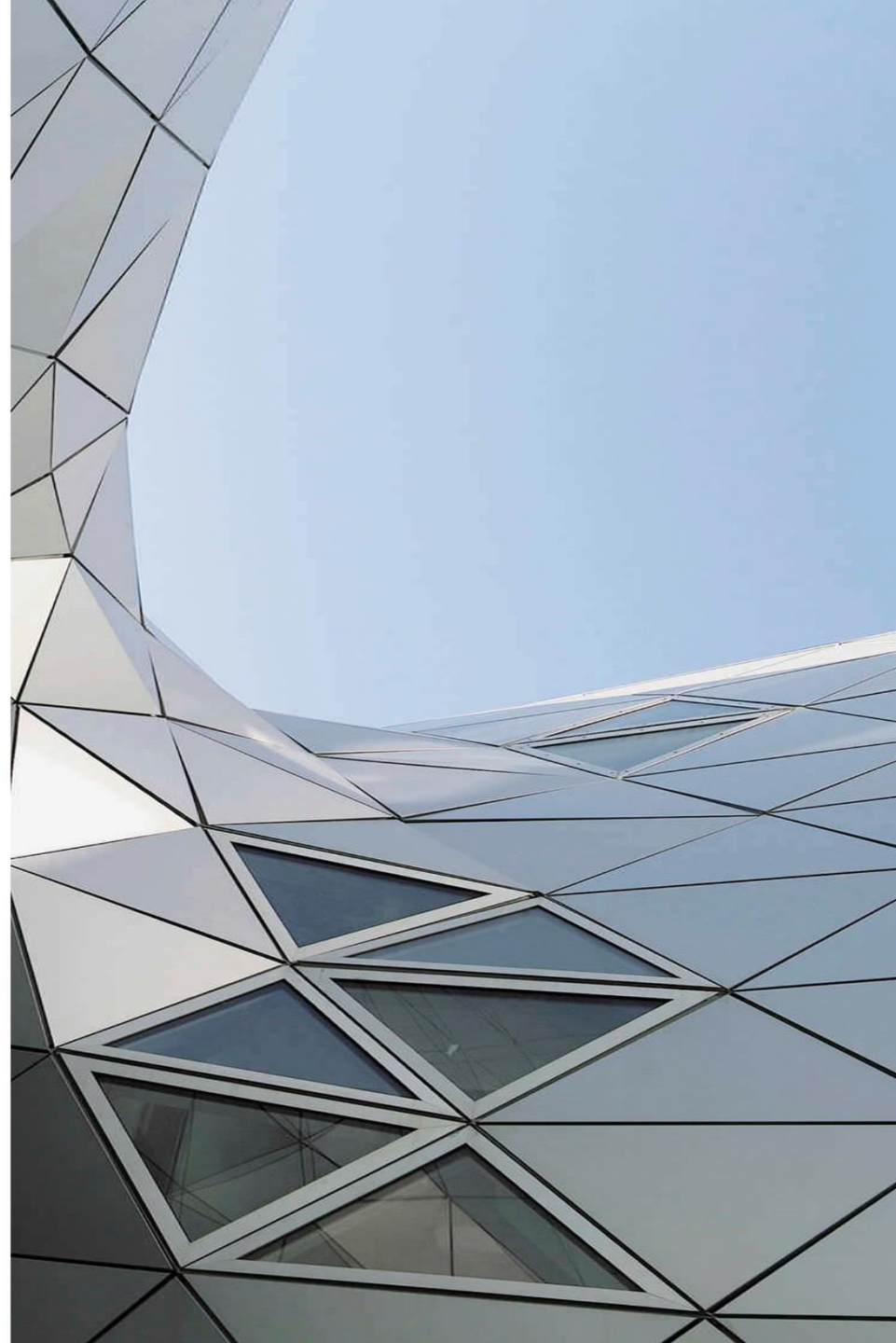




9M 2020

# Market and Business Update

October 2020



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## Market overview

- As at the end of 9M 2020, global economic activity has been demonstrating signs of recovery, whereby several datapoints have exceeded expectations and forecasts made in 2Q 2020 as COVID-19 was severely impacting the global economy
- In 9M 2020, global aluminum demand declined by 2.6% y-o-y to 46.7 million tonnes, an improvement compared to the 6.6% y-o-y decline observed during 1H 2020. A contraction in demand in the rest of the world ex-China (RoW) by 11.1% to 18.6 million tonnes was offset by strong demand growth in China of 3.9% y-o-y to 28.1 million tonnes.
- Global aluminium production in 9M 2020 grew by 1.5% to 48.4 million tonnes, taking into account the RoW decline of 0.1% y-o-y to 20.9 million tonnes and the 2.8% growth y-o-y in China, to 27.5 million tonnes. Overall, the global market was in surplus of 1.7 million tonnes during 9M 2020.
- In 9M 2020, the average electricity spot price on the day-ahead market in the second price zone was 888 RUB/MWh (down 3.1% y-o-y). According to Association “NP Market Council” data, the decrease reflected an increase in HPP generation, which in turn was due to decreased demand, transmission constraints on the transit between East and West Siberia and changes in the supply and demand structure

## Operational Performance

- Aluminium production was broadly unchanged y-o-y, totalling 2,805 kt. Aluminium sales decreased 5.6% y-o-y to 2,898 kt given the higher sales through 2019 driven by destocking of accumulated inventories from 2018.
- The average aluminium realised price decreased 9.2% y-o-y to USD 1,758 per tonne. During the period the London Metal Exchange (LME) QP component decreased by 10.5% y-o-y to USD 1,616 per tonne, while realised premium increased 7.6% to USD 142 per tonne.
- Sales of value added products (VAP) increased 12.3% y-o-y to 1,239 kt. VAP share in the Metals segment’s aluminium sales increased to 43% in 9M 2020 from 36% in 9M 2019.
- The electricity production by the Group's Power segment increased 5.2% y-o-y to 58.7 TWh. The hydro power output from the Group's Power segment increased 7.5% y-o-y to 49.9 TWh.

# 9M 2020 Operational Highlights

	9M 2020	9M 2019	Change		
Sales and production	Total aluminium production, kt	2,805	2,808	(0.1%)	▼
	Total aluminium sales, kt	2,898	3,069	(5.6%)	▼
	VAP share	43%	36%	7 pp	▲
	Total electricity production <sup>1</sup> , TWh	58.7	55.8	5.2%	▲
	• HPPs, TWh	49.9	46.4	7.5%	▲
	• CHPs, TWh	8.8	9.4	(6.4%)	▼
Heat production, mn Gcal	17.3	17.9	(3.4%)	▼	
Macro	LME QP component <sup>2</sup> , USD/t	1,616	1,805	(10.5%)	▼
	VAP upcharge over commodity (VAP products only), USD/t	163	175	(7.1%)	▼
	Average electricity spot prices <sup>3</sup> in 2nd price zone, Rb/MWh	888	917	(3.1%)	▼
	• Irkutsk region, Rb/MWh	822	829	(0.8%)	▼
	• Krasnoyarsk region, Rb/MWh	814	823	(1.0%)	▼
Average Exchange Rate, RUB/USD	70.78	65.08	8.8%	▲	

Note: Due to rounding, numbers may not add up precisely to the totals provided, percentages may not precisely reflect the absolute figures, and percent change calculations may differ.

Source: Company data, Bloomberg.

(1) Excluding Onda HPP (installed capacity 0.08 GW), located in the European part of the Russian Federation, leased to RUSAL since October 2014.

(2) QP (quotation period) prices differs from the real time LME quotes due to a time lag between LME quotes and sales recognition and due to contract formula speciality.

(3) Day ahead market prices, data from ATS and Association "NP Market Council". The prices average electricity spot prices are calculated as an average of the prices reported in the Monthly Day Ahead Prices Overview by Association "NP Market Council".

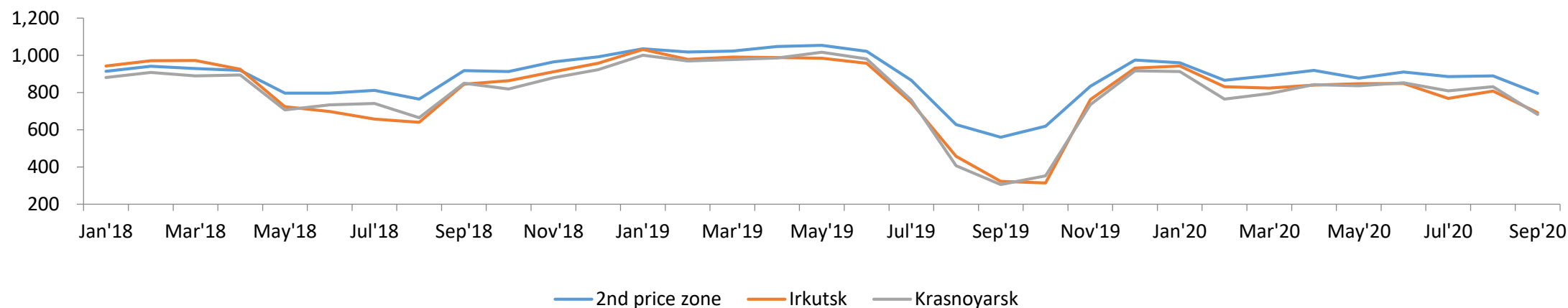
## Power supply and demand in Siberia<sup>1</sup>

TWh	9M'20	9M'19	Change
Production in Siberia	150.5	151.6	-0.7%
HPPs production	86.2	78.9	+9.1%
Consumption	152.3	153.8	-1.0%

## Average electricity spot prices<sup>2</sup>

Average market price, RUB/MWh	9M'20	9M'19	Change
2 <sup>nd</sup> price zone	888	917	-3.1%
Irkutsk region	822	829	-0.8%
Krasnoyarsk region	814	823	-1.0%

## Electricity spot prices<sup>2</sup>, Rb/MWh



## Capacity prices<sup>3</sup>

th. RUB/MW/month	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
2 <sup>nd</sup> price zone	189	182	186	190	191	225	264	267	279	303

Note: Due to rounding, numbers may not add up precisely to the totals provided, percentages may not precisely reflect the absolute figures, and percent change calculations may differ.

(1) System Operator of the Unified Power System, incl. February 29, 2020.

(2) Day ahead market prices, data from ATS and Association "NP Market Council".

(3) According to Russian regulations in the power industry, capacity price is defined by supply-demand balances, set in real terms and linked to CPI-1% till 2017 and CPI-0.1% since 2018.



# Water Inflows as a Driver to Increase HPP Generation

## Overview

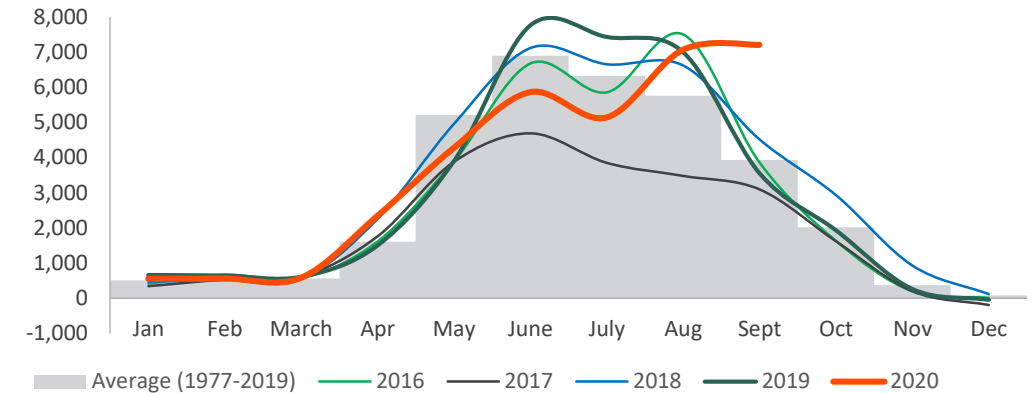
- The Group's Angara cascade HPPs (Irkutsk, Bratsk and Ust-Ilimsk HPPs) increased power generation to 34.2 TWh in 9M 2020 (up 6.2% y-o-y) and decreased to 11.9 TWh in 3Q 2020 (down 5.6% y-o-y). The increase in 9M 2020 was due to increased water reserves in the HPPs' reservoirs of the Angara cascade at the beginning of 2020. The decrease in 3Q 2020 was attributed to an increase in the energy output of the Bratsk and Ust-Ilimsk HPPs in 3Q 2019 due to heavy floods on the tributaries of the Bratsk reservoir.
- The Group's Krasnoyarsk HPP's total power generation increased to 15.7 TWh in 9M 2020 (up 10.6% y-o-y). In 3Q 2020, power generation at the Krasnoyarsk HPP was 6.0 TWh (up 17.6% y-o-y). This increase in generation levels was a result of higher water levels in the Krasnoyarsk reservoir. The lateral inflow to the Krasnoyarsk reservoir was 1,810 cubic meters per second in 9M 2020 (114% of normal level), compared to 1,590 cubic meters per second in 9M 2019 (99.8% of normal level).

## Water level (m)

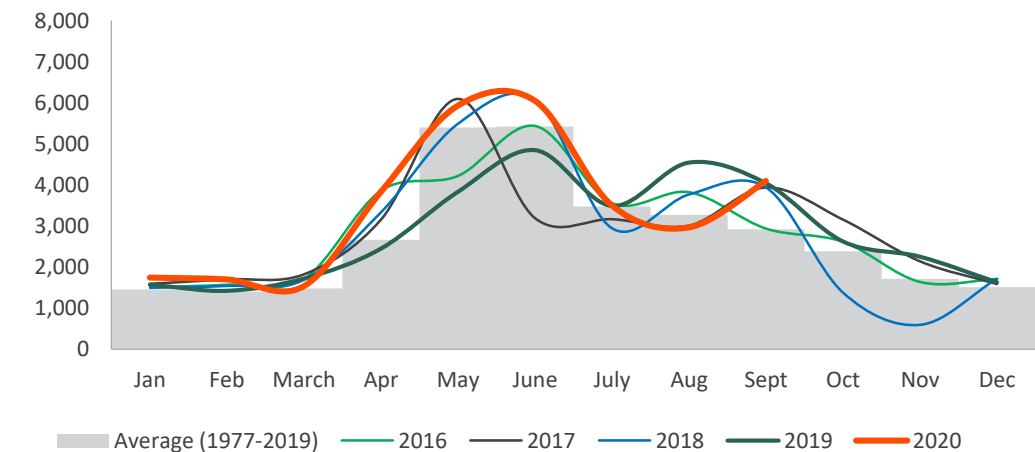
	Normal	Minimum	30.09.2020	30.09.2019
Irkutsk HPP	457.00	455.54	457.12	456.86
Bratsk HPP	402.08	392.08	400.00	399.98
Ust-Ilimsk HPP	296.00	294.50	295.69	295.84
Krasnoyarsk HPP	243.00	225.00	241.06	240.02

(1) Hydro production and water inflows data for Angara cascade include Irkutsk, Bratsk and Ust-Ilimsk HPPs.

## Water inflows, Angara cascade<sup>1</sup> (m<sup>3</sup> per sec.)



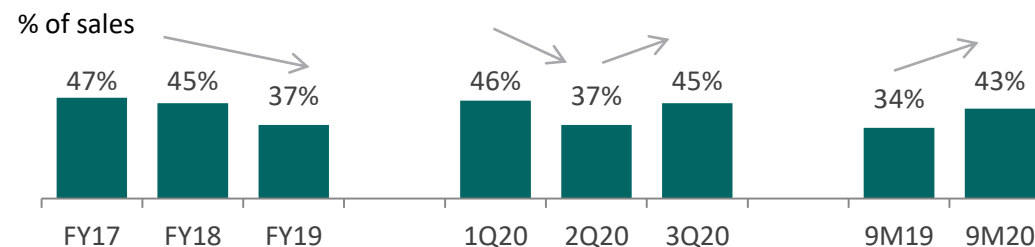
## Water inflows, Yenisey cascade / KHPP (m<sup>3</sup> per sec.)



# Aluminium Price and Sales Structure in 3Q 2020

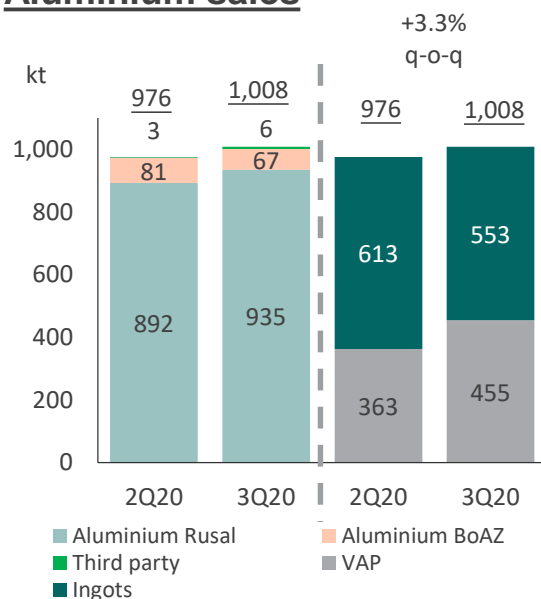
- In 3Q 2020, aluminium sales amounted to 1,008 thousand tonnes (+3.3% q-o-q)
- In 3Q 2020 the Metals segment continued to successfully adjust its regional sales geography in line with existing markets conditions. While the European destination decreased in share to 37% (vs 46% in 2Q 2020), Asia's and Russia&CIS's sales grew to 32% (vs 27% in 2Q 2020) and 24% (vs 20% in 2Q 2020) respectively
- In 3Q 2020, the average aluminium realised price increased by 6.5% q-o-q to USD 1,762/t. The increase was driven both by the London Metal Exchange (LME) QP component (+6.0% q-o-q to USD 1,618/t) and average realised premium component (+12.5% q-o-q to USD 144/t). The increase of realized premium during 3Q 2020 is attributed to the growth of the VAP share in product sales mix and a positive shift in VAP upcharge, reflecting the gradual recovery of the global market conditions

## VAP share in sales

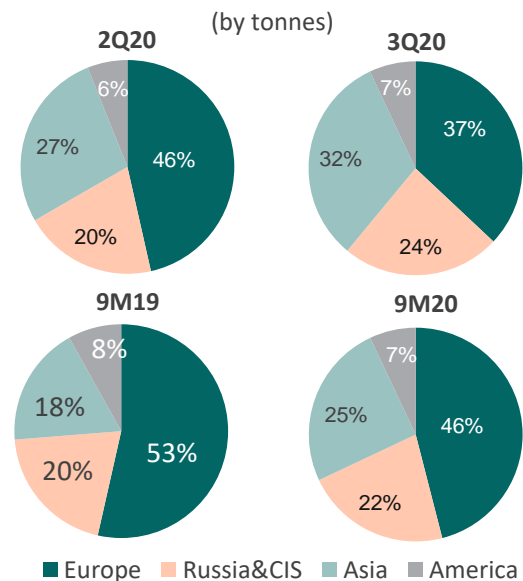


- In 3Q 2020, sales of value added products (VAP) increased by 25.4% q-o-q, to 455 thousand tonnes, demonstrating a recovery of VAP share in total sales mix to 45% in 3Q 2020, compared to 37% in 2Q 2020, that was then affected by external market drivers related to the COVID-19 pandemic

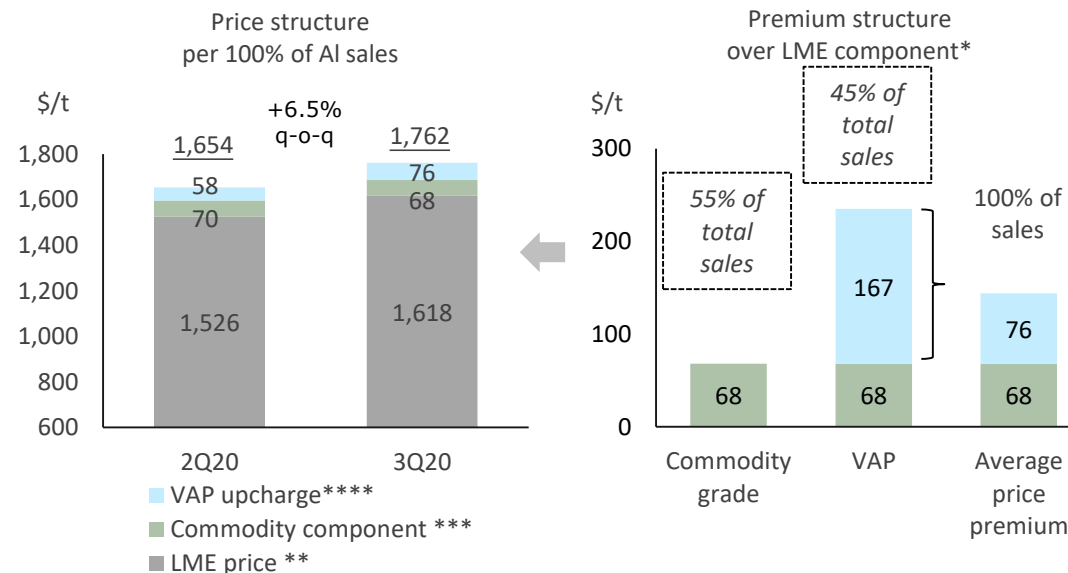
## Aluminium sales



## Sales geography



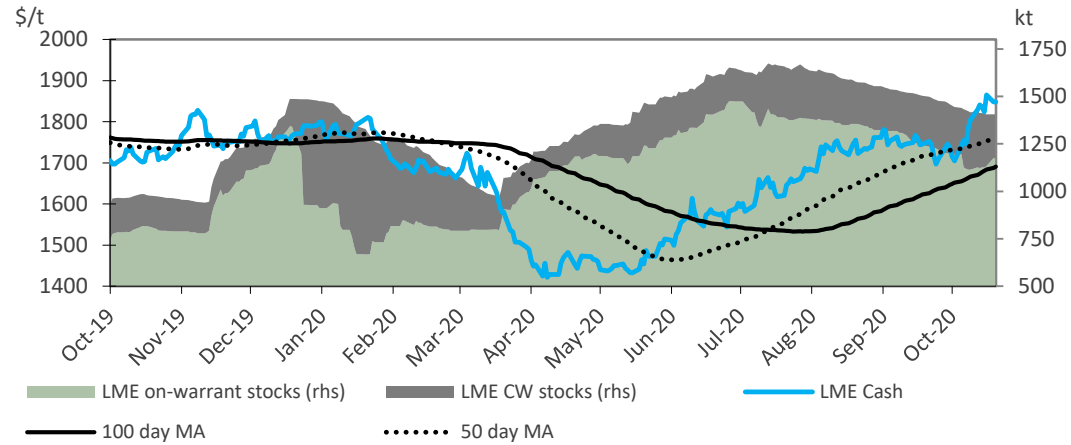
## 3Q 2020 realised price structure



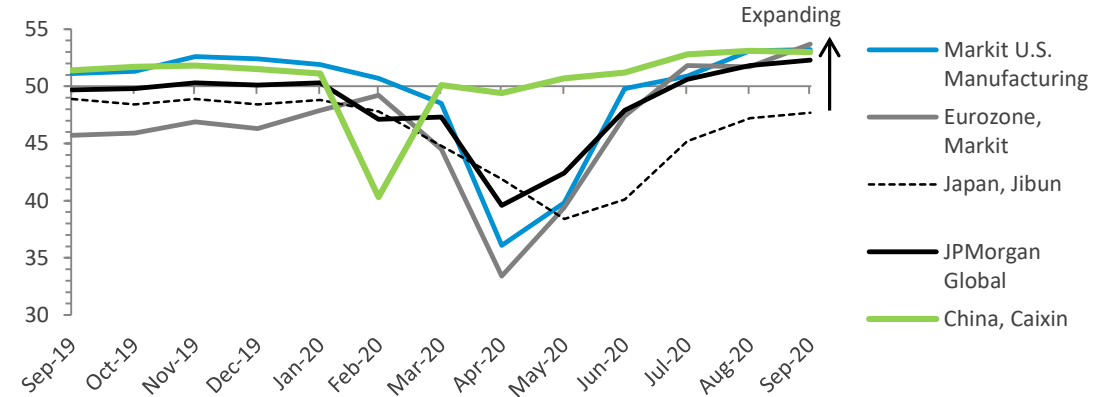
\* Excluding sales of secondary alloy \*\* LME cash price adjusted by quotation period \*\*\* Estimated average commodity premium over LME component \*\*\*\* VAP component is applicable only to VAP products and represents an upcharge over LME price and commodity premium.

# Aluminium Market: Prices and Premiums Rebounded Strongly

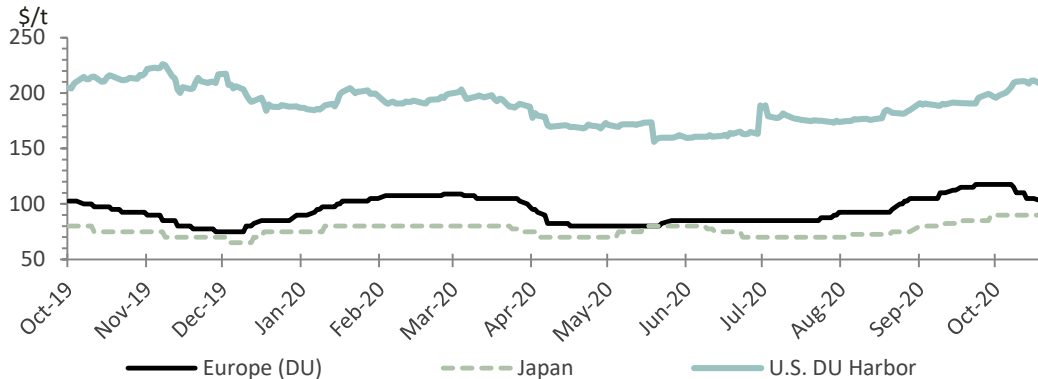
## Aluminium Price and Stocks



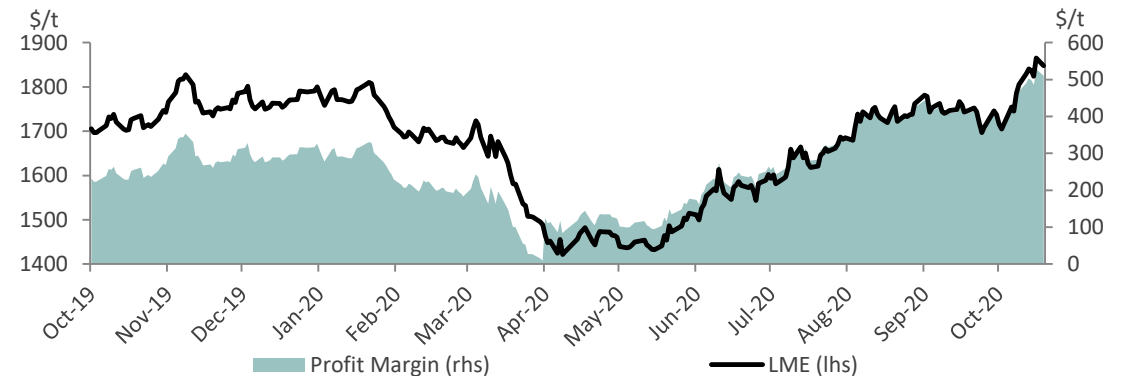
## Manufacturing PMI



## Regional market premiums



## Profit Margin of Aluminium Smelters



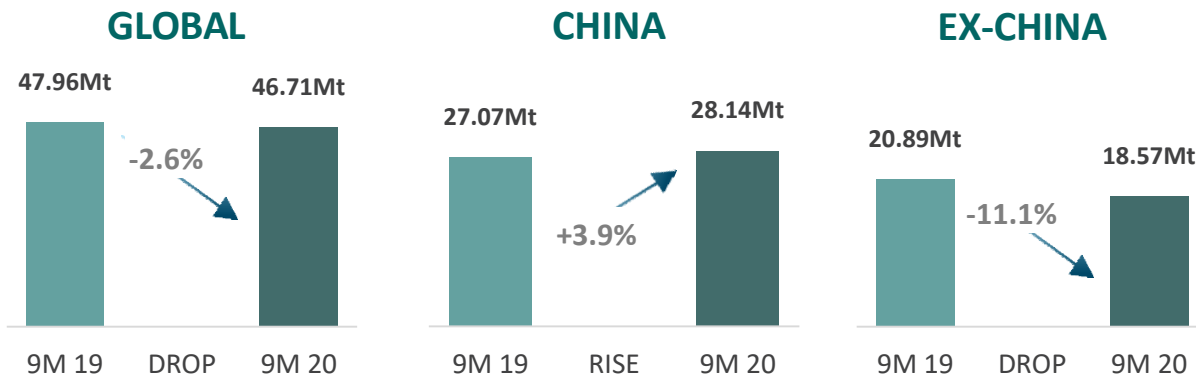
- LME price and regional market premiums rebounded strongly aiming improvements in the final demand
- PMI indicator for most of the regions continues to show a strong steady growth, which suggests that manufacturing is getting back on its feet
- Anti-dumping measures in RoW did not affect export volumes of Chinese semis manufacturers. Global aluminum producers' margins continue strong growth, indicating bullish cycle for prices



# Global Aluminium Demand Contracted by 1.3 Mt during 9M 2020

COVID-19 outbreak has changed the market outlook for 2020 dramatically. Current price environment gives a preference to primary aluminium in comparison to scrap. Primary aluminium will gain some share from scrap this year. As a result global market was in surplus of 1.7 million tonnes during 9M 2020 keeping aluminum prices and premiums under pressure.

## Primary demand contraction in 9M 2020



## Most affected sectors\*

### TRANSPORTATION SECTOR

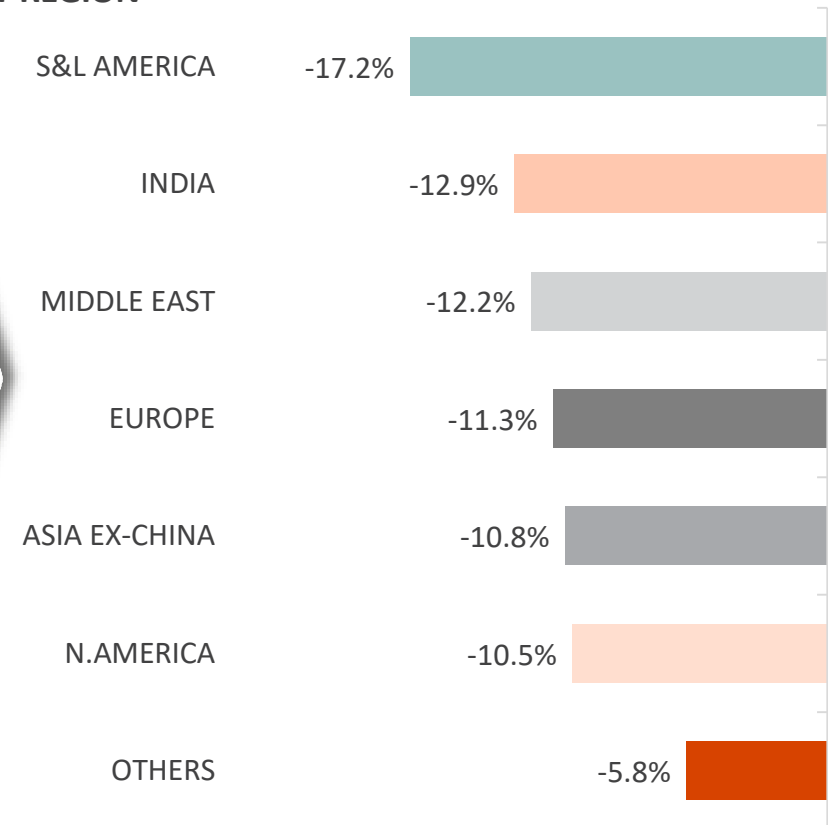
The Transportation sector is the most affected sector amid wide-spread suspension of car factories of key automotive producers in China, Europe, the USA and other regions. The launch of new models, including EVs, is delayed until the end of the virus outbreak.

### PACKAGING SEGMENT

Packaging segment is growing due to ongoing process of replacing plastic bottles by aluminium cans and due to additional demand, related to quarantine consumer behavior and COVID-19 medical treatment.

## World ex-China dynamics in 9M 2020 y-o-y

### BY REGION






\* Among aluminium end-user industries  
Source: CRU, Rusal analysis

# Business is Preparing for “Sustainable” Restart after Lockdown





## INTRODUCTION OF NEW “GREEN” TARGETS

- Europe unveils new “**Bauhaus**” plan for mass building renovation, sustainable construction and services expansion 
- **Japan and India** to promote CO2 cut for 2030 and 2050, respectively 
- **Australia** to move from coal-based power stations towards solar PV installed by 2050 



## PRIMARY PRODUCERS COMMIT TO GREEN ENERGY

- New divisions of **Renewables Growth and Batteries** + **JV with Lyse** to secure renewable power supply 
- Commissions **biomass steam boiler** for aluminum smelting 
- Invests C\$160 million in **refurbishing hydro plant** for continued production of LCA 





## END-USERS EXPAND AND NEW TECHNOLOGIES ARE INTRODUCED

- **Ball** to further expand its N. American al can production capacity by 2021 
- **Canpack** commenced 1 billion cans annual capacity at Stribro plant 
- **Tesla** will replace 70 components with a single module out of al casting 
- **Trimet** introducing trimal®-05AM for 3D printing 


## TAXONOMY

- The European Union and China agreed to co-lead a working group that will develop and publish a “common ground taxonomy” by mid-2021 
- Aim is to showcase overlaps between catalogues of environmentally-friendly investments 

## SCRAP LOOP PROJECTS ARE BEING LAUNCHED



- High-quality alloys project with recycled content– capacity **184kt** 
- Aluminum Closed Loop project in 2021– capacity **38kt** 
- Recycled aluminium project in Shanxi province – capacity **300kt** 
- JV on EVL dismantling and scrap recycling in China – capacity **200kt** of scrap, **50kt** end-of-life vehicles 

## POWER TARIFFS THREATEN PRIMARY OUTPUT; FEW RESTARTS ARE EXPECTED

- **Hydro** to restart Husnes by the end of November 2020– capacity **100kt** 
- **Mostar**, Bosnia to relaunch in 2021 due to change in ownership – capacity **130kt**





## MARKET PLAYERS RESPOND WITH NEW SUSTAINABLE PROJECTS

- **Audi & FAW** to launch new EV venture, operating from 2024 
- **Hyundai** to build EV hub (30,000 units) in Singapore, operating from 2024 
- **Constellium** to lead £15 million ALIVE project of new al battery enclosure (UK) 
- **AB InBev, Rio Tinto** in MoU for sustainably-produced beer cans 
- **JLR** commits to research of al waste up-recycling into new vehicles

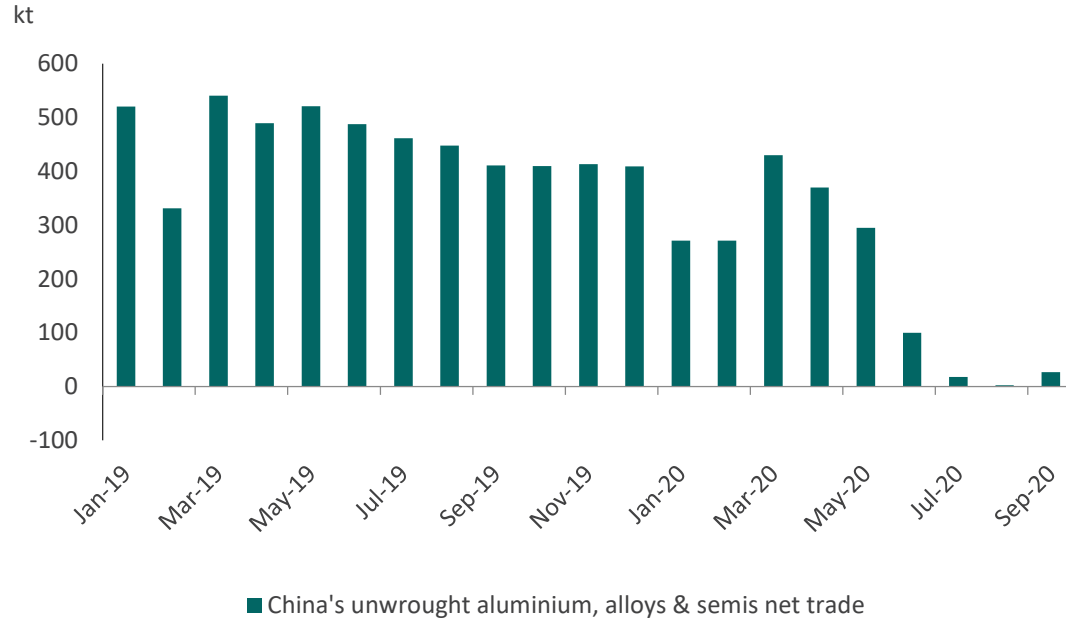
## COMMODITY TRADERS SHIFTING TO RENEWABLES

- **Glencore** to run down its coal mines and won't replace them, in efforts to cut "Scope 3" emissions by 30% by 2035 
- **Trafigura** creates new venture for 2GW of renewable power and storage projects 
- **Total and Ignis** to develop 3.3GW solar power projects in Spain 

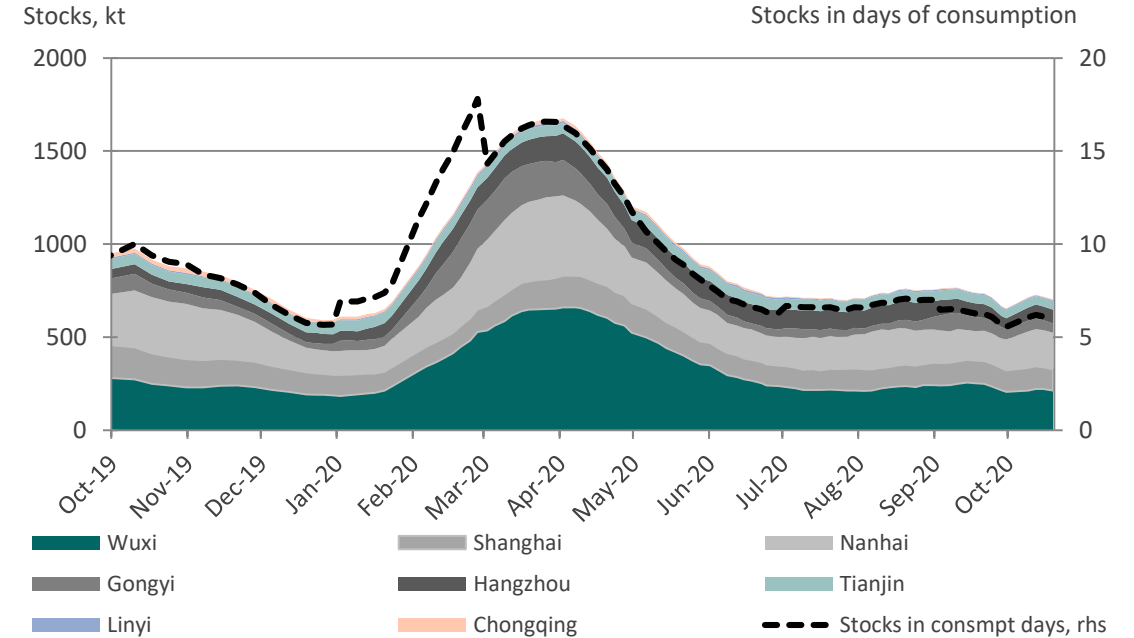
## TRADE PROTECTIONISM GAINS MOMENTUM

- EU to impose AD duties on extrusions from China, to come into effect 15/10 
- EU launches AD investigation into Chinese aluminium FPR, August 2020 
- US to probe alu foil imports from 5 countries AM, BR, OM, RU, TR
- Taiwan to launch AD investigation into Chinese alu foil, September 2020

## Chinese unwrought aluminum, alloys & semis net export



## Chinese primary aluminum stocks



- Chinese unwrought aluminium and product exports collapsed by 18.6% y-o-y in 9M 2020 to 3.6 million tonnes on strongly negative export price arbitrage and weak demand Ex-China; whilst primary unwrought not-alloyed aluminium net-import surged during 9M 2020 to 1.65 million tonnes
- Overall Chinese net trade of unwrought aluminum, alloys & semis during 9M 2020 declined by 2.4 million tonnes compared to the same period last year, thus significantly rebalancing surplus from the market outside of China
- Chinese regional stocks continued to decline steeply during 9M 2020 retaning low level of about 0.7 million tonnes from its highest level this year as of 1.68 million tonnes at the beginning of April 2020

Source: SMM, China custom data, RUSAL analysis