



Camelina: Biofuel for thought

Thanks to its agrarian roots, the Arkansas Delta has a surprisingly strong tradition of small business entrepreneurship. That enduring heritage may soon find renewed vitality, thanks to a breakthrough green energy technology, a group of enterprising family farmers, and a gutsy local development collaborative.

► The catalysts

The breakthrough technology? It's a small-scale biofuels micro-refinery developed at Mid-South Community College in West Memphis. Designed as a teaching tool and small enough to fit in a truck, it can process camelina—a new bioenergy crop, and waste vegetable oil into biodiesel fuel that is in high demand.

The region's farmers? In recent decades, farms in the Delta have had to grow larger in order to survive. This new agricultural economy makes it difficult for small-enterprise farmers to compete. Farmers across the region are eager to find crops to grow during off-seasons that will add to their bottom lines.

The gutsy collaborative? A regional nonprofit, alt.Consulting, has pulled together a network of more than 20 community stakeholders—state and federal agencies, four regional colleges and universities, small-firm entrepreneurs, green energy enthusiasts, energy associations, and community leaders. This Arkansas Green Energy Network (AGEN) aims to accelerate the micro-refinery's commercial deployment in ways that provide jobs and capture wealth for people, firms and communities in the region.

► The value opportunity

A few years back, the AGEN stakeholders were intrigued: Could they grow green energy and jobs right in the Delta?

First they looked at prospects for solar and energy efficiency products and services. But they settled on biofuels as their best value opportunity. Biofuels production is environmentally friendly, and that "friendly fuel" is in increasing

demand from business, government and individual consumers. In fact, biofuel production capacity has tripled in the last three years across the nation because of that demand.

Arkansas already hosts some commercial biofuels operations. But the two existing refineries are large industrial facilities, costing upwards of \$8 million to build. That's technologically and financially out of reach for the typical entry-level entrepreneur, especially in rural places.

On the other hand, a micro-refinery like Mid-South's costs less than \$300,000 to build. The Network thought this smaller model could tip the competitive scales in favor of local start-up businesses and regional investors. Even better, AGEN discovered that growing a new-to-the-region biofuel crop—camelina—could offer a new double-cropping opportunity for aspiring Delta farmers.

Camelina is an oil-rich seed. It's valuable not only for potential biofuel production, but because it can be grown in the winter and harvested early enough to allow farmers to put in an early soybean crop. It neither competes with food crops nor reduces other yields.

In short, small-scale biofuel could anchor a game-changing economic development strategy for the region.

► The demand

But AGEN did not want to get too far down the road until they knew demand was ripe for their new-scale biofuel production. So they researched local and regional demand—and found several likely commercial prospects.

Some demand is local. Cash-strapped governments in the Delta area want stable fuel prices and reliable fuel sources. Local small businesses that operate fleets of vehicles are looking for affordable biofuels. Local farm cooperatives might consider operating a micro-refinery to manufacture and sell biofuel to their own membership.

Other demand is world-class. Right across the river in Memphis, the Fortune 500's Valero has signaled its interest in buying significant quantities of locally sourced biofuel—if it is reliably available.

The AGEN strategy offers other enterprise options for local people with business dreams. There's potential for a local venture to save and process the camelina seed for farmers across the region. Locals can collect and sell waste vegetable oil as a second input that the micro-refineries can process into biofuel. And the byproducts from biofuel production can be used to manufacture glycerin, or feed meal for farm animals that is high in Vitamin E and omega-3.

► Putting it together

The long-term goal for the AGEN effort is ambitious: Position the Delta region as a national leader in both small-scale biofuel production and energy self-sufficiency. Another goal rings a bell with many



A field of camelina under cultivation. Oil-rich camelina seed provides a valuable input for making biodiesel fuel, making it an attractive cash crop for low-resource farmers in the Delta.

"If you're a small farmer, you are an entrepreneur. And one of the things that I think a lot of people just don't realize is that we need to start treating farmers like entrepreneurs." —Ines Polonius, Executive Director, alt.Consulting

regions: Grow small business that can employ graduates from the local two-year college system—in this case with practical skills in biofuel and diesel motor technology, electrical engineering and fuel testing.

Chartered as a regional community development financial institution (CDFI), alt.Consulting provides technical assistance and business loans to small enterprises in the Delta. To

advance AGEN's biofuels strategy, it is helping local entrepreneurs raise the investment capital needed to launch a network of commercially viable biofuels micro-refineries and ancillary businesses. Besides surfacing equity and loan options, alt.Consulting plans to organize angel investment networks within local communities.

After just 18 months, this "value chain" of connections is being deployed in DeWitt, Arkansas, a community of 3,200 with a poverty rate of 24%. DeWitt has quickly become the hub of a 10-county waste vegetable oil recycling district. A public-private partnership between the town and a local entrepreneur will result in oil being processed into biofuel and solid employment for a graduate of the renewable energy program at the local community college. Farmers around DeWitt are preparing to grow camelina in the winter. And more Delta towns are expressing interest in becoming future micro-refinery sites.

► The bottom line: Grow your own wealth

AGEN's creative and collaborative effort builds on what it discovered right in the region—know-how, crop and technology innovation, and people striving to do better—and connects

them to regional and world markets. It organizes local players both to satisfy their self-interest and to find the gaps in what they collectively need to meet demand—like marketing expertise or

crop rotation training—and, wherever possible, to fill those gaps with local players.

The results? Strengthened local self-reliance and know-how. More local earnings and businesses.

Increased owner-

ship and control of assets within the region. Working relationships that can capitalize on the next economic opportunity. And a clear case that reverses the recent "dependence and decline" history of the region and, instead, enhances its image.

Even so, the project is not without its challenges. Will local entrepreneurs raise sufficient capital to launch their micro-refineries? Will enough farmers—especially low-income farmers—adopt camelina and biofuel technology to drive renewable energy sector growth in the region while increasing their own prospects? Can the commercialization of the biorefinery technology be streamlined to keep up with demand? And will local municipalities see the opportunities and benefits of this economic development strategy to strengthen multiple forms of community capital and build wealth that sticks?

If the energy and resourcefulness already in evidence is any indication, the smart money may bet on it. A small industry cluster growing out of a local innovation in green technology, a hardy little seed crop new to the region, and the tireless effort of a flexible network of committed visionaries determined to work together have set the stage to cultivate this new community wealth.



Farm-to-fuel: Building the biofuel sector in the Arkansas Delta

the wealthworks inventory

The Arkansas Green Energy Network measures progress by more than just money. AGEN is tracking how its biofuels strategy fuels local self-reliance and future development prospects—by keeping a close eye on eight types of community capital, how local ownership is taking root, and how livelihoods are improving.

- **Individual capital.** New skills in bioenergy and entrepreneurship, particularly for college students learning about this emerging sector.
- **Intellectual capital.** New regional know-how on crops, biofuels production, and financing options, plus a new recognition about the importance of local investment.
- **Social capital.** Deep collaborations between city government, entrepreneurs, non-profits, colleges, and a university are building the trust they need to take on the next joint opportunity ably and quickly.
- **Natural capital.** Waste vegetable oil is recycled into emission-free energy. Camelina needs no pesticides and only limited fertilizers, nitrogen and water.
- **Built capital.** Vacant or dilapidated structures in the region take on new life as micro-refinery sites.
- **Political capital.** The Arkansas Advanced Energy Association is showcasing the DeWitt model to legislators and other influentials.
- **Financial capital.** Farmers gain revenue from camelina crop. New local biofuels-related firms generate profits that can be reinvested locally. Municipalities save money using locally sourced biodiesel and generate sales tax revenue from biofuel is sold in the region.
- **Cultural capital.** AGEN is strengthening the region's robust agricultural and entrepreneurial culture.
- **Local ownership and control.** In DeWitt, the local municipality leases the micro-refinery equipment it owns to entrepreneurs. Elsewhere, a local farm coop owns the equipment; coop members grow the crop, process the biofuel, and resell it to coop members.
- **Low-income livelihoods.** Low-income farmers are earning more by growing a new crop with a guaranteed market. Graduates from the two-year college renewable energy program connect to new local job and business opportunities. And cash-strapped communities collect new revenue from sales taxes.