KOTLER & MUKHARJEE

ESSENTIALS OF MODERN MARKETING

INDIA EDITION

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Case Study: PRAJ INDUSTRIES

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- **Introduction**

The environmental crisis is taking a turn for the worse and adversely impacting the ecology and progress of humanity. There is a dire need for sustainable climate actions to curb Greenhouse Gas (GHG) emissions from human activities that contribute to climate change. The case discusses how Praj Industries successfully formulated and implemented growth strategies by leveraging Bio-Mobility® solution to decarbonize the transportation sector.

- **Problem:**

In the quest for development and industrialization, human beings are heavily dependent on energy. Fossil fuels are the major source of energy and have led to an increase in Greenhouse Gas (GHG) emissions. Transportation is one of the hard to abate sectors that will continue to have a major share in GHG emissions in the coming future. Mobility is fundamental in supporting economic growth, creating jobs, and connecting people to essential services. Hence its growth cannot be restricted. However, there is need to reduce the GHG emissions from the transportation sector to ensure sustainable growth. Biofuels are one of the most promising solutions for the decarbonization of the transportation sector and can play an important role in the sustainable & inclusive growth in the future.

The Beginning

Under visionary leadership of Dr. Pramod Chaudhari, a first-generation techno entrepreneur, Praj's journey started in 1983 as an agri processing venture with an objective of bring world class technologies to facilitate growth. Praj offered process solutions to sugar mills for production of ethanol and other value-added products from sugarcane molasses and other waste streams. By the end of the first decade, Praj had commissioned several ethanol projects in various parts of India. In India, ethanol was primarily consumed in potable (beverage) segment with limited industrial applications till 1990. The application of ethanol as an alternate transportation fuel was mooted only after year 2000.

The modern history of ethanol blending began in Brazil following oil crisis in 1970s. In the face of rising international oil prices Brazil was the first country to start using ethanol as transportation fuel. Brazil successfully leveraged excess sugar cane as energy crop for production of ethanol to blend with gasoline. It helped them to negotiate the energy shock ensuring national energy security. Similarly, USA started Ethanol blending in gasoline In 1980s to reduce its dependence on imported oil.

Concepts such as Climate change, Net zero were yet to come in existence till late 1990s. Although several nations were dependent on imported crude oil, captive biofuel industry was not supported by way of policies.

It was in this period, Dr. Pramod Chaudhari envisioned alternate fuels like biofuels and its importance especially on agrarian economy. He believed that renewable fuels produced from biobased feedstock have potential as Socio-economic and environmental enabler. He was convinced that biofuels enable inclusive growth, protect environment from rising GHG emissions and can facilitate nation's self-sufficiency for energy. This very concept of self-reliance has now taken a shape of widespread movement in the form of Atmanirbhar Bharat (Self Reliant India).

Realizing the immense untapped potential of biofuels across the world, Praj formulated market and product expansion strategy to capitalize growth opportunities.

Market Expansion

After establishing its strong foothold with dominating market share in India, Praj started exploring opportunities in international markets. By end of 1990, Brazil and USA were matured ethanol markets and highly competitive with presence of leading industry players. Although China was another significant market for ethanol, concerns over intellectual property, legal & commercial redressal and business transparency were major deterrents.

Praj being a mid-sized company having little international experience, it made no sense to compete in crowded marketplace with major players having a stronger balance sheet. Therefore, as a part of market evaluation exercise, Praj took strategic decision to look beyond ABC market i.e. America, Brazil and China. Instead, Praj decided to focus on tropical and agrarian markets in Southeast Asia, South & Central America, Africa, East Europe etc. with its proven solutions. These emerging markets were neutral in terms of competition and provided level playing field. Praj decided to position its distinct technology solutions at a competitive price, creating value for customers.

Based on the thorough market research, Praj pitched unique business model i.e. TEMPO (Technology, Engineering, Manufacturing, Project Management, and Operations). Praj deployed its captive engineering talent pool in international markets and took advantage of low-cost manufacturing in India to create price differential with competition. Another USP Praj's offering was Lower energy and water footprints. This created good market traction and paved way for Praj's entry and growth in international markets.

In 2012, Praj established the largest grain (wheat)-based 1200 KLPD ethanol plant in the UK, showcasing its global reach and technical prowess. Over the years, Praj has earned over 60% market share in select markets i.e. Thailand, Argentina, and few nations in Europe.

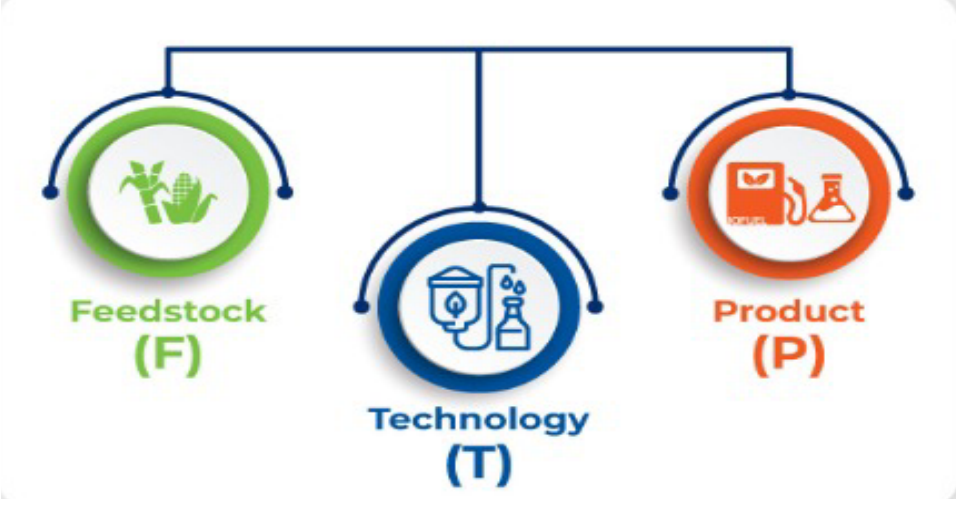
- **Solution**

Colombia is one of the leading sugar-producing and exporting nations in the world. However, at the beginning of the millennium sugar price in international market crashed, which led Colombia into a economic crisis including sugar glut. Praj approached Government of Colombia and proposed how excess sugar production can be diverted for ethanol production to diffuse the situation. Praj worked closely with the Government of Colombia to draft and implement Ethanol policy. Praj secured contracts for setting up as many as 7 ethanol plants in Colombia from year 2005 to 2015. Thus Praj technology was deployed in 100% ethanol production in the country. This enabled Colombia to leverage its captive resource i.e. sugarcane effectively while reducing its imports of crude oil and saving significant foreign exchange to overcome the challenge.

Unique Feedstock -Technology – Product (F-T-P) Approach

Praj has a strong conviction that R&D plays an important role in a sustainable growth. Soon after its inception, Praj started investing in research and development for continuous technology improvement. Major milestone came in 2008, when an exclusive state-of-the-art R&D centre- Praj Matrix was established. Matrix is home to 90+ scientists involved in cross functional research to develop advanced technologies for production of biofuels using variety of agri feedstock. Praj Matrix has capabilities of setting up bench scale, pilot scale and demo scale projects of innovative technologies.

It leverages deeper understanding of agri feedstock with inhouse technology expertise to develop variety of products aligned with market needs of today and tomorrow. This unique FTP approach, i.e. Feedstock -Technology – Product, creates competitive edge.



Over the years, Praj Matrix has mapped around 10,000 samples of a variety of bio-based feedstocks from around the world. Praj Matrix conducted research on each feedstock, analysing their compositions, processability, and output characteristics. The facility develops new

technologies for processing different feedstock to produce new products such as advanced biofuels, biochemicals and materials etc. The R&D facility also continuously works on improving its existing technologies to optimize them in terms of higher yields and lower operating costs. This has resulted Praj Matrix having over 400 national and international technology patents to its credit.

Product Portfolio Expansion

Praj had developed expertise in processing sugary and starchy feedstock for production of ethanol. In few developed nations, Food Vs Fuel debates raised concerns over using corn and casava as feedstock for ethanol production. This included concerns over potential increase in food prices if food supplies were diverted for ethanol production.

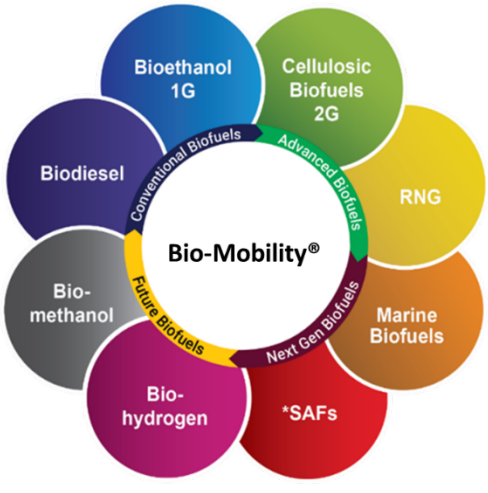
Foreseeing this as potential challenge, Praj prioritised R&D efforts on utilizing agri waste, feedstocks that are not fit for human consumptions. In 2007, Praj started its work on 2nd Gen ethanol that processes agricultural residue such as rice straw, wheat straw to produce ethanol. Praj made a significant investment to set up demo scale plant for production of 2G ethanol to inspire stakeholders' confidence in 2G technology. 2G ethanol technology is very pathbreaking as it not only addressed the issue of stubble burning causing air pollution but also contributed heavily towards rural development through additional income to farmers.

Bio-Mobility® Technology Platform for variety of biofuels

Praj's proprietary Bio-Mobility® platform of technologies envisages the utilization of Bio-based feedstock and organic waste for the production of low-carbon renewable transportation fuels in liquid and gaseous state across all modes of mobility i.e. Surface, Air, and Marine. Bio-Mobility® platform works on the principle of circular economy. Biofuels made from plants when combusted, release carbon dioxide which is absorbed by plants during photosynthesis resulting in a closed loop short carbon cycle.

Bio-Mobility® plays an important role in facilitating energy transition i.e. from hydrocarbon-based fossil fuels to carbohydrate-based low-carbon biofuels.

Praj's Bio-Mobility® platform comprises technologies for the production of:



Conventional Biofuels such as 1st generation/low-carbon ethanol produced from Sugary and starchy feedstock

Advanced biofuels such as 2nd generation/ ultra-low carbon ethanol and Renewable Natural Gas (RNG)/ Compressed Biogas (CBG) produced by variety of biobased feedstock

Next-gen biofuels such as Sustainable Aviation Fuel (SAF), bio-marine fuel

Future biofuels such as bio-methanol & biohydrogen In last 4 decades, Praj has successfully established itself as a global leader in the biofuels industry with over 1000 references in 100+ countries across five continents. The ethanol production capacity worldwide, of plants using Praj's ethanol technology has crossed a formidable 11 billion liters annually. This translates to over 10% of global ethanol production excluding China.

Here are highlights of its achievements on Bio-Mobility®

1G Ethanol: Praj has over 60% market share in ethanol production capacity of India playing major role in India's strides in the ethanol blending.

2G Ethanol: Praj has successfully commissioned India's first 2G ethanol biorefinery based on its proprietary enfinity® technology. This plant is expected to benefit more than 1 lac farmers and create around 1500 jobs for rural youth while eliminating around 3.2 lac MT of CO2 every year which is equivalent to replacing nearly 63,000 cars on the road annually. Praj is in the final stages of setting up two more 2G ethanol biorefinery projects in India.

CBG/RNG: Praj has developed technology "RenGas" for the production of Compressed Bio Gas (CBG) from a variety of agri and industry-based feedstock. RNG can be used as an alternative to fossil-based Compressed Natural Gas (CNG). Praj has successfully commercialized its technology by setting up CBG plants based on rice straw as well as press mud (sugar industry waste stream).

SAF: In May 2023, Praj in partnership with AirAsia India and Indian Oil, flew India's first ever commercial passenger flight powered by indigenously produced SAF blended Aviation jet fuel (ATF). By collaborating with major national and international energy companies Praj is helping build SAF capacities to make India the SAF hub, to comply with international mandates.

Bio Hydrogen: Aligned with National Hydrogen mission, Praj is developing technology for production of green hydrogen by processing agri based feedstock. This will empower farming community besides facilitating energy self-reliance.

Industry Shaping

As a flag bearer of biofuels industry Praj is playing important role in shaping the market. This includes working closely with government offices to formulate progressive policy framework to attract participation from various stakeholders. Praj has been promoting positive socio-economic-environmental impacts of biofuels using various national and international platforms. This has helped create positive environment about the industry and help weave resilient ecosystem.

Biofuels Policy 2018 is a resounding success considering achievement of EBP 10 milestone ahead of target schedule. Further strong momentum in the biofuels industry has enabled India to advance EBP 20 target. Yet another example of progressive policies is institutionalization of SATAT (Sustainable Alternative Towards Affordable Transportation) policy to promote the commercialization of CBG in India which is attracting participation from energy majors around the world.

Recognition & Awards

Praj's has received numerous global rewards and recognitions for its contribution to bioeconomy. For his exemplary work in technology, agriculture, innovation, and entrepreneurship, Dr. Pramod Chaudhari (Founder Chairman), widely acclaimed as Ethanol Man, was awarded with George Washington Carver Award 2020, regarded as the highest honour in Industrial Biotechnology. Dr. Chaudhari is recipient of prestigious William C Holmberg Award 2022 for Lifetime Achievement in Bioeconomy. Praj was also ranked No. 1 in the 'Best Place to Work' in Advanced Bioeconomy 2020, by Biofuels Digest, USA. Praj has also won different awards such as Golden Peacock Award, CII Innovation Award for its innovative technologies.

Conclusion

Praj has been a driving force in shaping the biofuels industry right from inception and today India is among the top ethanol producing nations in the world. Praj's unrelenting focus on developing and deploying innovative Bio-Mobility® solutions is the bedrock of its success. Praj's ability to understand customer needs of today and tomorrow and devising unique solutions to address them, has ensured its global leadership in the biofuels industry. Praj successfully collaborated with stakeholders, understanding importance of progressive policy and robust ecosystem in growth of industry. Praj has a major contribution in helping establish biofuels as a sustainable climate action pathway to achieve Net Zero. Bio-Mobility® platform thus enables socio-economic-environmental growth.

Questions to stimulate conversation on the case

What is the significance of Praj Industries' Bio-Mobility® platform?

Bio-Mobility® utilizes bio-based feedstock and organic waste to produce renewable transportation fuels. It facilitates transition of transportation sector from hydrocarbon-based fossil fuels to low-carbon biofuels. It helps in decarbonization of transportation across all modes of mobility: Surface, Air, and Marine. It acts as socio-economic-environmental enabler in growth of the nation. Biofuels enable inclusive growth, protect environment from rising GHG emissions and can facilitate nation's self-sufficiency for energy.

What strategies did Praj Industries employ to expand its presence in international markets?

Instead of competing in highly competitive mature markets like the USA and Brazil, Praj decided to focus on tropical and agrarian markets in Southeast Asia, South & Central America, Africa, East Europe etc. with its proven solutions. Praj offered Lower energy and water footprints solutions at competitive pricing by taking advantage of its captive engineering talent and low-cost manufacturing in India.

How did the focus on R&D contribute to the success of Praj?

Clear focus on R&D helped Praj develop variety of technology solutions aligned with market needs of today and tomorrow. Praj's unique FTP (i.e. Feedstock -Technology – Product) approach helped it create a unique competitive edge in the global market. Over the years, Praj has successfully expanded its technology portfolio for production variety of biofuels in liquid and gaseous state from different types of biobased feedstocks (sugary, starchy, lignocellulosic etc). The R&D facility also works on continuous improvements of its existing technologies to optimize them in terms of higher yields and lower operating costs.

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"The book adds significant value for the marketers by combining local market cases with innovative tools and techniques."

ALOK SANWAL, CEO DAINIK JAGRAN-INEXT

"An essential read for the marketers"

NITESH MATHUR, VICE PRESIDENT CGCEL

PHILIP KOTLER

FATHER OF MODERN MARKETING

Founder of the World Marketing Summit Group.

SADIA KIBRIA

"THIS BOOK IS OUR TRIBUTE TO PROF. PHILIP KOTLER, THE FATHER OF MODERN MARKETING."

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