

KTIPS 2021 KEY TAKEAWAYS

Sustainability – Patents and Investment Trends

Prosperity and advances in technology, the hallmarks of the second half of the twentieth century, have been the primary drivers of CO2 emissions. The sustained human activity-driven release of greenhouse gases is the main reason attributed to the rise in global temperatures. To address climate change, the United Nations established the Paris Agreement (Nov. 2016), setting a target, limiting average warming to 2°C (pre-industrial level), urging the world to urgently reduce emissions.

Innovation in “green” technology across many areas of society will help solve these problems. Two areas where innovation will be particularly impactful are green tech aimed at reducing fossil fuel use for energy production and innovation in the agriculture and food industry. Continued progress on improving performance and lowering costs for all of these technologies will be needed to meet our climate goals.

Below are the key takeaways as presented at the 2021 KT Intellectual Property Seminar (KTIPS) by [Kilpatrick Townsend](#) partners, [Jennifer Giordano-Coltart](#), [Siegmar Pohl](#) and [Joseph Snyder](#):

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Green Energy Tech: Innovation in the energy industry includes alternative energy production, energy conservation, nuclear power generation, and improvements to transportation. The total number of international PCT applications filed and published for renewable technologies increased each year from 2002 to 2012, when it peaked at 4,541. Since then, the number of applications has declined each year from 2013 to 2018, although figures increased slightly in 2019. Of the four main sectors of renewable energy technology, solar technology has been the clear leader over fuel cells, wind, and geothermal technology since 2009, with a peak of 2,691 published international patent applications in 2012. To put these data in context, 237,378 PCT applications were published by WIPO across all technologies in 2018. Although the total number of PCT publications has declined since the peak of 2012, the number of applications in 2019 it was still 3.5 times higher than in 2002. The inventions relating to renewable energy that were being patented during the 2002–2012 boom are likely to be seen in commercially available products and services today and in the coming decade.

WIPO Green was established by the World Intellectual Property Organization (WIPO) as an interactive, online marketplace that connects technology and service providers with those seeking innovative solutions. In this way, WIPO Green helps accelerate innovation and diffusion of green technologies, and also contributes to the efforts of addressing climate change. This database is a good resource for companies looking for technology available for license, collaboration, joint ventures, and sale. The database also contains needs defined by companies, institutions, and non-governmental organizations looking for technology solutions to address specific environmental or climate change challenges. As such, It is a good resource to keep abreast of green patent technology.

WIPO GREEN has two components:

- The **WIPO GREEN Database** consists of a range of IP assets, including inventions, technologies, know-how and services, and a catalog of expressed needs. The database is freely accessible, with certain details available upon registration.
- The **WIPO GREEN Network** serves as a global platform that connects users, fosters partnerships and provides a marketplace for green inventions, technologies, know-how and services.

EIP Climate Tech Index maintained by investment firm Energy Impact Partners is designed to track the performance of public companies primarily involved in providing technology that supports global decarbonization. The index is updated daily. Since May 2020, tracked companies have substantially outperformed the Nasdaq. In the two years prior, performance was similar to the Nasdaq.

Major investors in the industry include the venture arms of many traditional energy providers and transportation companies, like Shell, BP, Chevron, GE, GM, and BASF. There are also several venture capital firms focused on Clean energy, with the largest being Energy Impact Partners.

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Agriculture and Food: A sustainable food system is one that works to provide nutritious, accessible, and affordable food to support human progress and health while also supporting environmental integrity. With that goal, agriculture is facing tremendous pressure from climate change, environmental challenges, changing regulatory requirements, and consumer preferences all while trying to produce more food than ever before as our population continues to expand to a predicted 10 billion people by 2050. The industry is at the point of a revolution, where traditional practices are changing to integrate new technologies to maximize efficient use of resources and create higher yields, increased sustainability, and nutritious, delicious foods.

Innovation is the driving force behind market growth in the agribusiness and food industry. There is significant innovation occurring across both upstream and downstream sectors of the industry.

Upstream Sectors:

- There is a constant push for new biotech and chemical solutions to increase crop yield and improve resource efficiency and sustainability, driven by environmental challenges like changing water and nutrient availability and the introduction of pests capable of annihilating crops.
- Agribusiness marketplaces are a relatively recent development, representing trading platforms that connects farmers with suppliers and buyers. Market leaders in this space are focused on carbon credits but the ranges of products and services is wide.
- The Digital Ag or Smart Ag sectors focus on the software and equipment supporting big data analytics and automation, encompassing robotics, equipment, and the Internet of Things (IoT).
- Midstream technologies focusing on food safety, traceability, and supply chain became a huge focus during the pandemic.
- A fast growing, relatively new sector is novel farming systems, which includes indoor farming, vertical farming, aquaculture for both seafood and plants, and insect & algae production.
- Consumers demand is not only contributing to sustainability practices by shifting food production strategies, but also driving creation of entirely new food categories. The innovative foods sector is mainly focused on the burgeoning alternative protein market, including plant-based, microorganism-based, and cultured cell based products.

Downstream Sectors:

- The downstream sectors focus on bringing food to consumers. Innovation in these sectors include in-store retail and restaurant technology (e.g., 3D food printers, robotics, food waste monitoring, IoT), restaurant marketplaces, eGrocery stores and marketplaces, home and cooking technology (e.g., smart kitchen appliances, nutrition technologies, food testing devices), online restaurants and meal kits, and cloud retail infrastructure. With the COVID-19 pandemic, these sectors saw dramatic shifts in business operations.

Investment in the agrifood industry has been increasing for almost a decade and has skyrocketed over the last five years. Investors in the industry are wide ranging and increasingly diverse. There are a lot of big corporate investors – including the Big 4 Ag biotech companies, traditional animal protein producers, food processors, and retail & consumer goods brands – as well as numerous investor groups and funds, including those focused on sustainability, like FAIRR and Ceres.

The pandemic highlighted how essential and yet fragile the end-to-end food system is, and investors responded in 2020. The two top sectors getting investments last year were midstream technologies and eGrocery, with significant investment in companies focused on increasing efficiency in the supply chain. In the in-store retail & restaurant tech sector, most investment focused on optimizing grocery store operations. innovative food was also a major investment target and, absent the pandemic, quite possibly could have been the top 2020 investment category in the agrifood industry.

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Summary:

- Climate change challenges will continue to drive innovation in the sustainability of resources.
- WIPO Green and other sustainability technology markets will become more important as investors are forced to account for their profits.
- Innovation in Ag is critical to evolving a sustainable food system for our future.
- Agrifoodtech is a growing and diverse market sector with innovation touching each aspect of the food system.
- Sustainability innovation will drive investments.

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