

# The Synapse: Intercollegiate science magazine

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Volume 27 | Issue 1

Article 10

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2021

## Green Energy in Industry: Put Green In, Get Green Out

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### Recommended Citation

Craig, Kayri (2021) "Green Energy in Industry: Put Green In, Get Green Out," *The Synapse: Intercollegiate science magazine*: Vol. 27: Iss. 1, Article 10.

Available at: <https://digitalcommons.denison.edu/synapse/vol27/iss1/10>

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# A Synapse Series: Green Energy

## Green Energy in Industry

*Put Green In, Get Green Out*

*Written by Kayri Craig  
Illustrated by Adriana Baker*

One of the more significant challenges of getting industries to use ecologically-friendly technologies is making them seem profitable. There has been a substantial amount of research on the impact that private research groups have on adopting sustainable technologies. However, private groups are not incentivized to research environmental technologies because the optimal path for them is to develop profitable innovations. On the other hand, little research has been conducted on the impact of public research organizations, though they may be the key to normalizing the usage of green technologies. Climate change is occurring at an astonishing rate, and the large corporations responsible for pollution need to become more ecologically thoughtful. Government legislation is crucial in motivating private industries to implement environmentally-friendly company policies.

Public research organizations, such as universities and government organizations, are government-funded and mandated. However, private organizations, like think tanks and research foundations, are led by corporations and capital optimization. Consequently, private research organizations tend to study new technologies, whereas public research organizations are left responsible for building upon existing ones to make them more dependable, economical, or environmental. Thus, the production of new environmental technologies is limited. Because the foundation of how research organizations choose their work is different for each type, what they work on and their outcomes will vary by legislation and the leading economic technologies.

A critical aspect of climate change is greenhouse gas emissions, which are created when fossil fuels are burned. Fossil fuels are typically cheaper than more sustainable alternatives, like solar and wind power. Therefore, private funds for research and technological development of sustainable alternatives are sparse. To address this problem, Mowery and colleagues suggest that the government tax fossil fuel sellers for the "social cost" of using their resources. This would hold companies accountable for externalizing fossil fuel's many detrimental effects.

Government laws and policies are more effective than government incentives in pushing industries to adopt sustainable technologies. A study analyzed a sample of environmentally friendly patents registered by public research organizations to quantify their effect on an industry's implementation of sustainable technology. The study concluded that technologies developed and researched by public research organizations proved to be fundamental in promoting a low-carbon society. The study identified several factors that characterize the most successful and ecologically-friendly technology. First, it is researched and patented by public organizations. Second, the patent has a high number of claims specifications as to which part of a technology is covered. Third, the patent is owned by several organizations that are based in the United States. Finally, that the patent has been renewed at

least once. Following this template, public research organizations can increase the success, longevity, and implementation of their patented technology. Because public research organizations are more likely than private organizations to research and develop green technology, some amount of government regulation needs to exist for private organizations to receive the funds needed to research sustainable technologies.

A specific private industry that has promoted the shift to green energy is the hotel industry. A group of intercollegiate researchers studied how government regulations have different impacts depending on the technologies of the hotel industry. Green hotels follow an environmentally-friendly pattern that employs ecologically sound practices and sustainable development like water conservation, energy management, and waste management. The study concluded that government-imposed penalties were more effective than incentives in encouraging hotels to adopt sustainable practices. While government

Technologies developed and researched by public research organizations are fundamental in moving towards a low-carbon society.

regulation is typically unwanted in the market, as time continues, initial regulatory policies will cause a decrease in government regulation. Government regulation will eventually decrease because instituting green practices will be more cost-efficient than government penalties. As a result, hotels would naturally turn to the more profitable green-practice. An example near and dear to Obies is the energy management at The Hotel at Oberlin. The rooms in the hotel are only supplied electricity when a keycard is placed into a slot near the door. This is an industrialized version of turning off or unplugging extension cords when you are not using them. Solutions such as these are becoming more crucial and practical, only causing higher costs in the short term from purchasing green technology but increasing profits in the long term.

With climate change becoming a more pressing issue, finding environmentally-friendly technologies to replace harmful ones becomes the Earth's lifeline. The development and research of sustainable technologies can be moved in a positive direction with government regulation in industries, some of the highest contributors to pollution, and consequently climate change. Starting is the hardest part, but once industries begin to use environmentally friendly technologies, they will begin to see the long-term payout in profits and in a cleaner living environment. ●●●