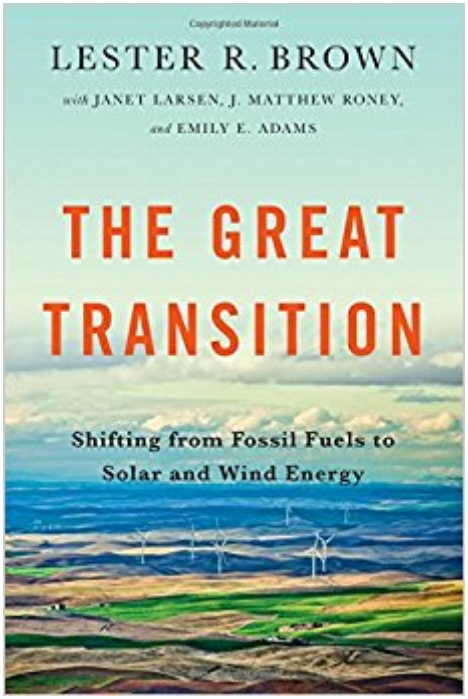
The Great Transition: Shifting From Fossil Fuels To Solar And Wind Energy



Synopsis

The great energy transition from fossil fuels to renewable sources of energy is under way. As oil insecurity deepens, the extraction risks of fossil fuels rise, and concerns about climate instability cast a shadow over the future of coal, a new world energy economy is emerging. The old economy, fueled by oil, natural gas, and coal is being replaced with one powered by wind, solar, and geothermal energy. The Great Transition details the accelerating pace of this global energy revolution. As many countries become less enamored with coal and nuclear power, they are embracing an array of clean, renewable energies. Whereas solar energy projects were once small-scale, largely designed for residential use, energy investors are now building utility-scale solar projects. Strides are being made: some of the huge wind farm complexes under construction in China will each produce as much electricity as several nuclear power plants, and an electrified transport system supplemented by the use of bicycles could reshape the way we think about mobility.

Book Information

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Customer Reviews

Lester R. BrownÃ Â is the founder of the Earth Policy and Worldwatch Institutes. He has been honored with numerous prizes, including a MacArthur Fellowship, the United Nations Environment Prize, and twenty-five honorary degrees. He lives in Washington, D.C.Janet Larsen is an author and the director of research for Earth Policy Institute. She has written on topics ranging from natural

resources availability to population growth and climate change. Prior to the creation of Earth Policy Institute, Janet worked at Worldwatch Institute, providing research support for State of the World and contributing to Vital Signs.

This is a terrific contribution from an experienced writer on environmental issues.It has been a long struggle to bring the costs of solar energy and other renewable sources down to a point where they can actually compete in the energy marketplace, even without major government incentives.That's the case for wind and solar, as Brown describes so well in this new book. Other renewable energy sources are also making great strides, as are efficient buildings and efficient transportation -- not to mention research accomplishments on energy storage technologies, efficient long-distance electricity grid designs, and massive new investments in green energy.The only deficiency of is the lack of graphics to support the text. But never mind that. Web searches on wave energy, tidal energy, ocean current energy, solar electric, solar thermal, energy storage, geothermal, wind turbines, electric grids, and renewable energy economics can put these images plus relevant charts and graphs at your fingertips.For example, when I started out as a solar scientist in 1976, the holy grail in the photovoltaic world was getting the price of PV down to an amazingly low price of 50Ãƒâ Ã Â¢ per peak Watt of electrical output. At that time the price was over $76/peak Watt. Take a look at the astounding bar chart of this price from 1976 to 2015 here:https://commons.wikimedia.org/wiki/File:Price_history_of_silicon_PV_cells_since_1977.svgIt turns out that we passed the 50Ãƒâ Ã Â¢/Wp point in 2013 and now the price is an amazingly 30Ãƒâ Ã Â¢/Wp, thanks mainly to China's recent burst in solar equipment manufacturing, aided along the way by the United States, Japan, and Germany.If you divide the cost of a PV array (multiply the peak Watts generated by the array by the current price per peak Watt to get the cost) by the expected lifetime of the system in years, you get the approximate yearly cost of the electricity generated by that system. This is like the annual amortized price of the investment. In many cases, this calculation yields an electricity price comparable to and even much lower than electric utility prices for the equivalent energy that would otherwise have to be purchased. This simply says that in some cases PV solar is cheaper electricity than current utility prices.Added to the fact that electric utility prices are increasing while solar prices are coming down, you have the makings of a giant energy transition--away from fossil fuels--thereby reducing significantly the emission of global warming gases that threaten our global climate. A similar price revolution has come to large wind turbine farms, which are in many cases cheaper and quicker to install than a fossil fuel power plant, with similar economic advantages,A result of the solar (and wind) price revolution is that businesses

around the world are filling their roofs with PV solar arrays to provide much of their electrical load during their daytime hours of operation, and when excess power is generated, it is fed back into the electrical grid, "running the meter backwards" so-to-speak, substantially reducing their electricity bill. In some areas, this is so prominent that electric utilities are charging impact fees to compensate for their significant losses of revenue as customers use (and pay for) less utility electricity. A new solar rights movement has started up, with the goal of blocking legislation pushed by electric companies to outlaw solar electricity from residential rooftops unless the electric utility owns and/or installs them.Wind has become very popular too, as costs have plummeted, and giant wind farms have been built in several countries. The same is true of large solar PV and solar thermal energy installations. To meet the challenge of solar and wind intermittency, efficient, high voltage DC long distance utility-scale electric grids are being built to transport wind and solar electricity from places and times where it is abundant to places where the local solar is absent or diminished.The energy industry is changing rapidly around the world -- as free market economies begin switching to energy conservation and renewable energy in big ways, both with and without government incentives. It might be possible to get the global warming thing under control before it is too late to do anything about it! I highly recommend Lester Brown’s new book on this subject. Read and be astounded.

An excellent update on what is going onin the movement to reduce worldwide carbon fuel consumption. An incredible number of ideas and achievements are discussed. A valuable tool for those concerned with the future of the world when challenged by global environmental change. Also give ideas of how you can help in this struggle and why investment in the carbon industry and supporting industries are no longer growth industries but face a death spiral of rising costs, rapidly growing competitive fuels, lifestyle changes and public outrage at the the hidden unpaid costs this industry imposes on the citizens of the world such as damage to our public health.Live better and longer in a world with reduced carbon.Go world

The book provided random statistics. It was generally one sided with no pros/cons or how the shift was taking place. I 100% agree there is a transition happening but what are the implications and how will it effect the infrastructure of the power grid we know today? How will tomorrows energy supply be effected? More expense, availability issues, reliability issues, none, some? As someone who works in the energy industry I was disappointed. From the small bio in the back the book is written by environmental researchers not energy experts, just noting how the book is geared.

Brown’s book is low on substance, but chock full of statistics taken out of context. The result is a very grim representation of fossil fuels and an exaggerated rosy picture of renewables. It’s short (115 pages) but tough to get through since it’s like rehashing all the clichÃƒÂ©d environmentalist propaganda you’ve heard so many times before. He’s not wrong on everything, but his presentation is often misleading. Some of it is pretty questionable though, such as "one seventh of a teaspoon of mercury dropped in a lake can poison that lake", which is Brown quoting a politician who likely was repeating an oft-quoted but dubious claim from the Environmental Defense Fund.I think this book is a good example of why the environmentalist movement’s credibility is often questioned. Brown could do more for his cause by shooting straight. Is it worth reading? I’m not sure - maybe if you want to see an example of how not to advance ideas. What’s the alternative? Try Mackay’s Sustainable Energy (Without the Hot Air)Sustainable Energy - Without the Hot AirÃ Â or Muller’s Energy for Future PresidentsEnergy for Future Presidents: The Science Behind the Headlines.

This book opened my eyes to the great changes in energy generation happening in the world. Yes, there is hope to save the environment for future generations. And technology to extract wind, solar, and other forms of environmentally friendly energy is only going to get better and better with time and additional investment. We need will power and changes in political thinking in order to ensure that this great transition happens sooner rather than later.

Practical Guide to Solar Energy - Designing and Installing Photovoltaic Solar Electric Systems The Story of Fossil Fuels (Science Readers: Content and Literacy) The Moral Case for Fossil Fuels Buried Sunlight: How Fossil Fuels Have Changed the Earth The Deep Hot Biosphere: The Myth of Fossil Fuels Burn Out: The Endgame for Fossil Fuels Cash in the Wind: How to Build a Wind Farm Using Skystream and 442SR Wind Turbines for Home Power Energy Net-Metering and Sell Electricity Back to the Grid Cash In The Wind: How to Build a Wind Farm with Skystream and 442SR Wind Turbines for Home Power Energy Net Metering and Sell Electricity Back to the Grid Wind Power Basics: The Ultimate Guide to Wind Energy Systems and Wind Generators for Homes The Homeowner’s Guide to Renewable Energy: Achieving Energy Independence Through Solar, Wind, Biomass, and Hydropower