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An Analysis of the Renewable Energy Industry: Lagging Indicators in the Legal, Infrastructural, and Economic Forces

Alina Sigitova
Pittsburg State University

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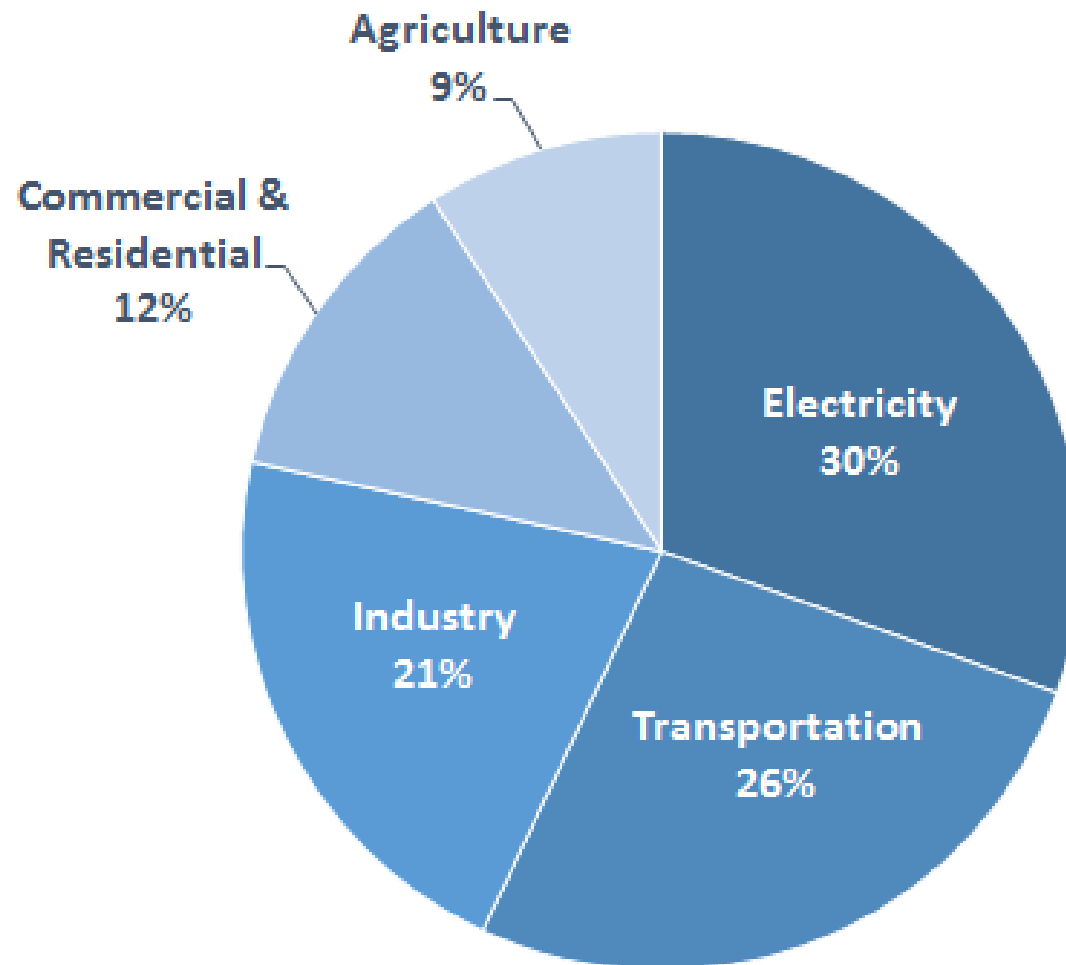
An Analysis of the Renewable Energy Industry: Lagging Indicators in the Economic, Legal, & Infrastructural Forces

A PRESENTATION BY ALINA SIGITOVA

The Problem

- Renewable Energy is an industry with a lot of potential
 - 2000-2009 was the hottest decade in the history of the Earth
 - Until 1950, carbon dioxide levels rose by 11%; they now rise by 45%
 - Sea levels have risen by 7% in the last 100 years; this is more than the last 2,000 years combined
 - 56% of consumers say that environment should be given protection, even at the expense of economic development
 - The major cause of this huge environment impact is the way we consume energy, primarily through fossil fuels

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2014



“Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2014”, EPA study



Electricity

67%

Transportation

90%

Industry

Nearly All

Enter the solution: Renewable Energy

“...Energy that is generated from natural processes that are continuously replenished. This includes sunlight, geothermal heat, wind, tides, water, and various forms of biomass. This energy cannot be exhausted and is constantly renewed.”

*-Daniel Ciolkosz
Assistant Professor at
Penn State Agricultural Science & Research*

How effective is Renewable Energy?

87% less emissions

What is the usage rate?

9.9% of all energy



Big Question:
Why isn't the industry dominating?

Reason 1: Economic

- **Government Subsidization**
 - 4 times more for fossil fuels than renewable energy
 - Fossil fuel subsidization world-wide is equal to 6.5% of world GDP
 - Fossil fuel subsidization = secure, long-term, written into tax codes
 - Renewable Energy subsidization = short-lived, instable, not permanent
- **Market Ideology**
 - Free market ideals
 - Fossil fuels took centuries to develop, had large subsidization help, & initially started as monopolies

Reason 2: Legal

- Structure of United States (State's Rights)
 - States govern themselves on energy consumption
 - More bureaucracy; 50 different policies to follow rather than one
- No enforceable federal plan
 - U.S. publishes a plan every 2 years for energy development; this is not a binding document, unlike EU's plan
- Changing Policies
 - Policies change term-to-term & administration-to-administration
 - Focus on different aspects, but not enough time invested in one

Reason 3: Infrastructural

- Grid & Logistical Incompatibility
 - Current grid is unable to be compatible with the fluctuating energy of most renewable energies
 - This causes waste, inefficacy, and added labor costs
- Land Limitations
 - Solar & wind both take a lot of space to produce energy
 - Meet energy needs of 2050:
 - 22% bigger than Massachusetts for solar
 - 633% for wind turbines
- Infrastructure Policies
 - More costly & extensive than fossil fuel permits



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Conclusion?

While important, there are several external factors that need to be solved first.

References

- A Short History of Energy. (2016). Retrieved from http://www.ucsusa.org/clean_energy/our-energy-choices/a-short-history-of-energy.html#.WEYot_krJEZ
- Ciolkosz, D. (2016). What is Renewable Energy? Retrieved December 05, 2016, from <http://extension.psu.edu/natural-resources/energy/what>
- Clarke-Billings, L. (2016, November 04). Paris climate change agreement officially came into force in Europe at midnight. Newsweek. Retrieved December 05, 2016, from <http://www.newsweek.com/paris-climate-change-agreement-takes-effect-ahead-us-presidential-election-516909>
- Elliott, D. (2013). Why the United States Does Not Have a Renewable Energy Policy. Environmental Law Institute.
- Environment. (2016, January 30). Retrieved December 05, 2016, from <http://www.gallup.com/poll/1615/environment.aspx>
- Ferrey, S. (2009, Fall). Restructuring a green grid: legal challenges to accommodate new renewable energy infrastructure. *Environmental Law*, 39(4), 977+. Retrieved from http://go.galegroup.com/ps/i.do?p=EAIM&sw=w&u=psu_main&v=2.1&it=r&id=GALE%7CA217847377&sid=summon&asid=b854e89f1540fd7882a5c9043f1cbf9a
- Geilen, D., Saygin, D., & Wagner, N. (2016). Renewable Energy Prospects: United States of America [Scholarly project]. In IRENA. Retrieved December 5, 2016, from http://www.irena.org/remap/irena_remap_usa_report_2015.pdf
- Hand, M. (Ed.). (2012). Renewable Electricity Future Study (Vol. 4) (United States, National Renewable Energy Laboratory, Department of Energy). Golden, CO: NREL.
- Historical Timeline. (2013, June 13). Retrieved December 5, 2016, from <http://alternativeenergy.procon.org/view.timeline.php?timelineID=000015>
- How 11 Countries Are Leading The Shift To Renewable Energy. (2016, February 04). CleanTechnica. Retrieved December 05, 2016, from <https://cleantechnica.com/2016/02/04/how-11-countries-are-leading-the-shift-to-renewable-energy/>
- Jenkins, J. (2015, June 25). How Much Land Does Solar, Wind and Nuclear Energy Require? The Energy Collective.

References 2

- Kavanagh, M. (2016, July 26). A world map of subsidies for renewable energy and fossil fuels. *Financial Times*. Retrieved December 05, 2016, from <https://www.ft.com/content/fb264f96-5088-11e6-8172-e39ecd3b86fc>
- Kraemer, S. (2015, June 10). A Closer Look at Fossil and Renewable Energy Subsidies. *Renewable Energy World*. Retrieved December 05, 2016, from <http://www.renewableenergyworld.com/articles/2015/06/a-closer-look-at-fossil-and-renewable-energy-subsidies.html>
- L., E. (2015, July 26). The global addiction to energy subsidies. Retrieved December 05, 2016, from <http://www.economist.com/blogs/economist-explains/2015/07/economist-explains-19>
- O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. von Stechow (Ed.). (2012). *Special Report on Renewable Energy Sources and Climate Change Mitigation* [Scholarly project]. In *IPCC*. Retrieved December 5, 2016, from <http://www.ipcc.ch/report/srren/>
- Pasqualetti, M. J. (2011). Social Barriers To Renewable Energy Landscapes*. *Geographical Review*, 101(2), 201-223. doi:10.1111/j.1931-0846.2011.00087.x
- Renewable Energy. (2016, March). Retrieved December 05, 2016, from <http://instituteeforenergyresearch.org/topics/encyclopedia/renewable-energy/>
- Sieminski, A. (2016). *International Energy Outlook 2016 With Projections to 2040* (United States of America, U.S. Energy Information Administration, Department of Energy). Washington, D.C: United States. Energy Information Administration.
- Sources of Greenhouse Gas Emissions. (2014). Retrieved December 05, 2016, from <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>
- Spector, D. (2013, December 3). Green Energy Could Crash The US Power Grid. *Business Insider*. Retrieved December 5, 2016, from <http://www.businessinsider.com/green-energy-isnt-compatible-with-us-power-grid-2013-12>
- The Energy Story - Chapter 8: Fossil Fuels - Coal, Oil and Natural Gas. (2012). Retrieved December 05, 2016, from <http://www.energyquest.ca.gov/story/chapter08.html>
- The world's most used renewable power sources. (2014, January 15). *Power Technology*. Retrieved December 05, 2016, from <http://www.power-technology.com/features/featurethe-worlds-most-used-renewable-power-sources-4160168/>
- Timmons, D., Harris, J., & Roach, B. (2014). *The Economics of Renewable Energy* [Scholarly project]. In *Tufts University*. Retrieved December 5, 2016, from http://www.ase.tufts.edu/gdae/education_materials/modules/RenewableEnergyEcon.pdf Walsh, B. (2011, April 6). The Surprisingly Long History of Green Energy. *TIME*. Retrieved December 5, 2016, from <http://content.time.com/time/health/article/0,8599,2063521,00.html>
- Williams, J. (2015, June 12). What are the different types of renewable energy? *PHYS ORG*. Retrieved December 05, 2016, from <http://phys.org/news/2015-06-renewable-energy.html>