

GREENFIELDS

Enabling a Green Future –
Harnessing Deep
Tech to Transform Biomass

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FOREWORD

As BiofuelCircle completes three years, it has never been more clear that the only way to disrupt the biofuel sector is through digital technology. Previous methods to transform the sector through government policy, directives, and incentives have not been sufficient to create the pervasive systemic change to harness the untapped potential within bioenergy.

India is very close to a tipping point when it comes to digital technology. The stage for a digital platform like ours is perfectly set with the proliferation of smartphones and the strengthening of digital payment infrastructure.

Any effective intervention in the biofuel sector must simultaneously involve and connect the farmers, MSMEs, and large industries. Digital technology can do this efficiently and at minimal cost. One of the primary problems facing the sector is that farmers and small business owners lack access to the wider market. Digital technology levels the playing field and equips

everyone with information about prices and market trends. It also empowers industries and business owners to strike more deals with the assurance that the platform will take care of the delivery, payment, and other necessary verifications. The platform also enables many new finance opportunities by opening up access to credit. And finally, what may be the greatest value of the platform is that it enables green traceability and green credits catalysing India's green transition.

This issue of Greenfields carries multiple perspectives from the farmer to the industry on how the digital platform will transform the biofuel sector on the ground. We hope you find some inspiration and hope in these stories of change.

Regards,

Ashwin Save

Co-founder and Chief Operating Officer
BiofuelCircle

PLATFORM INSIGHTS

Green Choices

- >800 Business Subscribers
- 2 Million MT green fuel on offer, every year

Business Growth

- Rs. 150 CR (US \$ 19 Million) worth of annual transactions
- Annual Volume of 2,30,000 MT of Biomass

Enhancing Value

- 27 Verified Suppliers chose 'Early Payment' service across >300 deliveries in last six months

Launching

- 6 seasonal warehouses



Glimpses of the Future

Insights from the people leading India's sustainable industrial revolution

Shridhar Shukla on the features of successful technology company

Dr. Shridhar Shukla is the Co-Founder, Chairman of kpoint technologies, which offers efficient solutions to manage all video content and communication needs of an organization. He is currently also a Founding donor at IITB Trust Lab. He has over 23 years of experience in creating and growing innovative technology-based companies. He was the Director and COO of Persistent Systems Ltd. and the Co-Founder and Chairman of GS Lab.

How do you see the impact of BiofuelCircle's technology on the biofuel sector?

The first thing to understand is that technology is not the primary concern of this sector. It is concerned with getting business problems solved on the ground. The participants in this sector are asking questions like, "Is it appropriate for me to use biomass in the first place? Will I get a reliable supply?" Farmers are concerned with how they can manage to remove agri-residue from their fields, aggregate it, transport it, sell it and do all of this with consistency. So for each player, there are more pressing problems than technology.

When a company like BiofuelCircle tries to contribute to a previously tech-agnostic sector through technology, there is a danger that they will be irrelevant. Producers of technology sometimes think, "Oh if I build the technology, it'll by itself solve the problems and people will adopt it." But that rarely happens.

What BiofuelCircle has done very well is to create a base of technology which is enabling business solutions, and they're careful to take the business solutions to their participants. They realise that these participants don't care for technology as much as they care for removing friction in selling biomass, creating biofuels and using them. BiofuelCircle is solving these business problems by guaranteeing reliable supply, convenient purchases, quick payments, and aggregation of producers. Of course, all of this is made possible through technology but the problems being solved are very real, on-the-ground issues that the sector faces.

I think the reason BiofuelCircle has managed this is that they maintained very close contact with their early users in the rural landscape and industrial units. From the beginning, they worked to remove potential hurdles to the adoption of their platform. And this is what will revolutionise the sector.

What are some of the features of the product that will increase customer stickiness in the long run?

This is a B2B marketplace, and the fundamental nature of business doesn't change even when new technology arrives. BiofuelCircle is removing friction between buyers, sellers and manufacturers who want to sell on the platform. Of course, this leads to transactions on the platform, but more than that, it leads to the setting up of relationships between businesses and such relationships do not go away quickly if they remain fruitful for all parties.

Businesses always value service quality, ease of doing business, and trust between parties more than a little bit of monetary benefit.

End consumers will always pay a little extra if they are guaranteed predictability and quality of supply. They will not necessarily shop for the cheaper or let go of a trustworthy partner just because there are five other guys out there. The platform is enabling these B2B relationships and this will be its greatest impact.

The initial impact is to make this platform more efficient and increase usage. And to make it more efficient, related business solutions are being offered, like transport and storage and early-payment services. These related services will be critical to the success of BiofuelCircle and its growth potential is very large.

What are some of the milestones and pitfalls to look out for as the technology expands?

When a start-up begins to see success and I think BiofuelCircle is seeing success, there is a common pitfall that the company starts to look ahead and diversify its offerings. This comes at the cost of the energy and resources you need to dominate the initially successful market. So a big milestone would be for BiofuelCircle to become a dominant player in the biomass supply chain, establishing itself firmly there before doing things that are futuristic.



As the platform becomes more efficient, it will enable future offerings like carbon trading. With carbon trading, the platform offers a potentially massive economic opportunity. It's big, it's long-lasting. The traceability of the entire supply chain fuel enabled by the platform - which farm the biomass came from and which manufacturer, processor, transporter and end-user it went through - will be critical to fulfilling the carbon credit requirement. That's the good news.

However, these are still the early days of the file and there will be all kinds of different players and ways to position yourself. It is a very sophisticated application requiring a lot of regulation and many possible pitfalls. It would be better to watch the progress of the technology, the ecosystem, the regulations, and what others are doing before entering.

In the meantime, I would say that BiofuelCircle should make its current offering very solid, set up robust transport and storage solutions, and provide everything in a way that the platform is set up to offer carbon trading and related traceability very soon. So be ready to launch but not launch until the moment is ripe and the foundation is very well established.



Enabling a Green Industrial Future

Harnessing Deep-Tech to Transform Biomass

The most exciting thing about new technology is that, once released into the world, there's no predicting how it will evolve. Each new user relates uniquely to a particular technology, accessing applications and benefits that its original creators may have never anticipated. This is particularly evident in technologies with network effects, where each additional user adds value to all existing users by extending the reach of the technology itself.

As the BiofuelCircle platform expands across the country, we're curious to see how users relate to the platform, make decisions, forge relationships and navigate its various features.

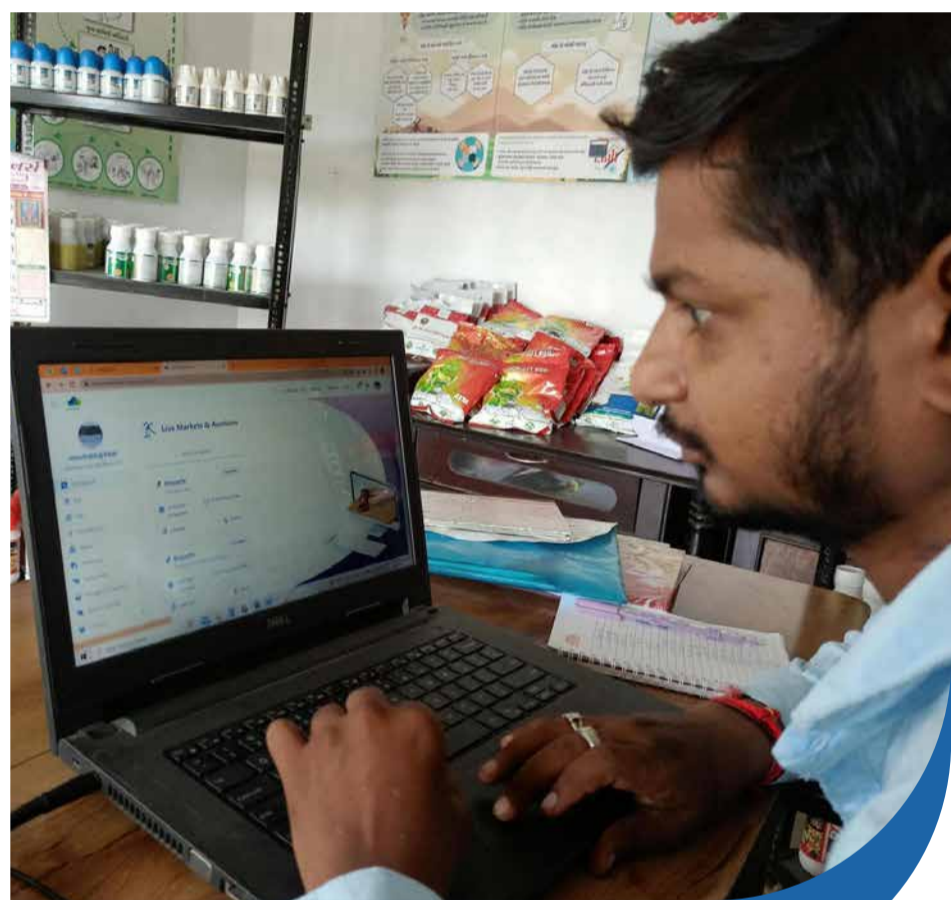
In this issue, we carry the accounts of three enterprises that have found ways to enable their goals, grow their businesses, and transition to a greener future using BiofuelCircle technology. No picture of the digital platform is complete without the stories of its users - their needs, problems, perceived benefits, and vision for the future.

The Security to Begin

In early 2023, Jitendrabhai Patel began the Krushiadhar Amod Farmer Producer Company Ltd. in Gujarat. Today, the FPO already has 314 members from over 10 villages, with many more still signing up. Patel attributes this early popularity to Krushiadhar FPO's drive to aggregate and sell agri-waste from cotton farms.

"We only dared take on this project because we knew we could sell all the biomass we collected. I saw enough buyers on the platform and we felt safe enough to continue." By the end of the season, despite limited machinery and a late start, Krushiadhar FPO managed to sell 610 metric tonnes of biomass through the BiofuelCircle platform.

For Patel, using a mobile application to conduct business is a novel and nerve-wracking experience. "I'm still figuring out all the various features. I'm always scared that what if I click something and it messes everything up? I still try to use all the features



Jitendrabhai Patel, Krushiadhar FPO

because it makes things very easy. I can track my shipments, payments and deliveries on the mobile, so I no longer need Excel or my laptop."

Krushiadhar FPO wants to use the platform to better plan their collection routes and reach more farmers. improve planning for their next drive. Moreover, they are eager to team up with another FPO to start a briquette manufacturing plant to increase the profit margin for everyone involved. The platform has equipped Patel with crucial market knowledge that emboldens him to spot opportunities and nurture his entrepreneurial spirit.

The Confidence to Expand

For Rameshwar Appa Kure of Shivshankar Biocoal Energy in Parvati district of Maharashtra, turning to technology was a means to double his revenue in just three years. From 2012 until March

2023, Shivshankar Biocoal Energy produced 250-300 metric tonnes of briquettes per month. But, as we spoke to Kure in June 2023, his production was over 500 metric tonnes per month.

"What changed is only my confidence in selling the product. I could have expanded in the past, but I had a small pool of clients and never knew if I could sell those additional briquettes. In March, I joined BiofuelCircle and I could access so many more buyers. Now I know...I just have to keep up production and it will sell," says Kure.

For Kure, the shift to technology involved none of the anxiety and nerves it held for Patel. "I do everything on the platform from planning to sales to accounting all by myself right here in the office. I'm looking forward to a time when more buyers and sellers enter the platform...that's when the real fun will begin. We will have many dynamic relationships emerging and multi-party auctions. This will change everything." As more participants uncover the vast potential hidden in biofuel, a better and more lucrative future will become inevitable.

The Stability to Go Green

A little over a year ago, a large chemicals company in Gujarat began to transition towards biofuels to fulfil its energy needs. As with any change, they quickly came up against several hurdles. Being a large industrial unit, they could not pay advanced or early payments that were essential for small buyers. They needed a bridge to small briquette manufacturers and the larger farming community.

"The BiofuelCircle platform became a one-stop solution for us. They bring together many small suppliers on the platform, doing their verification and quality checks. And then we buy from the platform, which fulfils our huge demand without any compromise in cost, quality or reliability," says the SCM Manager of the company.

Within a year, the company replaced 9% of its fossil fuel requirements with biofuel, buying around 8000-10,000 metric tonnes of biomass through the platform, with an ongoing order for another 10,000 tonnes. "Industries who want to transition are scared they will not have a reliable and constant supply of good quality biomass given that it is seasonal and erratic. But, the platform kept up with our rising demand, even in the monsoons, with their warehousing services."

The company is determined to further reduce its emissions and has committed to using 1.5 lac metric tonnes of biomass, hoping to fulfil most of this demand through the platform. Moving forward,

the company is an inspiring example of how industries can harness technology to catalyse the transition towards green energy.

More than convenience

"I have always burned my agri-waste until this year when I could sell it on the platform and make a profit out of it instead. I typically have over 300 bags of soya husk after harvest, and I hope to sell this through the platform even next year," says farmer Ram Jogdand from Dharashiv district in Maharashtra. For Jogdand, as for many committed users of the platform, this technology is not merely about saving time and energy. In fact, for many farmers, going digital is challenging and involves an initial learning curve. However, all these participants perceive a greater opportunity that can only be accessed through digital technology. To farmers and sellers, the platform is a complete, integrated tool to expand their income, enable their businesses, and create a strong market identity, while for industries, it is a means to access a reliable supply of biomass and transition towards green energy. Technology is simply the means to deliver these deep and long-lasting benefits to the opportunistic players of the biofuel sector.



Farmer - Ram Jogdand, Dist. - Dharashiv

The Inside Scoop

Stories and lessons from our growing team of passionate professionals

Varsha Jejurkar on enabling business solutions through technology

Varsha Jejurkar is a Product Manager at BiofuelCircle. She joined the company in its infancy as a Business Analyst. Her passion for addressing customers' needs and problems led her towards product development and customer-centric decision-making. She is a versatile employee contributing to several different teams at BiofuelCircle.

Can you tell me about your journey at BiofuelCircle and what your current work involves?

I began my journey at BiofuelCircle in 2020 as a business analyst. I was technically the first employee of the company after the founding members. I was involved in the initial testing of the product and training our first participants. This helped me understand the problems of our customers and the nuances of the market, which drove me towards product development and customer success.

It is really satisfying to translate customers' needs, problems and insights into actionable product features on the platform, either through small upgrades or by introducing new features entirely. Our data analysis revealed very early on the huge growth potential this product holds for the biofuel ecosystem, so all my work has been immensely rewarding.

Can you explain this growth potential as revealed by the data you collected and the customers you've interacted with personally?



Varsha Jejurkar, Product Manager

Initially, when I would speak to sellers and buyers about their problems, I made a list of all the benefits the platform could deliver.

So, on the seller side, the digital platform offers access to a wider market with diverse customers beyond their immediate

geographical area, increasing sales and revenue. On the MyBiofuelCircle page, they can create a profile, make posts and increase their visibility to potential clients.

Small briquette plants are often run by just one person who looks after everything from admin to sales. But, with the platform, they can find buyers, negotiate deals, and complete the transaction digitally, saving a lot of time and effort that can be channelled into their core business. The platform is also a wonderful source of information on real-time prices, market trends, and business analytics. Sellers can use this

data to make better decisions and remain competitive.

The sellers also love our early financing option. Long payment schedules were a huge concern for sellers everywhere who needed daily incoming capital to sustain their business. The platform offers early financing options and eases business for all sellers.

And lastly, many small manufacturers cannot afford a big ERP system to manage their data and accounting. But, the platform can step in as a substitute mini-ERP system which documents their offers, invoices, payments and deliveries, all in one place at no additional cost.

On the buyer side, the platform provides reliability and assurance of quality. We make quality profiles of our verified sellers by lab testing their products and creating data records of their past quality results. When a buyer publishes a buy, they have access to all this information for every verified seller.

The platform gives buyers access to multiple sellers and products, and streamlines the process of procurement which when done manually, is time-consuming and tedious. On the platform, you can publish, shop, buy, receive an offer, and initiate a purchase all within a few minutes.

The transparency on the platform goes both ways; with the quality testing, performance rating, and verification services, both the buyers and sellers can establish a trustworthy and robust circle of business, which is a major strength of the platform.

What are the challenges you face with the adoption of this technology and how do you navigate them?

- We've launched the app in not just English but also Hindi and regional languages like Marathi.
- Many farmers and briquette manufacturers don't have laptops so we're trying to ensure that all our features are available and easy to use on the mobile application.
- We conduct many trainings on how to use the platform and have a constant point of contact for all our customers who may have questions about how to navigate the platform.

The adoption of this technology can be challenging, especially for farmers who are not comfortable with smartphones and laptops. But, we're trying to make the transition easier.

Over the past three years, how has your view of the bioenergy sector and the impact of this technology evolved?

I have always been interested in green energy and this company gave me a chance to do meaningful work. The product promotes environmental sustainability, energy security, and independence. It will encourage the adoption and integration of biofuel needs, creating a more diversified, resilient energy system for India. This work will promote economic development by creating jobs and entrepreneurs in rural India.

The digital platform is more egalitarian than the previous way of doing business. It gives everyone access to the same information on suppliers/buyers, product quality, and prices. This will level the playing by empowering rural players and small businesses who didn't have access to this information before.

I really respect my work and it gives back to society which keeps me very fulfilled.



Understanding Biomass Banks - A Field Visit with BAIF, MNRE, and GIZ.

This May, we organised a field visit for delegates from key government departments across states to witness and interact with biomass-based rural enterprises. The delegates included the Chief Executive OREDA (Orissa), Managing Director, APGCL (Assam), Deputy General Manager, APGCL (Assam), Personal Secretary to Hon'ble Chairman GEDA (Goa), National Institute of Bioenergy (Kapurthala, Punjab) among others.

The visit aimed to nurture understanding around Biomass Banks to witness how they will generate opportunities and profit for farmers, FPOs, small briquette manufacturers and other

stakeholders. The project is sponsored by GIZ, under the guidance of MNRE with BAIF as the implementation partner.

The delegates visited farms in Yavatmal and Katol in Nagpur where they observed the process of aggregating farm residue, storing biomass, and converting it into briquettes. "Through their cloud-based marketplace, BiofuelCircle seeks to not only address all the challenges related to the bioenergy supply chain but also make a positive impact on the economy, community, and the environment around us," says a delegate from GIZ after the visit.



Celebrating 3 Years of BiofuelCircle

This June, BiofuelCircle celebrated 3 years around the sun. These years have been full of learning, growth, and inspiration as we move ever closer to our vision of empowering the green economy through a reliable, end-to-end supply chain for biomass, biofuels, and other bioproducts. Our team spent a week in fruitful

celebrations, strengthening our connection and mutual commitment to building a revolutionary digital platform for all players in the biofuel sector. We are deeply grateful for all your support and elated to walk with you into a brighter future.

