



BRUSSELS POLICY BRIEFING N. 56

The Land-Water-Energy nexus and the Sustainability of the Food System

Organisers: CTA, ACP Secretariat, European Commission/DG DEVCO, Concord

Wednesday 3rd July 2019, 9h00-13h00

ACP Secretariat, 451 Avenue Georges-Henri, 1200 Brussels, Room C

<http://brusselsbriefings.net>

RESOURCES

European Commission

European Commission. Position Paper on Water, Energy, Food, and Ecosystem (WEFE) Nexus and Sustainable development Goals (SDGs). JRC Technical papers. Editors: C. Carmona-Moreno, C. Dondeynaz, M. Biedler, EUR 29509 EN, Publications Office of the European Union, Luxembourg, 2019.

http://publications.jrc.ec.europa.eu/repository/bitstream/JRC114177/kjna29509enn_002.pdf

EC. The relevance of the water-energy nexus for EU policies. Setis Magazine No. 18.- October 2018. https://setis.ec.europa.eu/system/files/setis_magazine_18_online_1.pdf

Kougias I., Szabó S., Scarlat N., Monforti F., Banja M., Bódík K., Moner-Girona M., Water-Energy-Food Nexus Interactions Assessment: Renewable energy sources to support water access and quality in West Africa, Luxembourg, European Commission, 2018.

https://www.water-energy-food.org/fileadmin/user_upload/files/documents/organisations/j/JRC_WEF_Nexus_interaction_assessment_West_Africa.pdf

European Commission, Joint Research Centre, 'Photovoltaic Geographical Information System (PVGIS): Geographical Assessment of Solar Resource and Performance of Photovoltaic Technology'. 2017a. URL <http://re.jrc.ec.europa.eu/pvgis/index.htm>.

European Commission, Joint Research Centre, 'RE2nAF: Renewable Energies Rural Electrification Africa'. 2017b. URL <http://re.jrc.ec.europa.eu/re2naf.html>.

Bartholomé E et al., 'The availability of renewable energies in a changing Africa', JRC Scientific and Policy Report, European Commission, Joint Research Centre, 2013.

Kougias, I., Bódík, K., Jäger-Waldau, A. and Szabó, S., 'Installing solar systems on the face of existing african dams for additional energy production', In '1st Africa Photovoltaic Solar Energy Conference and Exhibition Proceedings', Vol. 1. pp. pp–58.

Kougias, I., Karakatsanis, D., Malatras, A., Monforti-Ferrario, F. and Theodossiou, N., 'Renewable energy production management with a new harmony search optimization toolkit', *Clean Technologies and Environmental Policy*, Vol. 18, No 8, 2016c, pp. 2603–2612.

Kougias, I., Patsialis, T., Zafirakou, A. and Theodossiou, N., 'Exploring the potential of energy recovery using micro hydropower systems in water supply systems', *Water Utility Journal*, Vol. 7, 2014b, pp. 25–33.

Kougias, I., Szabó, S., Monforti-Ferrario, F., Huld, T. and Bódík, K., 'A methodology for optimization of the complementarity between small-hydropower plants and solar PV systems', *Renewable Energy*, Vol. 87, 2016d, pp. 1023–1030.

EC. Commission Staff Working Document. Agriculture and Sustainable Water Management in the EU. 2017.

https://circabc.europa.eu/sd/a/abff972e-203a-4b4e-b42e-a0f291d3fdf9/SWD_2017_EN_V4_P1_885057.pdf

EC, 2014. Experiences of the European Union Regional Development Cooperation on Climate Change, Renewable Energies and Water with Latin America.

http://ec.europa.eu/europeaid/sites/devco/files/climate-change-brochure_en.pdf

GIZ

Hassan Tolba Aboelnga (ITT) Muhammad Khalifa (ITT) Ian McNamara (ITT) Lars Ribbe (ITT) Justyna Sycz (ITT). Water-Energy-Food Nexus Literature review. Nexus Regional Dialogue Programme (NRD). GIZ. 2018.

<https://www.water-energy-food.org/news/water-energy-food-nexus-literature-review-a-review-of-nexus-literature-and-ongoing-nexus-initiatives-for-policymakers/>

Mansour L, Kramer A, Abaza H, Al Ouran N, Al-Zubari W, Carius A, Ulrich A, Hoff H. 2017. National Policy Guidelines for Mainstreaming the Water-Energy-Food Nexus. Bonn/Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

GIZ Powering Agriculture and FAO. 2017. Toolbox on Solar Powered Irrigation Systems-Information and Tools for advising on Solar Water Pumping and Irrigation.

https://energypedia.info/wiki/Toolbox_on_SPIS

GIZ. 2016. Solar Powered Irrigation Systems (SPIS) – Technology, Economy, Impacts. Gesellschaft für Internationale Zusammenarbeit (GIZ), Eschborn, Germany.

GIZ, 2016. Water, Energy & Food Nexus in a Nutshell.

www.water-energy-food.org/fileadmin/user_upload/files/2016/documents/nexus-secretariat/nexus-dialogues/Water-Energy-Food_Nexus-DialogueProgramme_Phase1_2016-18.pdf

IFPRI

Mondal, Md. Hossain Alam; Bryan, Elizabeth; Ringler, Claudia; Mekonnen, Dawit Kelemework; and Rosegrant, Mark W. 2018. [Ethiopian energy status and demand scenarios: Prospects to improve energy efficiency and mitigate GHG emissions](#). Energy 149: 161-172.

Ringler, Claudia; Mondal, Md. Hossain Alam; Paulos, Helen Berga; Mirzabaev, Alisher; Breisinger, Clemens; Wiebelt, Manfred; Siddig, Khalid; Villamor, Grace; Zhu, Tingju; and Bryan, Elizabeth. 2018. [Research guide for water-energy-food nexus analysis](#). Washington, DC: International Food Policy Research Institute (IFPRI).

Siddig, Khalid; Stepanyan, Davit; Wiebelt, Manfred; Zhu, Tingju; and Grethe, Harald. 2018. [Climate change and agriculture in the Sudan: Impact pathways beyond changes in mean rainfall and temperature](#). MENA RP Working Paper 13. Washington, D.C. and Cairo, Egypt: International Food Policy Research Institute (IFPRI).

Siddig, Khalid; Elagra, Samir; Grethe, Harald; and Mubarak, Amel. 2018. [A post-separation Social Accounting Matrix for the Sudan](#). MENA RP Working Paper 8. Washington, D.C. and Cairo, Egypt: International Food Policy Research Institute (IFPRI).

Perrihan, Al-Riffai; Breisinger, Clemens; Mondal, Md. Hossain Alam; Ringler, Claudia; Wiebelt, Manfred; and Zhu, Tingju. 2017. [Linking the Economics of Water, Energy, and Food: A Nexus Modeling Approach](#). Egypt SSP Working Paper 4. Washington, DC: International Food Policy Research Institute (IFPRI).

Ringler C, Willenbockel D, Perez N, Rosegrant M, Zhu T and Matthews N 2016 Global linkages among energy, food and water: an economic assessment J. Environ. Stud. Sci. 6 161–71. <https://www.ifpri.org/publication/global-linkages-among-energy-food-and-water>

IISD

Bizikova, L., Roy, D., Venema, H. D. & McCandless, M., 2014. The Water-Energy-Food Nexus and Agricultural Investment: A sustainable development guidebook, s.l.: The International Institute for Sustainable Development.

Bizikova, L. et al., 2013. The Water-Energy-Food Security Nexus: Towards a practical planning and decision-support framework for landscape investment and risk management, s.l.: IISD.

<https://www.iisd.org/search/?qu=water+energy+food+nexus>

IRENA

IRENA, 'RESOURCE: Your Source for Renewable Energy Information'. 2017. URL <http://resourceirena.irena.org/gateway/#>.

IRENA, 'Solar pumping for irrigation : Improving livelihoods and sustainability', June. International Renewable Energy Agency (IRENA), 2016. ISBN9789295111943.

IRENA, 2015. Renewable Energy in the Water, Energy & Food Nexus. Ferroukhi R, Nagpal D, Lopez-Peña A, Hodges T, Mohtar RH, Daher B, Mohtar S, Keulertz
https://www.irena.org/documentdownloads/publications/irena_water_energy_food_nexus_2015.pdf

IWMI

IWMI, 2002. Wastewater Use in Agriculture: Review of Impacts and Methodological Issues in Valuing Impacts. www.iwmi.cgiar.org/Publications/Working_Papers/working/WOR37.pdf

OECD

OECD/FAO (2018), OECD-FAO Agricultural Outlook 2018-2027, OECD Publishing, Paris/Food and Agriculture Organization of the United Nations, Rome.
https://doi.org/10.1787/agr_outlook-2018-en.

OECD (2017), *The Land-Water-Energy Nexus: Biophysical and Economic Consequences*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264279360-en>.

OECD, Global Material Resources Outlook to 2060 – Economic drivers and environmental consequences, OECD Publishing, Paris. oe.cd/materials-outlook
<http://www.oecd.org/environment/waste/highlights-global-material-resources-outlook-to-2060.pdf>

A Nexus Approach to the Post2015 Agenda: Formulating Integrated Water, Energy, and Food SDGs Nina Weitz, Måns Nilsson, and Marion Davis
Appro SAIS Review ach tovol. XXXIV no. 2 (Summer–Fall 2014) the Post-2015 Agenda 37
<http://www.oecd.org/gov/pcsd/Art%20Nexus%20SAIS%20weitz.pdf>

OECD-FAO, 2012. OECD FAO Agricultural Outlook 2013-2022.
www.oecd.org/site/oecd-faoagriculturaloutlook/highlights-2013-EN.pdf

SEI

Galaitsi, S., Veysey, J., Huber-Lee, A., 2018. Where is the added value? A review of the water-energy-food nexus literature SEI working paper. June 2018.

Hoff, H. 2011. Understanding the Nexus. Background Paper for the Bonn2011 Conference: The Water, Energy and Food Security Nexus. Stockholm, Sweden: Stockholm Environment Institute (SEI).

Stockholm Environnement Institute (SEI)

Weitz, N., Strambo, C., Kemp-Benedict, E. and Nilsson, M. (2017). Governance in the water-energy-food nexus: Gaps and future research needs. SEI Working Paper 2017-07. Stockholm Environment Institute, Stockholm.

<https://mediamanager.sei.org/SEI-2017-WP-Nexus-Governance-Weitz.pdf>

UN

Gomez San Juan, M., Bogdanski, A. & Dubois, O. 2019. Towards sustainable bioeconomy - Lessons learned from case studies. Rome, FAO.

<http://www.fao.org/3/ca4352en/ca4352en.pdf>

FAO, 2018. Water-Energy-Food Nexus for the review of SDG 7. POLICY Br. #9, FAO, https://sustainabledevelopment.un.org/content/documents/17483PB_9_Draft.pdf

FAO, 'Africa Regional Overview of Food Security and Nutrition', The challenges of Building Resilience to Shock and Stresses, Food and Agriculture Organization of the United Nations (FAO), 2017a.

FAO. 2017. Does improved irrigation technology save water? A review of the evidence. FAO Discussion Paper. <http://www.fao.org/policysupport/resources/resources-details/en/c/897549/>

FAO, 'Irrigation Techniques for Small-scale Farmers', 2016.

FAO, 'AQUASTAT database'. 2017b.

FAO, 2015. The Energy-Food-Water Nexus. <http://www.fao.org/energy/81320/en/>

FAO. 2014. The Water-Energy-Food Nexus A new approach in support of food security and sustainable agriculture. <http://www.fao.org/3/a-bl496e.pdf>

FAO. 2014. Walking the Nexus Talk: Assessing the Water-Energy-Food Nexus in the Context of the Sustainable Energy for All Initiative.

http://wedocs.unep.org/bitstream/handle/20.500.11822/19556/Walking_the_Nexus_Talk.pdf?sequence=1&isAllowed=y

FAO. (2013). Impacts of investment and the Principles for Responsible Agricultural Investment (PRI) on African agriculture. .

http://www.fao.org/fileadmin/templates/est/Investment/expert_meeting/130602_DSG_TICAD_V_Side_Event_Agriculture_Investment_Speech.pdf

FAO. (2012a). Voluntary guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security. Retrieved from

<http://www.fao.org/docrep/016/i2801e/i2801e.pdf>

(2012b). Trends and impacts of foreign investment in developing country agriculture: Evidence from case studies.

http://www.fao.org/fileadmin/user_upload/newsroom/docs/Trends%20publication%202012%20November%202012.pdf

FAO. (2011a). The state of the world's land and water resources for food and agriculture (SOLAW) - Managing systems at risk. Rome: Food and Agriculture Organization of the United Nations/ London: Earthscan.

FAO. (2011b). Looking ahead in world food and agriculture: Perspectives to 2050. Rome: FAO

UNECE (United Nations Economic Commission for Europe). 2015. Reconciling Resource Uses in Transboundary Basins: assessment of the Water-Food-Energy-Ecosystems Nexus (Geneva: United Nations Economic Commission for Europe)

United Nations (UN). 2015. Transforming our world: the 2030 Agenda for Sustainable Development
<https://sustainabledevelopment.un.org/post2015/transformingourworld>

UN ESCWA, 2015. Conceptual Frameworks for Understanding the Water, Energy and Food Security Nexus.

UN Water, 2014. The United Nations World Water Development Report. 2014.
<http://unesdoc.unesco.org/images/0022/002257/225741E.pdf>

UNESCAP, 2013. Water, Food and Energy Nexus in Asia and the Pacific. Discussion Paper. UN. 2013.
<http://www.greengrowthknowledge.org/sites/default/files/downloads/resource/Water-Food-Nexus%20Report%20UNESCAP.pdf>

WWAP (United Nations World Water Assessment Programme). The United Nations World Water Development Report 2015: Water for a Sustainable World. UNESCO, Paris (2015)

WEF

WEF. 2018. Nexus Research. Engaging Stakeholders in Research to address Water–Energy–Food (WEF) Nexus Challenges. By A. Larkin, C. McLachlan, R. Falconer, I. Soutar, J. Suckling, L. Varga, I. Haltas, A. Druckman, D. Lumbroso, M. Scott, D. Gilmour, R. Ledbetter, S. McGrane, C. Mitchell, D. Yu.
<https://link.springer.com/content/pdf/10.1007%2Fs11625-018-0552-7.pdf>

WEF, 2014. The Water-Energy Nexus: Strategic Considerations for Energy PolicyMakers, s.l.: World Economic Forum.

WEF, 2011. Water Security: The water-food-energy-climate nexus. s.l.:Island Press.
https://books.google.be/books?hl=fr&lr=&id=Lc0KAQAAQBAJ&oi=fnd&pg=PR7&ots=4DfM2Zm8T9&sig=WXJtBTYnNv6lkAm0m9lZp1S-wOo&redir_esc=y#v=onepage&q&f=false

World Economic Forum WEF. (2011) Global risks 2011. 6th Edition. World Economic Forum, Cologne/Geneva.

<http://reports.weforum.org/wp-content/blogs.dir/1/mp/uploads/pages/files/global-risks-2011.pdf>

World Economic Forum. 2008. Thirsty Energy: Water and Energy in the 21st Century.

World Bank

Using Satellite Imagery to Assess Impacts of Soil and Water Conservation Measures Evidence from Ethiopia's Tana-Beles Watershed, Daniel Ayalew Ali, Klaus Deininger, and Daniel Monchuk. World Bank. Poly Land Governance. 2018.
<http://documents.worldbank.org/curated/en/254161536648763384/pdf/129862-BRI-PUBLIC-Land-Governance-Plicy-Brief-4.pdf>

World Bank, 2013. Thirsty Energy: Securing Energy in a Water-Constrained World.
<https://www.worldbank.org/en/topic/water/brief/water-energy-nexus>

ZEF

Dr. Jan Janosch Förster. Bioeconomy between Europe and Africa. Policy Brief. N. 29. Center for Development Research (ZEF) University of Bonn. 2018.
https://www.zef.de/uploads/tz_zefportal/Publications/jfoerster_download_ZEF_Policy_brief_Bioeconomy%20Africa%20-%20Europe.pdf

Grace B. Villamor, Dawit Guta, Utkur Djanibekov, and Alisher Mirzabaev, Gender specific perspectives among smallholder farm households on water-energy-food security nexus issues in Ethiopia, ZEF – Discussion Papers on Development Policy No. 258, Center for Development Research, Bonn, May 2018, pp. 32.
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3180530

Djanibekov, Utkur; Finger, Robert; Guta, Dawit Diriba; Gaur, Varun; and Mirzabaev, Alisher. 2016. [A generic model for analyzing nexus issues of households' bioenergy use](#). ZEF Discussion Paper 209. Bonn, Germany: Zentrum für Entwicklungsforschung (ZEF), Center for Development Research.

Guta, Dawit; Jara, Jose; Adhikari, Narayan; Qiu, Chen; Gaur, Varun; and Mirzabaev, Alisher. 2015. [Decentralized energy in Water-Energy-Food Security Nexus in Developing Countries: Case Studies on Successes and Failures](#). ZEF Discussion Paper 203. Bonn, Germany: Zentrum für Entwicklungsforschung (ZEF), Center for Development Research.

Other Research

Abdul Salam, P., Shrestha, S., Pandey, V.P., Anal, A., 2017. Water-energy-food Nexus: principles and practices. AGU

Albrecht T.R., Crootof A. and Scott C.A., 2018. The Water-Energy-Food Nexus. A systematic review. <https://iopscience.iop.org/article/10.1088/1748-9326/aaa9c6>
Africa Energy Commission, 'Africa Energy Statistics'. 2017.
<http://afrec-energy.org/En/>.

Nexus Outlook: assessing resource use challenges in the water, energy and food nexus. Al-Saidi, Mohammad, Ribbe, Lars (Eds.). 2017. Nexus Research Focus, TH-Koeln, University of Applied Sciences
https://www.water-energy-food.org/fileadmin/user_upload/files/documents/others/Outlook-Nexus_Assessing_Resource_Use_Challenges.pdf

Tamee R Albrecht et al. The Water-Energy-Food Nexus: A systematic review of methods for nexus assessment. 2018. Environ. Res. Lett. 13 043002.
<https://iopscience.iop.org/article/10.1088/1748-9326/aaa9c6/pdf>

Bellfield H. Water, Energy and Food Security Nexus in Latin America and the Caribbean. Global Canopy Programme (2015). Oxford, UK.
<https://www.globalcanopy.org/sites/default/files/documents/resources/The%20Water-Energy-Food%20Nexus%20in%20Latin%20America%20and%20the%20Caribbean.pdf>

Biggs EM, Bruce E, Boruff B, Duncan JMA, Horsley J, Pauli N, McNeill K, Neef A, Van Ogtrop F, Curnow J, Haworth B, Duce S, Imanari Y (2015) Sustainable development and the water-energy-food nexus: a perspective on livelihoods. Environ Sci Policy 54:389–397
<https://www.sciencedirect.com/science/article/pii/S1462901115300563?via%3Dihub#bbib0165>

Bizikova L., Roy, D., Swanson, D., Venema, H. D., & McCandless, M. (2013). The water-energy-food security nexus: Towards a practical planning and decision-support framework for landscape investment and risk management. Winnipeg: International Institute for Sustainable Development (IISD). Retrieved from http://www.iisd.org/pdf/2013/wef_nexus_2013.pdf

Blandi, C., Richerzhagen, C. & Stepping, K., 2013. Post 2015: Why is the Water-Energy-Land Nexus Important for the Future Development Agenda?. Briefing Paper, German Development Institute, 3.

Bonn 2011 Conference The Water, Energy and Food Security Nexus Solutions for the Green Economy 16– 18 November 2011.

https://www.water-energy-food.org/fileadmin/user_upload/files/documents/bonn2011_nexussynopsis.pdf

<https://mediamanager.sei.org/documents/Publications/SEI-Paper-Hoff-UnderstandingTheNexus-2011.pdf>

Boto I., Lopes I., Godeau M.P. The water we eat: challenges for ACP countries in times of scarcity. Reader. Brussels Briefing n.22. 2012.

https://brusselsbriefings.files.wordpress.com/2012/10/br-22-reader-br-17-the-water-we-eat_eng.pdf

Cecilia Borgia, Jaap Evers, Matthijs Kool and Frank van Steenbergen. Water, Food and Energy Nexus Challenges. World Business Council for Sustainable Development. MetaMeta . 2015. Geneva.

<https://www.gwp.org/globalassets/global/toolbox/references/water-food-and-energy-nexus-challenges-wbcsd-2014.pdf>

Conway, D., Van Garderen, E. A., Deryng, D., Dorling, S., Krueger, T., Landman, W., Lankford, B., Lebek, K., Osborn, T., Ringler, C. et al., 'Climate and southern Africa's water-energy-food nexus', *Nature Climate Change*, Vol. 5, No 9, 2015, pp. 837–846.

D'Odorico, P., Davis, K. F., Rosa, L., Carr, J. A., Chiarelli, D., Dell'Angelo, J., et al. (2018). The global food-energy-water nexus. *Reviews of Geophysics*, 56.

<https://www.davidseekell.com/pdf/pub45.pdf>

Detlef P. van Vuuren, David L. Bijl, Patrick W. Bogaart, Elke Stehfest, Hester Biemans, Stefan C. Dekker, Jonathan C. Doelman, David Gernaat, Mathijs Harmsen, Bert J.M. de Vries. The globalfood – water – energynexus. Development in aresource-constrained world. **Utrecht University**. Copernicus Institute of Sustainable Development. **Rabobank .2016**
<https://docplayer.net/57299258-The-global-food-water-energy-nexus.html>

ECDPM.GDI/DIE. The 2011/2012 European Report on Development, Confronting Scarcity: Managing Water, Energy and Land for Inclusive and Sustainable Growth, Overseas Development Institute (ODI), European Centre for Development Policy Management (ECDPM), German Development Institute/Deutsches Institut für Entwicklungspolitik (GDI/DIE).

http://www.greengrowthknowledge.org/sites/default/files/downloads/resource/Confronting_Scarcity_EU.pdf

Energy Research Centre of the Netherlands (ECN) 'Understanding the Energy-Water nexus' . 2014. <http://www.ecn.nl/docs/library/report/2014/e14046.pdf>

Future Earth (2018), Research and Engagement Plan for the Water-Energy-Food Knowledge-Action Network, Report of the Development Team.

http://futureearth.org/sites/default/files/nexus_kan_rep_2_0.pdf

C. Hoolahan · A. Larkin · C. McLachlan · R. Falconer · I. Soutar · J. Suckling · L. Varga · I. Haltas · A. Druckman · D. Lumbroso · M. Scott · D. Gilmour · R. Ledbetter · S. McGrane · C. Mitchell · D. Yu. Engaging stakeholders in research to address water–energy–food (WEF) nexus challenges. 2018.

<https://link.springer.com/content/pdf/10.1007%2Fs11625-018-0552-7.pdf>

Howarth C, Monasterolo I (2017) Opportunities for knowledge co-production across the energy-food-water nexus: Making interdisciplinary approaches work for better climate decision making. Environ Sci Policy 75(February):103–110CrossRefGoogle Scholar

IUCN, 2014, Nexus Dialogue Symposium: Building partnerships to Optimise Infrastructure and Technology for Water, Energy and Food Security.
<http://www.waternexussolutions.org/2bk/events/beijing-nexus-symposium.html>

Miralles-Wilhelm, F. & Muñoz-Castillo, R., 2018. An Analysis of The Water-Energy-Food Nexus in Latin America And the Caribbean Region: Identifying Synergies and Tradeoffs Through Integrated Assessment Modeling. The International Journal of Engineering and Science (IJES), vol. 07, no. 01, 2018, pp. 08–24.

Tafadzwanashe Mabhaudhi, Sylvester Mpandeli, Luxon Nhamo, Vimbayi G. P. Chimonyo1, Charles Nhemachena, Aidan Senzanje, Dhesigen Naidoo and Albert T Modi. Prospects for Improving Irrigated Agriculture in Southern Africa: Linking Water, Energy and Food. 2018. https://www.researchgate.net/publication/329774763_Prospcts_for_Improving_Irrigated_Agriculture_in_Southern_Africa_Linkng_Water_Energy_and_Food

Malabo Montpellier Panel. Water-Wise Smart Irrigation Strategies for Africa. 2018.
https://www.mamopanel.org/media/uploads/files/Water-Wise_Smart_Irrigation_Strategies_for_Africa.pdf

Mirzabaev, Alisher; Guta, Dawit; Goedecke, Jann; Gaur, Varun; Börner, Jan; Virchow, Detlef; Denich, Manfred; and von Braun, Joachim. 2015. Bioenergy, food security and poverty reduction: Trade-offs and synergies along the water–energy–food security nexus. Water International 40(5-6): 772-790.

Mohtar, R., 2016. The importance of the Water-Energy-Food Nexus in the implementation of The Sustainable Development Goals (SDGs). OCP Policy Center.

Mohtar, R.H., Lawford, R., 2016. Present and future of the water-energy-food nexus and the role of the community of practice. In J Environ Stud Sci 6 (1), pp. 192–199.

Nhamo, L., Ndlela, B., Nhemachena, C., Mabhaudhi, T., Mpandeli, S., Matchaya, G., 2018. The Water-Energy-Food Nexus: Climate Risks and Opportunities in Southern Africa. Water 10, 567.

Joanna Pardoe, Declan Conway, Emilinah Namaganda, Katharine Vincent, Andrew J. Dougill & Japhet J. Kashaigili. Climate change and the water-energy-food nexus: insights from policy and practice in Tanzania. In: Climate Policy. Pages 1-15.
<https://doi.org/10.1080/14693062.2017.1386082>

Pittock J, Hussey K, Dovers S (eds) (2015) Climate, energy and water. Cambridge University Press, Cambridge <http://www.cambridge.org/au/academic/subjects/earth-and-environmental-science/environmental-policy-economics-and-law/climate-energy-and-water?format=HB>

Ringler C, Bhaduri A and Lawford R 2013. The nexus across water, energy, land and food (WELF): potential for improved resource use efficiency? Curr. Opin. Environ. Sustain. 5 617–24. <https://www.sciencedirect.com/science/article/pii/S1877343513001504>

Romero-Lankao, P., McPhearson, T., Davidson, D.J., 2017. The food-energy-water nexus and urban complexity. Nat. Clim. Chang. 7, 233–235. doi:10.1038/nclimate3260

Sa'd Shannak, Daniel Mabrey, Michele Vittorio. Moving from theory to practice in the water–energy–food nexus: An evaluation of existing models and frameworks. Texas A&M System, College Station, TX, USA, niversity of New Haven, West Haven, CT, USA. King Abdullah Petroleum Studies and Research Center, Riyadh, Saudi Arabia. 2018.
<https://www.sciencedirect.com/science/article/pii/S258891251730005X>

SAB Miller- WWF, 2015, The Water-Energy-Food Nexus: Insights into Resilient Development
http://assets.wwf.org.uk/downloads/sab03_01_sab_wwf_project_nexus_final.pdf

Scott, A. 2017. [Making governance work for water–energy–food nexus approaches](https://cdkn.org/wp-content/uploads/2017/06/Working-paper_CDKN_Making-governance-work-for-water-energy-food-nexus-approaches.pdf). Working Paper. London: Climate and Development Knowledge Network (CDKN).
https://cdkn.org/wp-content/uploads/2017/06/Working-paper_CDKN_Making-governance-work-for-water-energy-food-nexus-approaches.pdf

Scott C A, Crootof A and Kelly-Richards S 2016 The urban water-energy nexus: drivers and responses to global change in the ‘urban century Environmental Resource Management and the Nexus Approach: Managing Water, Soil, and Waste in the Context of Global Change ed H Hettiarachchi and R Ardakanian (Berlin: Springer) pp 113–40

Scott C A, Kurian M and Wescoat J L Jr 2015 The water-energy-food nexus: enhancing adaptive capacity to complex global challenges Governing the nexus (Berlin: Springer) pp 15–38

Scott C A and Sugg Z P 2015 Global energy development and climate-induced water scarcity-Physical limits, sectoral constraints, and policy imperatives Energies 8 8211–25

Scott C A, Pierce S A, Pasqualetti M J, Jones A L, Montz B E and Hoover J H 2011 Policy and institutional dimensions of the water-energy nexus Energy Policy 39 6622–30

Scott C A 2011 The water-energy-climate nexus: resources and policy outlook for aquifers in Mexico Water Resour. Res. 47 W00L04

South African Development Community (SADC), 2018. ‘The Joint Meeting of SADC Ministers of Energy and Water held on 27th June’, Available from: <https://www.sadc.int/news-events/news/joint-meeting-sadc-ministersenergy-and-water-held-27th-june/>.

South African Development Community (SADC), 2017. ‘Swaziland PM Opens 36th Joint Meeting of SADC Ministers of Energy and Water, ahead of Resource Mobilisation and Energy Investment Forum’,
<https://www.sadc.int/news-events/news/swaziland-pm-opens-36th-joint-meeting-sadc-ministers-energy-andwater-ahead-resource-mobilisation-and-energy-investment-forum/>.

Stirling A (2015) Developing ‘Nexus Capabilities’: towards transdisciplinary methodologies <http://www.thenexusnetwork.org/wp-content/uploads/2015/06/Stirling-2015-Nexus-Methods-Discussion-Paper.pdf>.

Sustainable Energy for All (SEforAll), 2018. High Impact Opportunities. WEF-Nexus. https://www.seforall.org/hio_water-energy-food-nexus, accessed on 17/5/2018.

Syed Mohammed Arshad Zaidi, Varun Chandola, Melissa R. Allen, Jibonananda Sanyal, Robert N. Stewart, Budhendra L. Bhaduri & Ryan A. McManamay (2018). Machine learning for energy-water nexus: challenges and opportunities, Big Earth Data, 2:3,228-267
<https://www.tandfonline.com/doi/pdf/10.1080/20964471.2018.1526057?needAccess=true>

USAID, 2018. Grand Challenges for Development on Water, Food and Energy. <https://www.usaid.gov/grandchallenges>, updated on 2018, accessed on 17/5/2018.

von Braun, Joachim; and Mirzabaev, Alisher. 2016. [Nexus scientific research: Theory and approach serving sustainable development](#). In The water, food, energy and climate nexus. Challenges and an agenda for action, ed. Felix Dodds, and Jamie Bartram.. Earthscan.

Watson M, Jackson P, Sharp L, Southerton D, Warde A, Browne A, Evans D, 2016. The Domestic Nexus: interrogating the interlinked practices of water, energy and food consumption. Final report for the Nexus Network.

Weitz, N., Strambo, C., Kemp-Benedict, E., Nilsson, M., 2017. Closing the governance gaps in the water-energy-food nexus: Insights from integrative governance. Glob. Environ. Chang. 45, 165–173.

Yang, J., Ethan Yang, Y. C., Khan, H. F., Xie, H., Ringler, C., Ogilvie, A., Seidou, O., Djibo, A.G., van Weert, F., Tharme, R., 2018. Quantifying the sustainability of water availability for the water-food-energy-ecosystem nexus in the Niger River Basin. *Earth's Future*, 6.