NORTHERN COLORADO'S INNOVATION ECOSYSTEM

GLOBAL LEADERSHIP IN CLEANTECH

BY JOHN GARVEY

PHOTOS COURTESY OF COLIN BOYLE

The Colorado State University Powerhouse Energy Campus, opened three years ago in Fort Collins, boasts a dizzying number of moving parts: 14 private companies, several in-house labs, 12 research centers, an investment firm specializing in early stage energy-related ventures, and formal and informal collaborations with outside companies and institutions.

There can be a disconnect between university research and the marketplace, with academia and business occupying separate spheres. The Powerhouse, however, brings fundamental research, industrial design, behavioral science, venture finance, entrepreneurship, engineering and other disciplines under one roof. About 180 faculty, hundreds of students and dozens of companies are involved in its operations. The resulting synergies might be unrivaled worldwide—at least with regard to energy research and development. The campus is also the anchoring facility for the Energy Institute, the umbrella organization whose work predates the Powerhouse and extends well beyond the facility's walls.

"The typical university model is you do a piece of science, you publish a paper on it and then you go on to the next interesting area," says Bryan Willson, the Energy Institute's executive director and co-founder of Envirofit International.

"What we've done here is a much more longitudinal approach. We do the science, but then we take that science and turn it into tangible solutions," he says. "And then we work to get those commercialized, because it's when things go into production that they really have impact."

AN INNOVATION ECOSYSTEM

SEVERAL ELEMENTS ARE NEEDED TO BRING TECHNOLOGY TO MARKET:

- FUNDAMENTAL RESEARCH - TYPICALLY UNIVERSITY-BASED
- APPLIED RESEARCH, SUCH AS MARKET RESEARCH AND PROTOTYPING
- DE-RISKING AND SCALING TECHNOLOGY
- CAPITAL
- INTANGIBLES: PASSION, CULTURE, MENTALITY

The Energy Institute has shaved months to years off the product development and commercialization process for a number of technologies.

Some of these are brought to fruition through partnerships with companies like Caterpillar, Woodward and Cummins. When it makes sense strategically, however, new companies are launched. A large proportion of the Institute's work targets frontier markets like East Africa or India.

Envirofit International is perhaps the best-known clean energy (cleantech) company to emerge from the CSU/Northern Colorado innovation ecosystem. It has sold 1.4 million clean-burning cookstoves in the developing world, amounting to 6.5 million people breathing safe, clean air in their own homes. And that's just one of the knock-on effects of this innovation ecosystem.

The success of Willson's Engines and Energy Conversion Laboratory (EECL) and Envirofit was the springboard for the Energy Institute's formation in 2013. The Institute has already had a significant domestic impact.

"We developed a suite of technologies for reducing emissions from the massive engines used on the natural gas pipeline system that's gone into production through a couple of routes through partnerships here," Wilson says. "That suite of technologies reduced (nitrogen oxide) emissions on the pipeline system by the same amount as removing about 150 million automobiles from the highway."

In addition to co-locating venture capital, research and product development, the Powerhouse is just steps away from the Rocky Mountain Innosphere. The Innosphere, Colorado's longest-running business incubator, specializes in cleantech and three related fields. They are frequent collaborators.

The Institute also shares indirect linkages with other outside research centers, established companies and startups, which piggyback off each other's research and license each other's technologies.

GLOBAL LEADERSHIP

Located within the Powerhouse, FACTOR[e] has funded 13 companies, launching two internally. The venture development firm is almost entirely focused on frontier markets — or in humanitarian parlance, the developing world.

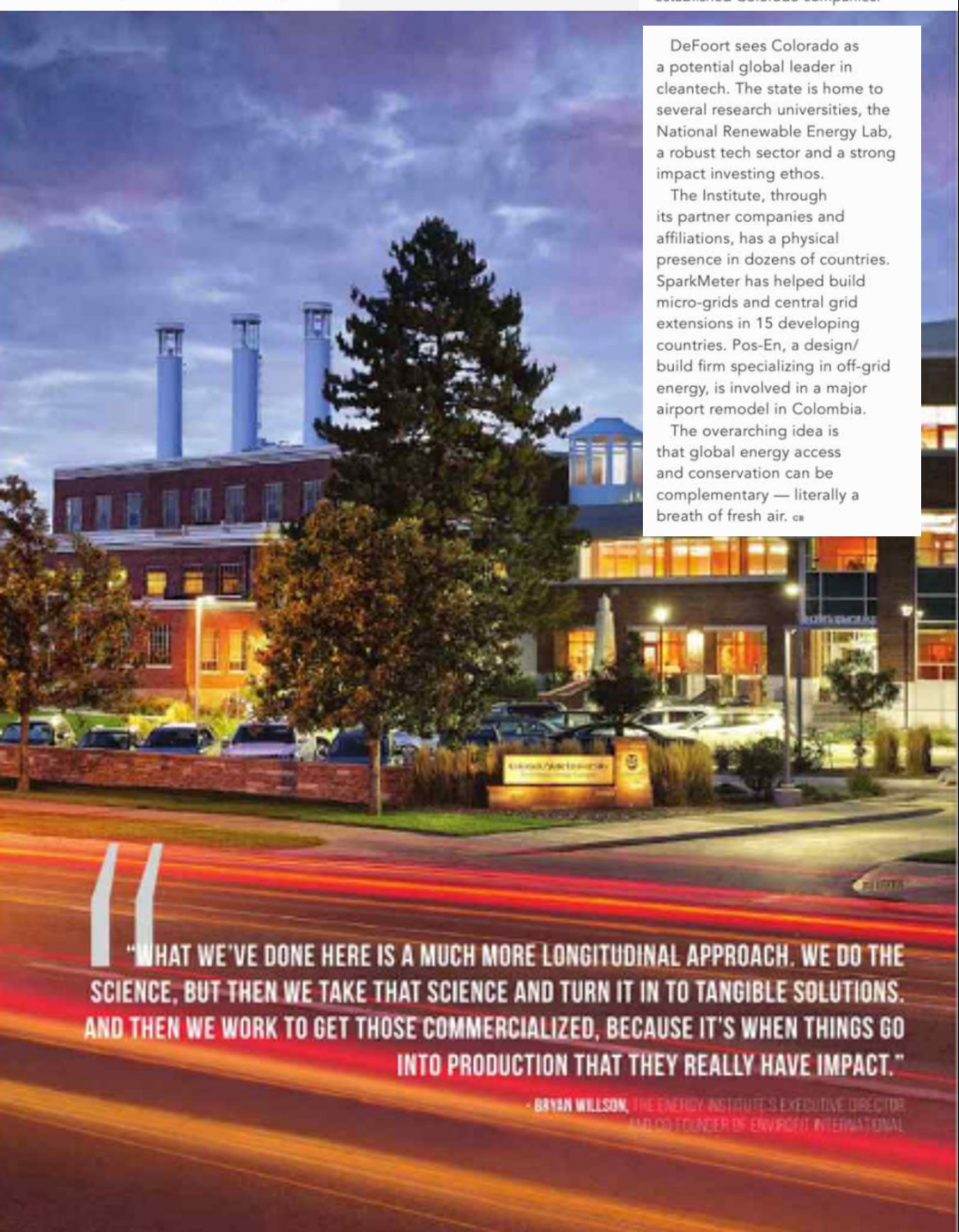
"There are lots of incubators and accelerators in the energy cleantech space and some more emerging market focused," says Morgan DeFoort, CEO and co-founder of FACTOR[e] Ventures. "But as far as a seed stage fund that is very high-touch, very engaged in developing companies after the investment, we're fairly unique."

Most of the technologies FACTOR[e] invests in are brought in from outside, refined and scaled. Although FACTOR[e] and much of the Energy Institute is focused on deploying technologies abroad, there's a lot of synergy with established Colorado companies.

DeFoort sees Colorado as a potential global leader in cleantech. The state is home to several research universities, the National Renewable Energy Lab, a robust tech sector and a strong impact investing ethos.

The Institute, through its partner companies and affiliations, has a physical presence in dozens of countries. SparkMeter has helped build micro-grids and central grid extensions in 15 developing countries. Pos-En, a design/build firm specializing in off-grid energy, is involved in a major airport remodel in Colombia.

The overarching idea is that global energy access and conservation can be complementary — literally a breath of fresh air. CB



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