Q4 2025 IDEaS in Review

Institute for Data, Energy and Sustainability (IDEaS)
Vienna University of Economics and Business

BMIMI Endowed Professorship for Data-driven Knowledge Generation: Climate Action

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Welcome to the first edition of the **quarterly newsletter** for the **Institute for Data, Energy, and Sustainability**! This series will keep our community updated on engagement, research, and teaching. Each issue shares recent developments and highlights a theme shaping our work.

This edition focuses on **energy start-ups and innovation for climate action**, a core theme for our team. I hope you enjoy the read!

Kavita Surana

Quarterly Data Insight

155%

For publicly funded climate and energy start-ups, **corporate investors** make a big difference: they **increase exit rates by 155%,** compared with 78% for other private investors, according to our research.

Community Spotlight

Community Engagement: Innovation and Energy

In October, Kavita Surana participated in **"WU matters WU talks"**, WU's public lecture series, highlighting how innovation, including through start-ups, drives the energy transition:

Kavita Surana also participated in the **VERBUNDx Venture Days** at TU Wien and

ISTA Klosterneuburg on *Closing the Innovation Gap*, advancing dialogue between energy innovation research and corporate practice.

Co-developing Applied Innovation with Our Industry Partners

Co-led by Behnam Zakeri, we are working with the ÖBB Innovation Lab to design a **site-assessment and planning framework for electrifying ÖBB's regional bus network** (Postbus) in Austria. During a joint sprint workshop in November, we explored technical and operational options, laying the groundwork for the next phase of the project.

Behnam Zakeri was also appointed to the **Scientific Advisory Committee for Wien Energie**.

Research Spotlight

We highlight three recent papers connected to the **role of innovation and technology start-ups in shaping the energy transition**.

Linking Corporate Investment to Climate and Energy Start-up Success

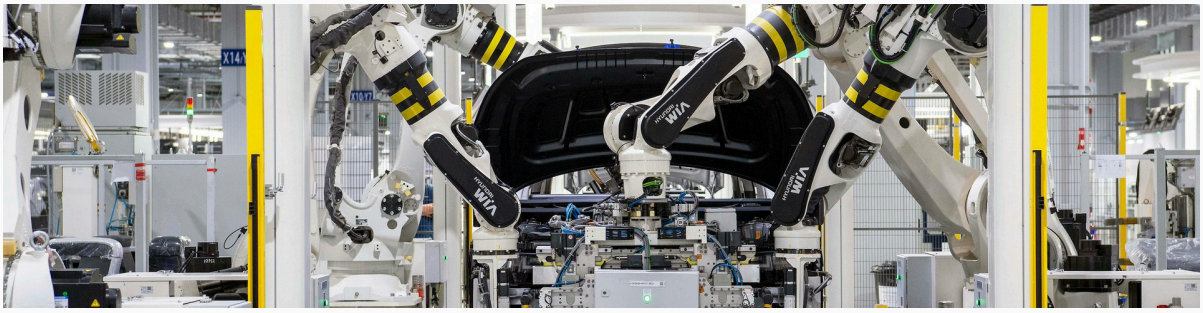
Our study in *Nature Energy* shows that **strategic corporate investment** can **support the success of climate and energy start-ups (through IPOs and M&A)**. For publicly funded start-ups, corporate backing improves exit rates by 155%, compared to 78% for other private investors. Public grants remain crucial for high-risk sectors, and the findings highlight how different investors play distinct roles in shaping technology success. As public and corporate funding expands, these insights can guide policymakers in designing strategies to accelerate the deployment of technologies critical for the energy transition.

Using Start-up Data to Explore the Feasibility of Direct Air

Capture

In *PNAS* we show how **Direct Air Capture with Carbon Storage (DACCS)**, a technology that removes CO_2 directly from the air, could play a major role in reaching net zero. Using start-up data, historical analogs, and systems modeling, the study finds DACCS could remove **up to 4.6 gigatonnes of CO_2 annually by 2050** if it scales as fast as solar power; slow growth would deliver only a fraction of that. These findings illustrate the importance of early investment and supportive policy to accelerate adoption of this emerging climate technology.

Exploring Start-up Investment Across Nascent Value Chains in Climate and Energy Sectors



In *Environmental Research Letters* we analyze early-stage investments in climate-tech start-ups to understand how innovation unfolds in nascent value chains of new industries before end products emerge. Most start-ups focus on upstream (components, manufacturing, optimization) or services, while **only 15% develop end products**. These patterns reveal distinct trajectories across emerging and maturing sectors and underscore the need to support **full value-chain development** to accelerate domestic development and scaling of climate and energy technologies.

These studies benefited from funding from the **BMIMI Endowed Professorship** and the **Alfred P. Sloan Foundation** and involved a strong international and interdisciplinary team of co-authors. Kavita Surana summarizes some of the research results in a video published with WU:

Teaching Spotlight

Mobilizing Students Toward Energy Innovation and Start-ups

In 2024/25, over **100 students** engaged in **8 joint Industry Labs** and completed **4 master's theses** (2 with VERBUND and 2 with ÖBB), exploring energy, climate, digitalization, and data while connecting with our partners as potential employers.

Two of our alumni have joined VERBUNDx Ventures, highlighting the value of an education in the digital economy, our emphasis on innovation and energy, and its relevance to the corporate energy world and start-ups.

In 2 of our labs, we worked on topics at the cutting edge of energy innovation and energy start-ups: In the first, students collaborated with **TTTech Zayne**, a joint venture between VERBUND and TTTech, a networked computing and industrial automation specialist, which is committed to building a real-time platform for the industrial energy ecosystem of the future. In the second, we analyzed **new energy business models** in the context of digitalization and digital ecosystems.

Showcasing Applied Innovation from Thesis Work

One of our Industry Lab students, **Fabian Weiss**, completed a project with VERBUND that highlights a tangible case of **applied innovation in the energy sector**: his master thesis extended a web-based **cost–benefit analysis framework** by integrating AI-generated second opinions. Comparing human expert evaluations with multiple AI models on real energy projects, the thesis shows that GPT-4o closely matches expert judgment and can enhance the speed, consistency, and quality in strategic decision-making.

What Comes Next

In 2026, we will advance **our basic and applied research agenda**.

Our WU research group develops **novel datasets** and **data-informed models** to inform robust policy and investment decisions, including in power grids, green hydrogen, and digital transformation - creating insights to support innovation and help scale emerging technologies.

A core priority is **deepening collaboration with stakeholders**. One example of this effort is our **Joint AI Research Track with VERBUND,** where 2026 will see an expansion of collaboration formats towards a long-term partnership.

We wish you happy holidays, and a great start into the new year!

WU WIRTSCHAFTS UNIVERSITÄT WIEN VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS

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