

# DYNAMIC SUSTAINABILITY LAB DECEMBER NEWSLETTER

## RESEARCH UPDATES

Research continues at the Dynamic Sustainability Lab as the year draws to a close. Check out what our teams have been accomplishing in their research, and find out how to contact them to learn more!

### Climate Smart Team - Aaron Otis + Katharine Ryan

The Climate Smart Commodities Team at the DSL is excited to be exploring several important areas of sustainability this year. The team is largely focused on developing strategies and policy recommendations to further the adoption of industry carbon intensity labels and the expansion of Climate-SMART and Biobased technologies, with an emphasis on domestic initiatives. Presently, many of the initiatives and techniques for carbon intensity labeling are in early development. As a team, Aaron Otis and Katharine Ryan seek to lend their expertise to assist in the transition toward more transparent and consumer smart commodities. The complexity of these labels should not be understated, and they seek to offer a systematic and holistic framework upon which industry and government entities can achieve widespread and meaningful labeling adoption, recognizing the critical leverage points for success.

In addition to carbon labeling, Otis and Ryan are also focused on the transition to BioFuel technologies and voluntary carbon markets, particularly in carbon capture, utilization, and storage (CCUS). Research suggests that singular initiatives are likely insufficient to achieve global carbon emission reductions. Supporting the enterprises of varied global actors and stakeholders is key to meeting both domestic and international goals. The team is exploring both the overt and more subtle linkages between the financial, government, and industry sectors. In doing so, they seek to develop strategies that reduce market uncertainty and streamline policy initiatives, while also supporting economic growth in its most needed areas and mitigating the risk of unintended consequences in the net-zero transition.

To inquire about the Climate Smart Team's research or other information, the team can be reached at [ktryan@syr.edu](mailto:ktryan@syr.edu) & [aaotis@syr.edu](mailto:aaotis@syr.edu).

### Carbon Tracking - Danila Rozhevskii

Carbon credits and carbon tracking will likely be dependent on the use of Blockchain technologies. As part of the Carbon Finance Team, Danila Rozhevskii is working on a solo project of sentiment analysis of

public opinions on the blockchain approach for carbon credit markets on Twitter.

The project's goal is to analyze tweets in English that can help understand public opinion on blockchain and its role in the transition to a net-zero economy around the world and find possible correlations between the geo-political and demographic background of those Tweets.

The project collects data on tweets about either current general perception or blockchain's role in the transition to a net-zero carbon economy. Rozhevskii uses supervised machine learning techniques to split the contexts of the tweet data into a desirable number of topics by considering keywords and hashtags. Finally, he uses various sentiment Intensity analyzers to determine the sentiment polarity of every tweet (whether the opinion is positive, negative, or neutral) and prepare the results for publication as a journal article or scientific conference promoting Net-Zero economy.

To inquire about the Carbon Finance Team's research or other information, Rozhevskii can be reached at [drozhevs@syr.edu](mailto:drozhevs@syr.edu).



### Corporate Transparency - Katrice Ramirez, Jacob Snelling, John Robinson

This project will develop a database to better assess the transparency of leading corporations in different industrial and financial sectors regarding their Net-Zero Carbon Transition and their efforts for Diversity, Equity and Inclusion. The first set of industrial sectors being evaluated include the retail grocery sector, apparel and textile sectors and the financial sectors. By the end of the project, the team will build a framework that is able to assess corporations across different industries and is distinctive from other rating mechanisms through our focus on the granularity of the information provided by corporations as well as consumer values.

To inquire about the Corporate Transparency Team's research or other information, the team can be reached at [kramir07@syr.edu](mailto:kramir07@syr.edu), [jrobin08@syr.edu](mailto:jrobin08@syr.edu), & [jasnelli@syr.edu](mailto:jasnelli@syr.edu).

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### Public-Private Renewable Energy Team - Adiba Alam, Charles Chibambo, Kayla Johnson, Riona Sheik, Ibrahim Tahir

The International Renewable Energy Team is working on The Role of Public Private Partnerships in Energy Transition Policies in Southeast Asia (SEA). Boasting rapid growth, SEA is drawing global attention. Free trade agreements, loosening tariffs, an abundance of labor, strong consumerism, and a global shift towards supply chain diversification have made the region attractive to industry. However, SEA has been slow to transition to low-carbon practices and renewable energy production while companies around the world are committing to a net-zero carbon transition.

The team is studying the role of multinational corporations in energy transition policy in SEA. Their work will analyze key economic, policy, and energy trends at play while highlighting how industry pressure is advancing transitioning energy policies. The team is also working on developing a leading index that will analyze the capacity of countries in SEA to foster and sustain a synergetic ecosystem that balances economic prosperity, environmental stewardship, and social responsibility while operating in a practice of perpetuity. This index will be used to better evaluate the regional energy transition and thus the ability of SEA nations to support sustainable business. Such research will help inform key stakeholders and industry leaders across SEA and the world.

To inquire about the International Renewable Energy Team's research or other information, the team can be reached at [adalam@syr.edu](mailto:adalam@syr.edu), [cchibamb@syr.edu](mailto:cchibamb@syr.edu), [kjohns71@syr.edu](mailto:kjohns71@syr.edu), [rrsheik@syr.edu](mailto:rrsheik@syr.edu), & [ietahir@syr.edu](mailto:ietahir@syr.edu).



### Offshore Wind Team - Samantha Walcott, Chris Cryan, Avanni Gudimetla, Matthew Wolf

The Offshore Wind Team is bridging information in the United States offshore wind transition. As President Biden committed to 30 gigawatts of offshore wind by 2030, the four team members are analyzing some of the bottlenecks of the industry moving towards this goal. The complexity of the U.S permitting process has created delays in federal, state, and local processes and offshore wind purchasing companies. The team is documenting both state and regional policies and regulatory processes required for offshore to onshore electrical connections. This is going to help find gaps in the process to be better prepared in future leasing areas in the Mid-Atlantic region in the U.S.

The offshore wind team is also addressing the lack of a domestic offshore wind supply chain that states are eager to implement into their infrastructure. This is a crucial process because an optimized supply chain results in lower costs and a more efficient production cycle. The team is also deep-diving into the manufacturing of Green steel as the supply chain in Steel manufacturing plays a huge role in the economy as well as in the environment. The team is also examining the competitive advantage of states in their efforts to deploy additional offshore wind generation. Additionally, the team is examining the break-even prices for offshore wind energy power generation and comparing those to the break-even prices for natural gas projects in the Northeast region.

To inquire about the Offshore Wind Team's research or other information, the team can be reached at [cmcryan@syr.edu](mailto:cmcryan@syr.edu), [agudimet@syr.edu](mailto:agudimet@syr.edu), [sewalcot@syr.edu](mailto:sewalcot@syr.edu), & [matthew.wolf@duke.edu](mailto:matthew.wolf@duke.edu).

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### Large-Scale Indoor Vertical Farming - Framke Vitale

Did you know that recently Walmart signed an agreement to invest in Plenty, an indoor vertical farming company, as part of their \$400M Series E funding round. This is an example of Walmart's and other global grocery chains broader strategic vision to deploy large-scale indoor vertical farming technology platforms to deliver fresh produce to their retail stores while also reducing carbon, water and pesticides.

At the Dynamic Sustainability Lab, Framke Vitale is currently researching and analyzing the vertical farming industry in its entirety, with a greater focus on how various vertical farming systems work, what produce is grown, and the overall perceptions of controlled environment agriculture. Vertical farming creates a sustainable alternative to current growing systems. With a need to increase current food supply systems by 70% by 2050, vertical farming can aid in addressing challenges in production yields, supply chain disruptions, as well as lowering water, pesticide, and carbon usage. Vitale is doing further research to truly understand the overall impact that vertical farming has economically, environmentally, and socially in respect to agriculture, grocery, and other related industries and sectors.

Vitale is aiming to gain further consumer and retailer insight into the perceptions and awareness of vertical farming and its produce. In the long run, the team plans to assist vertical farming industry partners through providing research on how to successfully penetrate the produce market and attract new consumers. The team is working on developing a metric to rank vertical farming as well as developing quantitative surveys to gain beneficial insight. Vertical farming poses an innovative and sustainable mode of produce farming as the industry continues to grow in the United States market and globally. The Lab is eager to be at the forefront of US-based vertical farming and continue to research and aid in the awareness of controlled environment agriculture.

To inquire about the Vertical Farming Team's research or other information, Vitale can be reached at [fvitale@syr.edu](mailto:fvitale@syr.edu).



**“INDOOR VERTICAL AGRICULTURE  
POSES A UNIQUE AND  
SUSTAINABLE LOOK INTO THE  
FUTURE OF AGRICULTURAL  
PRODUCTION.”**

**FRAMKE VITALE,  
UNDERGRADUATE RESEARCHER**