

The E&S Magazine

Volume 64
Issue 1 *Exploring Advancement*

2020

Changing Energy Security in the Face of Climate Change

Matthew Marton

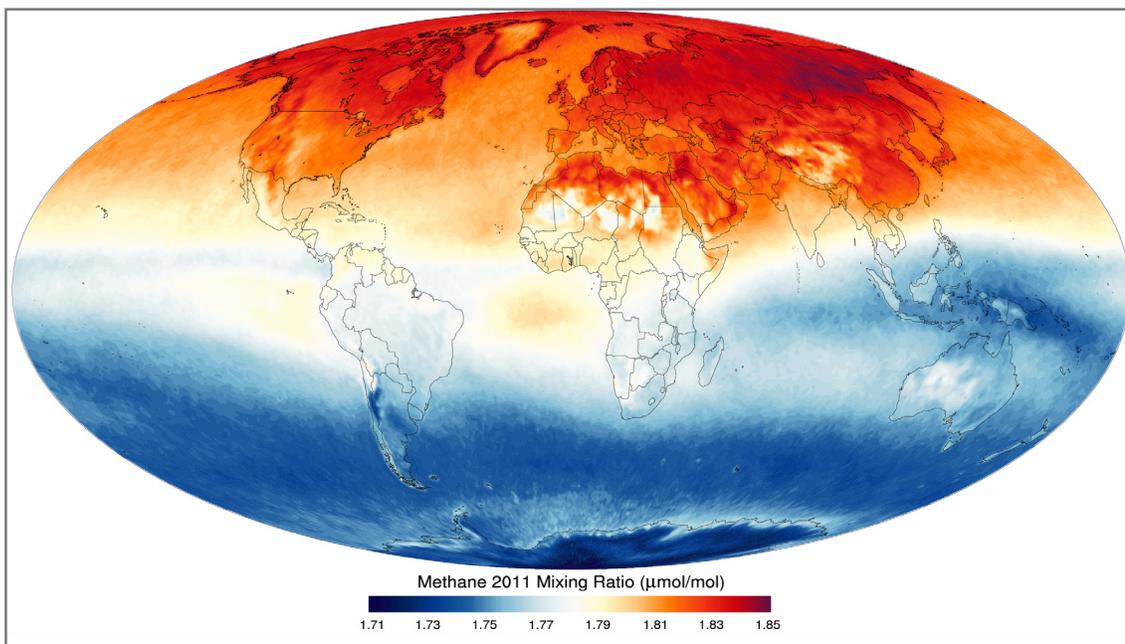
Follow this and additional works at: <https://digitalcommons.latech.edu/engineering-science-magazine>

Recommended Citation

Marton, Matthew (2020) "Changing Energy Security in the Face of Climate Change," *The E&S Magazine*: Vol. 64 : Iss. 1.

Available at: <https://digitalcommons.latech.edu/engineering-science-magazine/vol64/iss1/14>

This Article is brought to you for free and open access by Louisiana Tech Digital Commons. It has been accepted for inclusion in The E&S Magazine by an authorized editor of Louisiana Tech Digital Commons. For more information, please contact digitalcommons@latech.edu.



This graph from the World Resources Institute shows various forms of energy generation and their relation to both energy security and climate effects.

Changing Energy Security in the Face of Climate Change

By Matthew Marton, Mechanical Engineering Junior

Climate change poses a set of challenges unlike any other problem in human history. The problem encompasses every facet of society from economics and politics, to food and energy security. With climate change becoming a more pressing issue, new sources of energy have to be utilized in order to replace the current fossil fuels being used. This factor adds a new layer to the debate on how to handle the challenges, due to the fact that many countries import their energy from other countries.

One problem with addressing both energy security and climate change is that the energy sources that society depends on are cheaper to import than the cost of implementing renewable sources. Germany decreased its dependence on fossil fuels through the early 21st century. However, it also began transitioning away from nuclear energy. In doing so, the country needed to import natural gas from Russia, which is a political rival of the European Union (EU). This energy importation introduced a security problem to the region. While these imports may not last forever, once a country becomes dependent on one source of energy, it can be politically hard to move away from that industry. The United States (U.S.) maintains a heavy dependence on oil and natural gas, and the number of jobs in the sectors and the power of the fossil fuel lobby makes support for renewable energy politically dangerous. While the costs of new energy sources might eventually become cheaper than the current sources, they pose problems with regards to energy security. Several sources of energy that could be useful in combating climate change depend on changes in international supply

chains in most countries. Nuclear energy could be the most important non-carbon-based source for fighting climate change, but most countries do not have natural uranium supplies. This lack of supplies means that while a nation could shift away from power sources that release large amounts of carbon, it would depend on other nations for the needed fuel. Even solar power has problems related to the supply of raw materials

needed to build batteries for the solar farms. Lithium is a key material in the current generation of batteries, however most of the world's lithium comes from countries like China or Chile. While China is a trading partner to western nations, human rights abuses and global superpower goals often place it at odds with these nations. Places like Chile are not politically stable, which means that output from lithium mining operations could change from year to year. In the modern world it is not possible to eliminate dependence on international trade, but as nations begin to transition to green economies, they will have to secure new trade partners.

The only way for countries to get real energy security in the modern age is by heavily diversifying how they generate power. While climate change is a massive problem, it also provides new opportunities. Poland currently derives most of its power from coal. Eventually, coal will not be economically viable as companies move away from its use and extraction. This economic reality gives Poland the ability to diversify and strengthen its generation base. Even if a country has a problem securing one source of energy, it should not lose everything due to political instability in another country.

Climate change has to be tackled head-on by all nations. Humanity simply cannot afford to ignore the problem any longer, but governments will have to answer many questions surrounding energy security in this new green future. The transition will be difficult, however; the opportunities provided in the new economy can offset these costs. Society has overcome great challenges before, and it can do so again.

Sources:

The Relationship Between Climate Change and Energy Security: Key Issues and Conclusions; David Toke and Sevasti-Eleni Vezirgiannidou
Energy Security and Climate Change Protection: Complementarity or Tradeoff; Stephen P. A. Brown and Hillard G. Huntington; 2-6
<https://investingnews.com/daily/resource-investing/battery-metals-investing/lithium-investing/lithium-reserves-country/>