline (2009) M. Wu, M. Mintz, M. Wang, and S. Arora. (ANL/ESD/09-1), retrieved from: <http://www.transportation.anl.gov/pdfs/AF/557.pdf>

Corporate Water Accounting: An Analysis of Methods and Tools for Measuring Water Use and Its Impacts (2010) Morrison, Jason, Peter Schulte, and Rita Schenk. Pacific Institute and the Institute for Environmental Research and Education, retrieved from: http://www.pacinst.org/reports/corporate_water_accounting_analysis/index.htm

Modelling Biofuels and Water Quality: challenges and opportunities for simulation modeling (May 2010) Engel, Bernard¹, Chaubey, Indrajeet, Thomas, Mark, Saraswat, Dharmendra, Murphy, Patrick, Bhaduri, Budhendra. *Biofuels*, Volume 1, Number 3, pp. 463-477(15) (need to purchase)

The Role of Water in Sustainable Biofuels (2009) Winrock Foundation. retrieved from <http://www.unep.fr/energy/activities/water/index.htm>

Other

Biofuels, Land, and Water: A Systems Approach to Sustainability (June 2009) Gayathri Gopalkrishnan et al. US Dept. of Energy Publications, retrieved from: <http://pubs.acs.org/doi/abs/10.1021/es900801u>

Diverse feedstocks key to sustainable, successful biofuels (August 2010) Bevel, Chris. *Ethanol Producer Magazine*, retrieved from: http://ethanolproducer.com/article.jsp?article_id=6891

Feedstocks for Lignocellulosic Biofuels (August 2010) Somerville, Chris, Heather Youngs, Caroline Taylor, Sarah C. Davis, and Stephen P. Long. *Science* 329 (5993), 790. DOI: 10.1126/science.1189268, retrieved from: <http://www.sciencemag.org/cgi/content/abstract/329/5993/790>

Impact of Biofuel Crop Production on the Formation of Hypoxia in the Gulf of Mexico (Aug 2009) Costello, Christine, W. Michael Griffin, Amy E. Landis and H. Scott Matthews. *Environ. Sci. Technol.*, 2009, 43 (20), pp 7985–7991 DOI: 10.1021/es9011433, retrieved from: <http://pubs.acs.org/doi/abs/10.1021/es9011433> (need to purchase)

Jatropha and Pongamia: Improving Livelihoods (2009) Wani, Suhas et al. 6th International Biofuels Conference Proceedings, retrieved from: <http://www.unep.fr/energy/activities/water/index.htm>

Potential Impacts of Biofuels Expansion on Natural Resources: A Case Study of the Ogallala Aquifer Region (2007) Roberts et al. Environmental Defense, retrieved from: <http://www.edf.org/page.cfm?tagID=1550>

Rainfed Plantations on Wastelands in India (2009) Wani, Suhas et al. 6th International Biofuels Conference Proceedings, retrieved from: <http://www.unep.fr/energy/activities/water/index.htm>

Smart Choices for Biofuels (2009) Earley, Jane and Alice McKeown. Worldwatch Institute and the Sierra Club, retrieved from: <http://www.worldwatch.org/files/pdf/biofuels.pdf>

Unlocking Potential of Rainfed Agriculture (2009) Wani, Suhas et al. 6th International Biofuels Conference Proceedings, retrieved from:
<http://www.unep.fr/energy/activities/water/index.htm>

Water Demand Global Bioenergy Production (2008) Berndes, Göran. retrieved from:
<http://www.unep.fr/energy/activities/water/index.htm>

Water, Energy and Climate Change: A contribution from the business community (2009) WBCSD, retrieved from: <http://www.wbcsd.org/includes/getTarget.asp?type=d&id=MzM3NTI>

Which biomass resources should be used to obtain a sustainable energy system? (2009) Lorne, Daphné. IFP, retrieved from:
http://ifp.com/content/download/69130/1492286/version/2/file/Panorama2010_07-VA_Biomass-Resources.pdf

Water in a Changing World (WWDR3) World Water Assessment Programme (2009). The United Nations World Water Development Report 3: Water in a Changing World. Paris: UNESCO, and London: Earthscan Economic Commission for Europe (ECE) Economic and Social Commission for Asia and the Pacific, retrieved from: <http://www.unesco.org/water/wwap/wwdr/wwdr3/>

Additional resources

Water Footprint Network: <http://www.waterfootprint.org/?page=files/Publications>

More information on the potential ISO standard on water footprint is available at:
http://www.iso.org/iso/iso-focus-plus_index/iso-focusplus_online-bonus-articles/isofocusplus_bonus_water-footprint.htm