



Bibliography

- ABB (2018). Photovoltaic plants. Technical application paper No. 10. [www04.abb.com/global/seitp/seitp202.nsf/c71c66c1f02e6575c125711f004660e6/d54672ac6e97a439c12577ce003d8d84/\\$file/vol.10.pdf](http://www04.abb.com/global/seitp/seitp202.nsf/c71c66c1f02e6575c125711f004660e6/d54672ac6e97a439c12577ce003d8d84/$file/vol.10.pdf) (accessed 14 April 2018).
- Adinoyi M. J. and Said S. A. M. (2013). Effect of dust accumulation on the power outputs of solar photovoltaic modules. *Renewable Energy*, **60**, 633–636, Elsevier.
- Akhil A. A., Huff G., Currier A. B., Kaun B. C., Rastler D. M., Chen S. B., Cotter A. L., Bradshaw D. T. and Gauntlett W. D. (2013). DOE/EPRI 2013 Electricity Storage Handbook in Collaboration with NRECA. Sandia National Laboratories Albuquerque, New Mexico 87185 and Livermore, California 94550. www.sandia.gov/ess/publications/SAND2013-5131.pdf (accessed 14 April 2018).
- Alkaisi A., Mossad R. and Sharifian-Barforoush A. (2017). A review of the water desalination systems integrated with renewable energy. *Energy Procedia*, **110**, 268–274, Elsevier.
- Al-Karaghoulis A. A. and Kazmerski L. L. (2011). Renewable Energy Opportunities in Water Desalination. Chapter 8 in Schorr (2011).
- AMTA (2018). Membrane technology fact sheets. www.amtaorg.com/publications-communications/membrane-technology-fact-sheets-summary (accessed 14 April 2018).

© 2019 The Author. This is an Open Access book chapter distributed under the terms of the Creative Commons Attribution Licence (CC BY-NC-ND 4.0), which permits copying and redistribution for non-commercial purposes with no derivatives, provided the original work is properly cited (<https://creativecommons.org/licenses/by-nc-nd/4.0/>). This does not affect the rights licensed or assigned from any third party in this book. The chapter is from the book *Clean Water Using Solar and Wind: Outside the Power Grid*, Gustaf Olsson (Author). doi: 10.2166/9781780409443_0189

190 Clean Water Using Solar and Wind: Outside the Power Grid

- Asano T., Burton F. L., Leverenz H. L., Tsuchihashi R. and Tchobanoglous G. (2007). *Water Reuse – Issues, Technologies, and Applications*. Metcalf & Eddy/WECOM, McGraw-Hill, New York.
- AWEA (2017). *Wind Energy Reduces Greenhouse Gas Emissions*. American Wind Energy Association. www.awea.org/reducing-greenhouse-gas-emissions (accessed 5 March 2018).
- Balmér P. (2010). *Benchmarking and Key Parameters in Wastewater Treatment Systems* (in Swedish), Swedish Water, Report no 10, 2010. <http://www.svenskvatten.se/rapporter/> (accessed 15 March 2018).
- Bazargan, A. (ed.) (2018). *A Multidisciplinary Introduction to Desalination*, IWA Publishing, London.
- Beckman K. (2016). Interview Adnan Amin, head of IRENA: “Everything we see is pointing to transformational change. *Energy Post*, <http://energypost.eu/interview-adnan-amin-chief-irena-climate-negotiators-still-much-learn-energy-transformation> (accessed 20 March 2018).
- BNEF and Lighting Global (2016). *Off-Grid Solar Market Trends Report*, Commissioned by World Bank Group, Washington DC. <https://www.lightingglobal.org/resource/off-grid-solar-market-trends-report-2016/> (accessed 15 February 2018).
- Bundschuh J. and Hoinkis J. (eds) (2012). *Renewable Energy Applications for Freshwater Production*. IWA Publishing, London.
- Burn S. and Gray S. (2014). *Efficient Desalination by Reverse Osmosis: A Best Practice Guide to RO*. IWA Publishing, London.
- Campana P. E., Leduc S., Kim M., Olsson A., Zhang J., Liu J., Kraxner F., McCallum I., Li H. and Yan J. (2016). Suitable and optimal locations for implementing photovoltaic water pumping systems for grassland irrigation in China. *Applied Energy*, **185**, 1879–1889, Elsevier.
- Campana P. E., Li H. and Yan J. (2015). Techno-economic feasibility of the irrigation system for the grassland and farmland conservation in China: Photovoltaic vs. wind power water pumping. *Energy Conversion and Management*, **103**, 311–320, Elsevier.
- Casey A. (2013). “Reforming Energy Subsidies Could Curb India’s Water Stress”, <http://www.worldwatch.org/reforming-energy-subsidies-could-curb-india%E2%80%99s-water-stress-0> (accessed 5 February 2018).
- CEA (2016). *Growth of Electricity Sector in India from 1947–2013*. Central Electricity Authority, New Delhi, India, 2013. www.indiaenvironmentportal.org.in/content/380722/growth-of-electricity-sector-in-india-from-1947-2013/ (accessed 15 February 2018).
- CEEW (2017). Council on Energy, Environment and Water. *Greening India’s Workforce: Gearing up for expansion of solar and wind power in India*.

- www.nrdc.org/sites/default/files/greening-india-workforce.pdf (accessed 15 February 2018).
- Chandel S. S., Nagaraju Naik M. and Chandel R. (2017). Review of performance studies of direct coupled photovoltaic water pumping systems and case study. *Renewable and Sustainable Energy Reviews*, **76**, 163–175, Elsevier.
- Cipollina A., Tzen E., Subiela V., Papapetrou M., Koschikowski J., Schwantes R., Wiegand M. and Zaragoza G. (2015). Renewable energy desalination: Performance analysis and operating data of existing RES desalination plants. *Desalination and Water Treatment*, **55**, 3120–3140.
- ClimateScope (2017). 2018 off-grid and mini-grid market outlook. <http://global-climatescope.org/en/> (accessed 13 March 2018).
- Cust J., Singh A. and Neuhoff K. (2007). Rural Electrification in India: Economic and Institutional Aspects of Renewables. Cambridge Working Papers in Economics. University of Cambridge.
- Daniels F. (1977). Direct Use of the Sun's Energy. 6th edn, Yale University Press, New Haven/London.
- Delucchi M. A. and Jacobson M. Z. (2011). Providing all global energy with wind, water, and solar power, part II: Reliability, system and transmission costs, and policies. *Energy Policy*, **39**(3), 1170–1190, Elsevier.
- DNV GL (2017). The energy transition outlook 2017. www.dnvgl.com/technology-innovation/sri/climate-action/research-projects/energy-transition-outlook.html (accessed 14 January 2018).
- Drioli E., Criscuolo A. and Macedonio F. (2011). Membrane Based Desalination: An Integrated Approach. IWA Publishing, London.
- EPA (2011). Environmental Protection Agency. Water treatment manual: Disinfection. www.epa.ie/pubs/advice/drinkingwater/Disinfection2_web.pdf (accessed 15 February 2018).
- Espino T., Peñate B., Piernavieja G., Herold D. and Neskakis A. (2003). Optimised desalination of seawater by a PV powered reverse osmosis plant for a decentralised coastal water supply. *Desalination*, **156**(1–3), 349–350.
- Fraunhofer (2015). Fraunhofer Institute for Solar Energy Systems, NREL. Current status of concentrator photovoltaic (CPV) technology, <http://www.nrel.gov/docs/fy16osti/65130.pdf> (accessed 1 February 2018).
- Fraunhofer (2016). Fraunhofer Institute for Solar Energy Systems, Photovoltaics Report, June 6, <https://www.ise.fraunhofer.de/de/downloads/pdf-files/aktuelles/photovoltaics-report-inenglischer-sprache.pdf> (accessed 1 February 2018).
- Friedler E., Butler D. and Alfiya Y. (2013). Wastewater composition. Chapter 17 in Larsen *et al.* (2013).

192 Clean Water Using Solar and Wind: Outside the Power Grid

- Gillblad T. (2018). Power requirement for a decentralised activated sludge plant. Personal communication.
- GOGLA (2017). Global Off-Grid Lighting Association. Providing Energy Access through Off-Grid Solar: Guidance for Governments. The Netherlands, www.se4all.org/content/new-report-guides-governments-designing-off-grid-solar-policies (accessed 22 March 2018).
- Goswami D. Y. (2015). Principles of Solar Engineering. 3rd edn, CRC Press, Taylor & Francis Group, USA.
- Grady C. P. L., Daigger G. T., Love N. G. and Filipe, C. D. M. (2011). Biological Wastewater Treatment. 3rd edn, IWA Publishing and CRC Press, London.
- Greacen C., Engel R. and Quetchenbach T. (2013). A Guidebook on Grid Interconnection and Islanded Operation of Mini-Grid Power Systems Up to 200 kW. Lawrence Berkeley National Laboratory and Schatz Energy Research Center, LBNL-6224E, http://etapublications.lbl.gov/sites/default/files/a_guidebook_for_minigrids-serc_lbnl_march_2013.pdf (accessed 14 April 2018).
- Green J. (2018). Nuclear power in crisis: We are entering the Era of Nuclear Decommissioning. Energy Post, webpage for European Energy Affairs, <http://energypost.eu/nuclear-power-in-crisis-welcome-to-the-era-of-nuclear-decommissioning> (accessed 25 March 2018).
- Gude V. G., Nirmalakhandan N. and Deng S. (2010). Renewable and sustainable approaches for desalination. *Renewable and Sustainable Energy Reviews*, **14**, 2641–2654, Elsevier.
- Hartvigsson E. and Ahlgren E. O. (2018). Comparison of load profiles in a mini-grid: Assessment of performance metrics using measured and interview-based data. *Energy for Sustainable Development*, **43**, 186–195. doi:10.1016/j.esd.2018.01.009.
- Hoffman A. R. (2016). The U.S. Government and Renewable Energy – A Winding Road. Pan Stanford Publishing Pte. Ltd., Singapore.
- Hoffman A. R. (2017a). Important large market: Solar energy and clean water. Chapter 2.6 in Varadi (2017).
- Hoffman A. R. (2017b). Subsidies and solar energy. Chapter 3.2 in Varadi (2017).
- Huld T., Jäger-Waldau A. and Szabó S. (2014). European Commission Joint Research Centre. Mapping the Cost of Electricity from Grid-Connected and Off-Grid PV Systems in Africa. 1st Africa Photovoltaic Solar Energy Conference, Durban, South Africa. www.researchgate.net/publication/263221188_Mapping_the_Cost_of_Electricity_from_Grid-connected_and_Off-grid_PV_Systems_in_Africa (accessed 15 April 2018).

- IAEA (2017). International Atomic Energy Agency, International Status and Prospects for Nuclear Power, www.iaea.org/About/Policy/GC/GC61/GC61InfDocuments/English/gc61inf-8_en.pdf (accessed 15 February 2018).
- IEA (2011). Energy for All – Financing Access for the Poor. World Energy Outlook, Special Issue. International Energy Agency, Paris. www.iaea.org/media/weowebiste/energydevelopment/presentation_oslo_oct11.pdf (accessed 15 February 2018).
- IEA (2013). Rural Electrification with PV Hybrid Systems, Report IEA-PVPS T9-13:2013, International Energy Agency XE “International Energy Agency”, Paris. www.iaea-pvps.org/fileadmin/dam/public/report/national/Rural_Electrification_with_PV_Hybrid_systems_-_T9_-_11072013_-_Updated_Feb2014.pdf (accessed 10 April 2018).
- IEA (2014). World Energy Outlook 2014, International Energy Agency, Paris.
- IEA (2016a). World Energy Outlook 2016, International Energy Agency, Paris, 2016.
- IEA (2016b). Next Generation Wind and Solar Power: From Cost to Value. International Energy Agency, Paris. <https://www.iaea.org/publications/freepublications/publication/NextGenerationWindandSolarPower.pdf> (accessed 10 April 2018).
- IEA (2017a). Key World Energy Statistics. International Energy Agency, Paris. www.iaea.org/publications/freepublications/publication/KeyWorld2017.pdf (accessed 15 February 2018).
- IEA (2017b). Renewables 2017. Analysis and forecasts to 2022. International Energy Agency, Paris. www.iaea.org/renewables/ (accessed 11 February 2018).
- IEA (2017c). Energy Access Outlook 2017. From Poverty to Prosperity. World Energy Outlook Special Report. <http://www.iaea.org> (accessed 11 February 2018).
- IEA (2017d). Africa Energy Outlook. A focus on energy prospects in sub-Saharan Africa. www.iaea.org (accessed 1 May 2018).
- IEA-ETSAP and IRENA (2013). Water Desalination Using Renewable Energy, Technology Brief I12, https://iaea-etsap.org/E-TechDS/PDF/I12IR_Desalin_MI_Jan2013_final_GSOK.pdf (accessed 22 January 2018).
- IEA India (2015). India Energy Outlook, World Energy Outlook Special Report. http://www.worldenergyoutlook.org/media/weowebiste/2015/India_EnergyOutlook_WEO2015.pdf (accessed 12 February 2018).
- IEC (2011). Electrical energy storage, a White Paper. www.iec.ch/whitepaper/pdf/iecWP-energystorage-LR-en.pdf (accessed 15 April 2018).
- Inversin A. R. (2000). Mini-Grid Design Manual. National Rural Electric Cooperative Association (NRECA), Arlington, Virginia, U.S.,

194 Clean Water Using Solar and Wind: Outside the Power Grid

www.reseau-cicle.org/wp-content/uploads/riaed/pdf/Mini-Grid_Design_Manual-2.pdf (accessed 14 April 2018).

- IPCC (2011). IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [Edenhofer O., Pichs-Madruga R., Sokona Y., Seyboth K., lead authors]. Cambridge University Press, Cambridge, UK and New York, NY, USA, 1075 pp (Chapter 7 & 9). www.ipcc.ch/pdf/special-reports/srren/SRREN_FD_SPM_final.pdf (accessed 23 February 2018).
- IRENA (2012). International Off-grid Renewable Energy Conference 2012: Key Findings and Recommendations, Accra, Ghana, 1–2 November 2012. Available at www.irena.org/DocumentDownloads/Publications/IOREC_Key20Findings20and%20Recommendations.pdf (accessed 20 February 2018).
- IRENA (2013). Africa's renewable future. The path to sustainable growth. www.irena.org/documentdownloads/publications/africa_renewable_future.pdf (accessed 30 April 2018).
- IRENA (2015a). Accelerating Off-grid Renewable Energy Deployment: Key Findings and Recommendations from IOREC 2014. IRENA, Abu Dhabi. www.irena.org/DocumentDownloads/Publications/IRENA_2nd_IOREC_2015.pdf (accessed 15 February 2018).
- IRENA (2015b). Renewable Energy in the Water, Energy and Food Nexus. IRENA, Abu Dhabi. www.irena.org/documentdownloads/publications/irena_water_energy_food_nexus_2015.pdf (accessed 20 February 2018).
- IRENA (2015c). Quality Infrastructure for Renewable Energy Technologies: Small Wind Turbines, www.irena.org/publications/2015/Dec/Quality-Infrastructure-for-Renewable-Energy-Technologies-Small-Wind-Turbines (accessed 20 March 2018).
- IRENA (2016a). Renewable Capacity Statistics 2016. Abu Dhabi. www.irena.org/DocumentDownloads/Publications/IRENA_RE_Capacity_Statistics_2016.pdf (accessed 19 February 2018).
- IRENA (2016b). Letting in the Light. How Solar Photovoltaics will Revolutionize the Electricity System. International Renewable Energy Agency, Abu Dhabi. www.irena.org/DocumentDownloads/Publications/IRENA_Letting_in_the_Light_2016.pdf (accessed 20 March 2018).
- IRENA (2016c). REmap: Roadmap for A Renewable Energy Future: 2016 Edition, www.irena.org/publications/2016/Mar/REmap-Roadmap-for-A-Renewable-Energy-Future-2016-Edition (accessed 20 March 2018).
- IRENA (2016d). Solar PV in Africa: Costs and Markets, www.irena.org/publications/2016/Sep/Solar-PV-in-Africa-Costs-and-Markets (accessed 15 March 2018).

- IRENA (2016e). Solar Pumping for Irrigation: Improving Livelihoods and Sustainability. IRENA, Abu Dhabi. www.irena.org/publications/2016/Jun/Solar-Pumping-for-Irrigation-Improving-livelihoods-and-sustainability (accessed 15 March 2018).
- IRENA (2017a). REthinking Energy 2017: Accelerating the Global Energy Transformation. International Renewable Energy Agency, Abu Dhabi. ISBN 978-92-95111-05-9 (print) | ISBN 978-92-95111-06-6 (PDF). www.irena.org/DocumentDownloads/Publications/IRENA_REthinking_Energy_2017.pdf (accessed 10 February 2018).
- IRENA (2017b). Electricity storage and renewables: Costs and markets to 2030, www.irena.org/publications/2017/Oct/Electricity-storage-and-renewables-costs-and-markets (accessed 15 March 2018).
- IRENA (2017c). Renewable energy and jobs. Annual review 2017 www.irena.org/DocumentDownloads/Publications/IRENA_RE_Jobs_Annual_Review_2017.pdf (accessed 15 April 2018).
- IRENA (2018). Renewable Power Generation Costs in 2017, www.irena.org/publications/2018/Jan/Renewable-power-generation-costs-in-2017 (accessed 20 March 2018).
- Jones L. E. (ed.) (2017). Renewable Energy Integration: Practical Management of Variability, Uncertainty and Flexibility in Power Grids. 2nd edn, Academic Press, published by Elsevier Inc., Amsterdam, The Netherlands.
- Jones L. E. (2018). Utilities and Business: How Scaling Up Energy Access Delivers 'Wins' for Both. BRINK News. www.brinknews.com/utilities-and-business-how-scaling-up-energy-access-delivers-wins-for-both/ (accessed 15 February 2018).
- Jones L. E., Akyeampong E. K., Kutarna C. and Jasieniak J. J. (2018). Energy for Education Is Vital for Developing Economies. BRINK News. <http://www.brinknews.com/energy-for-education-is-vital-for-developing-economies/> (accessed 15 February 2018).
- Jones L. E. and Olsson G. (2017). Solar PV and wind energy providing water. *Global Challenges*, special issue on water and energy, **1**(5), 8 pages. Open access, <https://onlinelibrary.wiley.com/doi/pdf/10.1002/gch2.201600022> (accessed 1 March 2018).
- Kalogirou S. A. (2004). Solar thermal collectors and applications. *Progress in Energy and Combustion Science*, **30**(3), 231–295, Elsevier.
- Kalogirou S. A. (2005). Seawater desalination using renewable energy sources. *Progress in Energy and Combustion Science*, **31**, 242–281, Elsevier.
- Kaur T. and Segal R. (2017). Designing rural electrification solutions considering hybrid energy systems for Papua New Guinea. *Energy Procedia*, **110**, 1–7. www.sciencedirect.com.

196 Clean Water Using Solar and Wind: Outside the Power Grid

- Kirubi C., Jacobson A., Kammen D. M. and Mills A. (2009). Community-based electric micro-grids can contribute to rural development: Evidence from Kenya. *World Development*, **37**(7), 1208–1221.
- Kittner N., Lill F. and Kammen D. M. (2017). Energy storage deployment and innovation for the clean energy transition. *Nature Energy*, **2**, 17125. <https://rael.berkeley.edu/project/innovation-in-energy-storage/> (accessed 10 April 2018).
- Kumar A., Schei T., Ahenkorah A., Caceres Rodriguez R., Devernay J.-M., Freitas M., Hall D., Killingtveit Å. and Liu Z. (2011). Hydropower. In: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation, Edenhofer O., Pichs-Madruga R., Sokona Y., Seyboth K., Matschoss P., Kadner S., Zwickel T., Eickemeier P., Hansen G., Schlömer S. and von Stechow C. (eds), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 437–496.
- Lapsed Physicist (2018). Allan R. Hoffman blog: Thoughts of a Lapsed Physicist: Perspectives on energy and water technologies and policy, www.lapsedphysicist.org.
- Larminie J. and Dicks A. (2003). Fuel Cell Systems Explained. 2nd edn, John Wiley & Sons Ltd., Chichester, West Sussex, England. http://eng.harran.edu.tr/moodle/moodledata/134/Ders_Notlari/fuel_pilleri.pdf (accessed 6 April 2018).
- Larsen T., Udert K. M. and Lienert J. (eds) (2013). Source Separation and Decentralization for Wastewater Management. IWA Publishing, London.
- Lavelle M. (2015). Can sun and wind make more salt water drinkable? *National Geographic*, February 2. <http://news.nationalgeographic.com/news/energy/2015/02/150202-energy-news-renewable-salt-water-drought/> (accessed 5 February 2018).
- Lazard (2016). Lazard's levelized cost of storage, version 2.0. www.lazard.com/media/438042/lazard-levelized-cost-of-storage-v20.pdf (accessed 1 March 2018).
- Lazard (2017). Lazard's levelized cost of energy analysis, version 11, Nov. 2017. www.lazard.com/perspective/levelized-cost-of-energy-2017/ (accessed 5 March 2018).
- Leslie G. and Bradford-Hartke Z. (2013). Membrane processes. Chapter 25 in Larsen *et al.* (2013).
- Liehr S., Kramm J., Jokisch A. and Müller K. (eds) (2018). Integrated Water Resources Management in Water-Scarce Regions: Water Harvesting, Groundwater Desalination and Water Reuse in Namibia. IWA Publishing, London.
- Lienhard J. H., Thiel G. P., Warsinger D. M. and Banchik L. D. (eds) (2016). Low Carbon Desalination: Status and Research, Development,

- and Demonstration Needs. Report of a Workshop Conducted at the Massachusetts Institute of Technology in Association with the Global Clean Water Desalination Alliance. MIT Abdul Latif Jameel World Water and Food Security Lab, Cambridge, Massachusetts, November 2016, pp. 138. <http://web.mit.edu/lowcdesal/> (accessed 25 February 2018).
- Lighting Africa (2013). Lighting Africa: Market Trends Report 2012, Lighting Africa & The World Bank Group, www.lightingafrica.org/wp-content/uploads/2016/07/5_Market-Brief-Report-ElectronicREV-1.pdf (accessed 15 February 2018).
- Lingsten A., Lundqvist M., Hellström D. and Balmér P. (2011). Energy use in Swedish wastewater treatment plants 2008 (in Swedish). Swedish Water Report no 4, 2011. www.svenskvatten.se/rapporter/ (accessed 15 March 2018).
- Mahmoudi H., Ghaffour N., Goosen M. F. A. and Bundschuh J. (2017). Renewable Energy Technologies for Water Desalination. CRC Press, Taylor & Francis Group, USA.
- Manwell J. F., McGowan J. G. and Rogers A. L. (2011). Wind Energy Explained: Theory, Design and Application. 2nd edn, John Wiley & Sons, Ltd, UK.
- Masdar (2018). Renewable energy water desalination programme. The New Frontier of Sustainable Water Desalination, Report http://masdar.ae/assets/downloads/content/3588/desalination_report-2018.pdf (accessed 20 March 2018).
- Mathews J. A. (2016). Competing principles driving energy futures: Fossil fuel decarbonization vs. manufacturing learning curves. *Futures*, **84**(A), 1–11.
- Mathews J. A. and Huang X. (2018). China's green energy revolution has saved the country from catastrophic dependence on fossil fuel imports. *Energy Post*, webpage for European Energy Affairs, <http://energypost.eu/chinas-green-energy-revolution-has-saved-the-country-from-catastrophic-dependence-on-fossil-fuelimports/> (accessed 28 March 2018).
- Mathews J. A. and Tan H. (2014). Economics: Manufacture renewables to build energy security. *Nature*, **513**, 166–168. 11 Sep. 2014 Comment.
- Metcalf and Eddy (2013). Wastewater Engineering – Treatment and Reuse. 5th edn, McGraw-Hill Education, USA.
- NREL (2012a). Life Cycle Greenhouse Gas Emissions from Solar Photovoltaics. National Renewable Energy Laboratory, USA. www.nrel.gov/docs/fy13osti/56487.pdf (accessed 23 February 2018).
- NREL (2012b). Renewable Electricity Futures Study. National Renewable Energy Laboratory, USA. www.nrel.gov/docs/fy13osti/52409-ES.pdf (accessed 23 February 2018).
- Olsson G. (2015). Water and Energy: Threats and Opportunities. 2nd edn, IWA Publishing, London.

198 Clean Water Using Solar and Wind: Outside the Power Grid

- Oram B. (2014). UV Disinfection Drinking Water. Water Research Center, Dallas, PA, USA. <https://www.water-research.net/index.php/water-treatment/water-disinfection/uv-disinfection> (accessed 23 February 2018).
- Palit D. and Chaurey A. (2011). Off-grid rural electrification experiences from South Asia: Status and best practices. *Energy for Sustainable Development*, **15**(3), 266–276. doi:10.1016/j.esd.2011.07.004.
- Parida B., Iniyana S. and Goic R. (2011). A review of solar photovoltaic technologies. *Renewable and Sustainable Energy Reviews*, **15**, 1625–1636, Elsevier.
- Piani G. (2017). Python Solar Energy Calculation Primer. Code and manuscript, download at <https://pypi.python.org/pypi/solprimer/1.0.1>.
- Prinsloo G., Dobson R. and Brent A. (2016). Scoping exercise to determine load profile archetype reference shapes for solar co-generation models in isolated off-grid rural African villages. *Journal of Energy in Southern Africa*, **27**(3), 11–27. www.scielo.org.za/pdf/jesa/v27n3/02.pdf (accessed 1 February 2018).
- Rahman A. and Bhatt B. P. (2014). Design approach for solar photovoltaic groundwater pumping system for Eastern India. *Current World Environment*, **9**(2), 426–429. www.cwejournal.org/pdf/vol9no2/vol9_no2_426-429.pdf (latest approach 15 February 2018).
- REN21 (2017a). Renewable Energy Network for the 21st Century. Renewables 2017, Global Status Report. <http://www.ren21.net/status-of-renewables/global-status-report/> (accessed 20 February 2018).
- REN21 (2017b). Renewables Global Futures Report: Great debates Towards 100% Renewable Energy. REN21 Secretariat, Paris. ISBN 978-3-9818107-4-5.
- Rever B. (2017). Utility-scale solar. Chapter 2.5 in Varadi (2017).
- Riva F., Ahlborg H., Hartvigsson E., Pachauri S. and Colombo E. (2018). Electricity access and rural development: Review of complex socio-economic dynamics and casual diagrams for more appropriate energy modelling. *Energy for Sustainable Development*, **43**, 203–223, www.sciencedirect.com.
- Roul A. (2007). India's Solar Power – Greening India's Future Energy Demand. ECO World, <https://web.archive.org/web/20080619165847/http://www.ecoworld.com/> (accessed 15 February 2018).
- Schnitzer D., Lounsbury D. S., Carvallo J. P., Deshmukh R., Apt J. and Kammen D. M. (2014). Microgrids for Rural Electrification: A Critical Review of Best Practices Based on Seven Case Studies. Published by the UN Foundation, Washington D.C. http://energyaccess.org/wp-content/uploads/2015/07/MicrogridsReportFINAL_high.pdf (accessed 15 April 2018).
- Schorr M. (ed.) (2011). Desalination, Trends and Technologies. IntechOpen Limited, London.

- Shatat M., Worall M. and Riffat S. (2013). Opportunities for solar water desalination worldwide: Review. *Sustainable Cities and Society*, **9**, 67–80. Elsevier.
- Shukla O., Agravat S. M., Jani B. B., Srivastava N. and Singh, G. (2016). Canal Top Solar PV Plant in Gujarat. A Unique Nexus of Energy, Land, and Water Akshay Urja, India, August 2016, 20–23, <http://mnre.gov.in/file-manager/akshay-urja/july-august-2016/EN/20-23.pdf> (accessed 5 February 2018).
- SNV (2015). Solar PV standardised training manual. www.snv.org/public/cms/sites/default/files/explore/download/standardised-training-manual.pdf (accessed 15 April 2018).
- Sontake V. C. and Kalamkar V. R. (2016). Solar photovoltaic water pumping system – a comprehensive review. *Renewable and Sustainable Energy Reviews*, **59**, 1038–1067, Elsevier.
- Stenström T. A. (2013). Hygiene, a major challenge for source separation and decentralization. Chapter 11 in Larsen *et al.* (2013).
- Svensson J. (2018). Wind power, personal communication. Dr. J. Svensson, Lund University.
- Swift A., Rainwater K., Chapman J., Noll D., Jackson A., Ewing B., Song L., Ganesan G., Marshall R., Doon V. and Nash P. (2009). Wind Power and Water Desalination Technology Integration, Technical Report, Texas Tech University, Lubbock, Texas & U.S. Department of the Interior. Available at <https://www.usbr.gov/research/dwpr/reportpdfs/report146.pdf> (accessed 8 February 2018).
- Tilley E. (2013). Conceptualizing sanitation systems to account for new complexities in processing and management. Chapter 16 in Larsen *et al.* (2013).
- Tweed K. (2014). India Plans to Install 26 million Solar-powered Water Pumps, <http://spectrum.ieee.org/energywise/green-tech/solar/india-plans-for-26-million-solar-water-pumps> (accessed 5 February 2018).
- Uhrig M., Koenig S., Suriyah M. R. and Leibfried, T. (2016). Lithium-based vs. vanadium redox flow batteries – a comparison for home storage systems. *Energy Procedia*, **99**, 35–43, Elsevier.
- UN Water (2014). *Water for Life 2005–2015*, United Nations International Decade for Action. www.un.org/waterforlifedecade/africa.shtml (accessed 5 February 2018).
- UN WWDR (2014). *Water and Energy*, The United Nations World Water Development Report 2014 (2 volumes). UN World Water Assessment Programme. Unesco, Paris. <http://unesdoc.unesco.org/images/0022/002257/225741E.pdf> (accessed 18 February 2018).
- USAID (2014). Hybrid mini-grids for rural electrification: Lessons learned. USAID, prepared by the Alliance for Rural Electrification.

200 Clean Water Using Solar and Wind: Outside the Power Grid

- https://ruralelec.org/sites/default/files/hybrid_mini-grids_for_rural_electrification_2014.pdf (accessed 13 April 2018).
- Varadi P. F. (2017). Sun Towards High Noon: Solar power transforming our energy future. Pan Stanford Series on Renewable Energy, vol 8., Pan Stanford Publishing, ISBN 978-981-4774-17-8.
- Varadi P. F., Wouters F. and Hoffman A. R. (2018). The sun is rising in Africa and the Middle East. On the road to a solar energy future. Pan Stanford Series on Renewable Energy, vol 9., Pan Stanford Publishing, ISBN 978-981-4774-89-5.
- Voutchkov N. (2012). Desalination Engineering: Planning and Design. WEF Press & McGraw Hill, Alexandria, VA, USA.
- Voutchkov N. (2016). Desalination – Past, Present and Future. The Source, International Water Association. London, UK.
- WEC (2016). World Energy Council. World Energy Resources 2016, Chapter 8. Khetarpal, D (lead author). Available at <https://www.worldenergy.org/wp-content/uploads/2016/10/World-Energy-Resources-Full-report-2016.10.03.pdf> (accessed 5 February 2018).
- Weiner D., Fisher D., Katz B, Moses E. J. and Meron, G. (2001). Operation experience of a solar- and wind-powered desalination demonstration plant. *Desalination*, **137**, 7–13, Elsevier.
- Wesoff E. and Lacey S. (2017). Solar costs are hitting jaw-dropping lows in every region of the world, *GTM Research*, www.greentechmedia.com/articles/read/Solar-Costs-Are-Hitting-Jaw-Dropping-Lows-In-Every-Region-of-the-World#gs.8UA3X0Y (accessed 20 March 2018).
- White S. (2014). Solar Photovoltaic Basics, Routledge.
- White S. (2016). Solar PV Engineering and Installation. Routledge, London, UK.
- WHO (2006). Guidelines for the safe use of wastewater, excreta and greywater. Vol. 4: Excreta and greywater use in agriculture. World Health Organization, Geneva, Switzerland. www.who.int/water_sanitation_health/publications/gsuweg4/en/ (accessed 15 March 2018).
- WorldBank (2014). Electric Power consumption. World Bank Data. <https://data.worldbank.org/indicator> (accessed 10 February 2018).
- World Bank (2017). State of Electricity Access Report 2017. <https://openknowledge.worldbank.org/handle/10986/26646> (accessed 15 March 2018).
- WWEA (2016). Small Wind World Report 2016, World Wind Energy Association, Bonn, Germany. www.wwindea.org/ (accessed 20 February 2018).
- Yadoo A. and Cruickshank H. (2010). The value of cooperatives in rural electrification. *Energy Policy*, **38**(6), 2941–2947. doi:<https://doi.org/10.1016/j.enpol.2010.01.031>.

- Zabbey N. and Olsson G. (2017). Conflicts – oil exploration and water. *Global Challenges*, **1**(5), 10 pages. Open access, Special issue on Water and energy, <http://onlinelibrary.wiley.com/doi/10.1002/gch2.201600015/full> (accessed 20 February 2018).
- Zaragoza G. (2018). Private communication. CIEMAT Plataforma Solar de Almeria, Almeria, Spain.