



Stalwart of Bio-Economy Revolution!

We initiate coverage on Praj Industries Limited (PRAJ) with a BUY recommendation and a Target Price (TP) of Rs 422/share, implying an upside of 22%. Praj is well-placed to take advantage of shifted global focus on the decarbonization theme on account of its key competitive strengths such as a) Market leadership position in the domestic 1G Ethanol and frontrunner in 2G Ethanol space b) Capability to produce the highest yields of CBG vis-à-vis its peers by leveraging its proprietary RenGas technology, c) Improvement in working capital post management changes. We expect the company to report Revenue/EBITDA/PAT CAGR of 33%/37%/41% over FY21-FY23E driven by increase in orderbook, operational leverage and a debt free balance sheet. This will lead to a significant improvement in ROE/ROCE to 18.8%/24.8% in FY24 from 10.7%/14.7% in FY21 derived from 178% increase in the overall profitability.

Investment Thesis

- Ethanol Blending – Necessity of the Future:** Praj is one the leading developer of Ethanol plants in the country with ~65% market share. The government is taking focused initiatives to reduce carbon emissions and help the economy grow sustainably. The success of the Ethanol Blending Programme (EBP) has led the government to prepone its EBP target of 20% to the year 2025 from 2030 earlier. The government entities such as DFPD and MoP&NG are accountable for taking concentrated efforts to bring the necessary infrastructural change. So far, DFPD has approved 238 projects which will increase ethanol production capacity by 583 Cr litres and sanctioned a loan amount of ~Rs 16,000/ Cr. Furthermore, we foresee robust demand for 1G Ethanol plant in international markets from countries entering EBP as well as for 2G Ethanol plants from the Euro region due to the RED 2 programme.
- Compressed Bio-Gas (CBG) – A hidden trump card:** CBG is the technological boon expected to bring independence to oil-importing agrarian economies. It converts agriculture residue and other waste products to environment-friendly high-calorie energy molecules. Keeping this in perspective, the government has started the SATAT scheme which plans to set up 5,000 CBG plants by 2023-24 with a production target of 15 MMT. Letter of intent for 600 CBG plants and MoUs for 900 plants have already been given. A total of 1,500 CBG plants are at various stages of execution which will require an investment of Rs 30,000 Cr according to MoP&NG. Praj with its technological prowess and a proven track record will be a key beneficiary of these projects. It is already developing 3 large-scale CBG projects across the country.
- Renewable Chemical Materials (RCM) and Engineering Zero Liquid Discharge (ZLD) Business:** RCM business is expected to be the company's next big growth driver and it is investing proactively in the R&D to capitalise on this opportunity. Against this backdrop, Bio-plastics and Hydrogen are likely to be the leading candidates to be launched in the medium term, driving the company's growth prospects further. Moreover, stricter government regulations in India (as it participates in Paris Climate Accords) will require adherence to stringent water emissions rules and thereby compel manufacturing entities to implement/modify ZLD facilities. This, in turn, is expected to bode well for the company's ZLD business.

Outlook & Valuation – Initiate with BUY

We expect Praj to be a key beneficiary of multiple tailwinds provided by the bio-economic revolution, giving revenue visibility for the next 3-5 years. This, coupled with the company's focus on driving international revenues would lead to a sustained period of high revenue growth as well as margin improvement as operating leverage kicks in. Currently, the stock is trading at 47x FY22E PE and 33x FY23EPS. We initiate coverage on the stock with a BUY rating and value the company at 40x FY23E PE to arrive at a target price of Rs 422/share, implying an upside of 22% from the CMP.

Key Financials

(Rs Cr)	FY20	FY21	FY22E	FY23E	FY24 (E)
Net Sales	1,102	1,305	2,033	2,545	3,040
EBITDA	78	112	172	247	292
Net Profit	70	81	135	192	226
EPS (Rs)	3.85	4.42	7.36	10.47	12.30
P/E (x)	14.3x	44.0x	45.2x	31.8x	27.1x
ROE (%)	9.62%	10.66%	15.95%	19.42%	18.84%
ROA (%)	5.85%	5.88%	7.99%	9.96%	10.11%

Source: Company, Axis Research

CMP as of 20th Sep, 2021)

CMP (Rs)	347
Upside /Downside (%)	22%
High/Low (Rs)	407/64.6
Market cap (Cr)	6371
Avg. daily vol. (6m) Shrs.	28,72,380
No. of shares (Cr)	18.36

Shareholding (%)

	Dec-20	Mar-21	Jun-21
Promoter	32.9	32.9	32.9
FIs	12.3	11.6	13.1
MFs / UTI	14.3	14.7	6.8
Banks / FIs	0.3	0.0	0.3
Others	40.2	40.7	46.9

Financial & Valuations

Y/E Mar (Rs Cr)	FY21	FY22E	FY23E
Net Sales	1,305	2,033	2,545
EBITDA	112	172	247
Net Profit	81.06	266	327
EPS (Rs.)	4.42	7.36	10.47
PER (x)	75	45	32
EV/EBITDA (x)	54	35	24
ROE (%)	11%	16%	19%

Key Drivers (%) (Growth in %)

Y/E Mar	FY22E	FY23E
Net Sales	56	25
EBITDA	53	44
Net Profit	67	42

ESG disclosure Score**

Environmental Disclosure	N/A
Social Disclosure Score	N/A
Governance Disclosure Score	N/A
Total ESG Disclosure Score	N/A

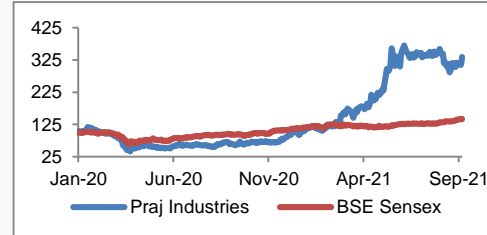
Source: Bloomberg, Scale: 0.1-100

**Note: This score measures the amount of ESG data a company reports publicly and does not measure the company's performance on any data point. All scores are based on 2020 disclosures

Axis vs Consensus

EPS Estimates	2022E	2023E
Axis	7.36	10.47
Consensus	8.37	-
Mean Consensus TP (12M) (Rs)		457

Relative performance



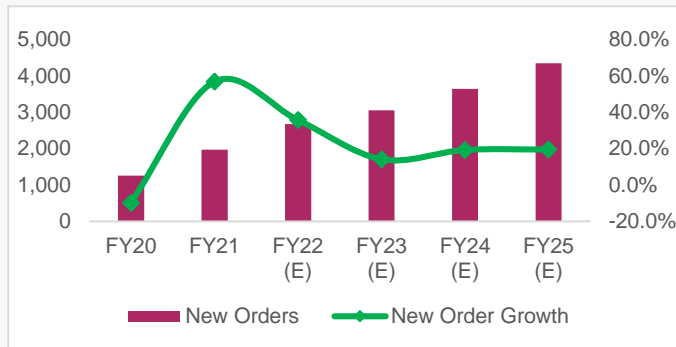
Source: Capitaline, Axis Securities

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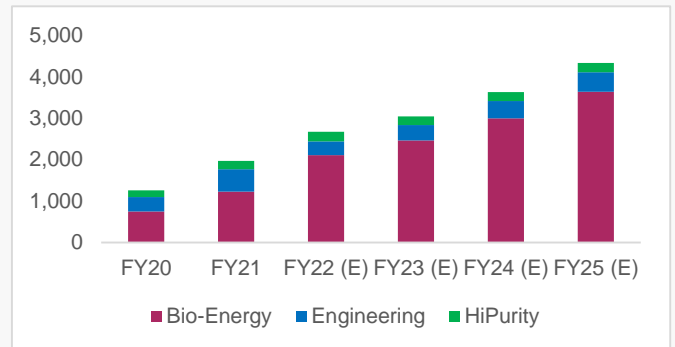
Financial Story In Charts

Exhibit 1: Order book Expected to Grow at 22% CAGR



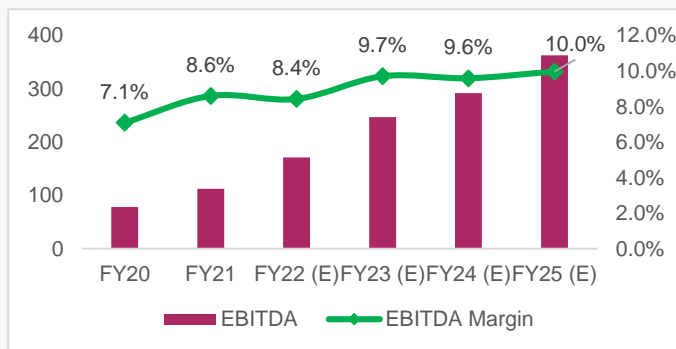
Source: Company, Axis Securities

Exhibit 2: Revenue to Post a Healthy Growth Rate



Source: Company, Axis Securities

Exhibit 3: Improving trend in EBITDA & EBITDA Margin



Source: Company, Axis Securities

Exhibit 4: Encouraging growth trend in PAT

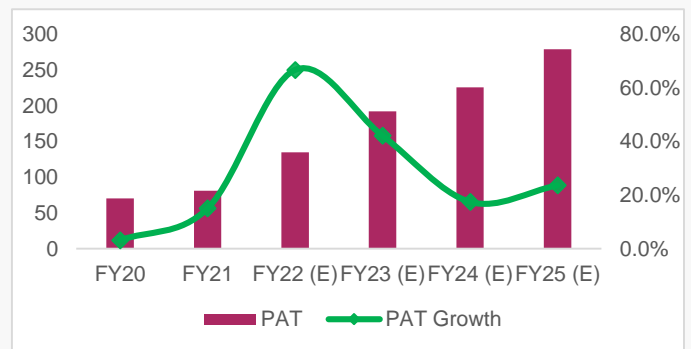
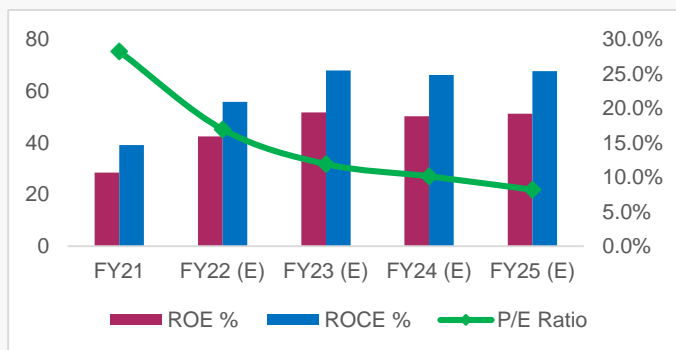


Exhibit 5: Improving profitability leading to superior return ratios



Source: Company, Axis Securities

Exhibit 6: Revenue/EBITDA/PAT Growth Trend

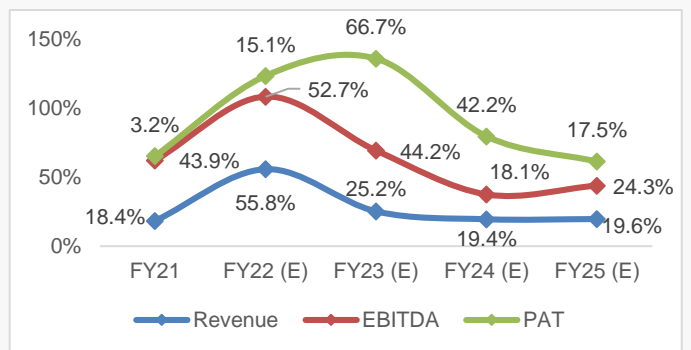
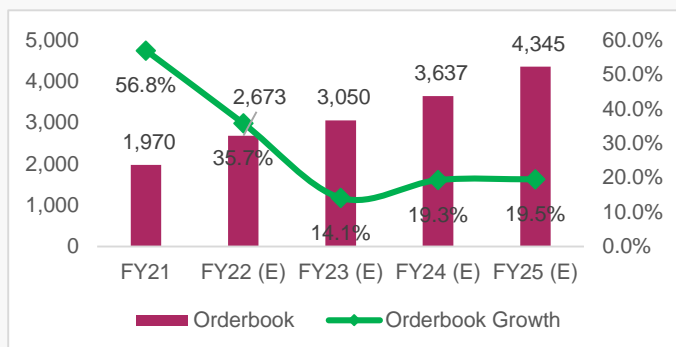
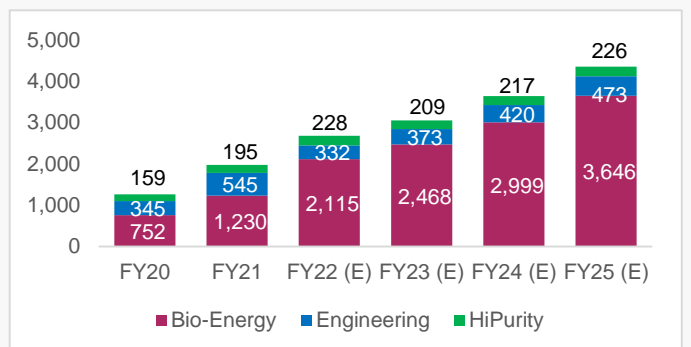


Exhibit 7: Order book Growth Rate & Improving Order book Size



Source: Company, Axis Securities

Exhibit 8: Order book: Segment Revenue Break Up



Company Overview

Praj Industries Ltd. – India's leading company in industrial biotechnology, is globally known for its TEMPO (*Technology, Engineering, Manufacturing, Project management, and Operations& Maintenance*) capabilities. For over three decades, the company has focused on environment, energy and farm-to-fuel technology solutions. Praj aims at sustainable de-carbonization through circular bio-economy by deploying its proprietary biofuel technology solutions. The company's business can be divided into three business segments:

- 1) **Bio Energy Business** – Consists of the Bio-Mobility™ platform which offers technology solutions globally to produce renewable transportation fuel..
 - **1G Bio Ethanol** - Transforming first-generation agri feedstock (sugars found in sugarcane juice, molasses, starchy grains, and tubers) into bioethanol, Leveraging its R&D capabilities, Praj has registered several patents in this technology.
 - **2G Bio Ethanol**- Praj offers end-to-end solutions to set up bio-refineries based on *its proprietary enfinity™ - 2G lignocellulosic ethanol technology*. This technology is currently being deployed at 4commercial-scale bio-refineries in India. Praj also intends to handle the O&M of these bio-refineries. Furthermore, this technology is considerably more sustainable than 1G Ethanol with 80% less water requirement and much higher Ethanol yield than 1G technology.
 - **Renewable Natural Gas (CBG) Technology** – Praj has developed and commercialised a proprietary renewable gas technology – RenGas™, and has commissioned it over 40 plants in India. It is the highest yielding BioGas RenGas technology with 30% lower operating costs due to its unique microbial cultures. Moreover, the process creates value-added manure with organic certificates as a byproduct while advanced biogas cleaning techniques gives pure methane.
 - **Bio-diesel Technology** – Praj has developed Ecodiesel enzymatic technology to produce biodiesel from feedstock such as used cooking oil, palm fatty acid, palm stearin, and tallow, among others. It not only offers the flexibility of feedstock but also has a lower operating cost, resulting in more profitable projects. (This technology is not yet commercially feasible)
 - **Sustainable Aviation Fuel Technology** – This is a replacement for high-cost aviation fuel. The Praj-Gevo innovative process uses iso-butanol produced from renewable sources (e.g. Sugars and Starch and Biomass) as feedstock to produce SAF. Iso-octane is another high-value co-product used as fuel for F1 racing.

- 2) **Engineering Businesses** – Praj's engineering businesses comprise Critical Process Equipment, Skids, Brewery plants, and Wastewater treatment solutions.
 - **Critical Process Equipment and Skids** – Products under this segment are used in sectors such as Oil & Gas, Refineries, Petrochemicals, and Fertilizer, among many others. The company offers a range of static equipment such as pressure vessels, reactors, shell & tube heat exchangers, columns, and other proprietary equipment as per the client design requirements.
 - **Brewery plants** – Praj integrates hygienic engineering with consistency in plant performance and cost-effectiveness. The service offerings include pre-feasibility to complete plant and technical audits to balancing equipment.
 - **Wastewater treatment plants (ZLD Business)** – Praj offers integrated energy-efficient solutions for effluent recycling and zero liquid discharge for various industrial applications. The company's strong experience of treating the most challenging wastewater enables it to offer highly optimized systems with lower footprints and optimized operating costs.

- 3) **Hi-Purity Business** – Praj Hi-Purity Systems Limited (a wholly-owned subsidiary) provides value-added and end-to-end integrated solutions to the Pharma, Biotech, and Wellness industry. These include water treatment solutions, modular processes systems, wastewater treatment solutions, process engineering, as well as design capability, ensuring superior service to clients.

Praj ranked 8th in the list of Top 50 hottest companies in Advanced Bio economy in 2019 released by the industry's leading publication Biofuels Digest, USA. Only Asian company in Top 10.

Ethanol Blending – Need of the Future

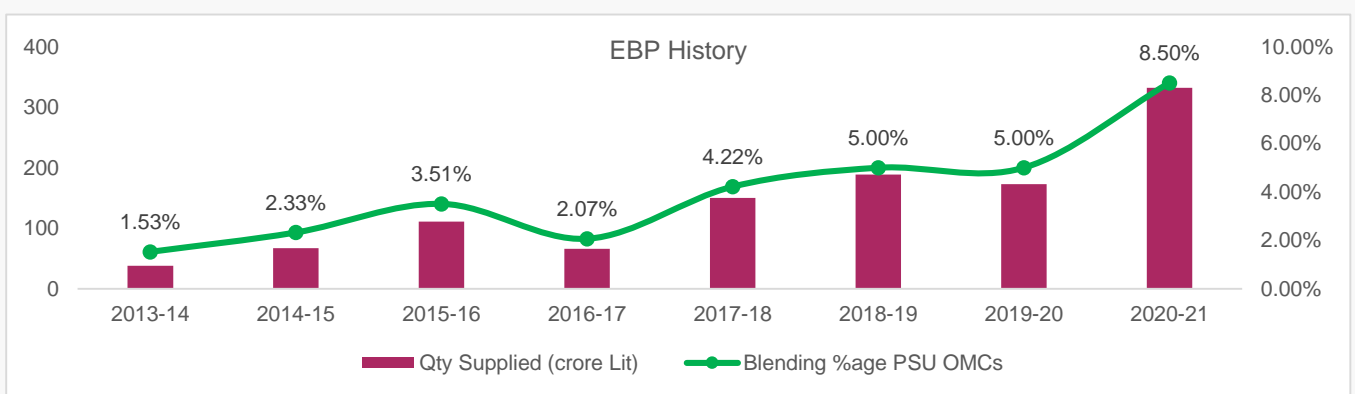
- **What is Ethanol Blending Programme:** Blending Ethyl Alcohol (Ethanol) is an organic man-made chemical compound that can be mixed with petrol or used independently in combustion engines. Ethanol Blending Programme (EBP) is mixing Ethanol with Petrol.
- **Why EBP:** The governments across the globe are judiciously aiming to control business impact on the environment by reducing collective carbon footprint and Green House Gases (GHG). Ethanol is a much cleaner burning fuel having high octane value and significantly less GHG emission and can be blended with petrol or used independently. Furthermore, the Ethanol production process creates a win-win scenario for all stakeholders.

India spent \$101.4 Bn on crude oil imports in FY2019-20 and \$111.9 Bn in FY2018-19. With every dollar increase in the crude oil price significantly raising India's annual import bill to the tune of Rs 10,700 Cr, EBP has the potential to play a crucial role in reducing India's reliance on crude oil import. EBP is also expected to reduce carbon emissions along with empowering farmers by increasing rural income.

India's net import of petroleum was 185 MMT at a cost of \$ 551 Bn in 2020-21. Most of the petroleum products are used in transportation. Hence, a successful E20 program can save the country US \$4 Bn per annum, i.e. Rs 30,000 cr.

- **Ethanol Blending Programme (EBP) in India:** The EBP program, started in few states in 2003, eventually spread across the country by 2019. During the Ethanol Supply Year (ESY) (December to November) 2018-19, ~189 Cr ltr of ethanol was supplied by sugar mills and grain-based distilleries to OMCs, thereby achieving a 5% blending target. In ESY 2019-20, 173 Cr ltr of ethanol was supplied for blending with petrol to achieve 5.6% blending. In the current ESY 2020-21, ~32 Cr ltr ethanol is contracted to be supplied to OMCs to achieve the 8.5% blending target. As of 26th Apr'21, ~349 Cr ltr ethanol has been allocated by OMCs to sugar mills/distilleries, out of which contracts of ~302 Cr ltr has been signed by distilleries and 124 Cr ltr has been supplied.

Exhibit 9: EBP History



Source: AMFI, Company, Axis Securities

Efforts are being made by DFPD and MoPNG/OMCs to ensure the achievement of blending targets. Also, in the next ESY 2021-22, it is likely to supply more than 400 Cr ltr of ethanol to OMCs to achieve 10% blending. Seeing the progress and the need for a blending programme, the government has preponed its E20 (20% Ethanol blending with petrol) target to the year 2025 from 2030 earlier.

Impact of EBP on Indian economy

- **Forex Savings and cost-effective** – Ethanol fuel is one of the least expensive energy sources (depends on demand-supply dynamics which is mitigated through blending) especially in Agrarian economies. Ethanol blending reduces the import of Crude Oil, thus reducing the country's forex bills. With most of the petroleum products being used in transportation, *a successful E20 program can save the country \$4 Bn per annum, i.e. Rs 30,000 Cr.* Furthermore, Ethanol production can be one of the least expensive energy sources in India considering abundant farming of key raw materials such as Sugar cane, paddy grain, and maize.
- **The Environmental Impact** – Use of E20 fuel in 2 and 4 wheeler vehicles reduces vehicular emissions of Carbon Monoxide (CO) by 50% and 30%, Hydrocarbons (HC) by 20% and Oxides of Nitrogen (NOx) by 10% (in 2-W).
- **The Rural Impact** – The EBP in India has helped Sugar companies to reduce cane arrears to farmers by shifting the excess capacity to Ethanol blending. The programme also plans to set up additional 400 refineries in the next 5 years which will lead to significant employment opportunities in India from setting up refineries, supply chain of raw material, and various other fronts of the whole segment.

In light of the above-mentioned advantages, the Indian government has been focusing on developing the infrastructure and pushing the Auto Industry towards FFVs to achieve the EBP targets. The groundwork has already been started with DPF, MoP and NITI Aayog pushing the OMCs and Auto industry to work towards developing the necessary Ethanol infrastructure and demand in the country.

Proof of Feasibility: Brazil Case Study

Oil Crisis triggering Ethanol Program: Arab countries hiked crude prices from \$3/bbl to \$12/bbl in 1973 resulting in an oil crisis, shot-up inflation, and high unemployment rates across the globe, including Brazil. In response to this adverse economic crisis, Brazil implemented Ethanol Blending by leveraging prevailing collapsed sugar prices and set up distilleries to reduce dependence on Crude Oil imports. So Brazil came up with idea of Ethanol Blending because of 2 reasons: 1) Oil Crisis to reduce dependence on Crude Oil & 2) Sugar prices collapsed due to new substitute sugar use on USA & Europe. Brazil started focusing on Ethanol Programme by supporting sugar sector, setting up distilleries. This Ethanol program resulted in the country's sugarcane production increasing by 50% and Ethanol by 500% to 280 Cr litres. Furthermore, also pushed the auto industry to produce vehicles that could run on Ethanol led to the launch E100 vehicle in 1976 first E100 vehicle was launched Fiat 147. Brazil started making Ethanol only vehicles and by 1985, 96% of vehicles in the country were ethanol-powered. by then Brazil's Ethanol production shot up to 1,280 Cr Litres in only nine years from 1976 to 1985. Everything was going well until this point until 1986 crude prices fell, making ethanol vehicles less economical and Sugar prices started increasing making it less incentivized to produce ethanol which led to ethanol shortages and further increased price of ethanol. Even after all this Brazil has managed to save \$55 Bn in Oil Imports from 1975-2002. Later due to political instability the EBP programme in Brazil was muted.

Launch of Flex Fuel Vehicles: Brazil introduced Flex Fuel Vehicles (FFVs) that could take in a combination of fuels in 2003 at competitive rates through collaboration with several automotive companies to revive the EBP program. This resulted in over 73% of new vehicles sold in Brazil being flex-fuel vehicles. The consumers could use fuels based on what was economical to them. Since 2003, Brazil's carbon emission has declined by 515 Mn tons and it has saved billions of dollars in Import bills as well. The country is currently following a 27% EBP.

The government support to bring traction to setting up capacities

- The government notified two interest subvention schemes for molasses-based distilleries in July'18 and Mar'19 to enhance ethanol production capacity in the country. Under the aforesaid scheme of DFPD, interest subvention at the rate of 6% per annum or 50% of the rate of interest charged, whichever is lower on the loan sanctioned, was borne by the central government for 5 years. DFPD approved 368 projects for setting up of new distilleries/expansion of existing distilleries. Loans amounting to about Rs 3,600 Cr has been sanctioned by banks to 70 sugar mills so far and resultantly, 31 projects have been completed creating a capacity of 102 Cr litres. The capacity of molasses-based distilleries has reached 426 Cr litres. 39 more projects with a capacity of 93 Cr litres are likely to be completed by Mar'22 which will bring cumulative capacities to about 519 Cr litres. In the year 2017-18, the installed capacity of molasses-based distilleries was around 278 Cr litres. Praj is the fron runner for majority of the expected capex of these Ethanol plants.

Ethanol Supply target for 20% blending by 2025-26

Ethanol Supply (in Cr. Lt.)	Fuel ethanol	Other uses	Total
(A) From sugar sector	550	134	684
(B) From grain/ maize etc.	466	200	666
Total Supply	1016	334	1350

Capacity Augmentation

Ethanol Capacity (in Cr. Lt.)	Molasses based	Grain-based	Total
Existing ethanol/alcohol capacity	426 (231 distilleries)	258 (113 distilleries)	684
Capacity addition from sanctioned projects	93 (will be added by March 2022)	0	93
New capacity to be added	241	482	723
Total Capacity required by Nov 2026 to reach 1350 Cr litres supply	760	740	1500

Source: NITI Aayog

Additional capacity (90 % of 1500 = 1350) has been taken to account operational efficiency, raw material availability in various parts of the country due to natural calamity etc., increase in demand in ethanol due to economic factors and anticipated demand for ethanol in flex-fuel vehicles. To achieve blending targets, DFPD is making concerted efforts to enhance the ethanol distillation capacity in the country. For this, the government had invited applications from the entrepreneurs under the ethanol interest subvention schemes in Sep'20 during a window of 30 days. Thus far, 238 projects for a capacity enhancement of 583 Cr litres with a loan amount of about Rs16,000/- Cr have been approved by DFPD. It is expected that at least 400 Cr litres capacity would be added to these projects by 2024.

- These initiatives and focus on grain-based distilleries the government will diversify the geographical production of ethanol from sugar-based ethanol produced mainly in three states viz Uttar Pradesh, Maharashtra and Karnataka. Transporting ethanol to far-flung states from these three states involves huge transportation costs. By bringing new grain-based distilleries to the entire country would result in the distributed production of ethanol and would save a lot of transportation costs and therefore costs to retail users. It would also prevent delays in meeting the blending target and would benefit the farmers across the country.
- From a recent statement from a BPCL Director, "OMC's are now close to procuring Rs 20,000 Cr worth of Ethanol as refining industry has increased the storage capacity to 15 inventory days. He also mentioned that BPCL is planning to set up 3-4 more plants for Ethanol. The government is taking the effort to remove the impediments in the transportation of ethanol across states" Praj has developed Ethanol plant for BPCL (and other OMCs) earlier & therefor more likely to receive further projects.

- The government has also fixed remunerative prices of ethanol derived from various feedstocks. It has also mandated OMCs, being the assured buyer for ethanol, to purchase Ethanol from distilleries. Demand visibility for the next 5-10 years makes these ethanol projects viable and profitable.

Ethanol Production Route	ESY18	ESY19	ESY20	ESY21
C Route	40.9	43.7	43.75	45.69
B Route		52.43	54.27	57.61
Sugarcane Juice Route			59.48	62.65
Damaged food grains / Maize				51.55
Ethanol from surplus rice with FCI				56.87

Source: NITI Aayog

*Y/E November: The government allowed Ethanol from Food Grain Route in ESY21

This is the average cost per MT of various feedstocks across the country, prices vary in different states for the raw material based on availability and state subsidies resulting in average profitability across the country.

Ethanol Revenue Mechanism Breakdown

Feedstock	Cost/MT of Feedstock (INR)	Ethanol Yielded/MT of Feedstock	Ex-Mill Ethanol Price (Rs/Litre)	Revenue to Mill	Gross Profit/MT of Raw Material
Sugarcane Juice/ Sugar/ Sugar Syrup*	2850	70	62.65	4,386	1,536
B Molasses	13500	300	57.61	17,283	3,783
C Molasses	7123	225	45.69	10,280	3,157
Damaged Food Grains (DFG)	16000	400	51.55	20,620	4,620
Ethanol from surplus rice with FCI	20000	450	56.87	25,592	5,592
Maize**	15000	380	51.55	19,589	4,589

- Ministry of Environment, Forest and Climate Change has also streamlined the process of getting environment clearance (EC) for ethanol projects. Department of Financial Services and State Bank of India have also issued Standard Operating Procedure (SOP) for sanctioning and disbursal of loans for ethanol projects which would expedite sanctioning and disbursal of loans. This would significantly facilitate faster augmentation of Ethanol distilleries in India, thereby supporting robust demand for the company's products and services.

Bio-Ethanol - The market size of opportunity

1G Ethanol - As of 2020, there are 684 Ethanol distilleries set up in India, out of which 426 are sugar-based while 258 are grain-based. The government's target of E20 blending would demand production of ~1000 Cr Litres of Ethanol for blending purposes and ~400 Cr litres for other domestic purposes. This whopping increase in demand would require ~800 more distilleries to be set up across India which will augur well for the company's growth.

The average cost of setting up a mid-size distillery is in the range of 100-200 Cr (i.e depending upon the automation, discharge process incorporated, geography etc) This translate to ~12,000-14,000 Cr of Capex requirements. Praj Industries currently has ~65% market share of the domestic 1G Bio Ethanol market. Assuming 65% market share, this translates to ~8,000-9,000 Cr top-line opportunity for the company over the next 3-5 years. Its sharp focus on improving its technology, optimising process flow via data analyses and standardisation, and consistent R&D investments have helped the company gain the technological edge and thereby maintain and improve its market share.

1G – Ethanol Capex example – Balrampur Chini Plant - The plant is expected to generate annual revenue of around Rs 650 Cr and has a cash pay-back period of fewer than 4 years.

The board of Balrampur Chini Mills approved the revised Capex of Rs 425 Cr for the 320 kilolitres per day (KLPD) distillery plant. It had earlier approved a Capex of Rs 320 Cr for the aforementioned capacity addition project. The increase in Capex to the tune of Rs 105 Cr is mainly owing to the inclusion of 20 KLPD of extra-neutral alcohol (ENA), higher storage capacity for raw material and finished goods, a sharp rise in steel prices and change in designs of equipment to bring in more efficiency and embrace automation.

2G Ethanol – While 1G Ethanol plants utilize feedstock such as cereals, sugarcane juice, and molasses as raw materials, 2G plants utilize surplus biomass and agricultural waste/residue. Moreover, no company globally has yet commercialised the 2G Ethanol plant profitably, Praj expects a breakthrough soon and is one of the closest contenders in the race.

“India's state-run refiners are going slow on plans to build second-generation or 2G ethanol plants and will instead set up a first-generation or 1G plants, which are more cost-effective,” (as per commentary by the officials from oil marketing companies such as Indian Oil Corp. Ltd (IOCL), Bharat Petroleum Corp. Ltd (BPCL) and Hindustan Petroleum Corp. Ltd (HPCL)). They find setting up 2G plants unviable as being expensive than 1G plant. A 2G plant requires an investment of 1,000 Cr compared to a 100-200 Cr investment for a 1G plant.

International Opportunity – Canada has planned an E15 blending programme rollout which it will eventually increase to E25, opening up a huge market for Praj and its international peers. Europe, too, is planning to add an equal amount of 2G Ethanol capacity to its existing 1G Ethanol capacity. It has undertaken RED 2, Renewable Energy Directive, which has set a new binding renewable energy target of at least 32% by 2030, with a clause for a possible upwards revision by 2023. Similarly, many countries across the world are focusing on reducing their carbon footprint and opening tremendous opportunities for players such as Praj across various segments.

~8000-9000 Cr market opportunity visible for Praj Industries over next 3-4 Years, just from the domestic 1G Ethanol business.

Compressed Biogas (CBG) – A hidden trump card in hand

- **CBG** is purified and compressed biogas produced through a process of anaerobic decomposition from various waste/biomass sources such as agriculture residue, sugarcane press, mud and spent wash of distilleries and sewage water, and bio-degradable fractions of industrial waste.
- **Advantages of CBG** – Research suggests that CBG, offers ~10% higher calorific value than CNG and can be used as green fuel in automotive, industrial and commercial sectors.
- **Praj's Technical Superiority** – Praj has *developed and commercialised its proprietary renewable gas technology, RenGas™*, commissioning over 40 plants in India. It is the highest yielding BioGas (RenGas) technology with at least 30% higher CBG yields than any other player in the market and also reduces operating costs by 30% because of its unique microbial cultures. The process also creates value-added manure that can be organically certified as a byproduct. Advanced biogas cleaning techniques gives pure methane.
- **The Plan**–The Ministry of Petroleum and Natural Gas (MoPNG) has signed MoUs with leading Oil & Gas Marketing companies and technology providers to establish Compressed Bio-Gas (CBG) plants across India under the Sustainable Alternative towards Affordable Transportation (SATAT) initiative. The MoUs have been signed with energy companies JBM Group, Adani Gas, Torrent Gas and Petronet LNG for setting up of CBG plants, and with technology providers in CBG sectors, Indian Oil, Praj Industries, CEID Consultants and Bharat Biogas Energy for facilitating the availability of technology for the projects.
- **Development so far:** Minister of Petroleum and Natural Gas said, “Letter of intent for 600 CBG plants have already been given and MoUs for 900 plants have been signed, a total of 1,500 CBG plants are at various stages of execution. Rs 30,000 Cr of investment is envisaged in these 900 plants. A project requires a 12-month cycle to set up and start functioning. The Indian government under the SATAT scheme envisages setting up 5,000 CBG plants by 2023-24 with a production target of 15 MMT. It is expected to create both greener fuels and also new employment opportunities in rural belts. The government has offered a procurement price of Rs 46 till the year ESY 2024 with takeoff assurance of 10 years plus GST. “Nowhere in the world such program exists, this is the first time program of this scale and this size is attempted by the policymakers” – MD, Praj Industries Ltd.
- **The Hurdles** - India does not have a strong established gas infrastructure, shortage of storage space, segregation of wastes, unavailability of raw materials and lack of established biomass pricing mechanism has slowed implementations. Regulatory approvals and financing are other major hindrances. Although the government is handling to solve these issues on the war front, the government also needs to solve issues around the taxation of digesterate, certification of digesterate. Storing gas is difficult, therefore simultaneous development of infrastructure and supply capacities should take place to benefit the end consumers.
- **Praj Development in CBG Business** - Praj received a prestigious breakthrough order from HPCL in Q4FY21 for setting up the CBG project at Badaun in Uttar Pradesh. The project will produce CBG from rice straw feedstock with a processing capacity of 35,000 metric tonnes of rice straw as feedstock and will generate over 5,000 metric tonnes of CBG annually. In addition, the project will also generate 23,000 metric tonnes of high-quality solid bio-manure and over 35,000 metric tonnes of liquid bio-manure for ferti-irrigation. The project has the potential to save over 15,000 metric tonnes of CO2 emissions per year.
- **Current Status** - Praj is also commissioning around 40 plants in India. One of the plants has started production and is currently operating at around 70-80% capacity. The gas produced at the Praj CBG plant is currently sold at various IOCL gas outlets and customers have already started using it.

Praj has developed the highest yielding Biogas, which yields at least 30% more CBG than any other player in the market and also reduces operating cost by 30% because of its unique microbial cultures.

Exhibit 10: EBP History

Source: AMFI, Company, Axis Securities

Indian Oil retail outlet at Talegaon Dabhade in Pune is one of the first fuel stations in the country selling CBG. Indian Oil has initiated the sale of CBG in September 2019 as 'IndiGreen'.

What can be the size of CBG opportunity?

The government plans to set up 5,000 plants across India by 2023-24 with a production target of 15 MMT. If we consider the MoP&NG assumption of Rs 30,000 Cr investment for 900 plants, we can expect an investment of around Rs 1,65,000 Cr over the next 3-5 years. According to Praj, "This translates to an opportunity of Rs. 1,75,000 Cr", Shishir Joshipura, MD, Praj. Praj's technical superiority in CBG technology would make sure it seizes a larger share of this opportunity in the coming future.

The technology is already used in various countries internationally (especially in cold countries for heating purposes), by purifying the gas it can be used in vehicles. Hence, this can also generate further demand internationally.

Well-positioned to handle demand scale!

The company faces significant market opportunity size when all its business segments are combined. Keeping this in view, the management has been proactively investing in building the necessary capacity and bandwidth to handle anticipated huge demand and a possible J curve scenario.

It is investing in R&D and Engineering upgrades with help of the IT systems to augment its capabilities, a few of which have been mentioned below:

- **Standardisation** of certain engineering processes which can be offered across a variety of customers to reduce project run-time and costs as well as improve internal efficiencies by leveraging . For eg. Praj has the its technical knowledge of installing over 175 distillation towers having varying capacities, geographies, raw materials, and characteristics. Using this data and experience to standardize certain processes will help in improving its project run time thereby leading to cost savings and efficiency in operations
- Simultaneously the company is also focusing on manufacturing by improving the **process flow, modernisation of equipment, applying automation technology and process digitalization** for better monitoring of the process flow and efficient production.
- **Outsourcing low value-proposition** segment of the business to external vendors as these segments or processes don't require superior technical expertise. While this could have a marginal impact on margins, it provides a significant advantage in terms of topline and cash flow improvement owing to efficient working capital. The company will focus on high value add propositions and IT protected parts of the business where it has technical prowess.

RCM and Engineering Business

RCM Outlook: Praj uses its special domain knowledge and understanding of fermentation and engineering to come up with a molecule demonstrating the highest scope of future sustainable growth. The company is partnering with various international players such as JEVO and SEKAB to find the commercial feasibility and sustainability of such molecules. The bioplastics and hydrogen are the front runners having tremendous industrial applications. Globally, RCM can be a ~\$75 Bn opportunity and Praj is envisaging to take a piece of this pie. The company has proactively invested in R&D and can successfully capitalise these investments to attain commercial feasibility. However, we haven't factored in any of this possible growth in the company's financial models and we believe that any advancement in these spaces would significantly improve the company's growth prospects further.

Engineering businesses: Praj's Engineering businesses comprises Critical Process Equipment and Skids, Brewery plants, and Wastewater treatment solutions (ZLD). Wastewater treatment plants (ZLD Business)-Praj offers integrated energy-efficient solutions for effluent recycling and zero liquid discharge for various industrial applications. The company's strong experience of treating the most challenging wastewater enables it to offer highly optimized systems under Engineering businesses with lower footprints and optimized operating costs. Furthermore, the government's stringent regulations imposed on manufacturing facilities with an aim to reduce their footprints are creating building blocks for the ZLD business. Companies across sectors such as Chemicals, FMCG, and Energy businesses need to follow the stricter mandate of ZLD to receive operating permissions for their manufacturing facilities. The company expects good growth in this vertical as these regulations are strictly implemented and become more stringent over the years.

Critical Process Equipment and Skids – These serve vital sectors like Oil & Gas, Refineries, Petrochemicals, and Fertilizer, etc. Praj offers a range of static equipment like pressure vessels, reactors, shell and tube heat exchangers, columns and other proprietary equipment as per the client design. Praj also undertakes end-to-end projects for modular process skids and packages, FEA (Finite Element Analysis), Process and Thermal Design and Piping Design and Stress Analysis, and design skids using software like Plant 4D and PDMS.

HiPurity Business – Praj HiPurity Systems Limited (a wholly-owned subsidiary) provides value-added solutions to the pharmaceuticals, biotechnology, and wellness industry and offers end-to-end, integrated solutions such as water treatment solutions, modular process systems, wastewater treatment solutions and process Engineering and design capability to ensure superior service to clients.

Positive resonance: Change in top management

The company appointed Mr. Shishir Joshipura as CEO and MD in Apr'18 and Sachin Raole as CFO in Jan'17, who have spearheaded important changes along certain dimensions of the company's functioning and work culture.

Every individual at Praj is dedicated towards purpose of the organization, which is sustainable future.

- **Focus on Free Cash Flow:** Every business vertical is given Cash Flow targets and expected to perform individually while managing their cash flow self-sustainably.
- **Focus on High potential geographies** - Move to Brazil, USA and Canada for 1G ethanol, Eurozone for 2G Ethanol, ZLD in India, and focus on CPS (investing to get the strategic supplier status).
- **Focus on bringing technology to the market** - Commercializing the developed technologies and bringing the innovation to the market to capitalizing on them. Praj has used its fermentation expertise to join hands with the international player which has helped it advance the commercial feasibility of producing 2G Ethanol.
- **Focus on Execution** - Creating a process flow once the order is received, de-bottlenecking processes, shift from team effort to driven effort where people are accountable for their responsibilities, creating key positions to monitor the change, shift from monthly review to weekly review, resolving supply chain issues including order offtake from customers to free up factory space. The shift from monthly to weekly review has helped the company for closer monitoring of the execution flow.
- **Focus on Employees** - The management started creating a sense of involvement and satisfaction among employees with a drive towards the purpose to curb employee attrition.

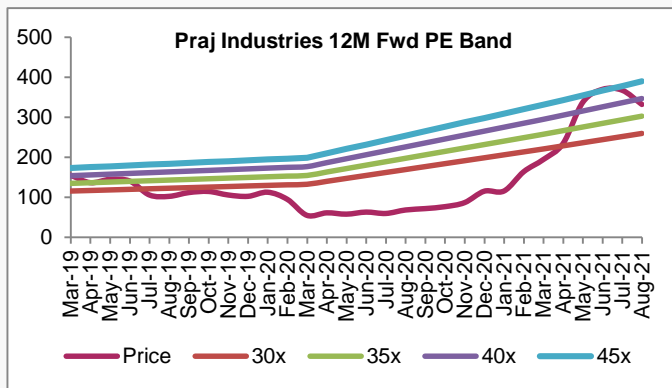
Outlook and Valuation

We initiate coverage on PRAJ with a BUY recommendation and value the stock at PE of 40x FY23E to arrive at a TP of Rs 422/share, implying an upside of 22% from CMP. PE of 40 is at a discount of ~15% to the current 45x FY22 earning. While FY21 operations were impacted owing to the COVID-19 led adverse commodity price fluctuations, the company's outlook over FY23-25E continues to be positively supported by a) Strong push on Bio-Ethanol in Indian as well as international markets; b) Commercial feasibility of 2G ethanol driving further demand in the ethanol space; c) Singificantly large CBG opportunity; d) Sharp focus on new product development in renewable chemical materials space; and e) Visible margin improvement owing to the management's focus on execution, international business growth, and operating leverage.

Uniquely positioned player in its business segment gaining moat from its technological prowess and engineering capabilities

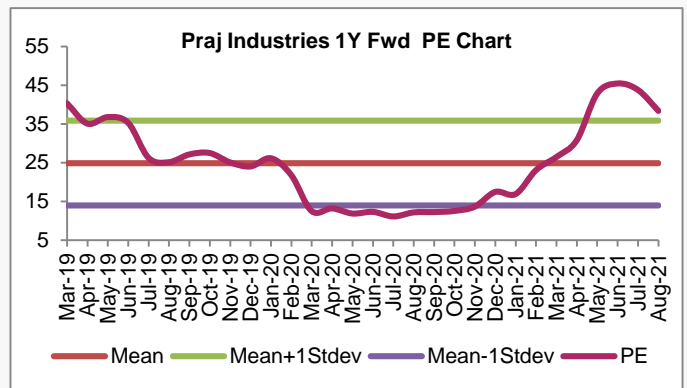
We expect Praj to report Revenue/EBITDA/APAT CAGR of 22.7%/32.6%/37.5% respectively over FY21-FY24E driven by order book growth and efficient execution as well as improvement in the company's Gross Margins with new contracts. We believe the company is well placed to take advantage of multiple tailwinds and is uniquely positioned in its business segment having moat from its technological prowess and engineering capabilities. The expected future growth justifies the valuation and makes a compelling investment opportunity. The premium valuations are justified in our view given the large headroom for growth.

Exhibit 11: FWD PE BAND (x)



Source: the company, Axis Securities

Exhibit 12: FWD PE CHART (x) –



Management Profile

Key Management Personnel	Experience
<p>Dr. Pramod Chaudhari Executive Chairman <i>IIT, Bombay,</i> <i>Harvard Business School</i></p>	<p>A first-generation techno-entrepreneur, Dr Pramod Chaudhari founded Praj in 1983. With a strong belief in the principle of triple-bottom-line, his business model is inherently scalable, replicable and sustainable. Praj fostered the emergence of advanced technologies in certain Bio-Energy and allied spaces. As India's biggest Biofuel Technology company, Praj has footprints in over 83 countries, across five continents. Dr. Chaudhari has recently received the Prestigious 'George Washington Carver Award 2020' by BIO-Impact, Washington DC, USA – he is the first Indian to receive this global honour.</p>
<p>Shishir Joshipura CEO & MD <i>B.Tech (Mech), BITS Pilani</i> <i>Harvard Business School</i></p>	<p>Mr. Shishir has over 35 years of rich experience in varied fields of engineering and possesses a strong business and leadership record. He began his career with Thermax Ltd and held several key positions to rise through the ranks to become Executive Vice President and Global Head of Cooling & Heating business. Before joining Praj, he served as Managing Director of SKF India Ltd from 2009 to 2018. Under his leadership, SKF consolidated its position as the leading manufacturer of bearings, seals, lubrication systems, mechatronics, and services. He is also the Founding Director for Alliance for Energy-Efficient Economy (AEEE) – an industry think-tank and policy advocacy organisation for energy efficiency in India.</p>
<p>Sachin Raole CFO and Director – Finance and Commercial <i>CA and ICWA</i></p>	<p>Mr. Sachin is a Cost Accountant and Chartered Accountant with 22 years of experience in varied fields of finance and accounts. He has worked in the areas of divestment, mergers and acquisitions, financial restructuring, treasury, accounts, and taxation. He has very rich experience in the wide spectrum of finance across industries; manufacturing, project, financial services and pharmaceutical. Additionally, he also has experience in heading Human Resources, materials, IT, legal and secretarial.</p>

Key Risks & Mitigation

- **Weak Balance Sheet of Sugar Companies:** Most of the small sugar companies do not have the necessary balance sheet strength to invest in Ethanol plants. However, government assistance and revenue visibility from tie-ups with OMCs is increasing the number of entities undertaking capital expenditure for setting Ethanol plants.
- **Fluctuation in input costs:** Fluctuation in input costs such as steel affects the cost structure and consequently the profitability of the company. Since Praj enters into fixed-price contracts, any rise in raw material prices affects Praj's gross margins. To reduce this, it is focusing on reducing the time lag between order inquiry and order execution.
- **Dependence on Water intensive crops:** Both Sugar and Paddy are water-intensive crops. It is estimated that sugarcane and paddy use 70% of the irrigated water of the country combined. Keeping in mind the need for water conservation, it is advisable to shift some of the areas under sugarcane to less water-intensive crops by providing suitable incentives to farmers. The Task Force on sugarcane and sugar industry constituted under Member of Agriculture department from NITI Aayog, has suggested ways to minimize water consumption through various means to encourage farm diversification. This may lead to a reduction in the supply of raw material for plants in future and adversely impact the setting up of Ethanol plants. Crops being water-intensive also makes the IRR of the Ethanol projects dependent on the monsoon. However, from a broader time frame perspective, it may not have much impact on Capex decisions by companies.
- **Co-dependence on Auto Industry:** The Ethanol initiative is also dependent on technology adoption in the auto industry as the program moves beyond 10% EB levels. Although we believe that this particular risk will be mitigated as there has been a very clear directive from the government (Road & Transport Minister) to move towards flexi fuel vehicles to accommodate the EBP mandate.
- **Dependence on Government Actions:** Praj is significantly dependent on the government regulations and initiatives for the domestic part of its ZLD business, CBG business, and Bio-Ethanol business. However, with these businesses being inevitable needs of the future, we see no threat in execution, especially with the increasing pressure from Paris Agreement and other International ESG bodies.

Ethanol Blending Programmes around the world

Roadmap / Mandate for ethanol blending in various countries

Country	Roadmap / Mandate for ethanol blends	Program	Implementation by	Vehicle Type
Brazil	The national policy of Brazil originally started in 2015 continues. The mandate is to blend 18-27.5% of ethanol in gasoline. This is currently at 27%.	National biofuels policy (Dec 2017)	Ministry of mines and energy (MME)	Mainly flex. Motorbikes and other two-wheeler engines use E27
United States	The clean air Act requires EPA to set the Renewable Fuel Standards (RFS) volume requirements annually. EPA updates volume requirements each year based on fuel availability	Renewable fuel standard (RFS) program	Environmental protection agency (EPA)	Primarily normal; Flex for E30 or E85 only.
European Union (EU)	EU aims to have 10% of the transport fuel of every EU country come from renewable sources, such as bio-fuels by 2020	Renewable energy directive	European commission	Flex and normal
China	In September 2017, the Chinese government announced legislation proposing the use of ethanol in fuel for all of China with the target of 10% ethanol blending	Fuel quality standards	National energy administration	Primarily normal
Thailand	Alternative Energy Development Plan (ADEP) targets the share of renewable and alternative energy from biofuel to increase from 7% of total fuel energy use in 2015 to 25% in 2036	ADEP	Ministry of Energy	Primarily normal

Source: Company, Axis Securities

Financials

Profit & Loss

(Rs Cr)

Y/E March	FY20	FY21	FY22E	FY23E	FY24E
Net sales	1,102	1,305	2,033	2,545	3,040
Raw Material	552	736	1,246	1,476	1,779
Employee benefit expenses	164	172	186	211	240
Other Expenses	308	284	429	611	730
EBITDA	78	112	172	247	292
Other income	30	26	33	33	33
PBIDT	108	138	205	280	325
Depreciation	22	22	21	21	21
Interest & Fin Chg.	3	3	3	3	3
E/o income / (Expense)	-	-	-	-	-
Pre-tax profit	83	113	180	257	302
Tax provision	13	32	45	64	76
RPAT	70	81	135	192	226

Source: Company, Axis Securities

Balance Sheet

(Rs Cr)

Y/E March	FY20	FY21	FY22E	FY23E	FY24E
Share Capital	37	37	37	37	37
Reserves & Surplus	683	765	857	1,049	1,275
Total Equity	720	803	894	1,086	1,312
Total Non-Current Liabilities	32	27	27	27	27
Trades Payable	187	342	447	530	638
Other Current Liabilities	197	376	376	376	376
Total Current Liabilities	409	764	870	953	1,061
Total Capital Employed	1,162	1,594	1,791	2,066	2,400
Net Block	217	206	205	202	200
Goodwill	63	63	63	63	63
Total Non-Current Assets	382	358	357	354	352
Cash	46	101	68	183	354
Inventory	111	129	201	231	268
Receivables	330	453	613	746	875
Investments	124	295	295	295	295
Total Current Assets	780	1,235	1,434	1,712	2,048
Total Assets	1,162	1,594	1,791	2,066	2,400

Source: Company, Axis Securities

Cash Flow

(RsCr)

Y/E March	FY20	FY21	FY22E	FY23E	FY24E
Net Profit before Tax	83	113	180	257	302
Depreciation	22	22	21	21	21
Working Capital Changes	-76	116	-126	-80	-57
Tax Paid	-18	-15	-45	-64	-76
Cash From Operating Activities	15	225	-1	102	158
Cash From Investing Act	62	-164	14	15	15
Cash Flow from Financing	-98	-6	-46	-2	-2
Change in Cash	-21	54	-33	115	171
Opening Cash	64	46	101	68	183
Closing Cash	46	101	68	183	354

Source: Company, Axis Securities

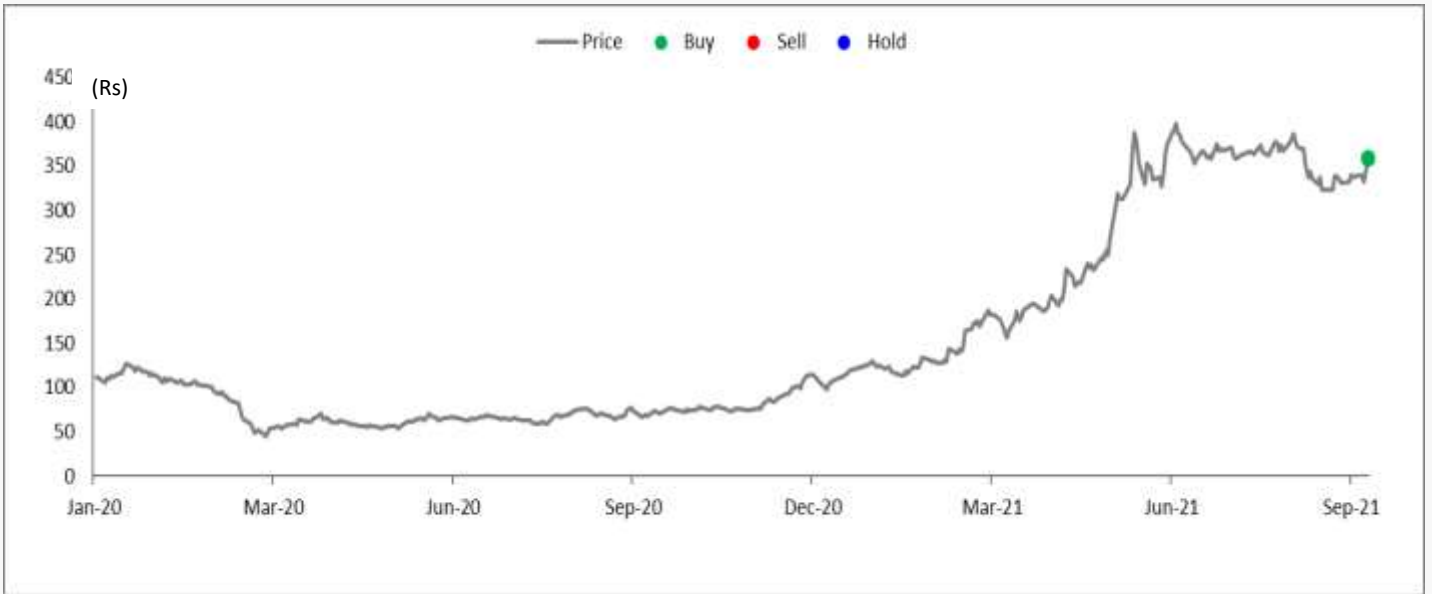
Ratio Analysis

(%)

Y/E March	FY20	FY21	FY22E	FY23E	FY24E
Operational Ratios					
Gross profit margin	50%	44%	39%	42%	42%
EBITDA margin	7%	9%	8%	10%	10%
PAT margin	6%	6%	7%	8%	7%
Growth Indicators					
Sales growth	-3%	18%	56%	25%	19%
EBITDA growth	-2%	44%	53%	44%	18%
PAT growth	3%	15%	67%	42%	18%
Efficiency Ratios					
Total Asset turnover (x)	0.9	0.9	1.2	1.3	1.4
Inventory turnover (x)	4.7	6.1	7.5	6.8	7.1
Sales/Working Capital	4.4	5.0	4.5	5.1	5.5
Liquidity Ratios					
Total Debt/Equity(x)	0.0	0.0	0.0	0.0	0.0
Total Asset/Equity(x)	1.8	2.0	1.9	1.9	1.8
Current Ratio(x)	1.9	1.6	1.6	1.8	1.9
Quick Ratio(x)	1.6	1.4	1.4	1.6	1.7
Interest Cover(x)	25.2	39.3	60.0	86.5	102.2
Per Share Data					
Earnings Per Share (Rs)	3.85	4.42	7.36	10.47	12.30
Valuation Ratios					
Adjusted PE (x)	14.3	44.0	45.2	31.8	27.1
Price / Book Value(x)	1.4	4.5	6.8	5.6	4.7
EV/Net Sales(x)	0.9	2.6	3.0	2.4	2.0
EV/EBITDA(x)	8.9	24.9	35.1	24.3	20.6
EV/EBIT(x)	11.1	29.6	32.8	23.2	19.8
Return Ratios					
ROA	5.8%	5.9%	8.0%	10.0%	10.1%
ROE	9.6%	10.7%	15.9%	19.4%	18.8%
ROCE	11.4%	14.7%	20.9%	25.5%	24.8%

Source: Company, Axis Securities

Praj Industries Chart and Recommendation History



Date	Reco	TP	Research
13-Sep-21	Buy	492	Initiating Coverage

Source: Axis Securities

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Analyst Bio: Prathamesh is a CFA with 4 years of experience in Equity Market/Research.

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SELL	Less than -10%
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