

Complete References, Bettering Human Lives: LBRT ESG Report, Issued July 2022

Preface: Introduction, Letter from the CEO, The Shale Revolution

Lomborg, Bjorn. "Welfare in the 21st Century: Increasing Development, Reducing Inequality, the Impact of Climate Change, and the Cost of Climate Policies." *Technological Forecasting and Social Change*, vol. 156, 2020, p. 119981., doi:10.1016/j.techfore.2020.119981.

"Household Air Pollution and Health." *World Health Organization*, World Health Organization, 2021, www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health.

"Ambient Air Pollution: A Global Assessment of Exposure and Burden of Disease." *World Health Organization*, World Health Organization, 7 Nov. 2016, www.who.int/phe/publications/air-pollution-global-assessment/en/.

Nordhaus, William. "Projections and Uncertainties about Climate Change in an Era of Minimal Climate Policies." *American Economic Journal: Economic Policy*, vol. 10, no. 3, 2018, pp. 333–360., doi:10.1257/pol.20170046.

Nordhaus, William D. "Revisiting the Social Cost of Carbon." *Proceedings of the National Academy of Sciences*, vol. 114, no. 7, 2017, pp. 1518–1523., doi:10.1073/pnas.1609244114.

Energy Access Outlook 2017 - Microsoft. International Energy Agency, 2017, iea.blob.core.windows.net/assets/9a67c2fc-b605-4994-8eb5-29a0ac219499/WEO2017SpecialReport_EnergyAccessOutlook.pdf

"Propane's Role in Improving Health, Environmental Standards." *LP Gas*, 6 Dec. 2021, www.lpgasmagazine.com/clean-cooking-globally/.

Williams, Kendra N., et al. "Exploring the Impact of a Liquefied Petroleum Gas Intervention on Time Use in Rural Peru: A Mixed Methods Study on Perceptions, Use, and Implications of Time Savings." *Environment International*, Pergamon, 5 Oct. 2020, www.sciencedirect.com/science/article/pii/S0160412020318870?via%3Dihub.

"Our Nation's Air: Trends through 2020." *EPA*, Environmental Protection Agency, 2022, gispub.epa.gov/air/trendsreport/2021/#resources.

"New York's Buried Opportunity: Cuomo's Policy Prevents Prosperity While Pennsylvanians Flourish." *Power the Future*, Jan. 2020, powerthefuture.com/wp-content/uploads/2020/01/PA-NY-Study.pdf.

"Average Retail Price of Electricity to Residential Sector, February 2021 (Cents/KWh)." *United States - Rankings - U.S. Energy Information Administration (EIA)*, Feb. 2021, www.eia.gov/state/rankings/?sid=US#/series/31.

Institute, ERI Economic Research. "Blue Collar Worker Salary the United States." *Salary Expert*, www.salaryexpert.com/salary/job/blue-collar-worker/united-states#:~:text=The%20average%20blue%20collar%20worker,anonymous%20employees%20in%20United%20States.

Part 1: Liberty's Business in Global Context: Low-Cost Energy as an Agent of Human Well Being

Energy

Lane, Nick, and William F. Martin. "Eukaryotes Really Are Special, and Mitochondria Are Why." *Proceedings of the National Academy of Sciences*, vol. 112, no. 35, 2015, doi:10.1073/pnas.1509237112.

"International Energy Outlook 2019 - Energy Information Administration." *Energy Information Administration*, Sept. 2019, www.eia.gov/outlooks/ieo/pdf/ieo2019.pdf.

"Statistical Review of World Energy: Energy Economics: Home." *Bp Global*, 2022, www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html.

"International Energy Outlook - U.S. Energy Information Administration (EIA)." *International Energy Outlook 2021 - U.S. Energy Information Administration (EIA)*, 2021, www.eia.gov/outlooks/ieo/pdf/ieo2019.pdf.

Smil, Vaclav. *Energy Transitions: Global and National Perspectives*. Praeger, an Imprint of ABC-CLIO, LLC, 2017.

Lomborg, Bjorn. "Welfare in the 21st Century: Increasing Development, Reducing Inequality, the Impact of Climate Change, and the Cost of Climate Policies." *Technological Forecasting and Social Change*, vol. 156, 2020, p. 119981., doi:10.1016/j.techfore.2020.119981.

Cembalest, Michael. "12th Annual Energy Paper: J.P. Morgan Private Bank." *Private Banking & Wealth Management*, 4 May 2022, privatebank.jpmorgan.com/gl/en/insights/investing/eotm/annual-energy-paper.

Cembalest, Michael. "Eye on the Market 11th Annual Energy Paper." *Eye on the Market 11th Annual Energy Paper | J.P. Morgan Asset Management*, JPM, 2021, am.jpmorgan.com/us/en/asset-management/institutional/insights/market-insights/eye-on-the-market/annual-energy-outlook

"U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." *International - U.S. Energy Information Administration (EIA)*, 2021, www.eia.gov/international/data/world/total-energy/total-energy-production.

Energy Poverty

"Household Air Pollution and Health." *World Health Organization*, World Health Organization, 2021, www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health.

- “Ambient Air Pollution: A Global Assessment of Exposure and Burden of Disease.” *World Health Organization*, World Health Organization, 7 Nov. 2016, www.who.int/phe/publications/air-pollution-global-assessment/en/.
- “PM2.5 Exposure | State of Global Air.” *State of Global Air*, 2022, www.stateofglobalair.org/air/pm.
- Van Donkelaar, Aaron, et al. “Global Estimates of Ambient Fine Particulate Matter Concentrations from Satellite-Based Aerosol Optical Depth: Development and Application.” *Environmental Health Perspectives*, vol. 118, no. 6, 2010, pp. 847–855., doi:10.1289/ehp.0901623.
- Dunbar, Brian. “New Map Offers a Global View of Health-Sapping Air Pollution.” *NASA*, NASA, 2021, www.nasa.gov/topics/earth/features/health-sapping.html.
- Enterprise Products Partners L.P., 2021, *Investor Deck February 2021*, www.enterpriseproducts.com/investors/presentations.
- “Commodity Markets Outlook - World Bank.” *World Bank*, World Bank, Apr. 2022, openknowledge.worldbank.org/bitstream/handle/10986/37223/CMO-April-2022.pdf.
- Goldman Sachs Energy & Infrastructure Team, 2022, *North American Energy: Positioned as a Key Growing Supplier of Global Energy Demand: A Game Changer for US Energy Infrastructure*.
- “World Development Indicators.” *World Development Data Catalog*, World Bank, 2022, datacatalog.worldbank.org/search/dataset/0037712.
- United Nations Department of Economic and Social Affairs. “Policy Brief 12 Global Progress Of SDG 7— Energy And Gender.” *Energy and Gender*, 2018, doi:https://sustainabledevelopment.un.org/content/documents/17489PB12.pdf.
- “Per Capita Electricity Consumption.” *Our World in Data*, ourworldindata.org/grapher/per-capita-electricity-consumption.
- “Statistical Review of World Energy: Energy Economics: Home.” *Bp Global*, 2022, www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html.
- “Number of People with and without Electricity Access.” *Our World in Data*, 2022, ourworldindata.org/grapher/number-of-people-with-and-without-electricity-access.
- Ember, 20 Aug. 2020, ember-climate.org/data/.
- Rosling, Hans, et al. *Factfulness*. Rizzoli, 2018. <https://www.gapminder.org/fw/income-levels/>
- “U.S. Energy Information Administration - EIA - Independent Statistics and Analysis.” *One in Three U.S. Households Faces a Challenge in Meeting Energy Needs - Today in Energy - U.S. Energy Information Administration (EIA)*, www.eia.gov/todayinenergy/detail.php?id=37072.

Bryce, Robert. "Case Study: Haiti v. Dominican Republic - Life:Powered." *Life Powered*, 16 Oct. 2018, lifepowered.org/haiti-v-dominican-republic/.

Smil, Vaclav. *Transforming the Twentieth Century: Technical Innovations and Their Consequences*. Oxford University Press, 2006, www.amazon.com/Transforming-Twentieth-Century-Innovations-Consequences/dp/0195168755.

Bryce, Robert. "My Old Refrigerator Used More Electricity than 3.3 Billion People." *Forbes*, Forbes Magazine, 22 May 2020, www.forbes.com/sites/robertbryce/2020/05/22/my-old-refrigerator-used-more-electricity-than-33-billion-people/?sh=27fcedf077d5.

Choi, Seong-Woo. "Changes in Health Status of North Korean Children and Emerging Health Challenges of North Korean Refugee Children." *Clinical and Experimental Pediatrics*, vol. 64, no. 11, 2021, pp. 552–558., doi:10.3345/cep.2021.00192.

Ritchie, Hannah, et al. "North Korea: Energy Country Profile." *Our World in Data*, 28 Nov. 2020, ourworldindata.org/energy/country/north-korea.

"World Development Indicators." *World Bank Data Bank*, 2022, databank.worldbank.org/reports.aspx?dsid=2&series=EG.ELC.ACCS.ZS.

Climate Change

Morris, Ian, et al. *Foragers, Farmers, and Fossil Fuels: How Human Values Evolve*. Princeton University Press, 2017.

Bralower, Timothy, and David Bice. "Carbon Dioxide Through Time." *Earth in the Future: Carbon Dioxide through Time*, Penn State College of Earth and Mineral Science, 2021, www.education.psu.edu/earth103/node/1018.

Lewis, Nicholas, and Judith Curry. "The Impact of Recent Forcing and Ocean Heat Uptake Data on Estimates of Climate Sensitivity." *Journal of Climate*, vol. 31, no. 15, 2018, pp. 6051–6071., doi:10.1175/jcli-d-17-0667.1.

Hille, Karl. "Carbon Dioxide Fertilization Greening Earth, Study Finds." NASA, NASA, 25 Apr. 2016, www.nasa.gov/feature/goddard/2016/carbon-dioxide-fertilization-greening-earth.

Spencer. "New Reference for Annual Cycle 1991-2020." *Nsstc.uah.edu*, University of Alabama Huntsville, Apr. 2015, www.nsstc.uah.edu/data/msu/v6.0/tlt/uahncdc_lt_6.0.txt.

Nerum, R.S., et al. *Climate-Change–Driven Accelerated Sea-Level Rise Detected in ... - PNAS*. Earth, Atmospheric, and Planetary Sciences, 12 Feb. 2018, www.pnas.org/doi/10.1073/pnas.1717312115.

Jet Propulsion Laboratory. "Satellite Mission Keeps a Steady Eye on Sea Level Change from Space." *SciTechDaily*, Jet Propulsion Laboratory, 15 July 2020, scitechdaily.com/satellite-mission-keeps-a-steady-eye-on-sea-level-change-from-space/.

- “Sea Level.” NASA, NASA, 18 July 2022, climate.nasa.gov/vital-signs/sea-level/.
- “Global Temperature Report.” *Global Temperature Report: The University of Alabama in Huntsville*, University of Alabama in Huntsville, 2022, www.nsstc.uah.edu/climate/.
- Jevrejeva, S., et al. “Recent Global Sea Level Acceleration Started over 200 Years Ago?” *Geophysical Research Letters*, vol. 35, no. 8, 2008, doi:10.1029/2008gl033611.
- Maue, Ryan. “Global Tropical Cyclone Activity: Ryan Maue.” *Global Tropical Cyclone Activity*, 2021, climatlas.com/tropical/.
- Weinkle, Jessica, et al. “Historical Global Tropical Cyclone Landfalls*.” *Journal of Climate*, vol. 25, no. 13, 2012, pp. 4729–4735., doi:10.1175/jcli-d-11-00719.1.
- Klotzbach, Philip J., et al. “Continental U.S. Hurricane Landfall Frequency and Associated Damage: Observations and Future Risks.” *Bulletin of the American Meteorological Society*, vol. 99, no. 7, 2018, pp. 1359–1376., doi:10.1175/bams-d-17-0184.1.
- “Storm Prediction Center WCM Page.” *Storm Prediction Center*, NOAA, www.spc.noaa.gov/wcm/.
- “US Hurricane Landfalls.” *Atlantic Oceanographic and Meteorological Laboratories*, NOAA, 2022, www.aoml.noaa.gov/hrd/hurdat/All_U.S._Hurricanes.html.
- Lomborg, Bjorn. “Welfare in the 21st Century: Increasing Development, Reducing Inequality, the Impact of Climate Change, and the Cost of Climate Policies.” *Technological Forecasting and Social Change*, vol. 156, 2020, p. 119981., doi:10.1016/j.techfore.2020.119981.
- Downton, Mary W., et al. “Reanalysis of U.S. National Weather Service Flood Loss Database.” *Natural Hazards Review*, vol. 6, no. 1, 2005, pp. 13–22., doi:10.1061/(asce)1527-6988(2005)6:1(13).
- Davenport, Frances V., et al. “Contribution of Historical Precipitation Change to US Flood Damages.” *Proceedings of the National Academy of Sciences*, vol. 118, no. 4, 2021, doi:10.1073/pnas.2017524118.
- Jr., Roger Pielke. “Global Disasters: A Remarkable Story of Science and Policy Success.” *The Honest Broker Newsletter*, The Honest Broker Newsletter, 14 Jan. 2021, rogerpielkejr.substack.com/p/global-disasters-a-remarkable-story.
- “National Interagency Fire Center Statistics.” *National Interagency Fire Center*, 2021, www.nifc.gov/fire-information/statistics.
- Parks1, Sean A, et al. “IOPscience.” *Environmental Research Letters*, IOP Publishing, 18 Apr. 2018, iopscience.iop.org/article/10.1088/1748-9326/aab791.
- “EM-DAT: The International Disasters Database.” *EM-DAT*, Centre for Research on the Epidemiology of Disasters (CRED), www.emdat.be/.

Climate Change Economics

“Sixth Assessment Report.” *IPCC*, 4 Apr. 2022, www.ipcc.ch/assessment-report/ar6/.

“Fifth Assessment Report.” *IPCC*, Oct. 2014, www.ipcc.ch/assessment-report/ar5/.

Lomborg, Bjorn. “Welfare in the 21st Century: Increasing Development, Reducing Inequality, the Impact of Climate Change, and the Cost of Climate Policies.” *Technological Forecasting and Social Change*, vol. 156, 2020, p. 119981., doi:10.1016/j.techfore.2020.119981.

Nordhaus, William D. “Revisiting the Social Cost of Carbon.” *Proceedings of the National Academy of Sciences*, vol. 114, no. 7, 2017, pp. 1518–1523., doi:10.1073/pnas.1609244114.

Nordhaus, William. “Projections and Uncertainties about Climate Change in an Era of Minimal Climate Policies.” *American Economic Journal: Economic Policy*, vol. 10, no. 3, 2018, pp. 333–360., doi:10.1257/pol.20170046.

Friedlingstein, Pierre, et al. “Global Carbon Budget 2020.” *Earth System Science Data*, vol. 12, no. 4, 2020, pp. 3269–3340., doi:10.5194/essd-12-3269-2020.

“Annual Total CO₂ Emissions, by World Region.” *Our World in Data*, ourworldindata.org/grapher/annual-co-emissions-by-region.

Department for Environment, Food & Rural Affairs. “UK's Carbon Footprint.” *GOV.UK*, GOV.UK, 22 Apr. 2021, www.gov.uk/government/statistics/uks-carbon-footprint.

Gamblin, Nikita. “Excess Winter Mortality in England and Wales: 2019 to 2020 (Provisional) and 2018 to 2019 (Final).” *Excess Winter Mortality in England and Wales - Office for National Statistics*, Office for National Statistics, 27 Nov. 2020, www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/excesswintermortalityinenglandandwales/2019to2020provisionaland2018to2019final.

Cembalest, Michael. “Eye on the Market 11th Annual Energy Paper.” *Eye on the Market 11th Annual Energy Paper | J.P. Morgan Asset Management*, JPM, 2021, am.jpmorgan.com/us/en/asset-management/institutional/insights/market-insights/eye-on-the-market/annual-energy-outlook/.

Koonin, Steven E. *Unsettled: What Climate Science Tells Us, What It Doesn't, and Why It Matters*. Two Rivers Distribution, 2021.

Emissions & Air Quality: The Big Picture

“The Environmental Kuznets Curve.” *Intelligent Economist*, 26 Oct. 2020, www.intelligenteconomist.com/kuznets-curve/.

“Corner of Liberty and Fifth Avenues 8:38 AM.” *Historic Pittsburgh*, historicpittsburgh.org/islandora/object/pitt%3ASCLS001.

“Criteria Air Pollutants.” EPA, Environmental Protection Agency, 22 Mar. 2021, www.epa.gov/criteria-air-pollutants.

“U.S. Energy Information Administration - EIA - Independent Statistics and Analysis.” *U.S. Energy Information Administration (EIA) - Ap*, www.eia.gov/environment/emissions/carbon/?src=email.

Yandle, Bruce, et al. PERC, 2002, *The Environmental Kuznets Curve: A Primer*, www.perc.org/2002/12/01/the-environmental-kuznets-curve/.

EIA Electric Power Annual (2021), Tables 4.3 and 4.5 , *Existing Capacity by Energy Source, 2020 (Megawatts)*, EIA, 2022, www.eia.gov/electricity/annual/html/epa_04_03.html, https://www.eia.gov/electricity/annual/html/epa_04_03.html,

“The February 2021 Cold Weather Outages in Texas and the South Central United States: FERC, NERC and Regional Entity Staff Report.” *Federal Energy Regulatory Commission*, Federal Energy Regulatory Commission, 8 Dec. 2021, www.ferc.gov/media/february-2021-cold-weather-outages-texas-and-south-central-united-states-ferc-nerc-and.

“Real-Time Operating Grid - U.S. Energy Information Administration (EIA).” *Real-Time Operating Grid - U.S. Energy Information Administration (EIA)*, 2022, www.eia.gov/electricity/gridmonitor/dashboard/electric_overview/US48/US48.

Zorn, Ryan. *Energy in Texas*. Bijou Insights, July 2022.

“State Energy Profile: Texas.” *EIA*, 2022, www.eia.gov/electricity/state/Texas/.

“Internal Analysis of U.S. Department of Energy Electric Disturbance Events (OE-417) Data.” *Energy.gov*, www.energy.gov/ceser/activities/energy-security/monitoring-reporting-analysis/electric-disturbance-events-oe-417.

“U.S. Energy Information Administration - EIA - Independent Statistics and Analysis.” *Form EIA-923 Detailed Data with Previous Form Data (EIA-906/920)*, 2022, www.eia.gov/electricity/data/eia923/.

Part 2

The Shale Revolution

Improving Environmental Performance

Digital Technology

Frac Engines

Noise/Dust/Sand

Frac Fluid Chemistry

Fisher, M.K., et al. "Optimizing Horizontal Completion Techniques in the Barnett Shale Using Microseismic Fracture Mapping." *All Days*, 2004, doi:10.2118/90051-ms.

Fisher, M.K., et al. "Integrating Fracture Mapping Technologies to Optimize Stimulations in the Barnett Shale." *All Days*, 2002, doi:10.2118/77441-ms.

Water

"Water Sources and Demands for Hydraulic Fracturing Of Oil and Gas Wells in Colorado." *Technical Reports*, Colorado Oil & Gas Conservation Commission, Jan. 2017, cogcc.state.co.us/documents/library/Technical/Public_Health_Safety_and_Welfare/Water_Sources_and_Demand_for_Hydraulic_Fracturing_2017_January.pdf.

Ecological Impact

Crude Oil Production, EIA, www.eia.gov/dnav/pet/pet_crd_crdpn_adc_mbbbl_m.htm.

Smil, Vaclav. "Power Density Primer: Understanding the Spatial Dimension of the Unfolding Transition to Renewable Electricity Generation (Part V – Comparing the Power Densities of Electricity Generation)." *Master Resource*, 14 May 2010, www.masterresource.org/smil-vaclav/smil-density-comparisons-v/.

Front Range Colorado: Case Study

Assessment of Potential Public Health Effects from Oil and Gas Operations in Colorado, Colorado Department of Health and Environment, 21 Feb. 2017, drive.google.com/file/d/0B0tmPQ67k3NVVFc1TFg1eDhMMjQ/view.

"Greenhouse Gas Inventories." *Denver Open Data Catalog: Greenhouse Gas Inventories*, City and County of Denver, 2020, www.denvergov.org/opendata/dataset/greenhouse-gas-inventories.

"Air Pollutant Emissions Trends Data." *EPA*, Environmental Protection Agency, 25 Mar. 2021, www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data.

"World Population Prospects - Population Division." *United Nations*, United Nations, population.un.org/wpp.

Safety

COVID-19 Response

Culture of Excellence

Revitalizing Small Town America

Published by Statista Research Department, and May 17. "U.S. GDP per Capita by State in 2019." *Statista*, 17 May 2021, www.statista.com/statistics/248063/per-capita-us-real-gross-domestic-product-gdp-by-state/.

North Dakota , U.S. Census Bureau, 2021,

www.census.gov/quickfacts/fact/table/willistoncitynorthdakota,williamscountynorthdakota,ND/PST045219.

Institute, ERI Economic Research. “Blue Collar Worker Salary the United States.” *Salary Expert*,

www.salaryexpert.com/salary/job/blue-collar-worker/united-states#:~:text=The%20average%20blue%20collar%20worker,anonymous%20employees%20in%20United%20States.