



**Rain Industries Limited**  
(Formerly Rain Commodities Limited)



## Table of Content

Sr. No.	Title	Page No.
	<b>Introduction</b>	3
<b>SECTION I: INVESTMENT RATIONALE</b>		
	Investment Rationale	9
<b>SECTION II : BUSINESS SEGMENTS</b>		
	<b>Carbon Products</b>	14
	<b>Calcined Petroleum Coke</b>	14
	<b>Coal Tar Pitch</b>	24
	<b>Other Carbon Products</b>	30
	<b>Advanced Carbon Materials</b>	30
	<b>Cement</b>	33
<b>SECTION III: SPECIFICATIONS OF CPC AND CTP</b>		
	Specifications of CPC and CTP	34
<b>SECTION IV: ALUMINIUM INDUSTRY: Major Demand Drivers</b>		
	Aluminium Industry	38
<b>SECTION V: MANAGEMENT QUALITY</b>		
	Management Quality	51
<b>SECTION VI: COMPETITIVE SCENARIO &amp; KEY RISKS</b>		
	Risks	57
<b>SECTION VII: PRICE CHARTS, FINANCIALS AND VALUATION MATRIX</b>		
	Past Price Charts & Valuation Matrix	59



**Rain Industries Limited**  
(Formerly Rain Commodities Limited)

**Initiated Coverage**

Date:	11 <sup>th</sup> August, 2016
Price:	Rs. 39
Market Cap(Cr):	Rs. 1290

**Key Data (as on 5<sup>th</sup> April 2021):**

Industry:	Metal
CMP	Rs. 181
Market Cap (Cr):	Rs. 6095
52-week high/low:	Rs.193/72
Investment Horizon:	2-3 years
Outlook:	Positive

**Shareholding Pattern**

Promoters:	41.14%
FII:	13.9%
Mutual Funds:	0.91%
Public:	44.05%

**Research Analyst**

**GunjanKabra**  
[info@gunjankabra.com](mailto:info@gunjankabra.com)

## Introduction and Summary of our Thesis

We initiated coverage of Rain Industries Ltd. on 11th Aug, 2016 at a market cap of Rs. 1290 crores.

An investor has an investment checklist ready every time before investing in a stock. The checklist becomes more precise if it is a cyclical industry. The one box that needs to be ticked before investing is does this business/company have a sustainable competitive advantage over its peers? The next is growth metrics followed by cash flows. Management Quality and Valuation metrics also needs to be ticked. Our thesis tells us that we can tick all the boxes here. At the same time, we also acknowledge the intricacies of this business and think that the different variables need to be tracked regularly.

A lot has been talked and speculated about this stock since we first released our note in 2016. We feel that the business is discussed very widely but still very less understood and highly speculated. In our opinion, understanding how the business makes cash flows is not as complex as perceived and that the company has a reasonable runway available to utilize the cash generated from Traditional Products to develop its Advance Carbon Materials business.

We believe, the earnings multiples to be given to this company should be bifurcated into 2 different multiples:

- i. Earnings of commoditized or converter business- to be given lower PE

- ii. Earnings of Specialty chemicals and advance materials- to be given higher PE as it's a more stable business.

Over the years, one of the key learnings in investing and analysing cyclicals is to understand the supply dynamics very properly. The macro environment has to be conducive is a pre-requisite but the key earnings would come from exploiting the demand-supply mismatch.

For instance, in 2017, there was a winter cut announced in China to curb pollution leading to less CPC and CTP exports from China to the rest of the world. This increased the market opportunity size for companies like Rain which was also exhibited in the results.

Similar rally was also seen in Graphite Electrodes.

In the past too, the management has been able to pull off a strong performance during challenging times. Now, when the company is coming out of a bad phase where capex got stuck and the business environment looks favourable, the company is expected to perform reasonably well in the coming quarters.

Over the years, understanding and analyzing the intricacies and nature of this business, it seems difficult for a new player to enter the CPC and CTP industry. Of course, the existing players can expand their capacities. Also, playing a critical role in the value chain of the most widely used metal, the company has a huge room to grow and increase profitability.

**Going forward in the short-medium term, what can play out for Rain Industries in a meaningful way:**

1. The company has applied to the government of India to import GPC/ACP for its vertical shaft calciner with proper justification of its non-pollutant nature. The management is expected to get a reply from the government sometime soon. **The probability of receiving a favorable outcome looks higher in this case.**
2. On 31<sup>st</sup> Dec, 2020, the company sold two of its subsidiary for Rs. 637 crores. The funds would be utilised for repayment of debt resulting in **Rs. 32 crores of interest savings** per annum. The management has also guided that no new capex in line for some time, the focus would be on to reduce debt. **They also guided on the reduction of overall interest rate from 5.5% to 4% in next one and half year.** Moreover, with healthy cash flows, it is expected that the management will reduce the debt in the coming quarters once the expansions are completed.
3. The aluminium LME prices are at high levels since the late 2018 implying higher capacity utilisation for aluminium smelters. **The management also guided that ~4 million tonnes of**

**new aluminium capacity is expected to come globally in 2021.** Out of this, 3 million tonnes would come in China in the form of new capacities or re-start of idled capacities. This will increase the market opportunity for Rain Industries Ltd. as there would be less exports of CPC from China and CTP to Middle East and South Africa.

4. The **rising CPC prices exhibited in the current quarter too would reflect in the performance of the company, going forward.** But, one needs to watch the GPC prices too. It wouldn't be difficult to pass on the increase in price because of the higher LME aluminium prices due to shortage of scrap and primary aluminium in the global market.
5. The company is **witnessing a strong demand in CTP and OCP segment.** With increase in steel production, the availability of coal tar would increase resulting in better operating efficiency. Koppers Inc, in its recent conference call guided about the expected increase in the availability of coal tar in the US in 2021 leading to reduction in imports of coal tar from Europe and other countries resulting in reduced costs. Also, there is an increased demand from graphite electrodes manufacturers. We can expect this segment to perform reasonably well in the coming quarters. Also, the rising trend of CTP prices is yet to be reflected in the result.

## 6. **Aluminium Capacity Expansion**

**Coal India's expansion in Aluminium Sector** - CIL will set up specific-purpose vehicles (SPVs) for about Rs 38,000-crore the green-field aluminium project, and an about Rs 23,400-crore aluminium smelting unit with state-run National Aluminium Company Ltd (NALCO).

**NALCO to invest Rs. 30,000 cr for expansion,** diversification in the next 6-7 years - State-run aluminium maker Nalco will invest around Rs 30,000 crore by the financial year 2027-28 on various expansion and diversification plans.

Rs 22,000 crore will be spent on the smelter and captive power plant (CPP) expansions, which also include expansion of the company's smelter plant at Angul district in Odisha with the construction of a 1400 MW feeder CPP. The company is planning a capacity expansion of the smelter plant from the existing 0.46 mtpa to 1 mtpa.

**With the proposed expansion plans** of both coal India and Nalco, the probability of receiving a favorable outcome from the government to Rain for the commencement of new vertical shaft calciner plant becomes higher.

## 7. **Cost cutting initiatives and restructuring measures**

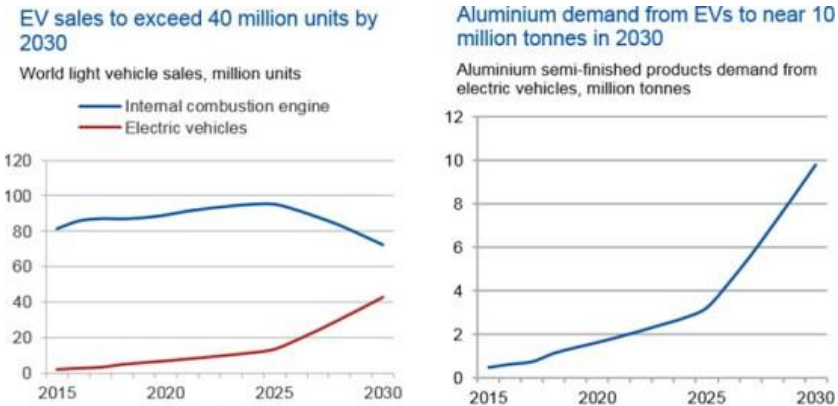
- **Interest Cost** - On 31<sup>st</sup> Dec, 2020, the company sold two of its subsidiary for Rs. 637 crores. The funds would be utilised for repayment of debt resulting in **Rs. 32 crores of interest savings** per annum. The management has also guided that no new capex in line for some time, the focus would be on to reduce debt. **They also guided on the reduction of overall interest rate from 5.5% to 4% in next one and half year.**
- **Closure of Netherland facility** - The Company has closed operations of plant situated at Uithoorn, Netherlands. The division mainly catered to printing ink adhesives, which witnessed slower demand and exhibited eroding profitability. The payback period would be around 3.5-4 years as guided by management.

If one understands the business of Rain Industries then, it can be inferred that it is a mere converter of different slurry materials and manufactures products used in aluminium industry. This is explained in detail in subsequent part of the report. Going forward, the trends that are visible around the world are pointing to a lesser availability of both the raw materials and hence companies which have global scale to source materials and blend them to achieve desired quality or have R&D set up to use alternate raw materials will have an edge.

The sale of its product depends on the overall aluminium production. It is not related to LME Aluminium Price. Therefore, higher aluminium demand leading to more aluminium production and this creates more demand for Rain's Products. So periods where aluminum prices go up due to surge in demand are far better periods for rain rather than when aluminium prices go up due to supply constraints.

**Aluminium is gaining market share to other metals in a lot of industries including Construction, Automobiles, Packaging and Aerospace, we believe aluminium volumes are more important than the prices. Though, in some sense both work in correlation and are important factors.**

## Expected demand growth from EV



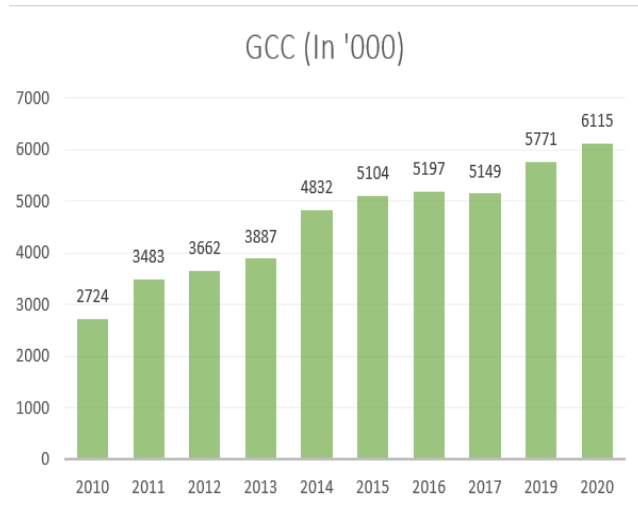
At the time of investing in Rain Industries Ltd., our thesis was that the aluminium cycle seemed to be turning around promising to be in a good shape in the coming years. Instead of investing directly in any aluminium company, where the supply side disruptions were very few and far between, we decided to play on a company which manufactures essential and niche material (CPC & CTP) used in the production process and whose industry had gone through supply side rationalization. It was further supported by huge entry barriers and no substitutes for the products. Rise in demand and commodity prices, supply deficit in carbon products has aided Rain Industries Ltd. to perform well.

Slowly, our analysis on the same gave us an idea that the Chinese cutting down production in aluminium and calcining is actually causing a structural change globally. The fundamentals of the industry is slowly changing and leading to benefit the global industry ex. of China. This actually acted as a long term game changer for the global aluminium industry leading to more production outside China.

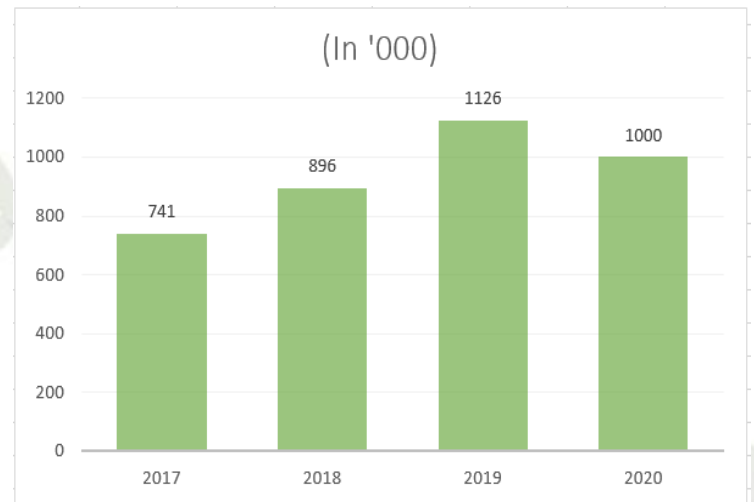
Similarly now, the low interest rates, liquidity in markets, government stimulus and supply disruptions have resulted a good rally in metal markets. Aluminium is also one of the beneficiaries.

The following graph depicts the increase in aluminium production in the Middle East in the last few years.

### Aluminium Production in Middle East



### U.S. Primary Production Growth (in 000')



The aluminium production as per management would be higher in upcoming years in US due to tariff and China +1 strategy. This will translate into additional demand of CPC in United States. The company has most of its plant located in U.S. and has a well-established client base. Thus, there is a huge room to grow if the company is able to win business there.

There is lot of changes that happened in the Aluminium and the Carbon Industry since the time of initiating coverage. The report also highlights how the industry of CPC and CTP has changed over the last few years and the future prospects of this industry.

Before understanding any other dynamics one must understand the unique situation of raw materials of this industry.



# SECTION I: INVESTMENT RATIONALE

## 1. Investment Rationale

### i. Long-standing relationship with suppliers

Rain enjoys long-standing relationship with many of its suppliers. It is very important to have an ensured availability of raw material in both CPC and the CTP market when there is not easy availability of GPC for the calciners. It becomes difficult for the new calciners to secure raw material supply as compared to the bigger players who already have a tie up with the refineries. In fact, the acquisition done by Rain of a much larger company than itself in 2007 gave Rain several long term supply contracts with an average maturity of over ~20 years. In world, where the supply of quality raw material is shrinking, this acts as a very important competitive advantage.

More than 90% of Ruetgers coal tar supply is based on long term contracts with relationships exceeding more than 10 years. Ruetgers recently expanded its Coal Tar Supply base by establishing the Russian JV.

### ii. Long-standing relationship with customers

Rain has established a customer base which includes top notch aluminium companies like Alcoa, Rio Tinto Alcan, Norsk Hydro ASA, Century Aluminum and Aluminerie AlouetteInc, Vedanta Aluminum Limited, etc. Rain has maintained relationship with many of their customers for over 15 years on average. Most of these smelters are the strongest in the industry hence they don't get affected by the minor hiccups in the industry

### iii. Technical Specifications needed

CPC and CTP are technical products where proper R&D is required. For instance, different grades of GPC are blended to form CPC. CTP contains polycyclic aromatic hydrocarbons (PAHs) that require safety precautions during its use. The content of PAHs has to be moderated according to the use of the product. With the technical know-how only, the company has been successful in diversifying its products.

**iv. Geographical advantage in terms of:**

▪ **Suppliers**

All its CPC plants are located in the United States where it has access to one of the most reasonably priced cokes and most of its plants in U.S. are located near the refineries and also near ports for easy transport of finished goods throughout the world which results in lot of savings in freight cost.

**v. Naturally Hedged in terms of currency exposure**

All the CPC sales are made in US dollars around the globe. The company derives 40-50% of revenues in Euros from plants located in Europe. If dollar strengthens, the euro becomes weaker meaning European markets becoming competitive resulting in higher operating profits.

Only about 10% of revenues from plants in Europe are generated in US Dollars, for which costs are incurred in Euros. A 10% decline in Euro-Dollar Exchange Rate would result in less than 2% decline in operating profitability in US dollar terms.

It has allocated its debt also in a way to bring down the tax cost at the same time remain hedged by having it proportionately in areas where it generates that cash.

**vi. There is no company globally who makes both CPC and CTP.**

This is an added advantage to Rain as it helps in increasing customer base and also maintaining it. Carbon Cost is approximately only 15% of the total aluminium manufacturing cost. Since, both are used in making anodes, sourcing them from one company only rather than 2-3 companies reduce hassles for smelters.

**vii. Gets priority to supply to smelters due to capability to fulfill volumes at lower cost.**

Cost Differentiation and keeping the quality intact is a very big advantage to have in this industry. Among the competitors, Rain is one of the best placed calciners globally by being the lowest cost producer due to the best raw material management and capex done in the past years to process low quality raw materials too. Further, strategic locations of plants leads to savings in logistics cost. This also helps in reducing cost. Hence, technology and strategic location of plants allow Rain to produce at lower cost than the competitors.

**viii. Superior Business than Aluminium Smelting**

Apart from a capital intensive industry with large supply disruptions, profitability of smelters vary a lot depending on the region of production and its comparative advantage along with the LME Prices. On the other hand, CPC and CTP are niche materials where supply disruptions are very few and are sustainable in the long run even if the aluminium cycle is in downturn.

**ix. There has been no major capacity expansion in CTP since last many years.**

The CTP Market is highly concentrated with a duopoly market structure. Shutting down of plants by the competitor has led to further consolidation in the industry and allowed Rain Industries to grab market share when the aluminium production is on an increasing trend.

**x. Excellent capital allocation skills**

Efficient capital allocation is paramount for successful running of any company. The company took various measures like investing in Flue Gas Deslphurisation Plant and patented ICE Technology that helped it to increase profitability.

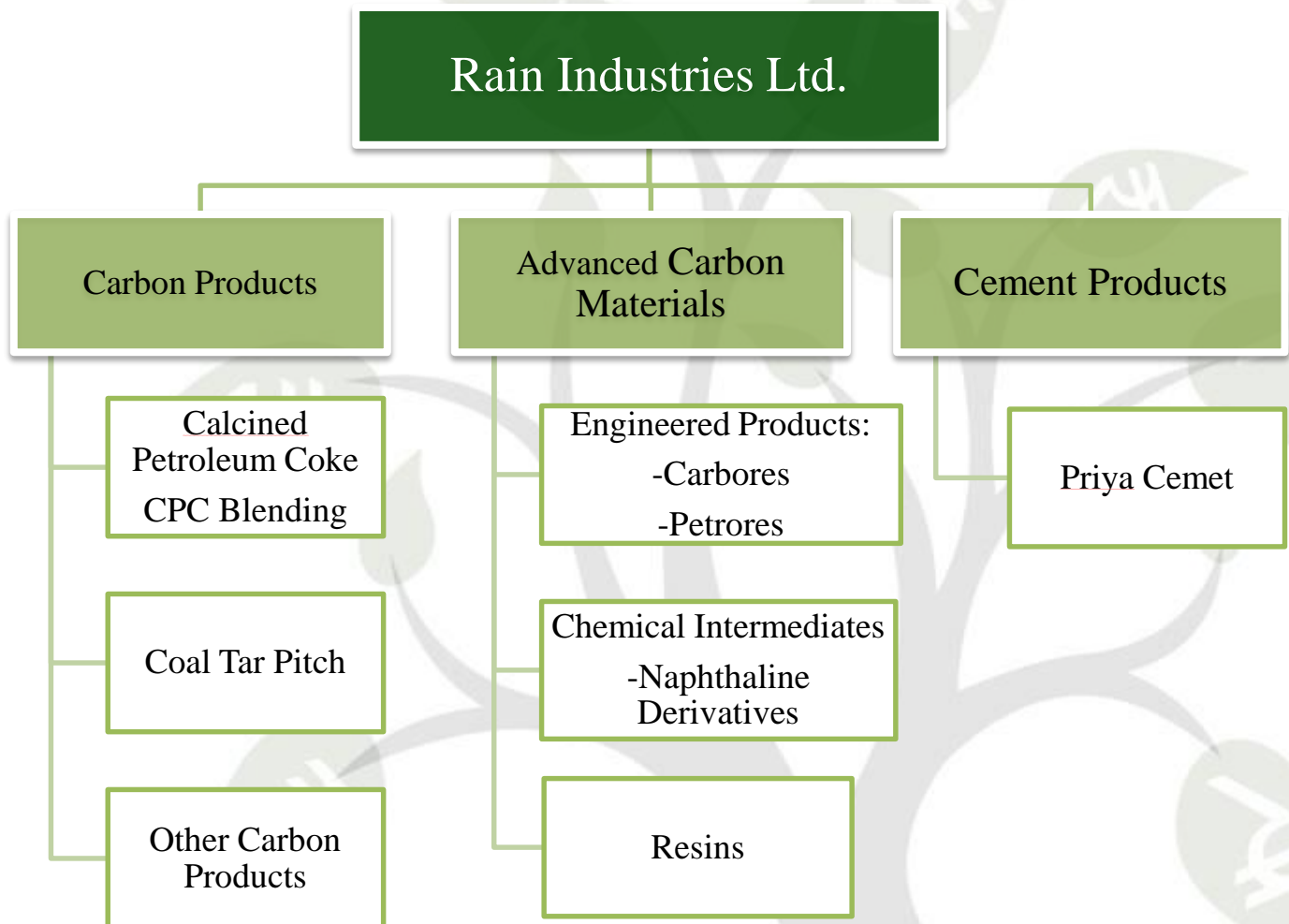
The price at which the acquisition of Rain Carbon and Rutgers was done also shows prudent capital allocation skills by the management.

**xi. The company remained profitable when other competitors were making cash losses.**

The company's competitive advantage was evident during the bad cycle as it remained profitable. This provides a cushion and at the same time shows good decision making ability of the management.

**All the above points are discussed in great detail in subsequent part of the report.**

## SECTION II: BUSINESS SEGMENTS



# Carbon Products (End Use Industry)

## CPC

- Aluminium
- TIO2
- Needle Coke
- Other Speciality Market

## CTP

- Aluminium
- Graphite Electrodes

## Other Carbon products

- Wood Treatment
- Carbon Black

# Advanced Carbon Materials

## Engineered Products

- Steel
- Refractories
- Speciality Coatings

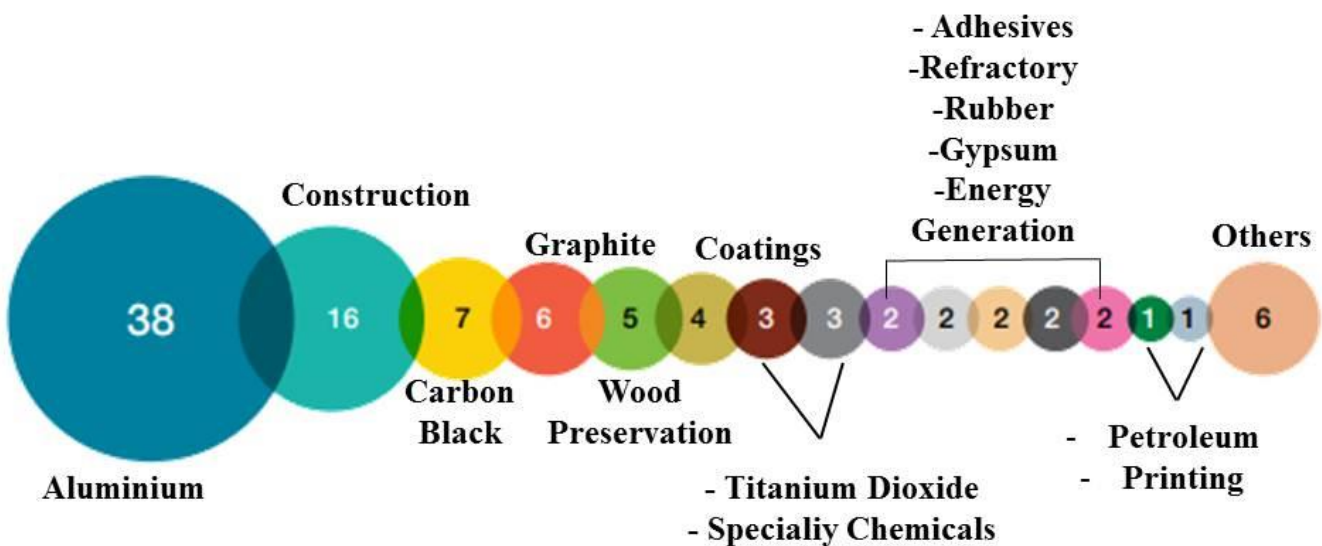
## Chemical Intermediaries

- Polymers & Solvents
- Coatings
- Pigments
- Construction
- Plastics
- Chemicals

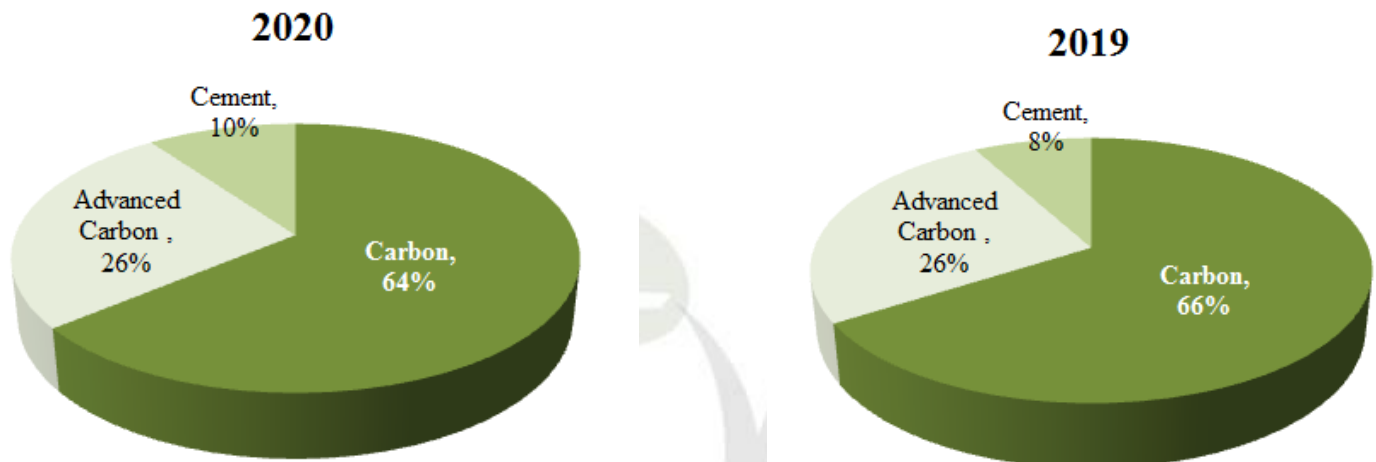
## Resins

- Adhesives
- Coatings
- Rubber

**Revenue by End-Industry (%) - 2020**



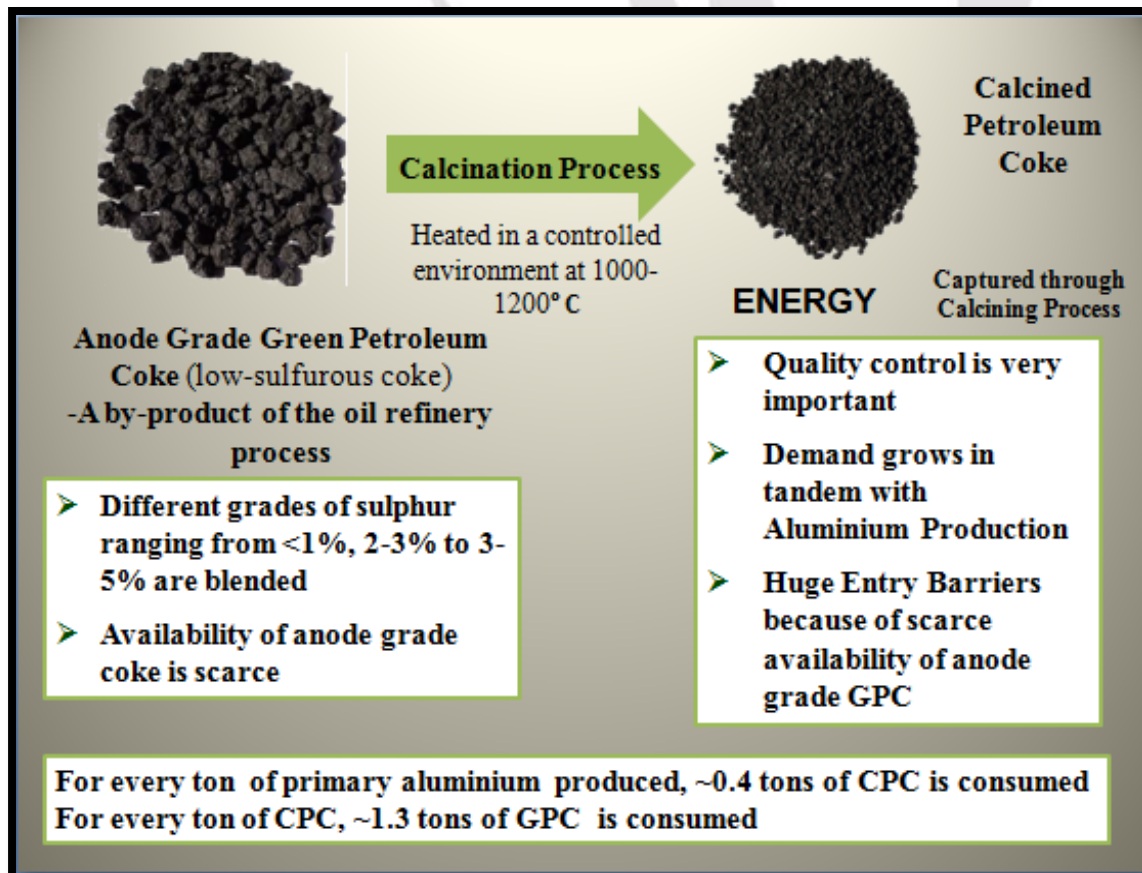
# Revenue by Business Segment



## 1. CARBON PRODUCTS

### 1.1 Calcined Petroleum Coke

#### i. Manufacturing Process



CPC is manufactured from anode grade Green Petroleum Coke (GPC).

Petroleum Coke is a by-product of the oil refinery process. Its properties vary with the crude oil source and the refining process used.

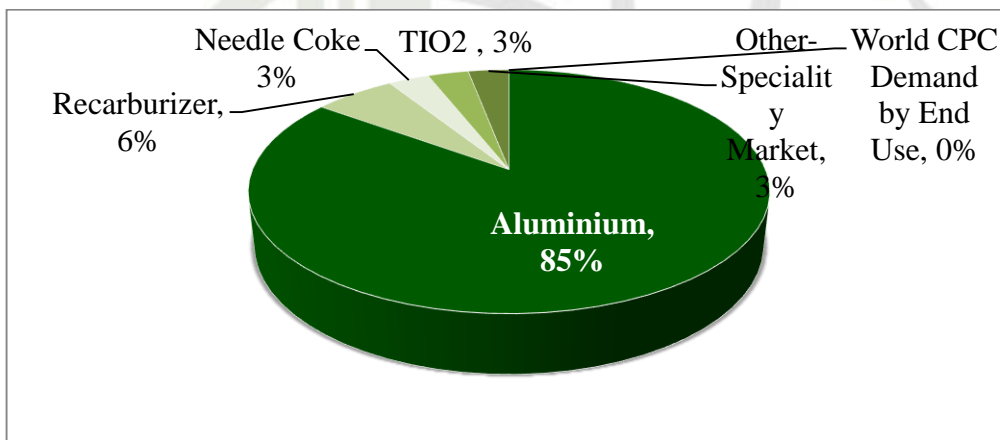
The main indicators of quality of petroleum coke obtained during crude oil refining are the content of sulphur, ash and moisture.

By sulphur content, petcoke is divided into

- Anode grade coke (low-sulfurous coke) used in making CPC and
- Fuel grade coke (high sulfurous coke) used in various industries as a fuel.

Fuel grade petcoke represents nearly 80 percent of worldwide production and is a source of fuel for cement kilns and electric power plants.

### ii. World CPC Demand by End-use

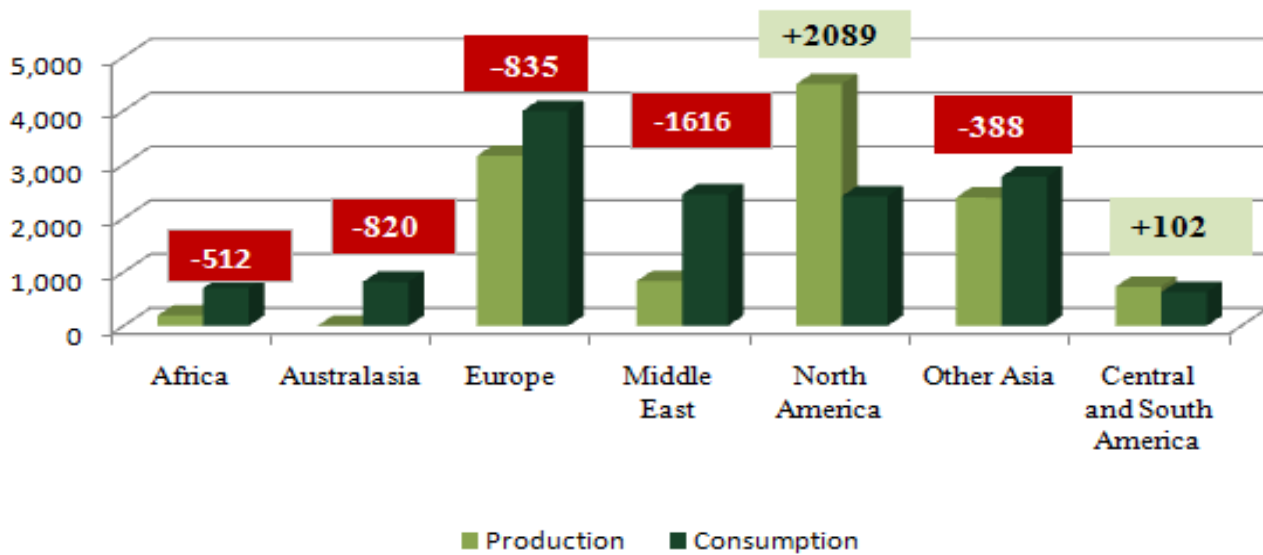


Source: Company

### iii. Industry Size

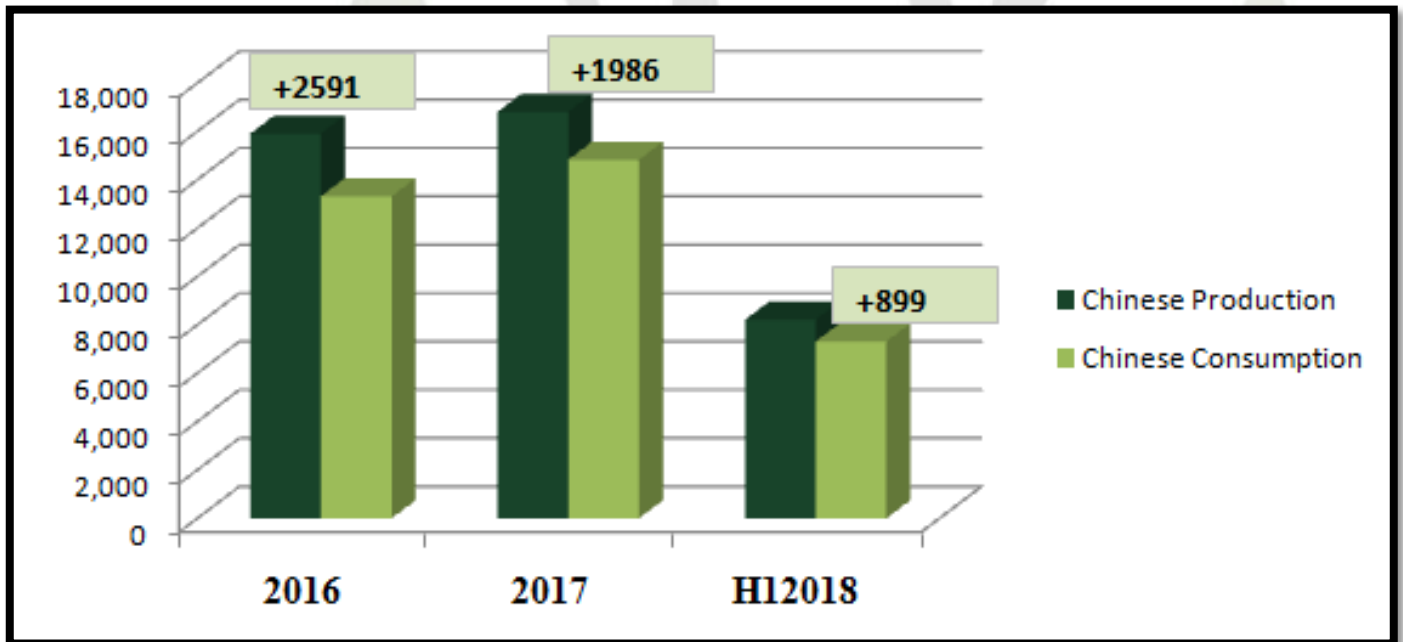
The total global CPC production is 28.64 million tonnes. Around 58.75% production is in China. The second largest producer is North America with share of 15.7%.

The following graph highlights the Production and Consumption of CPC (in 000' tonnes different countries in 2017):



Source: CRU

Production and Consumption of CPC (in 000' tonnes) in China:



Source: CRU



## iv. Industry Structure

### ▪ Global CPC Facilities

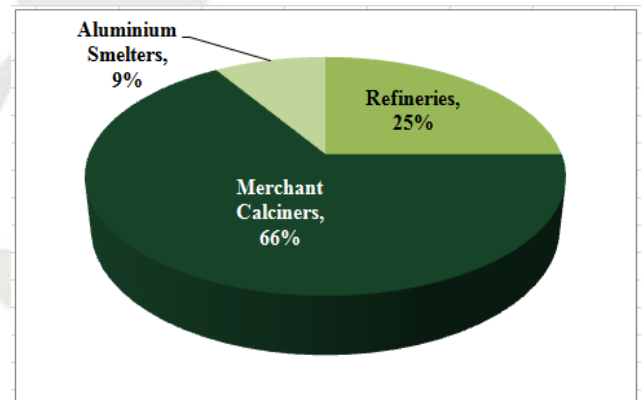
#### - Merchant Producers

This type constitutes of majority of the CPC plants. In this type, manufacturer sources GPC from refineries and make CPC. In order to have good and consistent quality of CPC, smelters prefer merchant calciners.

For example: Rain Industries Ltd. and Oxbow Carbon

#### - Refineries

CPC is also produced by crude oil refineries who are forward integrated. They already produce anode grade GPC and has set plant to produce CPC. For example: Conoco Phillips



#### - Smelters Integrated

Aluminium smelters have their own CPC plants used for captive consumption and the surplus is sold in the market. It constitutes a very less portion of the total calcining facilities globally. For example: Alba has its own CPC plant.

### ▪ Why Smelters prefer Merchant Calciners?

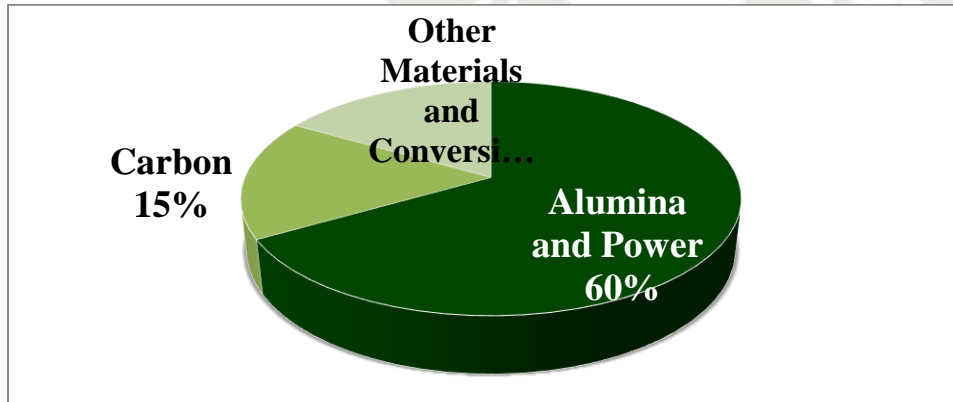
GPC contributes less than 3% to the refiner's overall revenue and needs to be further extracted through further processing of residual fuel. Similarly, CPC contributes ~12-14% of the total cost of production of aluminium. The appropriate quality of CPC is very important as inferior quality leads to higher energy consumption.

Captive production by smelters isn't a feasible idea for them as the availability and quality of raw material varies over time. Since, it requires technical expertise to produce efficiently and at lower cost, they prefer to procure from Merchant Refineries. The difference lies in their expertise as they are focused on producing only CPC and will always try to remain competitive by produce good quality at lower cost. This even helps smelters to reduce their carbon cost. The two largest calciners, Oxbow and Rain Industries Ltd. are also based on merchant calcining model.

▪ **Why is it difficult for Aluminium Smelter to have their own Carbon plants?**

It is good to have a well-integrated plant as it saves cost. But it is not viable all the time. The raw materials used in making aluminium are:

**Aluminium Cost Break-Up**



- Alumina contributes the highest to the raw material cost followed by Power.
- Approximately, 60% cost is Alumina and Power.
- Carbon Costs around 10-15% to the cost of raw material consumed.

It makes sense for the Aluminium Smelters to be vertically integrated by producing alumina as it contributes significantly to the cost. It can save cost significantly when there is rise in price.

The Carbon Segment just contributes around 10-15%. There are some aluminium smelters like Alba, Rusal that have their own carbon plants. The carbon industry itself is a huge industry governed by a lot of factors like raw material sourcing and availability, location of the plants, intricacies in transportation. Since, it is not a large part of their cost structure; many smelters don't own them.

In order to have good and consistent quality CPC, smelters prefer merchant calciners.

▪ **Why not Refineries?**

There are refineries who manufacture CPC but it is not a major part of their business because it is manufactured from the by-product of their main business. One risk for CPC manufacturers is the availability of anode grade GPC. In the recent years, crude oil refineries find it more profitable to manufacture sour crude oil (high sulphur) instead of

sweet crude that generates anode grade GPC. Not many refineries will set up new CPC plants. It is easier for them to dispose or sell to the calciners. Several factors make it unviable for refineries to have calcining business:

- Calciners source GPC from different refineries to meet the quality standards. It becomes difficult to have long lasting relationship with competitors.
- It just contributes 2-3% of total revenue. It is not worth the effort.

## v. **Rain Industries Ltd: CPC segment**

Rain's 7 CPC facilities are spread across the USA and India. 4 out of 7 plants have Waste Heat Recovery Plant and 3 plants have Flue Gas Desulphurisation. 2 plants are located near the refinery.

**Total capacity: 2.1 million tonnes.** Eighth production unit is under construction with a capacity of 3,70,000 tonnes per annum.

During normal cycle, the company makes a spread of around **\$80-100** after conversion.

### ▪ **Expansion of CPC plant**

The vertical shaft calciner plant (CPC capacity 3,70,000) is almost ready. The management is waiting for the government approval. This plant is different from rest of its CPC Plants. The new plant has a vertical shaft technology whereas the other plants have rotary kiln. The difference lies in usage of GPC and CPC output. The vertical shaft technology consumes lower GPC as compared to the rotary kiln because of lower heat up rate. It allows usage of some marginal grade qualities which cannot be processed in rotary kiln. This gives a lot of flexibility. The rotary kiln takes 1 hour to convert GPC into CPC whereas the vertical shaft takes 24-36 hours.

This isn't a new technology. China uses vertical shaft technology to produce CPC. The cost of setting up is slightly lower or same. One cannot rely on it as a primary technology to produce CPC to meet the increasing demand. A company can have 15-20% of total production with this method which enables them to reduce cost and increase profitability.

## ▪ **Anhydrous Carbon Pellets- An Engineered CPC Raw Material**

### **What is ACP?**

In simple words, ACP is a custom engineered product used for direct calcination. It is different from GPC in many aspects which is explained in detail in subsequent paragraphs.

### **How did ACP come into existence?**

In 2011, Rain started to experiment with agglomeration of GPC fines intending to improve calcining economics. Agglomeration is a well-established process used by many different industries. One of the most well-known applications is pelletizing of iron ore fines.

### **How this idea popped up at Rain Industries Ltd. ?**

When a rotary kiln is used for calcining, around 10% of the finest particle size GPC is carried along the flue gas stream. It is combusted and the heat generated is used to produce steam. Most plants with heat waste recovery, generate electrical power and this normally sold. The energy component that we see in the carbon division revenue segment is derived from this process.

GPC fine loss is much lower in a shaft calciner.

In 2011, low sulphur GPC prices increased dramatically with US Gulf prices hitting US\$400/ton in Q3 2011. When GPC price increases, it is better to reduce GPC fines carryover. The price of power is essentially fixed, it would be more favorable for calciners to convert as much GPC to calcined petroleum coke as possible for better viability. The idea to agglomerate GPC fines was conceived during this period.

Another benefit is an environmental one. This is a current pressing issue. Agglomeration eliminates SO<sub>2</sub> emissions. For calciners that scrub SO<sub>2</sub>, this will reduce scrubber operating costs. Rain has 3 scrubber technologies installed in the US and India.

### **Benefits of ACP Technology**

- To reduce fines carryover and improving the yield of the process
- The ability to blend GPC on a micro-scale to produce uniform CPC products.
- The production of high bulk density, spherical product can give significant potential benefits for anode production and performance.
- Addresses environmental concerns too

## **Benefit to Rain Industries Ltd.**

There can be an additional cost added in the process of calcination but that is offset by reduced fines carryover and higher CPC production per GPC tonne. 1.38 tonne of GPC is used to make 1 tonne of CPC as compared to 1.27 of ACP to make 1 tonne of CPC.

At higher GPC prices, there is economic benefit of ACP. With a more engineered product like ACP and the current process of making CPC when blended together will help in increasing margins for the company, going forward.

In the current scenario, when availability of GPC is declining leading to rise in GPC prices, a mix of ACP and the traditional method of making CPC will not only help Rain in improving margins but also enable the company to perform better than peers in the industry.

**Expansion Plan:** 1 ACP plant in US and one in India

**Status of the plant:** Vertical shaft calciner plant is ready to commence production. The company is waiting for government approval to import raw material and ACP.

### ▪ **Technology Advantage**

- The **Flue Gas Desulphurisation (FGD) plant** removes Sulphur Dioxide from the flue gas before it is released into the atmosphere and hence reduces the impact on the environment. This is also known as SO<sub>2</sub> Scrubbing Technology.

This has dual advantages:

- It allows usage of high sulphur coke which is cheaper compared to low sulphur coke
  - It is not very polluting, hence the adverse impact on the environment is reduced.
- Rain also has **patented ICE Technology** which allows usage of inferior grades of GPC to produce CPC without compromising the quality of the product materially. It allows the company to use non-traditional coke in which upto 10% usage is shot coke.

## **Market Share**

**Rain has a market share of near 36% share in United States(CPC). Rain has a market share of 8% globally and 16% ex-of China.**

## vi. CPC Industry: Current Scenario

### Price Trend and Spread Table

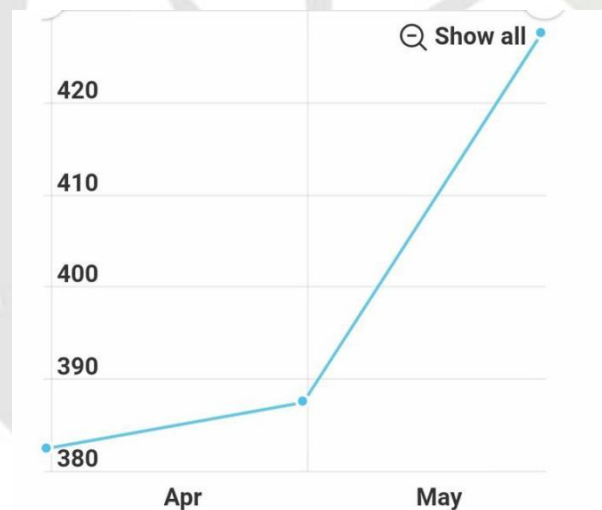
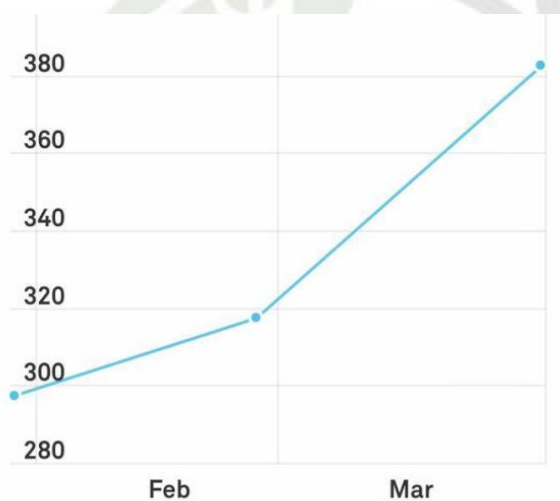
Calcined \$/t (Sept 2020)	\$/t
fob US Gulf	230
fob China	268

Calcined \$/t (Nov 2020)	Sulphur	Low	High	Mid
fob US Gulf	3%	250	270	260
fob China	3%	310	360	335
cif Europe	1.50%	255	280	267.5
cif Mideast Gulf	3%	285	350	317.5

Energy Report

Source: Argus

### Calcined Petroleum Coke Price Trend 2021



Source: S&P Platts

The price trend of CPC of the past cycles has been shown in the end part of the report for reference. The current trend shows that the prices have reached the high made in 2017.

- **Approximate CPC Spreads**

	Mar-17	Jun-17	Sep-17	Dec-17	CY 2017	Remarks
<b>Approximate CPC Spreads</b>	47.91	54.12	86.35	111.33	74.80	Winter Cut in China led to higher spreads
	Mar-18	Jun-18	Sep-18	Dec-18	CY 2018	
	101.05	92.08	67.64	28.93	71.49	The benefit of low cost inventory started waning towards the end of the year. Rusal Sanctions, petcoke ban in India were some of the other factors too that impacted the business environment
	Mar-19	Jun-19	Sep-19	Dec-19	CY 2019	
	40.96	38.21	53.77	52.72	46.82	
	Mar-20	Apr-20	Sep-20	Dec-20		
	53.79	44.96	46.44	51.66		
	Mar-21					
	75.50					

**Growth Drivers, going forward:**

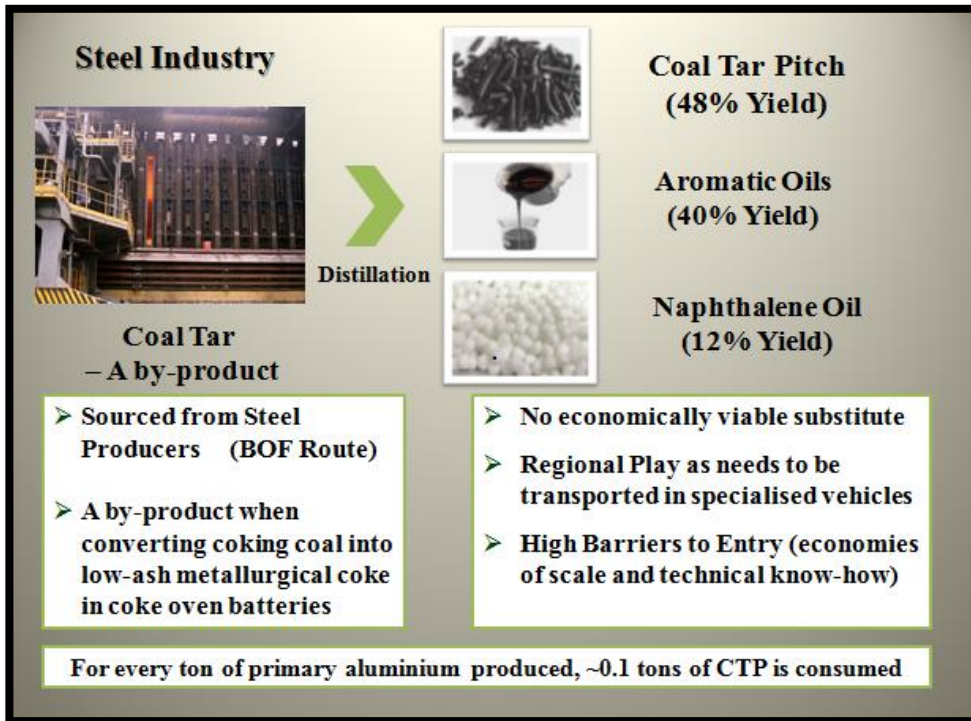
**1. Rising CPC Price Trend**

Due to low refinery utilizations because of reduced demand of fuel has caused reduced availability of anode grade GPC. This has increased GPC prices too. The company would be able to pass on the higher CPC prices to aluminum smelters as confirmed by Hindalco in the recent conference call too. Approximate CPC Spreads have been increasing for CPC since the last 3 quarters. Spreads have reached from \$46-\$70. The complete rise in CPC prices is yet to be captured in the results. Going forward, we expect spreads to normalize in the range of \$60-65. Reason being, they must have had low-cost inventory in the system that would have been exhausted by now.

2. Another trigger is the **government approval** to import ACP/GPC for its new plant in SEZ, Vizag.

## 1.2 Coal Tar Pitch

### i. Manufacturing process



Coal tar is the primary raw material for manufacturing Coal Tar Pitch and is produced during the processing of coking coal in a coke oven plant.

Coal Tar is primarily sourced from steel producers manufacturing through BOF route where they convert coking coal into low-ash metallurgical coke in coke oven batteries.

Coal Tar Pitch is also derived from petro tar. The company makes pitch through both the raw materials.

The coal tar is distilled to produce various grades of pitch and a variety of intermediate chemical products. Coal tar pitch has applications in the aluminium and graphite electrode industries. The aluminium industry is the largest coal tar pitch consumer.

#### Primary Distillation of Coal Tar yields three products:

Sr No.	Products	Yield	End Use
1.	Coal Tar Pitch	48%	Aluminium Smelters, Graphite Electrodes
2.	Aromatic Oil	40%	Used as feedstock in Carbon Black
3.	Naphthalene Oil	12%	used internally Downstream Chemical



These by-products are supplied to the downstream chemical business which is a part of another business division.

Coal Tar Pitch (CTP) needs to be transported in liquid form in specialized vehicles. Therefore, it limits the transportation to long distances.

### Other Products in Tar Distillation

- **Naphthalene**

It is mainly used as a precursor to other chemicals. It is used in construction industry and as super plasticizers to produce concrete and gypsum. The demand for Naphthalene is correlated to the building materials industry.

Naphthalene is also used in the production of phthalic anhydride as a substitute for orthoxylene (prices linked to fuel oil).

- **Aromatic Oils**

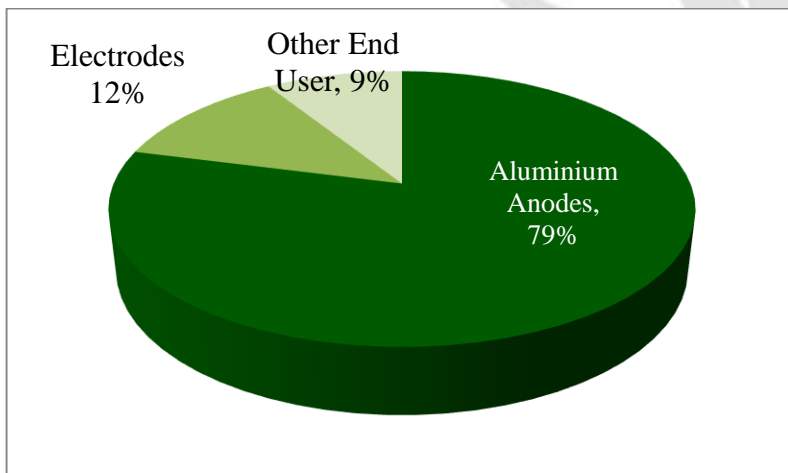
This includes Creosote Oil and Carbon Black Oil.

Creosote Oil is used by the wood-treatment industry for the impregnation of wood.

Carbon Black Oil is used to produce Carbon Black which is primarily used in rubber and automobile tyre industries.

The prices are benchmarked to crude oil prices.

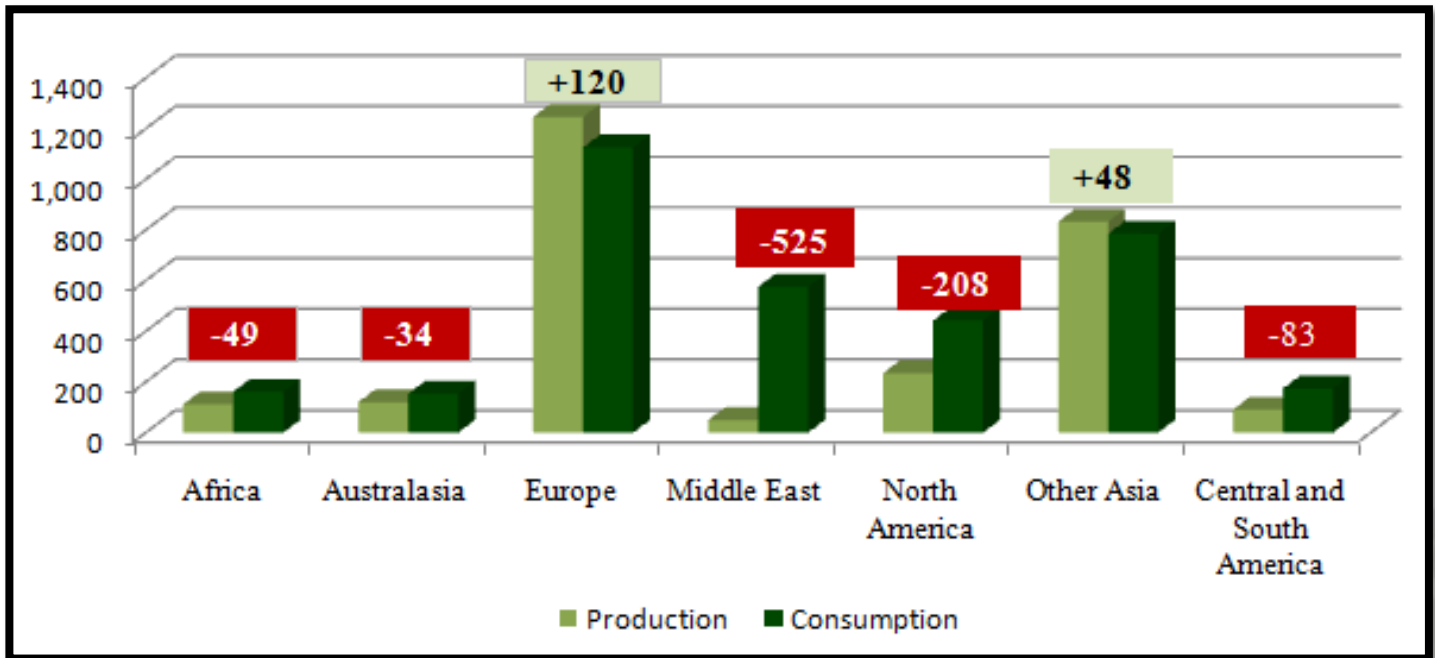
### ii. CTP Demand by Use



### iii. Industry Size

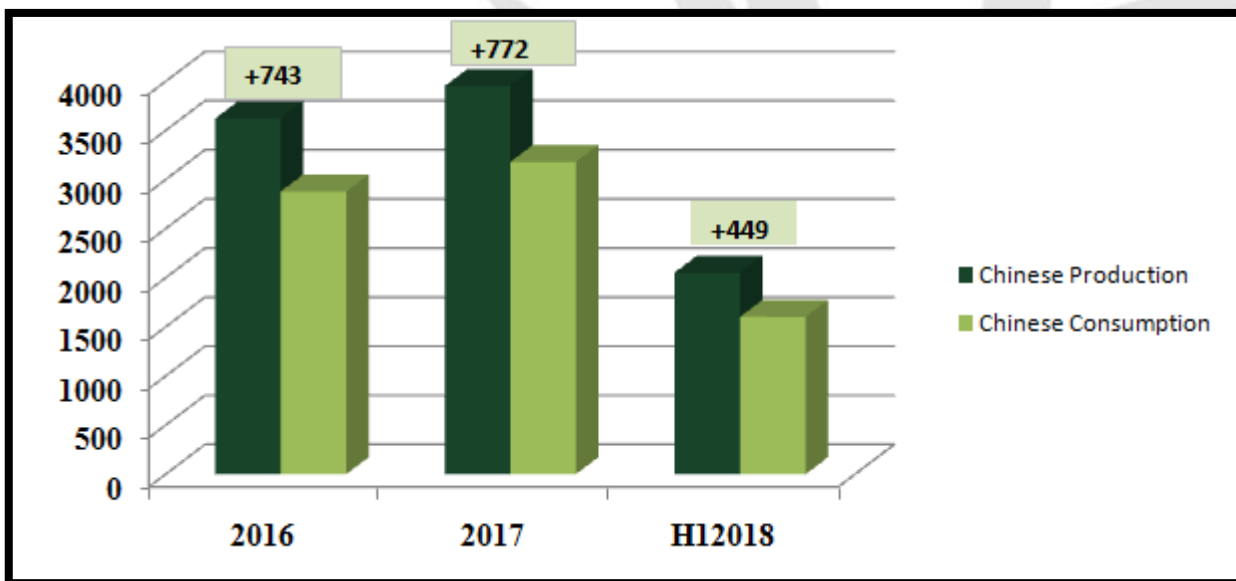
Global CTP production in 2017 was 6.636 million tonnes. Around 59.5% CTP is produced in China. Europe is the second largest producer with 18.7% share in the total global production.

The following graph highlights the **Production and Consumption of CTP (in 000' tonnes in different countries in 2017:**



Source: CRU

The following graph highlights the **Production and Consumption of CTP (in 000' tonnes) in China:**



#### iv. Major Players

There are only two major players globally, who manufactures CTP.

1. RÜTGER's (Rain's Subsidiary)
2. Koppers Chemical Company

Hence, the market is highly concentrated with a duopoly market structure. In order to mitigate the excess supply when the aluminium production was on declining levels (2013-15), Koppers shut down its 7 out of 11 plants. Due to Kopper's shut down, Rain's market further consolidated. Moreover, most of its plants are in Europe, so raw material prices are better managed as Rain is the single largest buyer. Currently, Ruetgers is operating at 93% capacity utilisation level. Shutting down of plants by the competitor has led Rain Industries Ltd. to grab market share when the aluminium production is on increasing trend.

There has been no major capacity expansion globally since last many years.

#### v. Rain Industries Ltd. : CTP Plant

Rain operates 4 coal tar distillation facilities. Three are operated through its wholly owned subsidiaries in Belgium, Canada and Germany, with a fourth in Russia operated through a joint venture with PAO Severstal with a cumulative capacity of 1.5 million tonnes of capacity.

#### Coal Tar Distillation Capacity

Location	Capacity (tpa in 000')	Remarks
Germany	500	
Belgium	300	Arcelor Mittal's has 5 mtpa flat steel plant in the region
Canada	260	Largest Steel manufacturing city in Canada (60% of the total).
Russia	300	Joint Venture with Severstal(Steel Plant)
<b>Total</b>	<b>1.36 million tonnes</b>	

The sale of its product (CPC and CTP) depends on the overall aluminium production. It is not related to LME aluminium price. Therefore, higher aluminium demand leading to more aluminium production and this creates more demand for Rain's products.

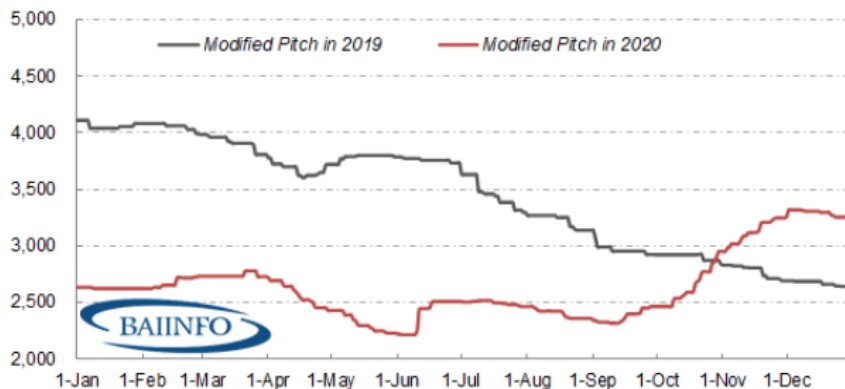
Prices of CPC and CTP are not indexed to aluminium prices and they are influenced by their own supply and demand dynamics. If there is demand, irrespective of the commodity prices, margins would definitely expand.

We are somewhere in the middle of the cycle where the demand of aluminium is still on an upward arc. It is discussed in detail in the subsequent part of the report.

### **i. CTP Industry: Current Scenario**

From early Oct. to early Dec. 2020, coal tar pitch market ramped up sharply due to supply crunch in China as shown in the chart below. At that time, most of the coal tar distillers halted for 10-15 days. Market players were active on picking prices up along with shrinking supply. Besides, coal tar prices went up constantly, giving cost support on coal tar pitch prices. As for demand, aluminium prices climbed up persistently, leading to high profits for the whole industry. Coupled with better situation in coal-based needle coke and graphite electrode industries, coal tar pitch prices got support from demand side.

#### **China Modified Pitch Price Trend Comparison in 2019 & 2020 (in RMB)**

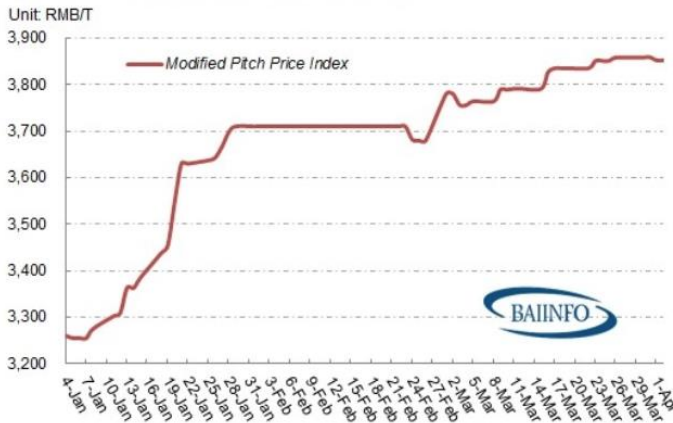


During Q1 CY2021, coal tar pitch prices climbed up. Bullish factors can be described as following:

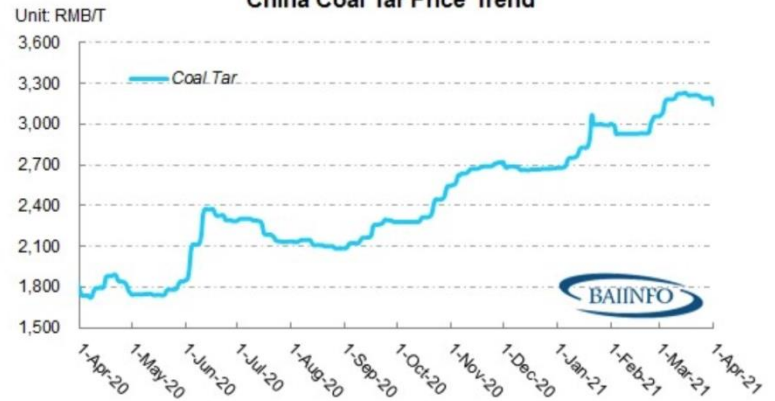
- First, feedstock coal tar prices constantly picked up
- Second, the markets for downstream coal tar distillation products were not doing well. This is also one of the reasons why coal tar pitch prices are up to make the distillers viable.

In Q2 CY2021, coal tar pitch market kept going up in China, recording historical new highs.

**China Modified Pitch Price Index in 2021**



**China Coal Tar Price Trend**



### Contributors:

- Feedstock coal tar prices were robust
- Supply-demand pattern kept generating support to CTP prices

Downstream buying interest was boosted in fear of constantly increasing costs. As for end users, aluminum market moved range bound at high price level during the quarter. Currently, given a profitable situation for aluminum producers, production was active, bullish for coal tar pitch consumption. Overall, the market firmed up amid supportive supply-demand pattern.

### Expectation:

- Coal Tar prices are anticipated to stand at high level or may edge down
- CTP market may be largely stable with slight corrections later (as per Baiinfo)

### Rain Industries Ltd: CTP performance expectation

The rise in CTP prices were reflected during Q1 CY2021. Essentially, it was this segment in the last quarter that pulled up the performance of carbon sector. During the last quarter, CTP realisations increased by 11%. Going forward, this is expected to continue as mentioned above. With better raw material mix availability to Rain and high aluminium prices making it easy for distillers to pass on the high price to smelters.

The distillation part of the business is like a stable business with less supply side disruptions and competition and should ideally deserve a higher PE multiple. We believe, it's quite undervalued by the market. The exit of Kopper from the European markets has made a very favorable impact on the company's margins and provided stability to the business. Now, being, the only player, it has easy availability of raw material and its R&D facility in Europe being

130 years old keeps churning new chemistry in advanced materials which can be produced from slurry materials. This is visible in spreads achieved over time. The spreads of CTP have become much more stable post Koppers exit. So the approximate CTP spread which hovered around \$45-\$50 in 2015 stabilized in the range of \$80-\$120 post Koppers partial exit from European markets and in the favourable cycle in 2017, it even crossed \$200 and is currently, around \$120 since last many quarters, depicting resilience and better market positioning than the CPC business.

Also, reducing its dependence solely on coal tar, Rain developed processes to use petro-tar as feedstock along with coal tar for better operating efficiency.

### 1.3 Other Carbon Products

It includes Carbon Black Oil, Creosote, Naphthalene Oil, other Basic Aromatic Oils. The prices are benchmarked to crude oil prices.

Here, will be mentioning about Carbon Black and Naphthalene Market

## 2. Advanced Carbon Materials division

Engineered Products	Petro Chemical Intermediaries	Naphthalene Derivatives	Resins
<ul style="list-style-type: none"> <li>• Carbores</li> <li>• Petrores</li> <li>• Pitch (Petro)</li> <li>• Pitch Oil Mixtures (Petro)</li> </ul>	<ul style="list-style-type: none"> <li>• Benzene</li> <li>• Toluene</li> <li>• Xylene</li> <li>• Fuel</li> <li>• Solvents</li> <li>• By-Products</li> <li>• Other Oils</li> </ul>	<ul style="list-style-type: none"> <li>• Phthalic Anhydride</li> <li>• PCE Liquid</li> <li>• PMS Liquid</li> <li>• PNS Liquid</li> <li>• PNS Powder</li> <li>• Modifiers</li> </ul>	<ul style="list-style-type: none"> <li>• Acetophenon</li> <li>• Anthracene</li> <li>• C-9 Resins</li> <li>• Phenolics</li> <li>• Carbon resins</li> <li>• Petro resins</li> </ul>

### i. Engineered Products

- The company realigned its products and revised its reporting segment from Chemicals to Advanced Carbon Materials. There is some reclassification from Carbon Segment to this segment such as Carbores and Petrores (Engineered Products) used as binder in Graphite Electrodes and Lithium Ion Batteries.
- The company is trying to make the most on the opportunities in the growing Lithium Ion Battery Industry by providing coating materials used in anode in Lithium Ion Battery. The

company is trying to cater the Asian Market. This is a solid margin product for emerging markets.

## ii. Petro Chemical Intermediaries

- The company produces benzene, toluene and xylene from the secondary distillation of crude benzene, a liquid by-product derived in conversion of coal into metallurgical coke used for pig iron and steel production. A substantial part of crude benzene is procured from third parties.
- Applications: Benzene, toluene and crude xylene are critical inputs for several chemicals-based substances. Applications of toluene and crude xylene include use as solvents for inks and paints.

## i. Naphthalene Derivatives

- Naphthalene derivatives are primarily produced from internal production of naphthalene oil which is further processed into downstream products. Naphthalene oil is used as a raw material for producing phthalic anhydride and PNS/PCE liquids.
- **Applications: Phthalic anhydride** is used in construction, plastics and as specialty chemicals in other industries.  
**PNS/PCE liquids** are a class of polymer-based dispersant materials, principally used as in-process aids in the manufacturing of construction products such as concrete and gypsum, as well as a variety of other demanding industrial and agricultural applications.

## ii. Resins

- The company produces aromatic hydrocarbon resins that are based on either coal tar distillers or petrochemical raw materials
- Coal Tar based resins are used primarily for applications in coating, rubber tyres and other end use rubber products.
- Petrochemical Resins are used in adhesives and printing inks.
- The resins produced by Rain are the only coal tar based resins in Europe used in applications of Electric Vehicle.
- The company provides technical know-how and provide tailor made products that meet their requirements.

Engineered Products segment is expected to remain robust in the coming quarters. Any better operating efficiency coupled with the new expansion; this segment is expected to perform well in the coming quarters. There has been some restructuring done in this division like write off of loss-making plants and taking measures to making this segment more stable from commoditized nature. One of the steps is setting up of Hydrogenated Hydro Carbon Plant explained below.

**New Expansion:** Hydrogenated Hydro Carbon Resin

This is a high margin business dealing in finished product. This plant is expected to commence in Q4 CY2021 commercially.

**Hydrocarbon Resin plant in Germany:**

Hydrogenated hydrocarbon resins (HHCR) are ‘white-water’ resins used as adhesives in food packaging and personal-hygiene products, as they are contaminant-free. They also serve as a backbone for polymers in new high-strength adhesives. To serve a growing market for these resins, the company constructed an HHCR manufacturing facility in Castrop-Rauxel in Germany, which begun commercial operations during the second half of 2020 and expected to achieve stabilisation during 2021. Our talk with an analyst at Mubadala investments gave us an insight that Rain’s plant of HHCR is one of the latest technology and also they have incurred less capex compared to Eastman Chemicals or Exxon Mobil for the same plant.

**Delay in Commencement:** The plant was expected to commence in Q3 2019. The project got delayed on account of arrival of equipment and also on construction side and then due to covid. But it has started test production already in November 2020 and should start commercial production any time now.

**Pay Back Period:** With increase in capex, the payback period is expected to remain same at 4.5-5 years on account of premium quality and ready acceptance of the product as per management guidelines.

**Margins:** On comparing similar products sold by Eastman chemicals (USA) and data from other wholesale channels indicate the margins on these resins in range of 24-28%. Also, it provides stability to this segment as the raw material from other segments in the division (commodity nature) would be used in manufacturing HHCR.

**Quality:** It’s the cleanest white water resin of superior quality with lower cost of production.

**Capacity Utilisation:** The Company would start with utilization rate of 50% and slowly ramp up to 70% and then 90%.



## Forecast:

	CY 2022E	CY 2023E	CY 2024E	Remarks
<b>Capacity Utilisation (%)</b>	30%	50%	90%	The company has done pilot sales already and will start commercial production anytime soon. It is possible that company can attain 50% capacity utilisation from next year if the plant commences during this year. Conservatively, have estimated 30% capacity utilisation for next year.
<b>Volumes</b>	9000	15000	45000	
<b>Revenue/ton(in \$)</b>	2500	2500	2200	
<b>Revenue</b>	157.5	262.5	693	
<b>Cost</b>	118.13	189.00	498.96	
<b>EBIDTA</b>	39.38	73.50	194.04	
<b>EBITDA Margins</b>	25%	28%	28%	

## 3. Cement Division

RAIN operates a 4mt cement plant in Andhra Pradesh, southern India. It sells mainly to retail customers in Andhra Pradesh, Karnataka and Tamil Nadu under the brand name, Priya Cement. Rain utilises the cash flow generated from its Indian Cement Business to pay dividends.

	CY 2016	CY 2017	CY 2018	CY 2019	CY 2020
<b>Realisation/tonne</b>	4529.25	5037.55	4074.92	4173.42	4576.08
<b>Cost/tonne</b>	4124.01	4524.71	3754.60	3540.52	3607.32

The cement capacity being of 4.0 million tonne gives the business a valuation of ~2000 crores based on peer Market Cap/Tonne multiple.

## SECTION III: FAQs (SPECIFICATIONS OF CPC AND CTP)

### 1. Is the CPC and CTP Industry concentrated?

#### i. CPC Industry

##### ▪ China

It is the largest producer of CPC and CTP in the world. What is different about the CPC industry in China from the rest of the world is :

- China has a vertical shaft technology to produce CPC. The details about this technology are discussed above.
- The CPC producers manufactures on small scale. So, there are many producers with small scale production and cumulatively, it becomes the largest producer of the world. On one hand, being the largest producer, it has the ability to influence price on the other hand, it becomes a little difficult for small producers to export efficiently.

China majorly supplies the surplus CPC and CTP to India and Middle East.

There are huge entry barriers due to capital intensive nature and raw material constraints in the industry.

##### ▪ Outside China

The major CPC producer after China is North America and Europe.

#### ii. CTP Industry

There are only two major players globally, who manufactures CTP.

- Ruetgers (Rain's Wholly Owned Subsidiary)
- Koppers Inc

Hence, the market is highly concentrated with a duopoly market structure. CTP Market was oversupplied in the past few years due to declining aluminium production. Koppers shut down 7 out of 11 plants. This has led to improved capacity utilization.

## 2. Is it a Technical Product?

### i. CPC

Over years, supply dynamics of GPC has changed from abundant to scarce. Few years back, there was ample availability of GPC in the market. With change in oil refining dynamics, refineries opted to refine high sulphur oil yielding more benefits to them and leading to low availability of low sulphur anode grade coke. With the enactment of MARPOL 2020, availability of low sulphur crude oil will further deplete.

With scarcity in the market, it is important to utilize it prudently and efficiently. Active R&D Program, close dialogue with refineries and installation of efficient technology not only leads to better cost efficiency but also improves quality of the product. For instance, company has installed desulphurization plant which enables company to use high sulphur coke which is abundantly available at cheap price with quality remaining unaffected. These technological advantages give them an edge over other calciners.

### ii. CTP

CTP contains polycyclic aromatic hydrocarbons (PAHs) that require safety precautions during its use. The content of PAHs has to be moderated according to the use of the product. With the technical know how only, the company was able to diversify the use of existing products. For instance, with the growing Steel and Graphite Electrodes Industry, the company manufactured CARBORES (premium product), a variation of CTP with some technical assistance used in these industries.

Carbon Quality is of utmost importance because:

1. CPC quality directly affects the quality of anodes. The calciners have to fix the quality (amount of sulphur content) according to the requirements of the smelters.
2. It is an expensive operating cycle for smelters and bad quality can have adverse impact on the potline.
3. A good pitch will yield a good amount of graphitized carbon or coke when baked. This is known as coking value. The value should not be very high and not low too.

The technical specifications of CPC and CTP have to be met for better performance of anodes. Calciners compete on the basis of product quality and reliability, apart from price.

### 3. Huge Entry Barriers

#### i. Long-standing relationship with suppliers

Rain enjoys long-standing relationship with many of its suppliers. The plants are strategically located near the refineries helping in savings of freight cost. It is very important to have an ensured availability of raw material in both CPC and the CTP market. Currently, there is not easy availability of GPC for the calciners. It becomes difficult for the new calciners to source raw material as compared to the bigger players who already have a tie up with the refineries. Rain has long-standing relationship with Motiva, Exxon Mobil, Phillips66 for sourcing GPC.

More than 90% of Rutgers Coal Tar supply is based on long term contracts with relationships exceeding more than 10 years. Rutgers recently expanded its coal tar supply base by establishing the Russian JV.

The table depicts the Top Suppliers of Rain Industries Ltd.

Suppliers	% of Purchases	Length of Relationship
ConocoPhillips	31%	Over 20 Years
Sinopec International	17%	Over 13 Years
Motiva Enterprise	12%	Over 30 Years
Exxonmobil Corporation	13%	Over 20 Years
Marathon Ashland Petroleum	12%	Over 20 Years
HUSKY	9%	Over 10 Years

- The Robinson-Illinois, USA plant with two rotary kilns of 315,000 capacity is located adjacent to Marathon Oil Refinery.
- The Norco-Louisiana, USA plant with one rotary kiln of 230,000 capacity is located adjacent to Motiva Enterprise.

The following extract has been taken from the annual report depicting the tenure of the contracts:

	Estimated Lives	2017	2016
(in thousands of dollars)			
<b>Intangible assets with definite life</b>			
Customer Contracts	9-15 years	229,078	214,140
Supply Contracts	10 years	-	70,000
Favorable contracts	13 years	1,028	906
Technology Rights	8-12 years	21,616	20,109
Trade Names	15 years	42,033	40,614
IRP&D	15 years	11,949	-
Others	3-20 years	16,178	14,740

## ii. Long-standing relationship with customers

Rain has established a customer base which includes companies like Alcoa, Rio Tinto Alcan, Norsk Hydro ASA, Century Aluminum and Aluminerie AlouetteInc, Vedanta Aluminum Limited, etc. Rain has maintained relationship with many of their customers for over 15 years on average.

## iii. Technical Specifications needed and ability to blend different grades of coke

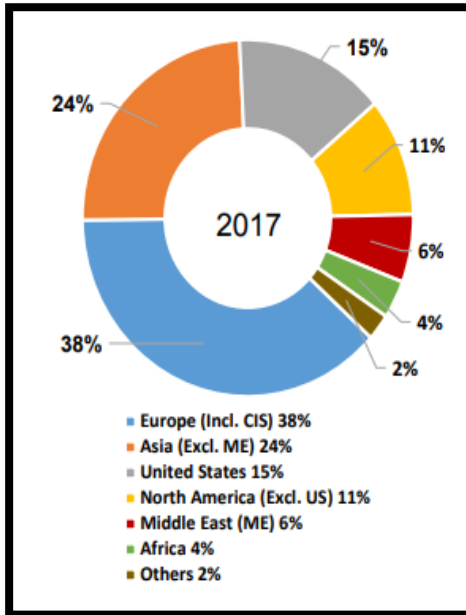
This is explained above in detail.

## 6. Geographical Advantage to Rain Industries Ltd. and Recent Updates on different countries

Aluminium is mainly produced in China, North and South America, Europe, Middle East, India, Africa and Australia. Rain supplies CPC or CTP to all of these except Australia and China.

On the positive side, it has geographic presence in almost all aluminum producing countries but there also some risk of being a global company influenced by aluminium and carbon industry of many countries and not just one.

## Revenue by Geography (2017)



**Transportation and Logistics Cost** is also a very important factor that needs to be considered while sourcing CPC and CTP by aluminium smelter. If the aluminium production increases in North America, the increase in CPC demand would be better met by Rain Industries Ltd. as its plants are located there. Aluminium production in North America is expected to increase on the back of Trump Tariff Policy incentivising domestic aluminium production.

Not only aluminium smelters, CPC plants should also be strategically located in order to ensure easy availability of GPC and sourcing GPC where transportation cost is reduced.

CTP is a local market as transportation is difficult.

It is not viable for European smelters to source CPC from China because of higher transportation cost. Other largest CPC producer is North America where there is surplus capacity available. This surplus capacity can be exported to Europe where Ruetgers already has an established customer base for CTP.

## SECTION IV: ALUMINIUM INDUSTRY- CHARACTERISTICS OF DIFFERENT CYCLES IN THE PAST

### 1. Aluminium Industry – Major Demand Driver

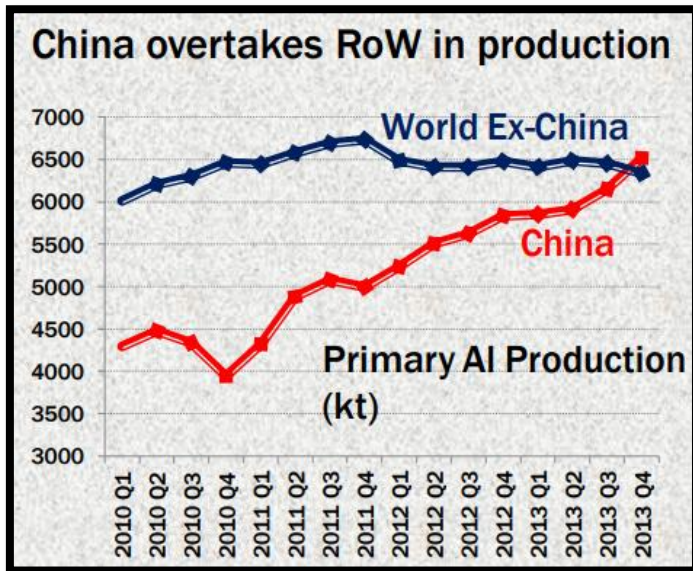
#### i. Characteristics of different cycles in the past

##### ▪ Boom Cycle during 2000s

From 2000 onwards, primary aluminium demand has witnessed strong growth but the growth was mainly driven by China. Primary aluminium consumption in China has grown at a rate of almost 16% per year since 2000, while growth in the rest of the world has been slightly above 1% per year. This growth was driven by China's massive investments in Real-Estate and infrastructure as well as by private consumption and exports of manufactured goods containing aluminium. As a consequence, China's share of global aluminium demand increased from 14% in 2000 to 42% in

2011. In 2000, China's imports of primary aluminium accounted for more than 25% of its consumption.

▪ **Bust Cycle (2012-16)**



With fueling demand from China, large-scale capacity expansion happened in other parts of the world. On the contrary, the anticipated import from China didn't happen as China rapidly expanded its smelting capacity.

From 2014-16, aluminium industry faced severe competition from China. The growth in aluminium production was mainly led by China and Middle East with South and North America leading the decline in production. During this period, export from China increased, prices came down and smelters in developed countries couldn't compete

with the Chinese Aluminium. The change in the supply environment due to overcapacity in Chinese Aluminium Market led to several companies in developed countries to shut down smelters like Alcoa, Century.

The CPC prices have to be competitive globally in order to sustain in long run and is being dominated by those who are in surplus, namely US and China.

In recent years, China has continued to steal market share away from US calciners as CPC capacity expansion outpaced demand. This increased exports by China to the outside market.

Between 2011 and 2016, China CPC exports increased by 334,000t, or 24%, while exports of CPC from the US decreased by 790,000t, or 21%. This trend came to an end in 2017.

▪ **Boom Cycle : 2016 onwards**

In 2017, we have seen the disruption in supply of CPC and CTP globally due to winter cuts in China. This created supply deficit in the other countries and as per demand and supply theory prices increased.

Until now, China was meeting the fueling demand of aluminium in the world. Then, the fundamentals of the industry slowly changed and leading to benefit the global aluminium industry ex. of China. The production is now increasing in North America, Europe, Middle East and Asia (ex-of China) due to increased demand of aluminium in rest parts of the world.

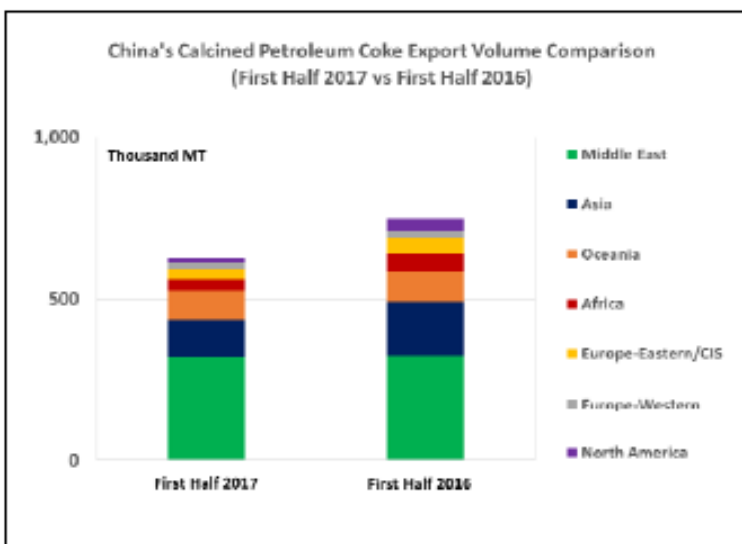
## What changed with this winter closure policy ?

Due to Environmental Inspection, there was limited output available in the market and the smelters wanted to secure supply. This raised domestic prices in China. The CPC which used to get exported was now used in the domestic market. This further raised the output prices higher. This resulted in international market to source their supply from the next surplus country i.e. United States. As a result, the demand for US CPC increased which led to increase in capacity utilization.



Due to this exports from China dwindled. During the first half of 2017, China's export volumes of CPC were 17% lower than first half of 2016. This supported the price to move upwards both in China and rest of the world.

The reduction in CPC volumes supplied by China to the International Market has resulted an increase in the quantity of CPC provided by the US. Overall, total CPC exports during the first half 2017 increased by 21% as compared to half year of 2016.

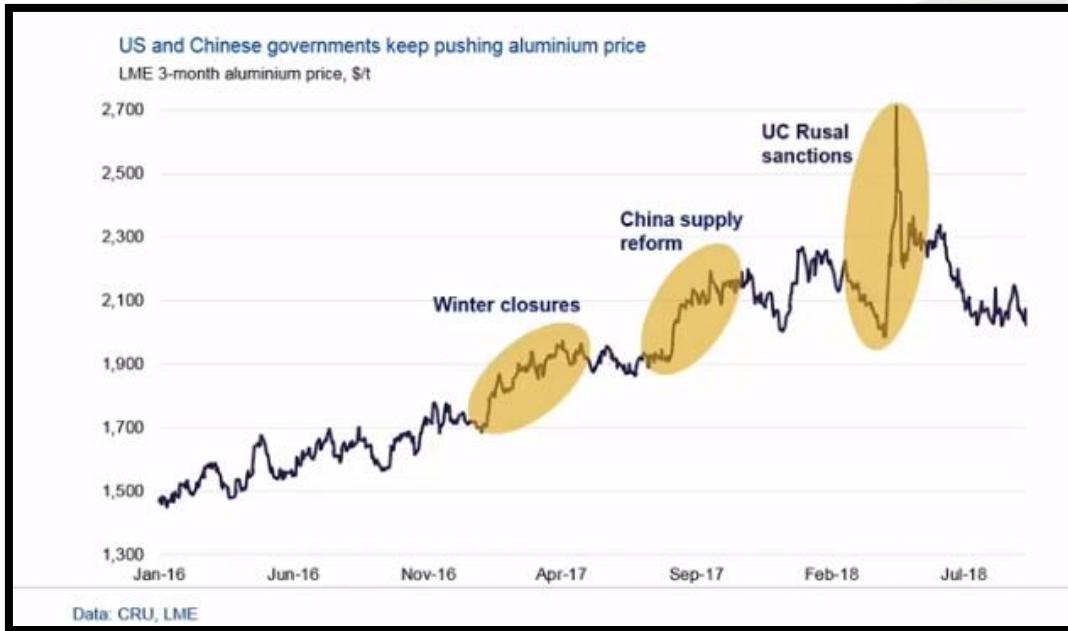


Between 2011 and 2016, US share of global CPC exports dropped from 49% to 40% while China's share jumped from 18% to 23%. In 2017, US exports were up 13%, or 234,000t, while Chinese exports were down 18%, or 163,000t. In terms of global trade market share, the US appeared to recapture what was lost over the past 6 years, while China slipped back to 2011 levels.



■ **Fat Tails Events that happened in Aluminium Industry after a good cycle in 2017**

**Aluminium Prices witnessed record levels of volatility in 2018**



Alumina Market

was very tight. The key drivers behind a tight market have been:

- **Curtailment at Norsk Hydro’s Alunorte Refinery**
- **Disruption at Alcoa’s operation in Australia due to labour dispute**
- **Uncertainty around Rusal**



The strength in alumina prices and the depressed aluminium market have meant that the price ratio of alumina to LME aluminium has broken 30% compared to historical levels of around 15-20%. A rallying alumina market has put pressure on smelters margins.

Source: ING Research

▪ **The current cycle: 2020 onwards**

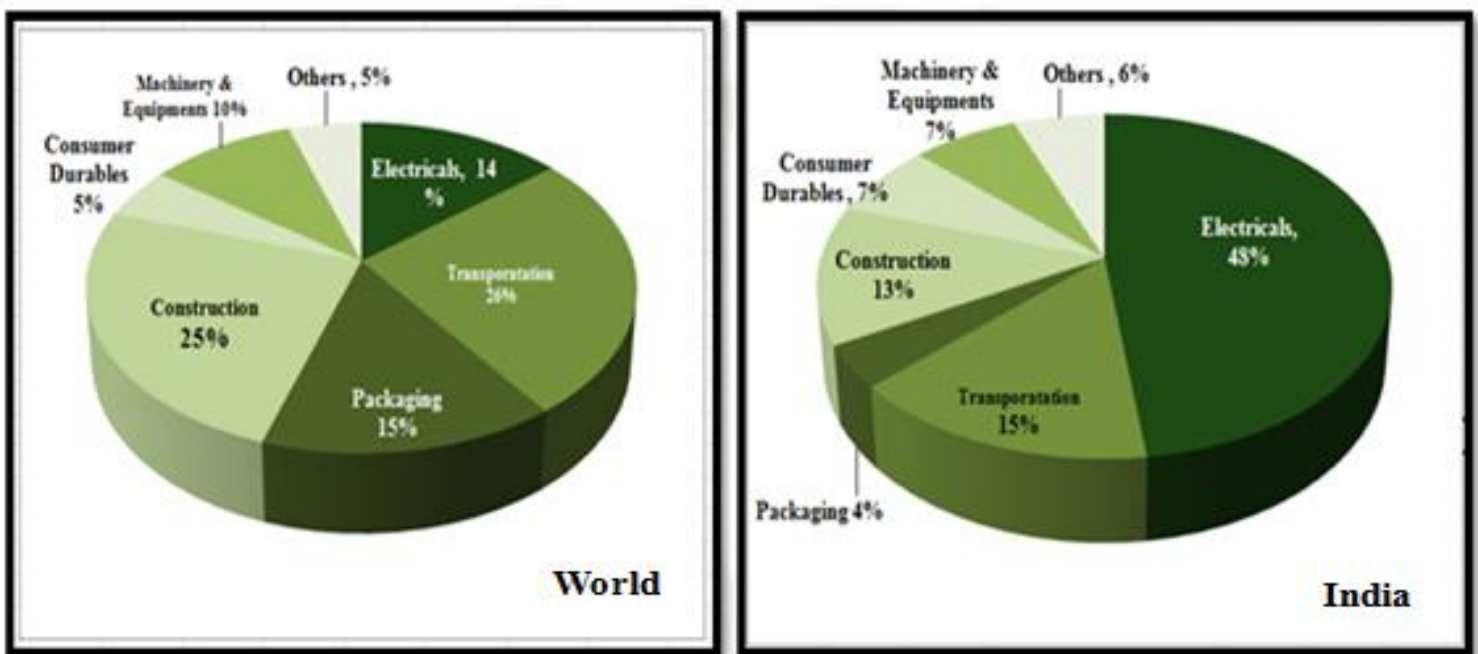
The low interest rates, liquidity in markets, government stimulus and supply disruptions have resulted a good rally in metal markets. Aluminium is also one of the beneficiaries. The high LME aluminium prices have improved the bottom-line of smelters resulting in more production. Hence, increased demand for CPC and CTP.

COVID-19 also caused low utilization rates in refineries leading to scarce availability of low sulphur GPC which raised CPC prices. Similar scenario, we are seeing in CTP markets too.

Along with demand from developing economies like India and Middle East, there is high demand from Advanced Economies like United States and Europe on the back of revolution in Electric Vehicles. This trend still substantiates our thesis that the demand of aluminium is on upswing.

**2. Where are we in the aluminium cycle ?**

The consumption pattern of aluminium in the country is diametrically opposite to that of the world as shown in the chart below:



The Power and Transmission was the major sector that contributed significantly to the aluminium consumption. The sectors like Transportation, Packaging, Building and Construction which were a major sectors contributing growth in aluminium demand globally made low relevance to India.

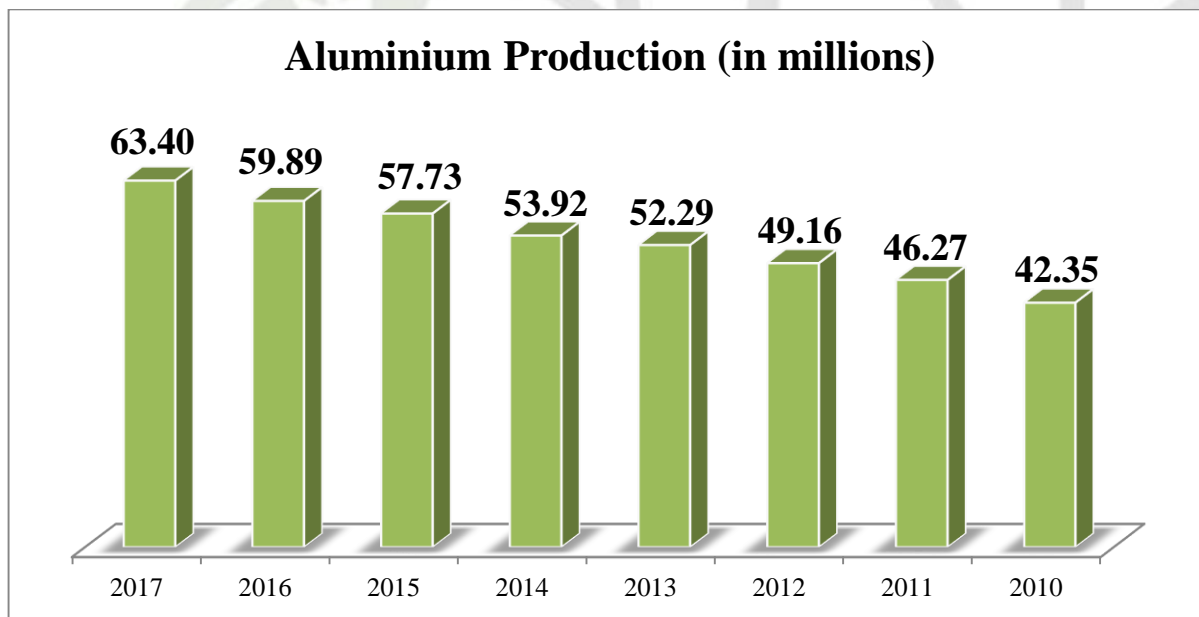
Looking at the consumption pattern of aluminium in India, there seems to tremendous headroom to grow.

**Building and Construction:** In the Western World, the usage of aluminium in architectural and buildings have been fully exploited. Cleaning and Maintenance of aluminium is comparatively low. This is one factor why the usage as increased and the life cycle of aluminium is quite long.

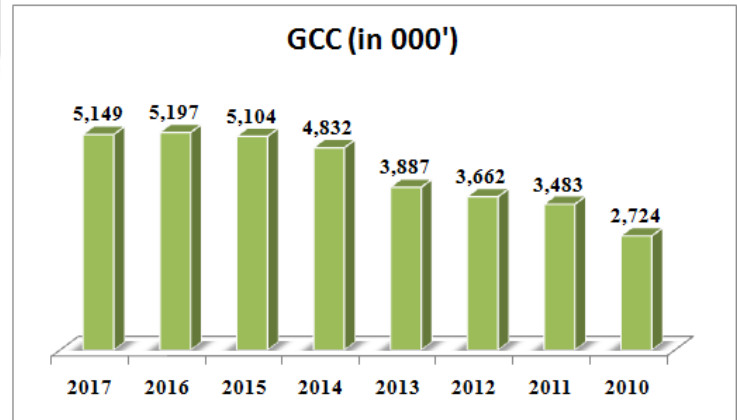
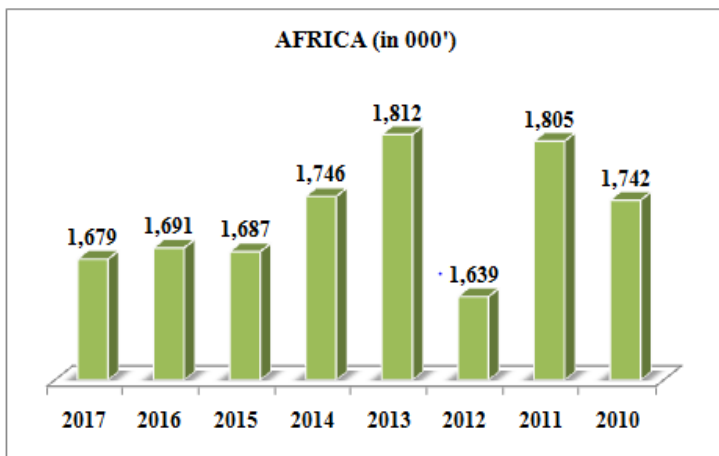
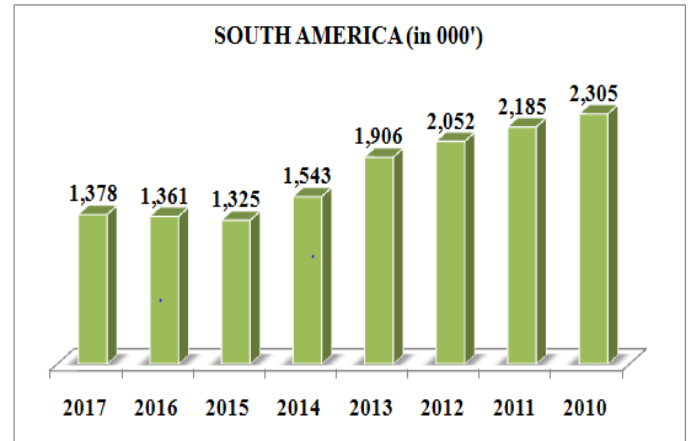
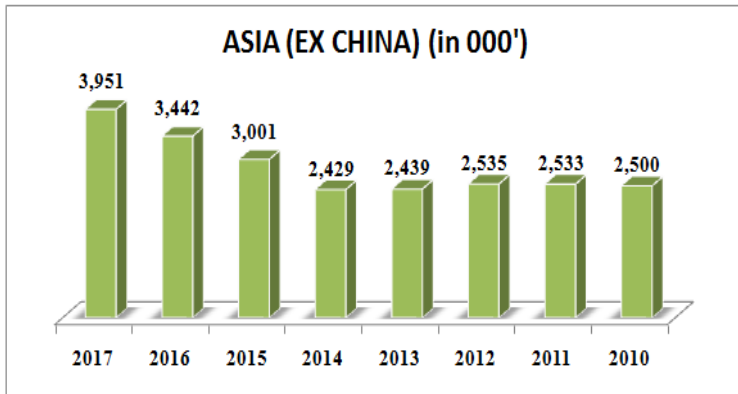
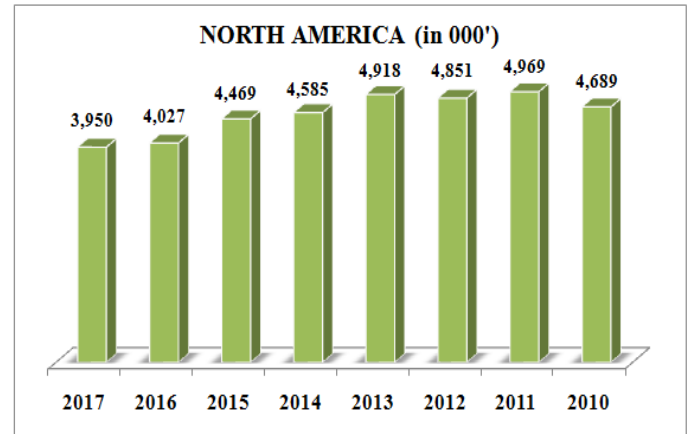
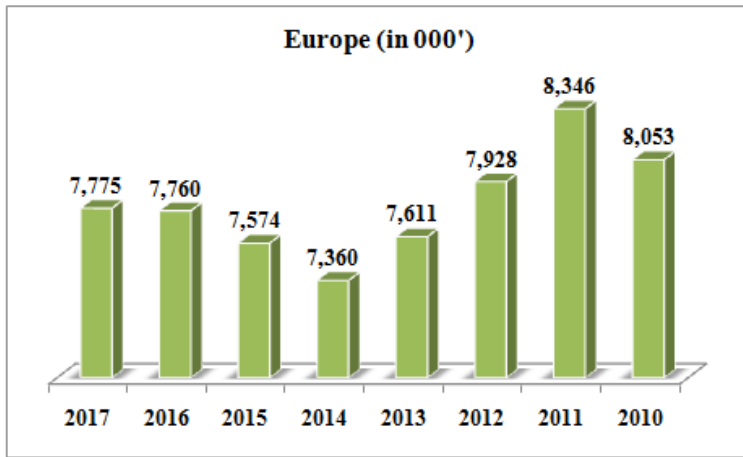
The most startling improvement in demand in Asia has come from China when there was a slowdown in demand from advanced economies. The urbanization of China as well as an increased standard of living and increased consumption of capital goods including appliances and automobiles made the country a net importer in 2006 from net exporter in 1998. Thus, infrastructure spending by government has given a major boost to the aluminium demand.

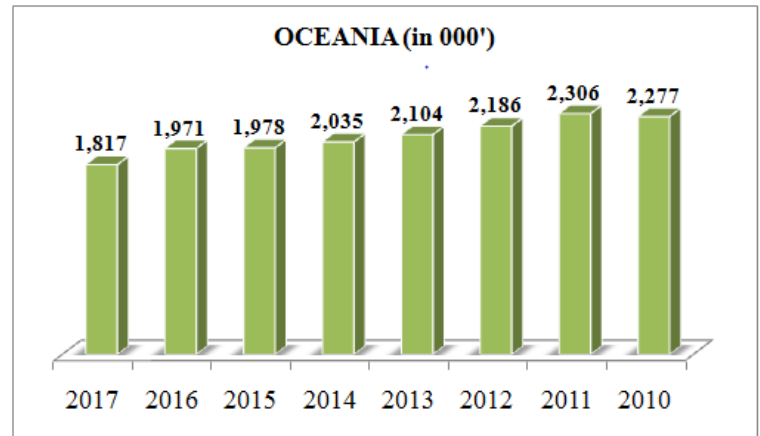
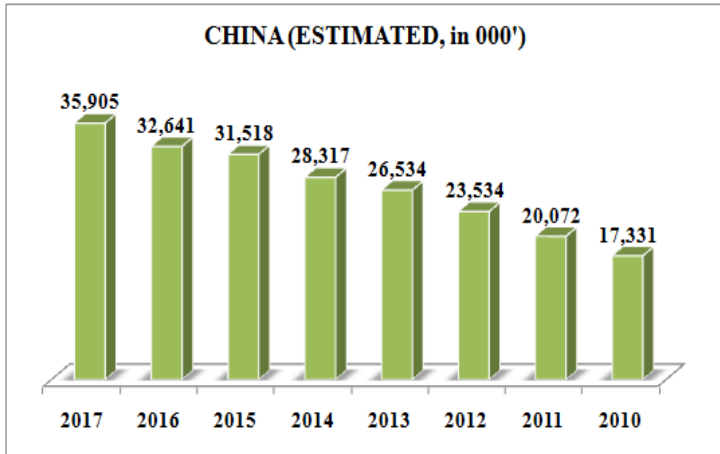
Global aluminium consumption in building and construction sector is 25% where as in India it is only 13%. With spend on Railways, infrastructure by government and rapid urbanization, the aluminium demand in the country is expected to get a boost.

**The following graph highlights the total aluminium production:**



## Aluminium Production in different countries





**Aluminium is gaining market share to other metals in a lot of industries including Construction, Automobiles, Packaging and Aerospace, we believe Aluminium volumes are more important than the prices. Hence, our leading indicator remains the aluminium production volumes which are showing the following trends:**

### **3. The demand for Aluminium is expected to continue its upward arc. because of the following reasons:**

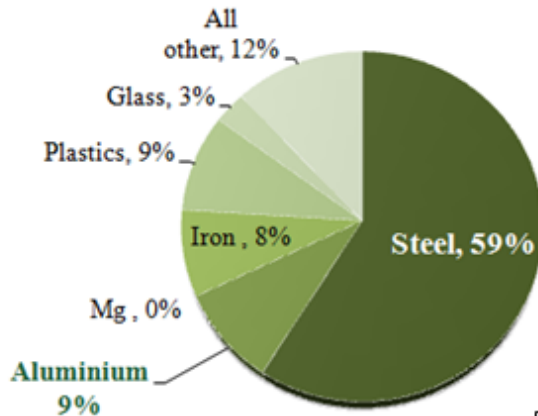
#### **i. Huge Demand of Electric Vehicles to transform Aluminium Demand**

Usage of aluminium in automobile designs is going up substantially owing to its lightweight and ability to be energy efficient that complies with stricter pollution norms being followed around the world especially the large economies.

The greater adoption of electric vehicles, which uses more metal than conventional vehicles, will have positive consequences for aluminium producers. Apart from the vehicle's chassis, body and wheels, aluminium will mandatorily be used in the cases that carry electric batteries in EVs because of its lightweight property. Those structures must provide thermal transfer capabilities to keep the battery cool or keep it warm in cold weather, all making aluminium an excellent choice. Demand for aluminium will also rise on account of infrastructure needs for serving EVs, since aluminium is commonly used as housing material for EVs charging stations. Some 45% of charging stations producers use aluminium extrusions for housings. This lightweight metal will also have its share in the construction of assembly plants of batteries and vehicles. According to European Aluminium, the average European car currently uses around 150 kg of aluminium (2016 data). This is expected to increase to 200 kg by 2025. In USA, the average content in cars will increase from 180 kg in 2016 to around 235 kg in 2025. The uptick in aluminium demand is expected to continue for quite some time as new facilities producing aluminium parts and batteries for EV segment will enter the market to meet the increasing demand.



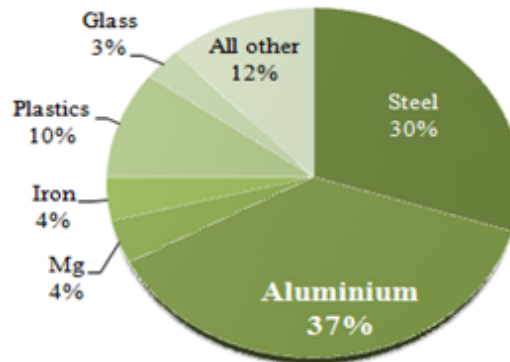
### Today's SUV



Total Mass: 1,711 kg

Source: Alcoa Report

### Tomorrow's SUV



Total Mass: 1,237 kg

28% Mass  
Reduction:  
474 kg

- 10% reduction in vehicle weight gives car manufacturers a 5-7% fuel saving
- 1 kg of aluminium substitution in cars saves between 15-20 kg GHG emissions.

It can be inferred from the above graph that the usage of aluminium in cars in the coming years will increase significantly. As a result, production of aluminium will increase.

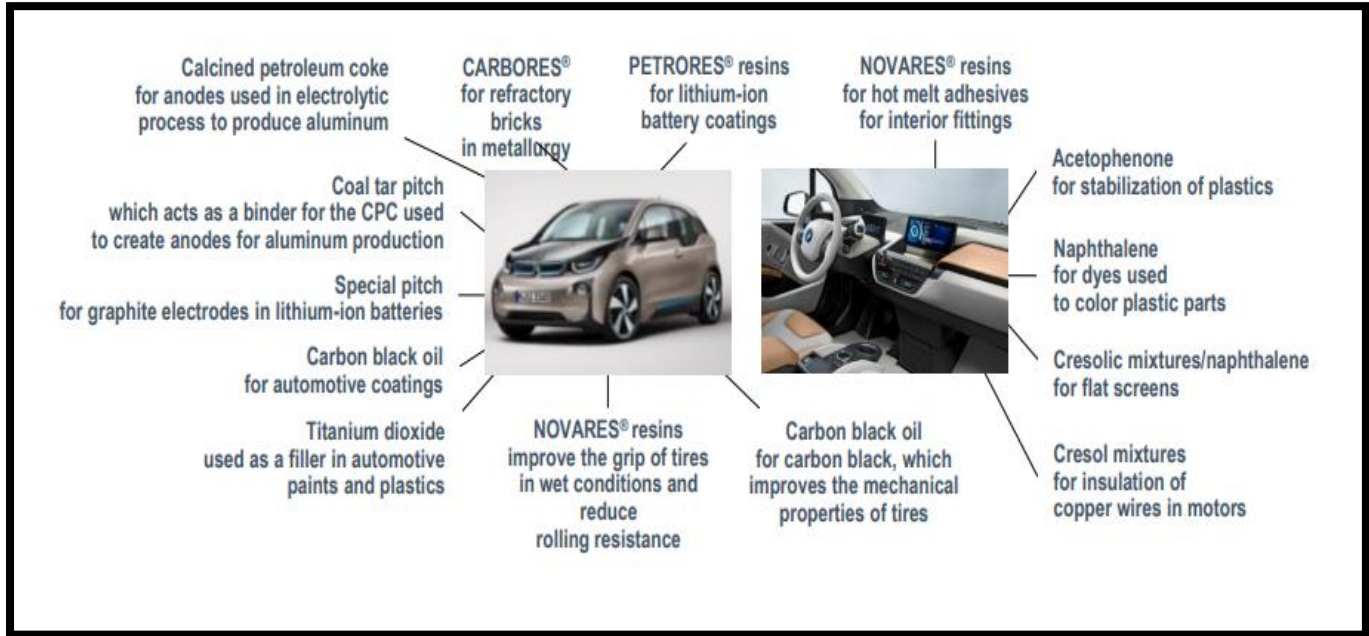
According to European Aluminium, the average European car currently uses around 150 kg of aluminium (2016 data). This is expected to increase to 200 kg by 2025.

In USA, the average content in cars will increase from 180 kg in 2016 to around 235 kg in 2025.

The uptick in aluminium demand is expected to continue for quite some time as new facilities producing aluminium parts and batteries for EV segment will enter the market to meet the increasing demand.

Hence, primary aluminium producers have great potential upside. This ensures the demand for Carbon Products.

**Today's automobiles are highly reliant on Carbon and Advanced Materials-based products**



Apart from serving to Steel and Aluminium Industry, the company makes raw material used in making almost all automobile parts. Everything from frames, tires to plastics, paints and the interior.

By investing in this company, we are indirectly playing on the opportunity of the spur in the Electric Vehicle Revolution.

## ii. Packaging Sector

In the packaging sector, especially soft drinks and beer, there is a shift from glass to aluminium. Increased adoption of aluminium cans by beer and soft drink producers in China and other countries are expected to be a significant driver in aluminium demand in the coming years.

**The overall price of primary aluminium consists of several components:**

1. The underlying base metal component which is typically based on quoted prices from the London Metal Exchange.
2. The regional premium, which comprises of the incremental price over the base LME component that is associated with a physical delivery of metal in a particular region.
3. The product premium, which represents the incremental price for receiving physical metal in particular shape(e.g. coil, billet etc.) or alloy.

## 5. Why the Business of Converting Slurry Raw Material is better than the Smelting Business of Aluminum which is more volatile

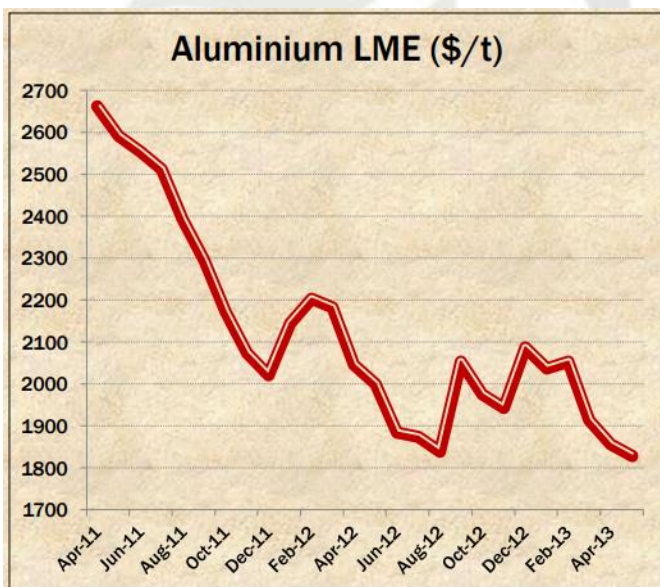
Let's understand the last bad cycle of aluminum

### Global Aluminium Smelters Capacity were running at cash negative

In 2012, when LME cash aluminium price was just below US\$ 1900 / tonne, some 60% of world's (excluding China) primary aluminium producers had production costs above the market price.

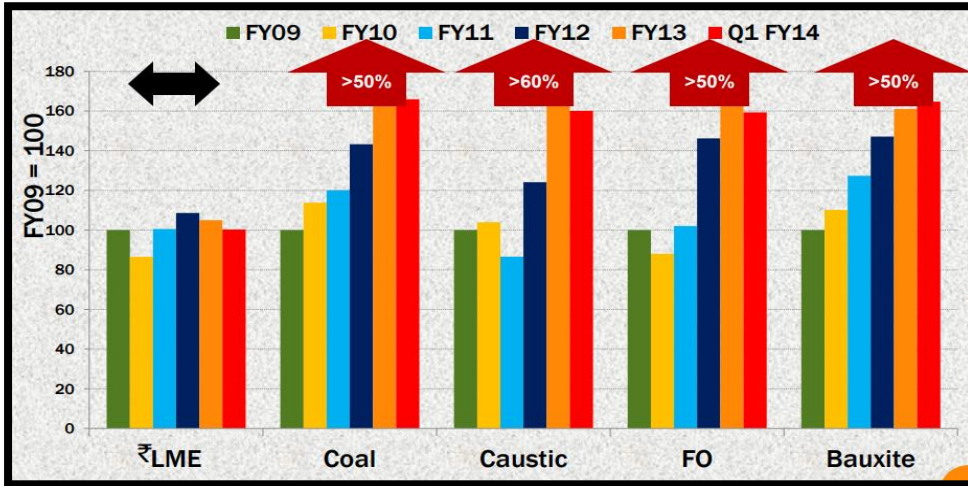
During this period, margins fell due to adverse macro factors.

### Cost Pressures way ahead of LME



Source: Hindalco Report





Input Costs increasing at a higher rate than the finished aluminium led to the aluminium smelters incurring cash losses. During 2014, nearly 30% of world capacity was making cash losses.

To conclude, the profitability of smelters vary a lot depending on the region of

production and its comparative advantage along with LME Prices.

On one side, smelters were struggling to generate cash profit, efficient calciners and distillers supplying raw material to the aluminium industry were able to generate profits and were sustainable in the long run.

**For instance, Hindalco engaged in manufacturing aluminium witnessed squeezed margins during the bust cycle as shown in the table below:**

Particulars (Rs. in crores)	2018	2017	2016	2015	2014	2013	2012
Net Sales	21072	19986	18366	14105	10050	8779	9041
EBIT <sup>1</sup>	2257.19	2202	880	1349	934	930	1822
EBIT Margins	11%	11%	5%	10%	9%	11%	20%
Profit After Tax <sup>2</sup>	6083	1900	(251)	854	2175	3027	3397

Notes

1. EBIT represents the Aluminium Division only.
2. PAT is not directly comparable because Hindalco has other business divisions too (Copper, Alumina)

**Rain has maintained its healthy financial position even during the cyclical downturn as evidenced in the table below:**

Particulars (Rs. in crores)	Dec-17	Dec-16	Dec-15	Dec-14	Dec-13	Dec-12
<b>Gross Sales</b>	11,447.14	9,494.47	10,450.61	12,144.55	11,918.91	5,572.29
<b>Profit After Tax</b>	791.24	296.68	302.28	69.76	386.76	464.81
<b>Cash From Operating Activities</b>	868.09	1566.75	1238.23	1291.25	609.14	1401.97

The above numbers highlight that the net profit numbers maybe volatile but the cash flows are fairly stable above 1000 crs.

Note: Profit after Tax was reduced significantly in 2014 because of Exceptional Items of (257 crores)

Exceptional Items:

1. 2015: (6.09 crores)
2. 2016- (26.16 crores)
3. 2017- (180.33 crores)

Cash Flow from Operating declined in 2013 as RUTGERS(coal tar distiller) was acquired.

**By being a mere converter of different slurry materials, the company managed to survive and sustain in the long run.**

## SECTION V: MANAGEMENT QUALITY

Rain Industries was started as a cement company in the early 1970's led by Mr. Radhakrishna Reddy. In the mid -80's the company changed its names to Priyadarshini Cement Ltd. His son, N Jagan Mohan Reddy is an engineer and wished to enter the aluminium industry in 1998. He decided to enter the niche industry providing raw material to the aluminium industry. The rationale behind this decision was that aluminium smelting was a very capital intensive industry with huge upfront cost and capital requirements. So he opted out this idea and decided to enter an industry which was supply constraint and provided essential raw materials to the aluminium smelters. He set up an independent company named Rain Calcining Ltd to manufacture and sell Calcined Petroleum Coke to domestic smelters.

In 2007, the two companies (Cement and Calcining) joined hands to acquire the second largest CPC producer through an all debt LBO of CII Carbon.

The debt levels increased significantly when CII Carbon was acquired. The company slowly repaid its net debt from US\$728 million to US\$413million from 2017 to 2012.

In 2008, Rain Calcining Ltd was merged with Rain Commodities Ltd and in October 2012, Rain Commodities bought Belgian chemicals maker Rutgers NV at an Enterprise Value of ~\$ 700/ton (€ 636/ton).

In 2007, there was severe price bidding between RCL and Oxbow Carbon to acquire Great Lakes Carbon (2.1 million capacity) which was the largest manufacturer of CPC at that time. Rain failed to increase its takeover price and opted out of the bidding when the price exceeded its target. Oxbow paid ~\$385/ton for the GLC acquisition.

Subsequently in 2007, Rain acquired CII Carbon, USA (second largest producer globally with a capacity of 1.89 million ton) at ~\$328/ton as compared to ~\$385/ton paid by Oxbow in the same year.

This shows good quality decision making ability of the management led by N Jagan Mohan Reddy.

The management in various conference call highlighted different strategies that needs to be deployed at different stages that can increase revenue and profitability. The management in the past has been very practical in its approach from understanding the raw material market to the customer market. Fruitful results of the strategies executed in the past gives a sense of assurance

that the management is focused towards the business and has the ability to perform reasonably well even in downturns.

## **1. Strategies Executed:**

### **i. Proactive in developing new products**

The company has made efforts to utilize wider variety of GPC raw materials for use in aluminium anodes. Shot coke (type of petcoke) and other nontraditional anode cokes (“NTAC”) are not only priced at a discount to traditional anode grade coke, but commercial use of NTACs is likely to increase, as traditional anode grade GPC availability declines. CII developed the **patented ICE technology** which allows the usage of shot coke.

RÜTGERS’ developed CARBORES technology, an environment-friendly pitch binder, which produces less emission upon use compared to certain alternative pitch binders and has the potential to be used in the aluminum industry to improve anode performance and reduce anode production cost.

### **ii. India CPC Blending Strategy**

The management is proactive in understanding the industry and takes appropriate action timely. In 2016, U.S. production was sluggish and the aluminium smelting was shifting to countries with lower cost of operations such as India and the Middle East. The basis of the India CPC blending strategy is to ship CPC product from US plants, and blend it with the Indian produced CPC product for re-sale in India and the Middle East markets. This blending plan helps the company to maintain the production volumes in the U.S. and meet the growing demand of emerging aluminium markets.

### **iii. Flue Gas Desulphurisation Technology**

Rain has set up Flue Gas Desulphurisation Plant at 3 out of 7 CPC plants.

The Flue Gas Desulphurisation (FGD) plant removes Sulphur Dioxide from the flue gas before it is released into the atmosphere and hence reduces our impact on the environment. This is also known as SO<sub>2</sub> Scrubbing Technology. This has been discussed above in detail.

**iv. The company’s competitive edge was evident during the bad cycle** when all other companies were shutting down capacities, generating losses, and industry was getting consolidated but Rain Industries Ltd. remained consistently profitable and made capacity

expansion and did de-bottlenecking at some plants. It is benefitting now because of expansion done during the bad phase earlier and can cater to the needs of the increasing demand of CPC and CTP, the market of which has been bullish for quite sometime now.

**v. Stopped GPC Trading**

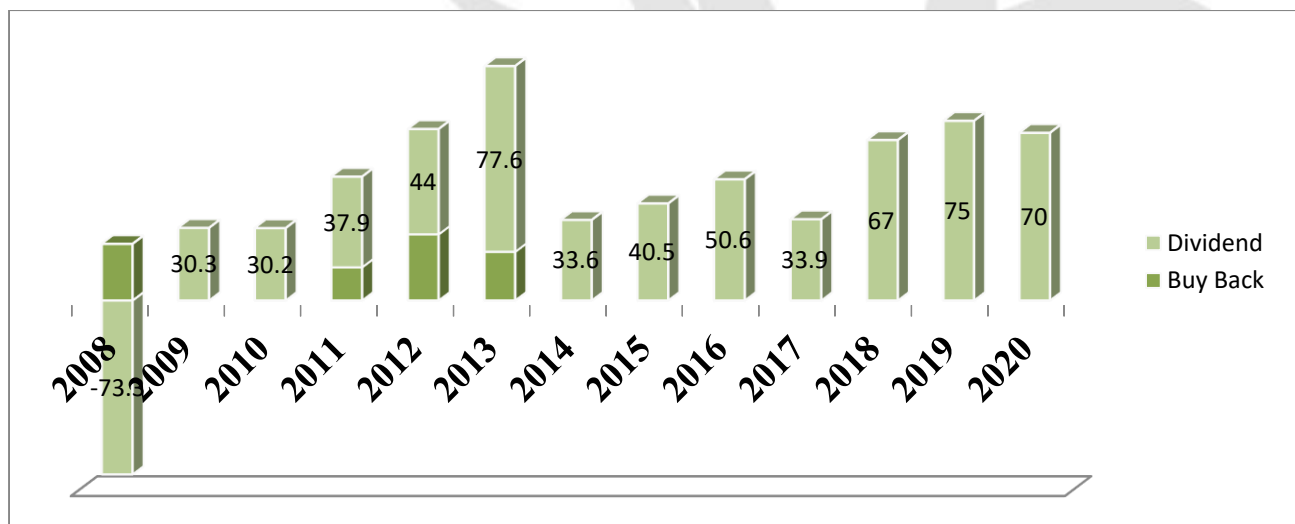
The company slowly stopped GPC Trading in 2017. This reduced the company’s exposure on the commodity based business and allowed to focus on the high margin business segment.

**vi. Focus on Advanced Carbon Materials**

The company has forayed in to making Carbores and Petrores used in making Lithium Ion Batteries and Graphite Electrodes which is a booming industry. Overall, the management has been very proactive in identifying the trends shaping up in their industry and making the most of it by changing product mix and focusing on premium products.

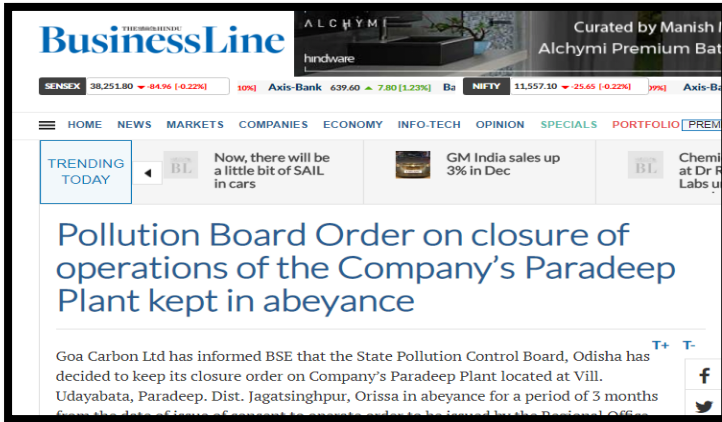
All these strategies have enabled the company to be on the lower cost curve and be able to increase profitability.

**2. Rain has always been rewarding shareholder and trend is expected to continue.**



### 3. Environment compliance

Environment Compliance is of utmost importance in this industry. The images below depict how other Calciners like Goa Carbon and Kalinga Calciners were asked to shut down its plants because of pollution issues.



**Rain Industries Ltd.** hasn't faced any such issues except there was a gas leakage at the CTP Plant in Hamilton in Jan 2018. The company has taken various measures to adhere to environment compliance. Moreover, it has installed SO<sub>2</sub> Scrubber at some of its plants which limits sulphur emission and Waste Heat Recovery Plant which has further enabled them to reduce pollution. Hence, it is compliant to environment.

Also, the environment concerns have been a pressing issue since 2018 after the petcoke import ban by Supreme Court in India. As per our understanding, calcining industry actually helps in reducing pollution if done properly. GPC, if disposed by refineries will cause more pollution. Secondly, calciners who have SO<sub>2</sub> Scrubbing technology will cause minimal pollution. Essentially, the CPC plant at Rain in India causes minimal pollution. Also, the new plant is built with a technology that results in zero pollution. If proper justification is given to the government and careful analysis is done, ideally, the permission should be granted to Rain to import additional petcoke for its new plant.

## 4. Increasing Profitability is not always led by volume growth. Sometimes, improving efficiency through incremental capex can also lead to significant increase in profitability and cash flow

The company incurred the following incremental capex:

i. During CY 2015, the Company commissioned a **Flue Gas Desulfurisation Plant at calcining plant**. Currently, the company has installed desulfurization unit at 3 plants.

### ii. CPC Blending Facility

During CY 2015, the company commenced a new CPC Blending Facility in India. It enabled the company to optimize capacity utilization of its US CPC Plants to meet the increased demand for CPC from smelters in India and the surrounding regions. This was the time when there was low demand in US and increasing demand in India and Middle East. The blending facility got shut in 2018 due to the Supreme Court ban on importing CPC by calciners.

Carbon Segment						
(in crores)	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019	CY 2020
Revenue	7181.4	6601.1	8632	9568	8122	6677
EBITDA	998.1	1145.2	2049.6	1667	1275	1385
Cost	6183.3	5455.9	6582.4	7900	6846	5291
Cost as a % of Sales	86%	83%	76%	82%	84%	79%
EBITDA Margins	14%	17%	24%	18%	16%	21%

EBITDA/ton						
Carbon Segment	3105	3827	6695	6141	4876	5495

This FGD Plant enables the Company to use low grade GPC to produce CPC. Low grade GPC (high sulphur) is cheaper than high grade GPC (low sulphur). This facility allows the company to use more of high sulphur GPC. This technology has enabled Rain to produce at lower cost than its competitor.

As, shown in the table above, the company has been able to reduce its cost since 2015.

# SECTION VI: COMPETITIVE SCENARIO AND KEY RISKS

## 1. Competitive Scenario

There are several global players who manufacture CPC such as Oxbow, Phillips66 and Koppers Inc and Himadri Speciality among the coal tar distillers.

In India, **Goa Carbon** is the only listed CPC player in India with a capacity of 2,40,000 tons per annum. There are some private small players too like Sanvira Industries, Atha Group, Indian Carbon etc.

In CTP business, **Himadri** has a capacity of 400,000 tonnes per annum coal tar distillation plants with 70% market share in India. Koppers is a global company and has shut down 7 out of 11 plants recently.

Himadri also manufactures Binder pitch for Graphite electrodes and Advanced Carbon Material for Lithium Ion Battery.

### i. Goa Carbon

The two companies should be viewed differently as the business scenario and most importantly raw material sourcing is different. It imports most of the GPC from China. It mainly caters to the Indian Aluminium Industry.

Capacity: 2,40,000tonnes per annum

### ii. Himadri Speciality

As mentioned above, CTP is a local market where transportation is done in specialized vehicles. It can't be directly compared to Rain Industries as Rain is a global company with CTP plants in Canada, Europe and Russia.

Currently, apart from Carbon Black, the company is focusing on Specialty Carbon and Advance Carbon Material for Lithium Batteries.

Capacity of CTP: 400,000 tonnes per annum.



## 2. Risks

### i. Aluminium Volume

The demand for CPC and CTP is directly linked to the aluminium production. We need to keep a close watch on the production and the demand side.

### ii. Raw Material Constraint

The key concern for calciners is the availability of suitable quality anode grade GPC. GPC is not produced to meet the supply or quality needs of the world's CPC for aluminium producers. Why scarce?

-Refineries are using more of sour crude in refining

-MARPOL 2020

-Also, during the pandemic, demand for fuel decreased. This resulted in low utilization rate in refineries. Hence, there is reduced availability of GPC.

Rain manages this by entering into long term contracts and held long standing relationship with suppliers.

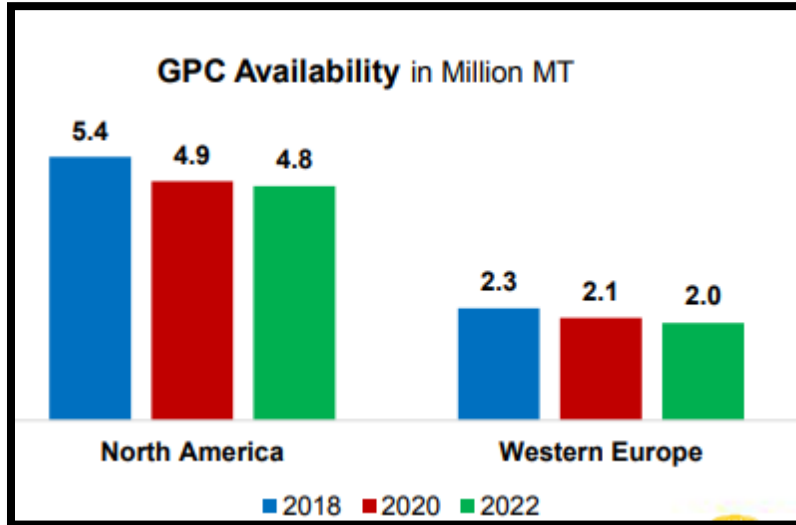
### iii. Marpol 2020

IMO has set a global limit for sulphur in fuel oil used on board ships of 0.50% (lowest sulphur coke) m/m (mass by mass) from 1 January 2020. The current global limit for sulphur content of ships' fuel oil is 3.50% m/m (mass by mass). This is a significant change to bunker fuel. This can have an impact on production of green petroleum coke and also on the price dynamics and availability of different grades of petcoke. Hence, affecting the carbon part of the business and can cause an increase in freight rates.

### Impact of MARPOL on GPC availability

The enactment of MARPOL will put existing quantities and qualities of calcinable green petroleum coke ("GPC") production at risk of decreasing.

As per the recent industry estimates, upon the enactment of MARPOL, over 900KMT of calcinable GPC supply is expected to be at the risk of disappearing from global marketplace. This includes approximately 600KMT in North America and 300KMT in Western Europe.



Source: Rain Industries Ltd. presentation

#### iv. Leverage

The company has high debt on its book. But, the debt is financed at very low interest rate (~5%). The management intends to reduce debt once the expansion gets over. They maintain strong cash flows.

#### v. Alternate Technologies in Aluminium Smelting

##### ▪ Inert Anode Technology

There is no known economically viable substitute for carbon anodes. Aluminium is a technology driven industry. There is continuous Research done in this industry on alternative technology to limit pollution. The inert anode technology hasn't proved its feasibility yet and the research is going on since last 25 years.

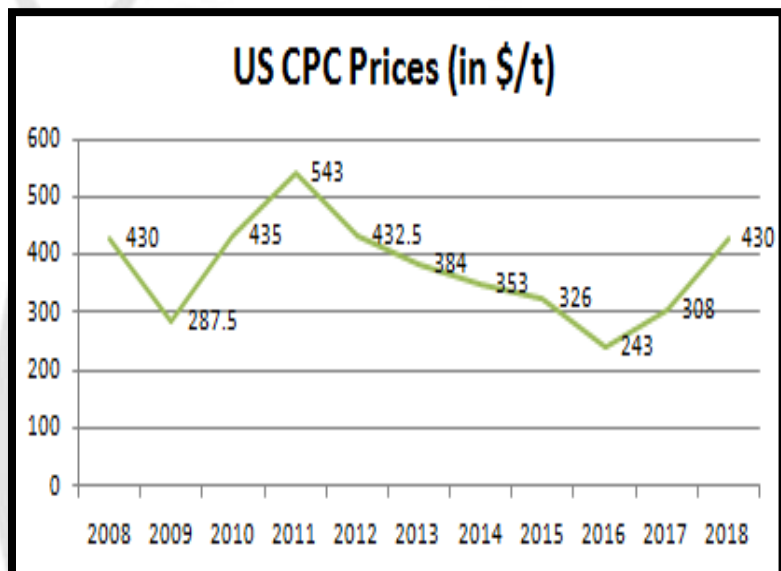
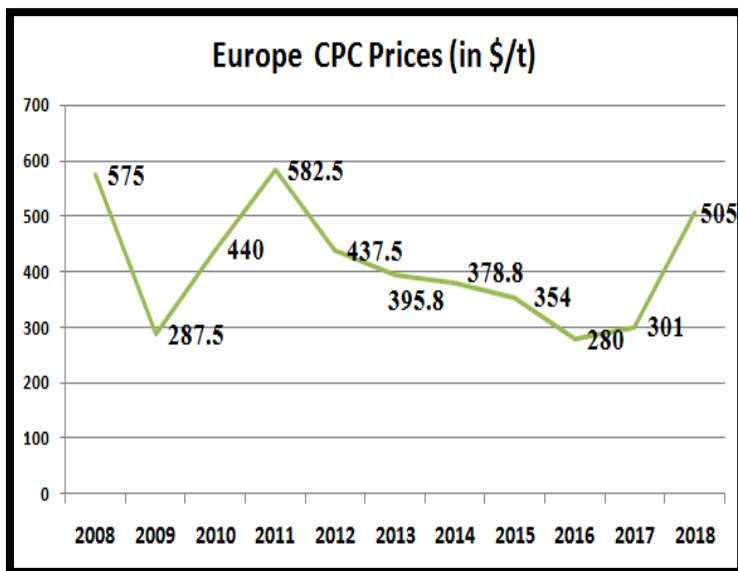
##### ▪ Green Aluminum

Alcoa is trying to manufacture carbon free aluminum. It is appreciated that the company is taking efforts to produce environment pollution free metal which emits Oxygen and not CO<sub>2</sub>. It has been working on this process since last so many years but nothing has materialized yet. It will take a lot of time and investment to do this.

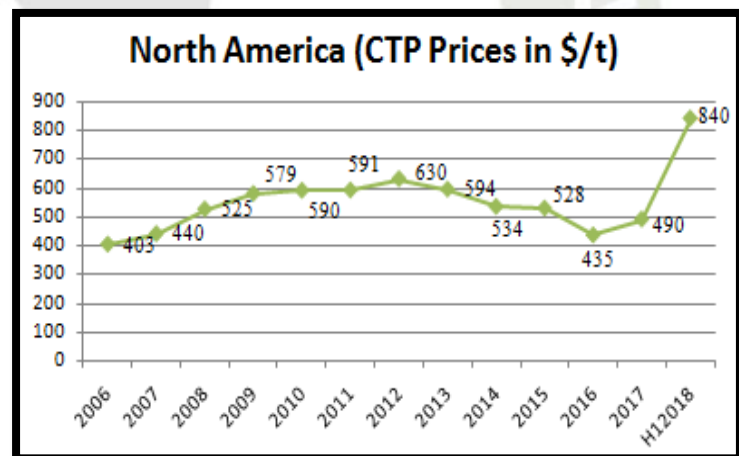
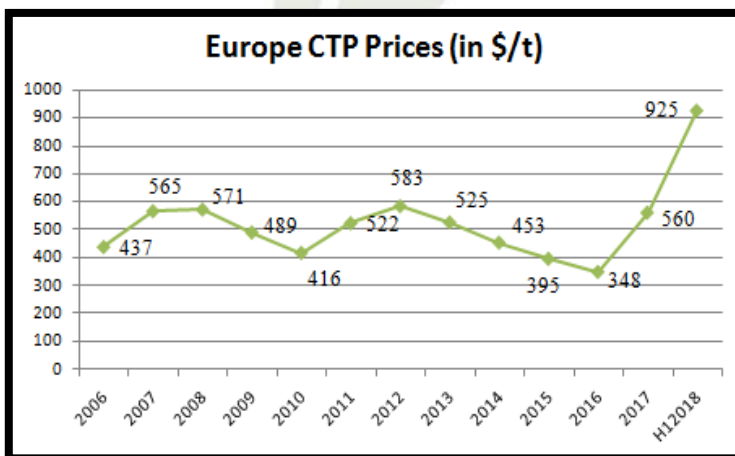
# SECTION VII: PRICE CHARTS, FINANCIALS & VALUATION MATRIX

## 1. Price Charts

### i. CPC Prices



### ii. CTP Price



## 2. Financials

(Rs. in crores)	2020	2019	2018	2017	2016	2015	2014	2013
<b>Gross Sales</b>	10464.7	12360.8	14049	11447.14	9494.47	10450.61	12144.55	11918.91
<b>EBITDA</b>	2100.8	1742.7	2141.1	2270.25	1530.70	1349.20	1204.94	1447.42
<b>Profit after Tax</b>	532.1	521.1	730.5	791.24	296.68	302.28	69.76	386.76
<b>EPS</b>	15.82	15.5	21.7	22.70	8.65	9.61	2.63	11.43

### Cash flow from Operating Activities

(Rs. in crores)	Q1 2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>CFO</b>	2563	1822.5	2240	1706	868.09	1566.75	1238.23	1291.25	609.14

### 3. Valuation Matrix

#### i. Valuation based on EBITDA Margins and Peer Multiple

Business Segments	Total Worth approximately (Rs. in crores)
CPC <sup>1</sup>	7645.68
CTP <sup>2</sup>	9890
Cement <sup>3</sup>	2000
<b>Total</b>	<b>19535.68</b>
<b>Total Debt</b>	<b>8516.2</b>
<b>Residual Equity Value</b>	<b>11019.48</b>
<b>Current Market Cap (13<sup>th</sup> June, 2021)</b>	<b>6131.58</b>

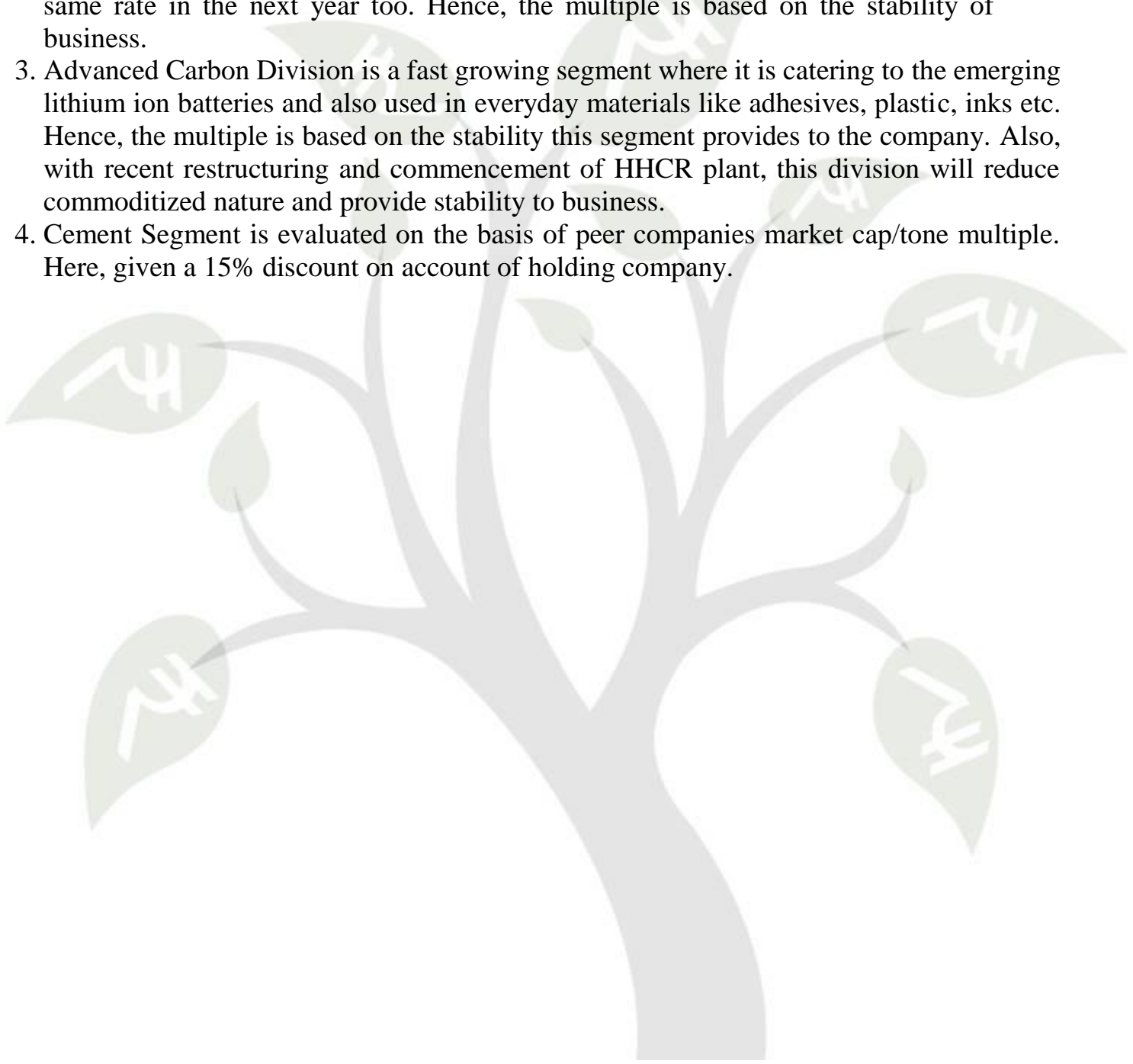
1. Assuming EBITDA/ton to be \$100/ton and EV/EBITDA to be 7.
2. The valuation is based on recent sale of Koppers plant done at EBITDAx of 10x.
3. The cement capacity being of 4.0 million tonne gives the business a valuation of ~2000 crores based on peer Market Cap/tonne multiple.

#### ii. Valuation based on P/E Multiple

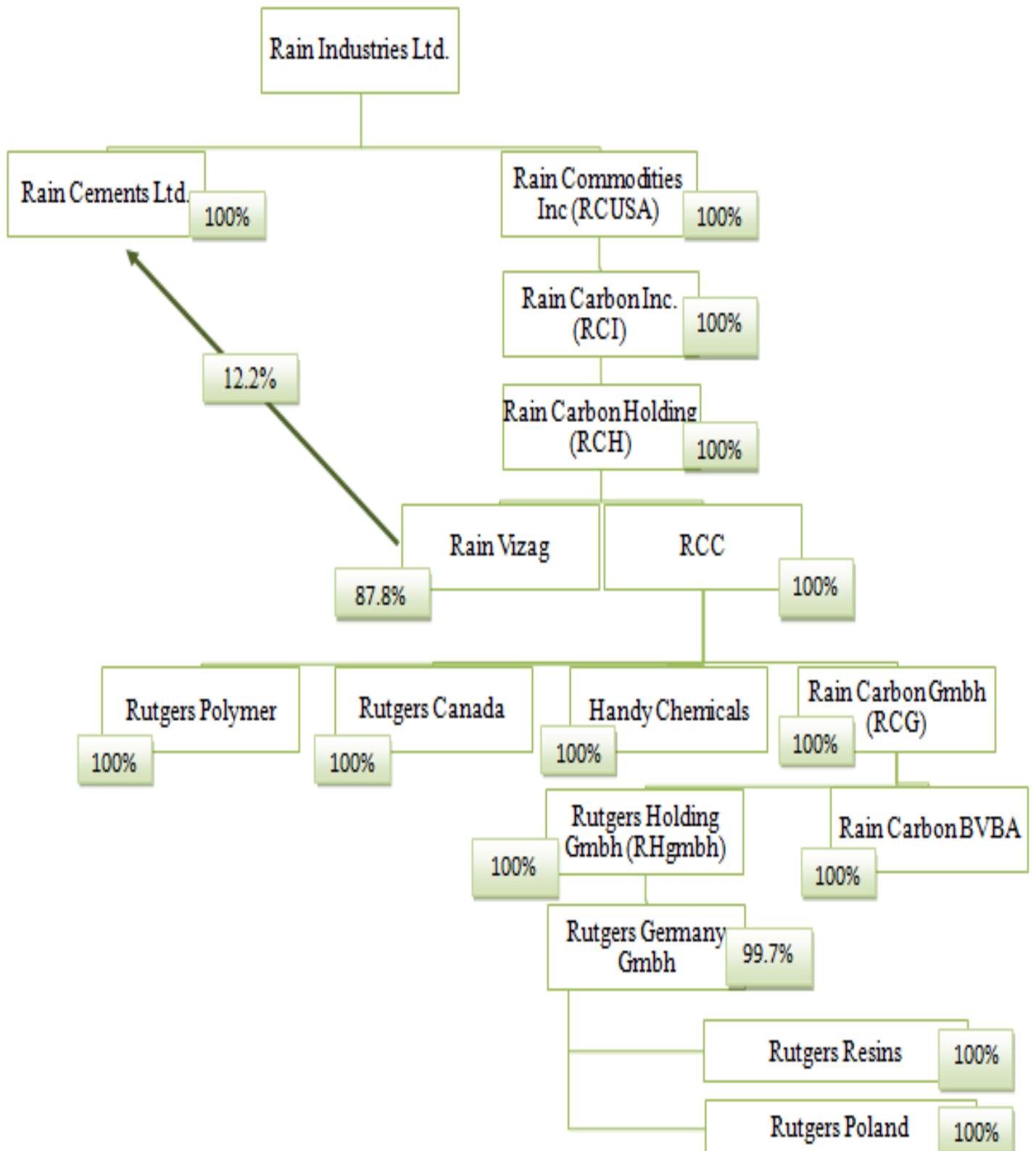
Business Segments	PE Multiple	Market Cap (Rs. in crores) Based on 2021E Earnings
CPC <sup>1</sup>	6.5	2014.79
CTP <sup>2</sup>	12	4771.6
Advanced Carbon Materials <sup>3</sup>	15	2388.87
		9175.26
Cement <sup>4</sup>		2000
<b>Total Market Cap</b>		<b>11175.3</b>
<b>Price Expected (Rs.)</b>		<b>335.59</b>
<b>CMP (Rs.)</b>		<b>182</b>
<b>Upside(%)</b>		<b>84.3%</b>

**Assumptions:**

1. The multiple of CPC Segment is based on the commoditized business multiple.
2. CTP Business is a stable business for the company. It mainly caters to the European Market which is operating at optimum utilization and is expected to operate at the same rate in the next year too. Hence, the multiple is based on the stability of business.
3. Advanced Carbon Division is a fast growing segment where it is catering to the emerging lithium ion batteries and also used in everyday materials like adhesives, plastic, inks etc. Hence, the multiple is based on the stability this segment provides to the company. Also, with recent restructuring and commencement of HHCR plant, this division will reduce commoditized nature and provide stability to business.
4. Cement Segment is evaluated on the basis of peer companies market cap/tonne multiple. Here, given a 15% discount on account of holding company.



## 4. Rain Industry Structure



**Disclaimer:**

**Niveshaay is a SEBI Registered (SEBI Registration No. INA000008552) Investment Advisory Firm.** The research and reports express our opinions which we have based upon generally available public information, field research, inferences and deductions through due diligence and analytical process. To the best of our ability and belief, all information contained here is accurate and reliable, and has been obtained from public sources we believe to be accurate and reliable. We make no representation, express or implied, as to the accuracy, timeliness, or completeness of any such information or with regard to the results obtained from its use. This report does not represent an investment advice or a recommendation or a solicitation to buy any securities.

