



*We Deliver Precision®*



**ECONOMIC UPDATE**

**2020 OVERVIEW**



*We Deliver Precision®*

# ECONOMIC UPDATE

Number 9 • 2020 OVERVIEW

## **A Letter from the CEO, Chris Ulbrich**

Greetings,

As we begin the New Year, we are pleased to report we are very optimistic about 2021. We are hopeful the end of the pandemic is near – even though the initial rollout of vaccines is somewhat disappointing. That said, we remain confident relief is within sight and a return to normalcy can't be far behind. We believe a new era of economic prosperity will soon become a reality.

As you may recall, with high hopes, Ulbrich commenced with publishing its very own ***Economic Update*** in 2019. The newsletter provides readers with a comprehensive summary of key data and recent economic trends impacting the steel and commodities markets, as well as associated industries across the globe. We are happy and proud to say that Ulbrich's easy to read monthly newsletter has been very positively received. In fact, since its inception, we have built a subscription base of over 4,500 contacts. Unfortunately, due to the unprecedented challenges presented by the worldwide spread of the COVID-19 virus, we were forced to temporarily suspend publishing our informative periodical in April of 2020. That said, we are happy to be restarting publishing the *Economic Update* and look forward to once again, sharing key metrics and news about worldwide business activity, new business developments and emerging trends. With this in mind, please feel free to forward the Ulbrich *Economic Update* to anyone you think will benefit. Visit [www.ulbrich.com/blog/](http://www.ulbrich.com/blog/) and subscribe to our newsletter to be added to our mailings.

In this issue, we present a timely overview of key metrics from 2020 – a year that we will never forget. Beginning in March of 2021, we plan to regularly publish the *Economic Update* on a monthly basis. Future issues will include interesting articles focusing on economic and innovative initiatives taking place around the world. As we all hope for improved market conditions in the near term, the *Economic Update* will track how regional, national and worldwide economies perform in 2021. We live in an exciting age with innovation, technological advancements, artificial intelligence and opportunities for growth. The *Economic Update* will keep you in the know about what's going on all around us – we hope you enjoy reading it.

Ulbrich wishes you and yours the best of health and healing in the New Year. We all have been through so much and we certainly embrace 2021 and the hopeful horizons that abound. Thank you for your support of Ulbrich as we continue to reach for new and exciting heights. In turn, we wish you all the best for much success with all of your business endeavors!

Sincerely,

A handwritten signature in cursive script that reads "Chris".

Chris Ulbrich

*Chief Executive Officer/Chairman*

*Ulbrich Stainless Steels & Special Metals, Inc.*



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## EXECUTIVE SUMMARY

**AMERICAS: U.S. STOCKS HIT RECORD-SETTING YEAR-END LEVELS IN 2020**, capping off a banner year in everything from options bets to bitcoin. **The jobless rate held steady at 6.7% in December**, far below its April peak of 14.8% but still almost twice its pre-pandemic level. About 16 million people were on unemployment benefits under all programs at the start of the year. The economy has recovered 12.4 million of the 22.2 million jobs lost in March and April. **Manufacturing activity rose to its highest level in nearly 2.5 years** in December. **Services sector activity accelerated in December**, but surging COVID-19 infections depressed employment. **Sales of previously owned homes** rose in 2020 to the highest level in 14 years. December housing starts were the highest since 2006. **Consumer confidence sagged and remains far below pre-pandemic levels**. The budget deficit from October through December totaled a record \$573 billion, a 61% increase from a year earlier. **Economists raised their U.S. GDP growth prediction for 2021**, as vaccinations and the prospect of additional financial relief from Washington for individuals and small businesses brightened economic prospects.

**OVERSEAS: THE WORLD BANK HAD LOWERED ITS PROJECTIONS FOR GLOBAL GROWTH** in the current decade, even before COVID-19. The pandemic raises the prospect of a “lost decade” ahead, the World Bank said, as it also cut its forecasts for this year. **Activity in the eurozone manufacturing sector** hit its highest level in December since May 2018. The eurozone manufacturing purchasing managers’ index rose to 55.2 from 53.8 in November, marking the sixth consecutive reading indicating expansion. **China’s GDP grew 2.3% in 2020**, the only major economy in the world to avoid a contraction last year as nations struggled to contain the COVID-19 pandemic.

**STEEL: U.S. STAINLESS STEEL PRODUCERS HAD A DIFFICULT YEAR IN 2020**. Pandemic shutdowns negatively impacted some important stainless markets, such as restaurant and food processing equipment. **Allegheny Technologies announced it was exiting the standard sheet business in mid-2021**, reducing domestic production of common 304 cold-rolled stainless coil. Buyers are already looking to place business with the other three domestic sheet mills, extending lead times to over six months in some cases.

**METALS/COMMODITIES: IRON ORE PRICES WERE TEETERING NEAR RECORD TERRITORY AT THE END OF 2020** as a landslide at a Brazilian iron ore mine intensified concerns about supply and Chinese demand runs hot. **The price of iron ore soared to its highest level since September 2011**, almost doubling its value at the start of the year. **Nickel prices climbed higher in mid-January** on supply worries from top producers. Three-month nickel futures soared from a low of \$5/lb in April of 2020 to over \$8/lb in January.

**AEROSPACE: HYDROGEN-POWERED FLIGHT FOR PLANES IS GETTING SERIOUS CONSIDERATION**. Several companies are looking again at hydrogen-powered flight. Many planes are driven by propellers which can be turned by electric motors. Using fuel cells, it is possible to generate the electricity needed with hydrogen. **A British firm, ZeroAvia, expects to achieve commercialization as early as 2023 with demonstration flights in the 500-mile range in 20-passenger aircraft**. An American electric-motor manufacturer magniX announced a partnership with Universal Hydrogen to convert a 40-seat de Havilland to run on fuel cells by 2025.

**AUTOMOTIVE: ELECTRIC VEHICLES ARE GAINING A NEW CACHE**, but few bear any resemblance to good old Detroit steel until now. This summer, startup **Rivian expects to ship the already-sold-out launch editions of its first-generation R1T pickup and R1S SUV**, vehicles with ranges of over 300 miles and price tags around \$70,000. **GMC’s Hummer EV pickup is due in the fall**. Reservations are already full for the \$112,595 Edition 1, which is reported to have a range of over 350 miles and can do zero-to-60 in 3 seconds.

**MEDICAL: HEALTH EXPERTS WARNED A NEW STRAIN OF THE CORONAVIRUS** may evade current vaccines after enough mutations, highlighting the importance of a national surveillance program to determine the prevalence of the new COVID-19 variant. This new variant was first detected in the U.K through genome sequencing. **To accelerate its efforts for national-level surveillance, the CDC has already contracted LabCorp** and is also supporting a collaboration formed by Illumina and Helix to track the new variant.

**ENERGY: A MONSTER WIND TURBINE IS UPENDING AN INDUSTRY**. GE’s giant machine, which can light up a small town, is stoking a renewable-energy arms race. At the mouth of Rotterdam’s harbor is a wind turbine so large it is difficult to photograph. **The turning diameter of its rotor is longer than two American football fields end to end**. Later models will be taller than any building on the mainland of Western Europe, packed with sensors gathering data on wind speeds, electricity output and stresses. When assembled in arrays, the wind machines have the potential to power cities, supplanting emissions-spewing coal or natural gas-fired plants.

**INNOVATION: EUROPE’S LARGEST STEELMAKER HAS UNVEILED BREAKTHROUGH TECHNOLOGIES** that will take the company to 30% lower CO2 emissions by 2030 and carbon neutrality by 2050. **ArcelorMittal Europe is investing in two routes to carbon neutrality**, Smart Carbon and an innovative direct reduction-based route, in recognition of the need to act now to reduce CO2 emissions, in line with the EU’s Green Deal and the Paris Agreement. In its first phase, Smart Carbon will primarily use circular carbon.

## THE AMERICAS

- **The U.S. trade deficit** hit a 14-year high in November, expanding 8% from the prior month to \$68.14 billion. Imports increased 2.9% in November to \$252.3 billion. Exports rose 1.2% to \$184.2 billion. Factories in the U.S., Asia and Europe boosted their output as 2020 drew to a close, aided by a rise in new orders and a revival in trade that has continued despite a sharp rise in coronavirus infections across many large economies.
- **U.S. import prices** increased 0.9% in December, boosted by higher prices for energy products and a weak dollar, suggesting inflation could pick up in the near term. In the 12 months through December, import prices slipped 0.3%. U.S. export prices surged 1.1% in December and were 0.2% higher on a year-over-year basis.
- **The U.S. jobless rate** held steady at 6.7% in December, far below its April peak of 14.8% but still almost twice its pre-pandemic level. The U.S. shed 140,000 jobs in December as a resurgence of the coronavirus ended seven months of job growth and weakened the recovery. Restaurants and bars drove the decline in December by cutting 372,000 jobs.
- **U.S. consumer confidence** fell to 88.6 in December from 92.9 in November as measured by the Conference Board. Confidence remains far below pre-pandemic levels. The index stood at 132.6 before the viral outbreak in February.
- **U.S. retail sales** fell 0.7% in December from the prior month, the third consecutive month of declines after a stretch of growth last spring and summer. Many analysts are optimistic about increased consumer spending in the months ahead, partly due to the prospect of additional pandemic relief from the government.
- **U.S. consumer prices** ticked 0.4% higher at the end of 2020, as Americans contended with higher gasoline and food costs along with a rise in coronavirus cases. Gasoline prices rose 8.4% in December, accounting for more than 60% of the overall increase in prices. In the year ended December, prices were up 1.4%, the smallest yearly rise since 2015.
- **The Paycheck Protection Program (PPP)** reopened to large lenders in January with many big banks ready to start accepting applications. The Small Business Administration has approved over \$5 billion in PPP loans in the first week since reopening under a new round of federal funding.
- **The U.S. Leading Economic Index (LEI)** rose 0.6% in November, but its pace of improvement has been decelerating in recent months. The Conference Board survey is signaling a significant moderation in growth as the economy heads into 2021.

- **The U.S. economy** will grow 4.3% this year, according to a *Wall Street Journal* survey. Economists raised their growth prediction for 2021 U.S. GDP in the January survey, saying vaccinations and the prospect of additional financial relief from Washington for individuals and businesses brightened economic prospects.

- **Factories in the U.S., Asia and Europe** boosted their output as 2020 drew to a close, aided by a rise in new orders and a revival in trade that has continued despite a sharp rise in coronavirus.

The resilience of the global manufacturing sector contrasts with weakness in service businesses that rely on close physical proximity. Service businesses have



suffered as consumers try to lower their risk of infection while struggling with government-imposed restrictions.

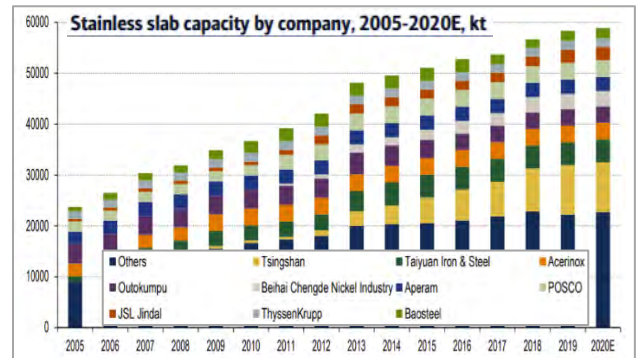
**Key Update:** IHS Markit's PMI for the U.S. manufacturing sector rose to 57.1 in December from 56.7 in November, the biggest improvement since September 2014.

- **U.S. industrial production** increased 1.6% in December, providing a source of strength for the economy as consumer spending and employment gains slow. Production was boosted by the utilities sector, which rose 6.2% as demand for heating picked up following warmer-than-usual November weather. Manufacturing ended the year down 2.8%. Mining output rose 1.6%, driven by drilling and extraction in the oil-and-gas sector. Capacity utilization increased to 74.5% in December from 73.4% in November.
- **Durable goods orders** increased for a seventh-straight month in November. Orders for core capital goods, a closely watched proxy for business spending plans, rose 0.4%. Orders for motor vehicles and parts increased 2.4 percent.
- **U.S. producer prices** rose 0.3% in December, suggesting that an anticipated increase in inflation in the coming months will probably not be worrisome. Energy prices jumped 5.5% after advancing 1.2% in November. In the 12 months through December, the PPI rose 0.8 percent.
- **U.S. manufacturing activity** in early January surged to its highest level in nearly 14 years, but bottlenecks in the supply chain caused by the COVID-19 pandemic are driving up prices and signaling a rise in inflation in the months ahead, according to IHS Markit Purchasing Managers' Index. New orders received by factories raced to their highest level since September 2014.



- **U.S. factory orders** rose 1.0% in November and business investment on equipment was solid, pointing to sustained recovery in manufacturing. Orders fell 7.3% year-over-year. Manufacturing, which accounts for 11.9% of the U.S. economy, is being supported by a shift in demand from services to goods because of the COVID-19 pandemic.
- **U.S. service sector activity** accelerated in December, but surging COVID-19 infections depressed employment. The ISM non-manufacturing activity index increased to a reading of 57.2 from 55.9 in November, within striking distance of its 57.3 level in February of 2020, before the coronavirus pandemic reached the United States.  
*Key Update: The strong growth in service sector activity partly reflected an improvement in the ISM measure of supplier deliveries. A lengthening of delivery times is normally associated with a strong economy and increased customer demand, which would be a positive contribution.*
- **Sales of previously owned homes** rose in 2020 to the highest level in 14 years, totaling 5.64 million units, up 5.6% from 2019. Existing-home sales rose 0.7% in December from November to an annual rate of 6.76 million. The December sales marked a 22% increase from a year earlier. December housing starts jumped 5.8% to an annual rate of 1.669 million units, the highest level since September 2006.
- **Consumer spending**, the biggest driver of U.S. economic growth, fell by 0.4% in November. It was the first decline since April. The drop in spending was accompanied by a 1.1% fall in personal incomes, reflecting a decline in Paycheck Protection Program (PPP) loans to businesses and the expiration of other federal wage assistance measures that were put in place earlier last year.
- **The U.S. budget deficit** from October through December totaled a record \$573 billion, a 61% increase from a year earlier. Federal outlays rose 18% to \$1.4 trillion, driven higher primarily by automatic safety-net spending such as jobless benefits, nutrition assistance and health care. Total receipts held steady, at \$803 billion. In 2020, the federal government ran a \$3.3 trillion deficit, more than triple the deficit of 2019 and roughly 15.8% of U.S. gross domestic product.
- **Construction spending** rose 0.9% in November, the fifth increase in six months since the economy reopened in May. Outlays on new homes climbed 2.6% in November and 16.2% in the past year, a development that points to shifting attitudes toward home ownership during a pandemic. Outlays on all other forms of construction, both commercial and government funded, fell 0.6% in November.


- **U.S. stocks** hit record-setting year-end levels, capping off a banner year in everything from options bets to bitcoin. Share prices soared in 2020. After plunging into a bear market—a drop of at least 20%—a new bull market emerged, one that raced to new highs faster than ever before. The S&P 500 climbed 16.3% to end the year at a record, while the Nasdaq Composite gained 44%, its best year since 2009. The Russell 2000 small-cap stock index has roughly doubled from its March low.
- **U.S. stainless steel producers** had a difficult year in 2020. Pandemic shutdowns negatively impacted some important markets, such as restaurant and food processing equipment, while driving limited demand growth in home appliance and architectural products. Allegheny Technologies announced it was exiting the standard sheet business in mid-2021, reducing domestic production of common 304 cold-rolled coil. Buyers are already looking to place business with the other three domestic sheet mills, extending lead times as far as three months.



- **U.S. Steel** restarted the last idled blast furnace at its Gary Works in December, eight months after being idled by the spread of the coronavirus pandemic. After hot-rolled coil steel futures hit a yearly low of \$447/ton in August, the benchmark steel price gained more than 80% amid higher demand and increasingly tight supply. The surge in hot-rolled coil has been supported by a strong recovery in automotive sales and restocking across the supply chain.  
*Key Update: USS exercised its option to acquire the remaining 50.1% stake in Big River Steel for \$774 million, giving it ownership of one of the newest, most advanced flat-rolled mini mills in the U.S. The acquisition is the centerpiece of its drive to raise profit by investing in mills that make steel less expensively by melting scrap in electric arc furnaces.*
- **Steel mills** in the U.S. shipped 6.753 million tons of steel in November, an 11.9% decline from November 2019. Steel mill product shipments for 2020 through November were 73.950 million tons, a 16.1% decrease vs. 2019 shipments of 88.157 million tons for eleven months.



- **Steel imports into the U.S.** were 1.370 million tons in November, including 1.181 million tons of finished steel (down 9.2% and 5.5% respectively vs. the prior month). For eleven months of 2020, total and finished steel imports were 20.526 million and 14.799 million tons, down 22.1% and 24.9% vs. 2019. Finished steel import market share was an estimated 18% over the first eleven months of 2020. (See **Appendix: Steel**, page 14)
- **Cleveland-Cliffs** completed the acquisition of all the operations of ArcelorMittal USA and its subsidiaries, forming the largest flat-rolled steel producer in North America. On a FY2019 basis, the combined company generated \$17B in proforma revenues and \$1.7B in adjusted EBITDA, including expected synergies. ArcelorMittal received \$505M cash, 78M common shares of Cleveland-Cliffs and non-voting preferred stock redeemable for about 58 common shares or an equivalent amount in cash.
- **The stainless scrap market** was soft for most of 2020, but underlying price support from nickel pushed prices higher through the final weeks of the year. For example, grade 316 solids reached over 90¢/lb, up 8¢ from November.
- **Automakers in the U.S.** estimate the industry sold 14.5 million cars and light trucks last year, as the pandemic kept buyers away from dealerships and forced companies to shut down factories for two months last spring. That amounts to a 15% decline from 2019 and the lowest level since 2012. However, automakers are counting on a rebound in 2021, and foresee strong growth in the 2<sup>nd</sup>H, as they roll out new SUVs, pickup trucks and electric cars.
- **Microsoft** is investing in GM's driverless-car startup Cruise as part of a strategic tie-up, another sign of renewed interest in autonomous-technology after a relatively quiet period. Cruise will use Microsoft's Azure cloud-computing service to help it roll out autonomous-vehicle services.
- **Fiat Chrysler and PSA investors** approved a \$52 billion merger to create the world's fourth largest automaker, named Stellantis. With annual sales of 8.7 million vehicles worldwide (more than GM) and revenues over \$203 billion, the newly-formed firm is expected to play a key role in the auto industry's jump into the new era of electrification. Stellantis will have 14 brands, including FCA's Fiat, Maserati and U.S.-focused Jeep, Dodge and Ram to PSA's traditionally Europe-focused Peugeot, Opel and Citroen. PSA and FCA have pledged not to close any plants.
- **The U.S. Bureau of Land Management** gave final approval to Lithium America's Thacker Pass lithium mine in Nevada, part of a push by policymakers to boost domestic output of the white metal for electric vehicle batteries.

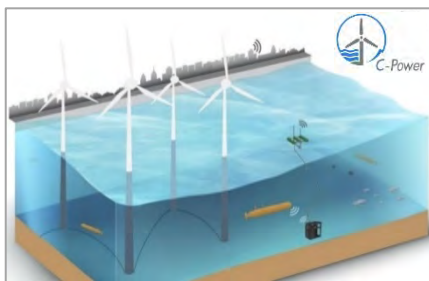
- **General Motors** presented at the CES a futuristic flying Cadillac - a self-driving vehicle which takes off and lands vertically and carries the passenger above the streets and through the air. GM described the concept as "reimagining the future of personal transportation". The single-passenger vertical take-off and landing (VTOL) drone will be able to travel from urban rooftop to urban rooftop at speeds up to 55 miles per hour. It is fully autonomous and all-electric, with a 90kW motor, a GM Ultium battery pack and an ultra-lightweight body with four pairs of rotors. (See **Appendix: Automotive**, page 12)
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- **Automakers around the world** are shutting assembly lines because of a global shortage of semiconductors that in some cases has been exacerbated by U.S.'s actions against key Chinese chip factories. The shortage, which caught much of the industry off-guard and could continue for many months, is now causing Ford, Subaru and Toyota to curtail U.S. production. Automakers affected in other markets include Volkswagen, Nissan and Fiat Chrysler. Chips are used in a growing number of applications including driver assistance systems and navigation control. **Key Update:** *The supply problems stem from a confluence of factors as auto manufacturers compete against the sprawling consumer electronics industry for chip supplies. Consumers stocked up on laptops, gaming consoles and other electronic products during the pandemic, creating tight chip supplies throughout 2020. In at least one case, the shortage ties back to U.S. policies aimed at curtailing technology transfers to China.*
  - **General Motors and labor union Unifor** have reached a tentative deal for the automaker to invest nearly C\$1 billion (US\$785 million) in its CAMI assembly plant in Ingersoll, Ontario. GM intends to begin work on the plant immediately and start large-scale commercial production of the EV600 electric van there. The new deal builds upon recent investments by GM in Canada. In November, GM announced that it would invest C\$1 billion in its Oshawa plant to expand production of its full-size pickup trucks.
  - **Richard Branson's LauncherOne rocket** was released from beneath the wing of a Boeing 747 carrier aircraft off the coast of Southern California in January. The two-stage rocket ignited and carried a cluster of very small satellites known as CubeSats, developed and built as part of a NASA educational program involving U.S. universities.

- **NASA's next moon rocket's engines** fired in synchrony for the first time in January. The engines shut down after 75 seconds, far shorter than the planned 8-minute firing that was to simulate what the engines will do during an actual launch of the Space Launch System. The agency didn't explain what went wrong, but a former manager of NASA's space shuttle program said it was a significant problem. The truncated test was another setback for a program that has suffered delays and \$1 billion in cost overruns, and it was another stumble by Boeing, the prime contractor on the core stage. (See **Appendix: Aerospace**, page 10)
- **Boeing** will pay \$2.5 billion to resolve a Justice Department criminal investigation and will admit that Boeing employees deceived aviation regulators about safety issues that led to two deadly crashes of the 737 MAX. Meanwhile, American Airlines put passengers back on Boeing's 737 MAX in December for the first time in the U.S. since the aircraft was grounded nearly two years ago.

**Key Update:** Boeing delivered about 60% fewer aircraft to customers in 2020 vs. 2019 and less than one-third the deliveries of rival Airbus, the lowest in 43 years. For the year, gross orders were 184 jets, down 25% compared with 2019 and the lowest since 1994.

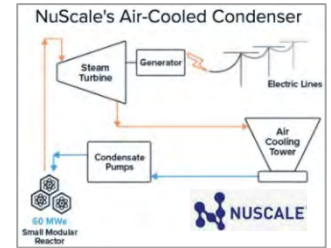
- **U.S. aviation regulators** approved the first fully automated commercial drone flights, granting permission to operate drones without hands-on piloting or direct observation by human controllers or observers. The decision by the FAA limits operation of automated drones to rural areas and below 400 feet, but it is a potentially significant step in expanding commercial applications of drones for farmers, utilities, mining companies and other customers.

- **Columbia Power Technologies** started a six-month sea trial to test and validate its SeaRAY autonomous offshore power system (AOPS) in partnership with the U.S. Department of Energy and the U.S. Navy. The sea trials are conducted at the Navy's Wave Energy Testing site, located off



the U.S. Marine Corps Base on the island of Oahu, Hawaii. The SeaRAY AOPS is a moored configuration consisting of a surface wave energy converter and a combined cable for mooring, data, communications and power. A seafloor base unit provides 100 kWh of energy storage for payload operation.

- **NuScale's small modular nuclear reactor** moved another step forward in January. NuScale Power and its partner Fluor received an order from their first customer, the Utah Associated Municipal Power Systems, to provide an estimate of cost for development, design and engineering services for their first SMR as part of their Carbon-Free Power Project. CFPP will deploy NuScale Power Modules on property of DOE's Idaho National Laboratory to provide cleaner, safer and cost-effective carbon-free power for UAMPS member utilities. (See **Appendix: Energy**, page 11)



- **The U.S. EIA** forecasts rising total energy use in the U.S. during 2021/2022. After falling by 7.8% in 2020, EIA forecasts total energy consumption will rise by 2.6% in 2021 and 2.5% in 2022, reaching 97.3 quadrillion BTUs (quads), 3.0 quads less than in 2019. Electricity generation from renewable energy sources will rise from 20% in 2020 to 21% in 2021 and 23% in 2022. The nuclear share of U.S. generation will decline from 21% in 2020 to 20% in 2021 and 19% in 2022.

- **Moderna** is on track to deliver 100 million doses of its COVID-19 vaccine for use in the U.S. by the end of March, with additional doses to follow. Pfizer and its partner BioNTech SE also are supplying vaccines.
- **Health experts** warned a new strain of the coronavirus may evade current vaccines after enough mutations, highlighting the importance of a national surveillance program to determine the prevalence of the new COVID-19 variant (B.1.1.7.) It was first detected in the U.K through genome sequencing, a method to determine the order of chemical 'bases' of the virus genetic material used in the detection of COVID-19 mutations.

- **Key Update:** To accelerate its efforts for national-level surveillance, the CDC has already contracted LabCorp and also is supporting a collaboration formed by Illumina and Helix to track the new variant.

- **Philips** announced a \$2.8 billion deal to buy Bio Telemetry, which specializes in remote cardiac diagnostics and monitoring, including wearable heart monitors and AI-based data analytics. The bulk of BioTelemetry's work is on the diagnosis and monitoring of heart rhythm disorders, including wearable heart monitors that detect and transmit abnormal heart rhythms. Bio Telemetry currently monitors 1.2 million patients a year, with 40,000 sensors shipped each month. (See **Appendix: Medical**, page 13)

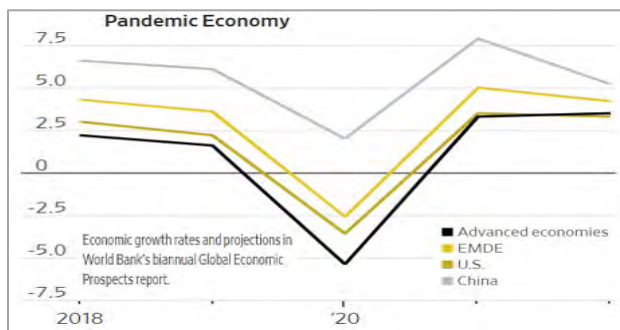
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## EUROPE, AFRICA & THE MIDDLE EAST

- **The World Bank** had lowered its projections for global growth in the current decade, even before COVID-19. The pandemic raises the prospect of a “lost decade” ahead, the World Bank said, as it also cut its forecasts for this year. Before the pandemic, the bank projected that potential global growth between 2020 and 2029 would slow to a yearly average of 2.1%, from 2.5% in the previous decade, as a result of aging populations and lower productivity growth. Now, the bank has lowered its projection to 1.9%.

**Key Update:** *The U.S. is now projected to expand 3.5% in 2021, down from 4% in the bank’s June 2020 forecast. The euro area is expected to grow 3.6%, down from 4.5 percent.*



- **Activity in the eurozone manufacturing sector** hit its highest level in December since May 2018. *IHS Markit's* final eurozone manufacturing purchasing managers' index rose to 55.2 from 53.8 in November, marking the sixth consecutive reading indicating expansion. Germany was the best-performing country, with the rate of expansion the best for nearly three years. The German PMI increased to 58.3 from 57.8 in November.
- **ArcelorMittal** has increased its European hot-rolled coil price to €730/tonne for 2<sup>nd</sup>Qtr deliveries with immediate effect, up by €30/tonne on its official offer at the end of last year. The price increase was the company's fourth since November, amounting to a cumulative jump of €180/tonne.
- **Domestic steel prices across Europe** rose rapidly in the 2<sup>nd</sup>Half of 2020. One of the main drivers was a shortage of both domestic and imported steel products after demand started to recover. Most market sources believe that, following rapid rises in 2020 and early 2021, prices will fall. They suggest two possible scenarios: (1) prices will decrease substantially but the price level should remain high compared with the previous year; or (2) prices will collapse mimicking the 2008 scenario of a price spike quickly followed by a sharp fall. Delivery time is likely to shorten when utilization rates increase and the backlog of demand from the automotive industry eases.

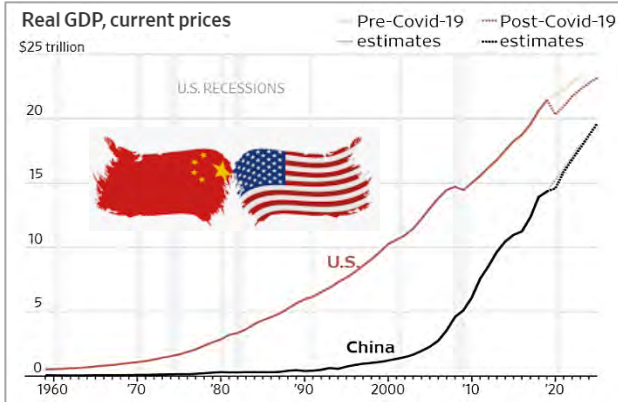
- **Italian state-owned Invitalia** reached a deal with ArcelorMittal paving the way for the Italian government to become the main shareholder of troubled steel plant ILVA. The agreement foresees a series of investments, including a plan to de-carbonize Europe's largest steel plant by activating an electric furnace. The goal is to transform the Taranto mill into the largest “green” steel production plant in Europe, while making it possible to keep all of the 10,700 workers employed at the plant. The plan targets ILVA reaching an overall steel production of 8 million tonnes in 2025. (See **Appendix: Steel**, page 13)
- **Global crude steel production** was 158.3 million tonnes (Mt) in November 2020, a 6.6% increase compared to November 2019. China produced 87.7 Mt of crude steel, an increase of 8.0% compared to a year ago. The U.S. produced 6.1 Mt of crude steel, a decrease of 13.7% vs. the year prior.
- **Airbus** exceeded its 2020 delivery goal of 560 aircraft. This achievement came despite the aviation industry's total deliveries falling to levels last seen 21 years ago. Airbus made new aircraft deliveries to a multitude of carriers, even delivering four Airbus A380 aircraft, despite most operators having grounded the type.
- **Mercedes-Benz** unveiled the EQA, a new electric compact SUV, as part of plans to take on rival Tesla and offer more emission-free vehicles to consumers to meet targets in Europe and China. The EQA is the first of several electric models Mercedes-Benz plans to launch this year. Sales of fully electric and plug-in hybrid models rose 122% across the EU through the first three quarters of 2020.
- **Volkswagen's profit** almost halved last year due to the impact of the pandemic, but a rebound in premium car sales in China and stronger deliveries in the fourth quarter helped keep the world's largest carmaker in the black.
- **Ford Motor Company** ordered a month-long production halt at its factory in Saarlouis, Germany because of the chip shortage and weak demand. The plant makes Ford's most popular car in Europe, the Focus, and employs 5,000. Volkswagen cut car production further at its main plant in northern Germany due to the shortage of semiconductors.
- **Norway** became the first country in the world where electric cars account for more than half of new registrations. Electric vehicles accounted for 54.3% of the new car market last year. In December, electric car sales set a monthly record in Norway accounting for 66.7% of new sales.





## ASIA/PACIFIC, JAPAN, AUSTRALIA & INDIA

- **China's economy** is expected to account for 16.8% of global GDP for 2020, adjusted for inflation, according to forecasts by *Moody's Analytics*. That's up from 14.2% in 2016, before the U.S. and China entered a trade war. The U.S. is expected to make up 22.2%, virtually unchanged from 22.3% in 2016. China's 2020 1.1% increase in its share of global GDP is its largest in a single year since at least the 1970s.



- **China's GDP grew** 2.3% in 2020, making China the only major economy in the world to avoid a contraction last year as many nations struggled to contain the COVID-19 pandemic. GDP expanded 6.5% year-over-year in the 4<sup>th</sup>Qtr and followed the 3<sup>rd</sup>Qtr's solid 4.9%. China is expected to continue to power ahead of its peers this year, with GDP set to expand at the fastest pace in a decade at 8.4 percent.
- **The U.S.-China trade pact** signed a year ago is being credited for improving business conditions for some American companies, but China's commitment to greatly increase purchases of U.S. goods has fallen short. Under the deal, China agreed to purchase about \$159 billion in U.S. goods. Through November, China's actual purchases were about \$82 billion or about 52% of the target goal.
- **China's market influence** is affecting global coke prices. In addition to prohibiting its coke industry from importing Australian coal, the government is limiting domestic coke production while demand from its steel industry grows. The overall effect is declining exports and increasing imports from the rest of the world and higher prices overall.
- **Maersk Line**, the world's largest container ship operator, has characterized the current situation in the global supply chain as a "perfect storm" of surging demand and reduced logistical capabilities. Ongoing congestion at terminals and the ecommerce boom are causing further freight rate increases, particularly from Asia to the U.S. West Coast, where fees have reached record highs.

- **Chinese car sales** declined 6.8% last year, as the world's largest market for automobiles shrank for a third-straight year. The single-digit drop still counted as a success in the context of 2020, with the coronavirus pandemic taking an even heavier toll on other markets. Automakers in China sold 19.29 million passenger vehicles. Global car sales are estimated to have fallen 15% in 2020, while U.S. sales are also expected to have dropped about 15 percent.
- **Tesla** delivered its first made-in-China Model Y compact crossover vehicles, the latest milestone in its drive into the world's largest market for electric cars. Tesla, which broke ground at its Shanghai plant two years ago, rushed to start producing cars there and expand capacity. The Chinese government has set a target for EVs to account for 20% of auto sales by 2025, around 5 million vehicles.
- **Indonesia** signed a \$9.8 billion electric vehicle battery deal with South Korea's LG as it moves to become a global production hub for the green technology. The agreement was signed in mid-December, with investments planned in production and supply chains for lithium batteries, which rely on nickel. Mineral-rich Indonesia is a major producer of the metal. Initial development will kick off in February with plans for a mine and smelter in the remote Maluku Islands.
- **Vulcan Energy Resources** claimed to be one step closer to providing Europe's auto industry with a key ingredient for electric-car batteries. Vulcan released a pre-feasibility study claiming it can produce battery-grade lithium without emitting carbon dioxide and do so more efficiently than its rivals. The Australian start-up also said its German lithium resources are the biggest in Europe. Its strategy involves extracting lithium using a geothermal power plant in southern Germany.  
*Key Update: Vulcan said its process is more environmentally friendly because its feedstock — hot solar brine — provides not only lithium, but also heat to generate renewable energy, reducing the method's overall carbon footprint. The technique is similar to what Warren Buffett's Berkshire Hathaway is researching in California's Salton Sea.*
- **Nickel prices** climbed higher in mid-January on supply worries from top producers. French mining group Eramet warned that its nickel subsidiary (SLN) in the world's fourth-largest nickel producer, New Caledonia, risked going into liquidation within weeks if protests continued to disrupt its operations. Meanwhile, a Philippine mining ban on Tumbagan Island raised supply worries in the world's second-biggest producer and top exporter of nickel ore. The order does not cover the Philippines's nickel hub in the Caraga region. (See **Appendix: Commodities**, page 15)

## ECONOMIC UPDATE: APPENDIX TO THE JANUARY 2020 REVIEW

### THE YEAR 2020: IT WASN'T ALL BAD NEWS - FIVE SIGNIFICANT SILVER LININGS

The year 2020 had good news that will stand out as astonishing triumphs of human achievement in any other year. In areas ranging from public health to medicine, to digital infrastructure and biotech, there were some tremendous leaps: (1) **The record speed of the vaccine rollout** will help end this pandemic sooner and is a reminder that humanity is still capable



of astonishing leaps. The first vaccines for the coronavirus have begun, 11 months after the existence of the virus started to become widely known. (2) The coronavirus vaccine is also **a good sign for new vaccine technologies**. Moderna is working on a flu vaccine that lasts for life instead of requiring a yearly update and mRNA vaccines might also be used to train the body to fight cancer. (3) **America is likelier to be ready for the next pandemic**. Post-pandemic accountability will make a big difference in determining how much America lets its mistakes this time around make it stronger for the next time. (4) **Our digital infrastructure for remote work was tested — and passed**. As rough as 2020 was, it would have been

much worse without remote communications technology. The ability for fully 40% of the labor force to stay home during a pandemic was remarkable. Zoom and similar tools enabled companies to switch to remote meetings more or less overnight. The amount of traffic online jumped dramatically, and the Internet mostly handled it without visible strain. (5) **Biotech is making huge leaps in other sectors**. For a long time, scientists have tried to identify principles that explain what shape proteins will take when they fold. They've had only moderate success. There are more than a googol possibilities for any given protein, and which form a protein will take depends on incredibly complex interactions among its thousands of amino acids. 2020 saw a big leap in these efforts, thanks to AI. In 2020, Alphabet's DeepMind (an AI research organization) improved on its previous performance by an enormous margin, producing results good enough that researchers should be able to use them for all kinds of biomedical research, such as custom-designing drugs that have desired receptors. It would also let researchers quickly scan every existing drug to learn which ones will work against some novel disease.

### AEROSPACE: THRILLING SPACE MISSIONS ARE SCHEDULED FOR BLAST-OFF

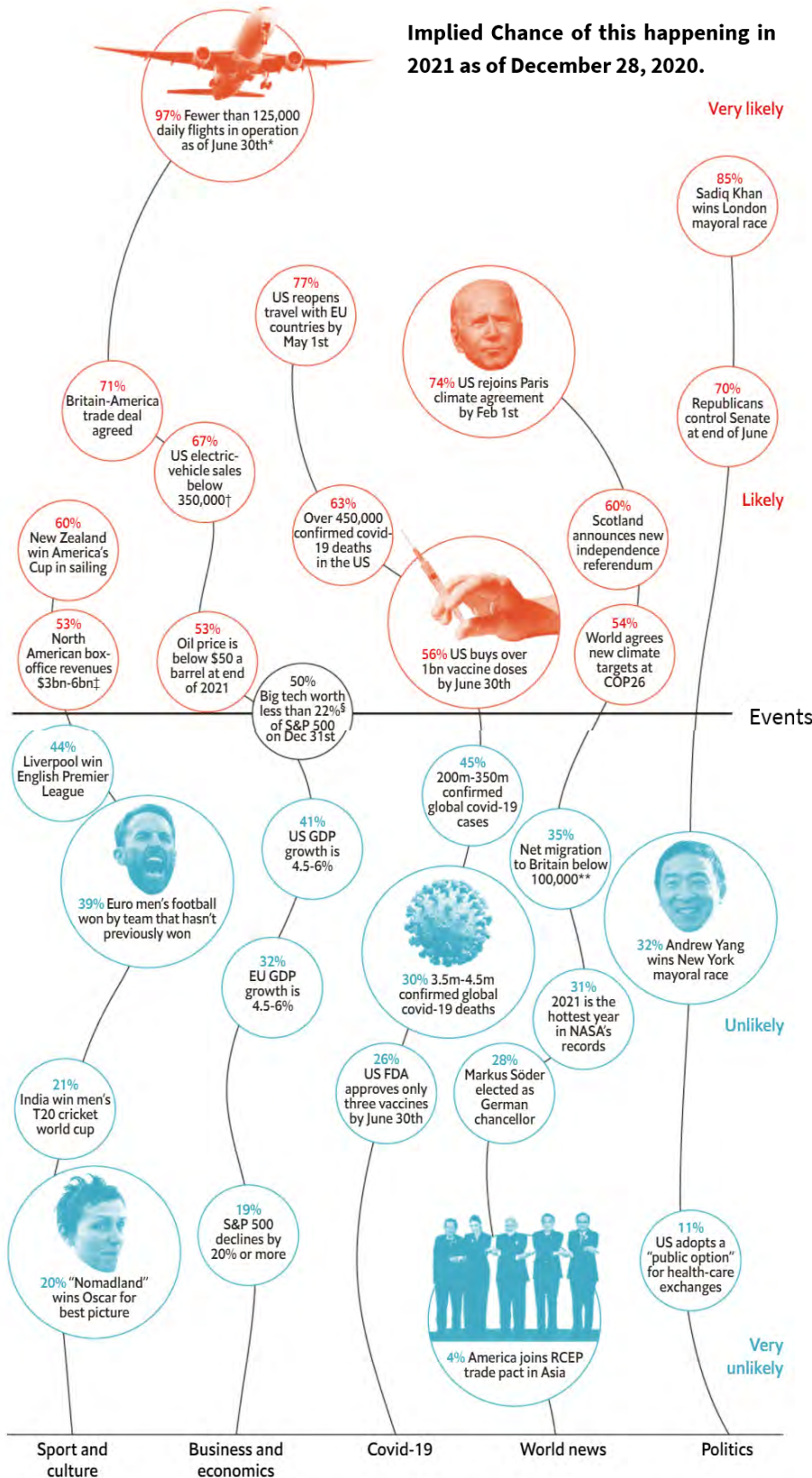
To tweak the orbit of an asteroid's moon that is nearly as big as a stadium, America's NASA plans to launch a car-sized craft to smash into it the coming year. Neither the asteroid, Didymos, nor its moon, Dimorphos, threatens Earth, but the collision should yield potentially handy "planetary defense" know-how. NASA also plans an uncrewed flight around the Moon, and with help from Canadian and European space agencies will launch the James Webb Space Telescope, the biggest and priciest ever. India may put three astronauts into orbit. India and Russia aim to launch lunar landers, and China will begin launching parts of its next and biggest space station, Tiangong-3. It is ambitious stuff for all parties concerned. **NASA's asteroid spacecraft must eject an Italian Space Agency observation pod before hitting its target at a closing speed of 6.6/km a second**. Unfolding the nearly \$10B space telescope's mirror and tennis-court-sized sunshield will require weeks of intricate robotic origami at -230°C. India has never attempted crewed space flight. Its previous lunar lander crashed. Russia must develop new systems for difficult ballistic navigation to an unvisited region near the Moon's south pole. China hopes to complete its space station with a blitz of a dozen launches over two years.



With spending on space outstripping overall global economic growth, spacefarers are keen to continue dazzling in 2021 while also trying to keep costs down. Europe's ArianeGroup hopes the inaugural launch of its big Ariane 6 rocket will help recover business lost to American competitors. **Russia is under pressure to succeed. Its (or the Soviet Union's) last moonshot was in 1976, and its lucrative monopoly on delivering astronauts to the International Space Station was broken by America's SpaceX in May 2020**. Expect innovation from established players and newcomers alike. In 2021 Rocket Lab, an American and New Zealand-based launcher of small payloads, may even recover a discarded rocket stage using a helicopter to snag its parachute. Blue Origin, owned by Jeff Bezos, plans the maiden launch of New Glenn, a rocket with a reusable stage and twice the payload volume of any existing alternative. Boeing hopes to carry its first astronauts to the ISS (an uncrewed flight in 2019 failed to dock). United Launch Alliance's first two flights of the Vulcan Centaur aim to loft an unflown lunar lander (by Astrobotic) and an unflown spaceplane (by Sierra Nevada Corp) designed to shuttle cargo and astronauts to low-Earth orbit. Along with a handful of Western outfits, Russia's space agency, Roscosmos, hopes to launch space tourists in 2021.

## FORECASTING: WHAT TO EXPECT IN 2021 ACCORDING TO PREDICTION MARKETS

Implied Chance of this happening in 2021 as of December 28, 2020.



John Kenneth Galbraith, an economist, once quipped that “the only function of economic forecasting is to make astrology look respectable.” With normal life thrown off course by covid-19, you might be forgiven for ignoring economists and studying the stars instead. Prediction markets, which harness the collective wisdom of the crowd, offer another guide to the future. **The Economist consulted several platforms—Betfair, Metaculus, PredictIt and Smarkets—for signals on what 2021 will hold for business, politics, covid and culture.** Many of these events are one-offs, so a lack of historical data makes prediction especially tricky. Still, with inoculations now being rolled out, these forecasts give some insight into what the “new normal” in 2021 might look like.

Online prediction markets began cropping up in the late 1980s, focusing on everything from movie box office receipts to the outcome of presidential elections. They have included the Iowa Electronic Markets, PredictIt, Betfair, and Smarkets. **Researchers have speculated that prediction markets are more successful when they include a diversity of informed opinions.** Yet such websites are not infallible. Perhaps the most famous example of this was the Brexit vote in Great Britain. Prediction markets said voters would opt to remain in the European Union; instead, voters chose to leave the EU. Metaculus trains its forecasting eye on all things scientific. For example, a majority of Metaculus users correctly predicted that the LIGO research team would announce the discovery of gravitational waves; a majority also correctly predicted that an Artificial Intelligence player would beat a professionally ranked human player at the ancient game of Go, and that physicists at the Large Hadron Collider would not discover a new, subatomic boson particle.



## AEROSPACE: HYDROGEN-POWERED FLIGHT FOR PLANES GETTING SERIOUS CONSIDERATION

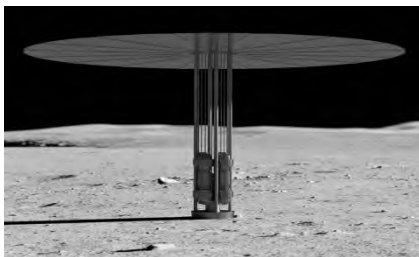
In the 1950s, the U.S. Air Force attempted to build a plane fuelled with hydrogen. The engines operated successfully, but storing and supplying the hydrogen proved too expensive to continue. Since then there has been a string of failed attempts to use hydrogen to power heavier-than-air flight. The allure is great. Hydrogen packs three times as much energy per kilogram as kerosene, and lightness is at a premium aloft. Hydrogen is light but bulky, making it awkward to store on-board. It must be either pressurized or liquefied and there is no established infrastructure for making and distributing it. **But now, aviation is under pressure to curb carbon-dioxide emissions by burning less kerosene and talk of building hydrogen-manufacturing-and-delivery infrastructure for other purposes, such as heating and ground transport, is getting serious, so hydrogen might become available as a commodity rather than having to be made specially.**



Several companies are looking again at hydrogen-powered flight. Early attempts used hydrogen the way that kerosene is used—to create the heat needed to power a jet engine, but many planes are driven by propellers, which can be turned by electric motors. Using fuel cells, it is possible to generate the electricity needed with hydrogen. **A British firm, ZeroAvia, expects to achieve commercialization as early as 2023 with demonstration flights in the 500-mile range in 20-passenger aircraft.** An American electric-motor manufacturer, magniX, has announced a partnership with Universal Hydrogen to convert a 40-seat de Havilland Dash to run on fuel cells by 2025. Such approaches have to compete in practice with electric aircraft powered by batteries. Last May, the American firm Aerotec flew a nine-seater Cessna converted to battery power through the skies above Washington state. **Proponents of fuel cells say that they are better than batteries for powering flight because the cells and their associated fuel store many times more energy per kilogram than batteries can manage. Another benefit is that hydrogen, as a fuel, doesn't contain carbon, so its combustion does not cause CO2 emissions.** In September, Airbus unveiled zeroe, a project centered on three hydrogen-powered concept aircraft. Though these are single-aisle short-haul models, they are a step up from anything that might be powered solely by fuels cells. All three are designed to yoke two hydrogen-based technologies together, with hydrogen-burning turbine engines boosting take-off and fuel cells powering the cruise. One of the concepts is a turboprop that would carry up to 100 passengers for distances up to 2,000km. A larger turbofan version would take twice that load, twice as far. The third approach is more experimental: a “blended wing” model, in which fuselage and aerofoils form part of the same triangular aerodynamic structure. The advantage of this is that it creates extra volume for hydrogen storage. For the next few years, Airbus will focus on developing the twin technologies of fuel-cells and hydrogen-powered turbines in parallel with the design of their future aircraft. If ground tests succeed, the firm hopes to have airborne demonstrators aloft by 2025. A full-scale prototype would follow by the end of the decade, with the first zero-emission commercial airliner entering service by 2035. Who would supply the engines for such a plane is not yet clear, but Safran, a French engine-maker that often works with Airbus, has confirmed it is looking at hydrogen power for commercial aircraft. So far, Boeing has not followed suit. However, Boeing would be taking a gamble by leaving hydrogen-power to Airbus.

## AEROSPACE/ENERGY: NASA WANTS TO PUT A NUCLEAR POWER PLANT ON THE MOON

NASA and the U.S. Department of Energy will seek proposals from industry to build a nuclear power plant on the moon and Mars to support its long-term exploration plans. The proposal is for a fission surface power system, and the goal is to have a flight system, lander and reactor ready to launch by 2026. **The plan is to develop a 10-kilowatt class fission surface power system for demonstration on the moon by the late 2020s.**

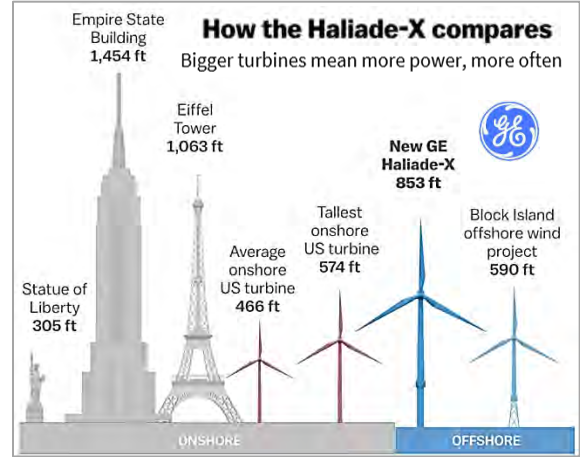


The facility will be fully manufactured and assembled on Earth, then tested for safety and to make sure it operates correctly. Afterwards, it will be integrated with a lunar lander, and a launch vehicle will transport it to an orbit around the moon. A lander will lower it to the surface, and once it arrives, it will be ready for operation with no additional assembly or construction required. The demonstration is expected to last for one year. Once the technology is proven through the demonstration, future systems could be scaled up or multiple units could be used together for long-duration missions to the moon and eventually Mars. Four units, providing 10 kilowatts of electrical power each, would provide enough power to establish an outpost on the moon or Mars. The ability to produce large amounts of electrical power on planetary surfaces using a fission surface power system would enable large-scale exploration, establishment of human outposts, and utilization of in situ resources, while allowing for the possibility of commercialization, according to NASA.



**ENERGY: A MONSTER GENERAL ELECTRIC WIND TURBINE IS UPENDING AN INDUSTRY**

Twirling above a strip of land at the mouth of Rotterdam’s harbor is a wind turbine so large it is difficult to photograph. **The turning diameter of its rotor is longer than two American football fields end to end. Later models will be taller than any building on the mainland of Western Europe.** Packed with sensors gathering data on wind speeds, electricity output and stresses on its components, the giant whirling machine in the Netherlands is a test model for a new series of giant offshore wind turbines planned by General Electric. When assembled in arrays, the wind machines have the potential to power cities, supplanting the emissions-spewing coal or natural gas-fired plants that form the backbones of many electric systems today. GE has yet to install one of these machines in ocean water. As a relative newcomer to the offshore wind business, the company faces questions about how quickly and efficiently it can scale up production to build and install hundreds of the turbines, but already the giant turbines have turned heads in the industry. A top executive at the world’s leading wind farm developer called it a “bit of a leapfrog over the latest technology”. An analyst said the machine’s size and advance sales had “shaken the industry.” The prototype is the first of a



generation of new machines that are about a third more powerful than the largest already in commercial service. As such, it is changing the business calculations of wind equipment makers, developers and investors. The GE machines will have a generating capacity that would have been almost unimaginable a decade ago. A single one will be able to turn out 13 megawatts of power, enough to light up a town of roughly 12,000 homes. **The turbine, which is capable of producing as much thrust as the four engines of a Boeing 747 jet, will be deployed at sea, where developers have learned that they can plant larger and more numerous turbines than on land to capture breezes that are stronger and more reliable.** The race to build bigger turbines has moved faster than many industry figures foresaw. GE’s Haliade-X generates almost 30 times more electricity than the first offshore machines installed off Denmark in 1991. In coming years, customers are likely to demand even bigger machines. Industry executives predict that, just as commercial airliners peaked with the Airbus A380, turbines will reach a point where greater size no longer makes economic sense. In December, GE reached another preliminary agreement to provide turbines for Vineyard Wind, a large wind farm off Massachusetts, and it has deals to supply 276 turbines to what is likely to be the world’s largest wind farm at Dogger Bank off Britain. To make a blade of such extraordinary length that doesn’t buckle from its own weight, GE called on designers at LM Wind Power, a blade maker in Denmark that the company bought in 2016 for \$1.7 billion. Among their innovations is a material combining carbon fiber and glass fiber that is lightweight yet strong and flexible.

**ENERGY: KOREAN ARTIFICIAL SUN SETS NEW WORLD RECORD - 20 SECONDS AT 100 MILLION DEGREES C**

The Korea Superconducting Tokamak Advanced Research (KSTAR), a superconducting fusion device also known as the Korean artificial sun, set the new world record as it succeeded in maintaining the high temperature plasma for 20 seconds with an ion temperature over



100 million degrees (Celsius). **The success of the KSTAR experiment is a step closer to the development of technologies for realization of nuclear fusion energy.** On November 24, the KSTAR Research Center at the Korea Institute of Fusion Energy announced that in a joint research with the Seoul National University and Columbia University, it succeeded in continuous operation of plasma for 20 seconds with an ion-temperature higher than 100 million degrees. This result is one of the core conditions of nuclear fusion in the 2020 KSTAR Plasma Campaign. It is an achievement to have extended the 8 second plasma operation time during the 2019 KSTAR Plasma Campaign by

more than 2 times. To re-create fusion reactions on Earth that occur in the sun, hydrogen isotopes must be placed inside a fusion device like KSTAR to create a plasma state where ions and electrons are separated, and ions must be heated and maintained at high temperatures. Director Si-Woo Yoon of the KSTAR Research Center at the KFE explained, "The technologies required for long operations of 100 million degrees plasma are the key to the realization of fusion energy, and the KSTAR's success in maintaining the high-temperature plasma for 20 seconds will be an important turning point in the race for securing the technologies for the long high-performance plasma operation, a critical component of a commercial nuclear fusion reactor in the future." The final goal of KSTAR is a continuous operation of 300 seconds with an ion temperature higher than 100 million degrees by 2025.

## AUTOMOTIVE: THE APPLE CAR APPEARS TO HAVE MOVED FORWARD IN 2020

The long-rumored, long-dead Apple car may have been resurrected. **Reuters reports that Apple is planning to start production of its own line of electric cars with pioneering battery technology in 2024.** Apple has been trying to get a car project rolling for years with little public success so far, which makes the prospect of it actually producing its own car by 2024 no sure thing. Still, building a new car line is a daunting process that will always take time, especially if the company behind it is hoping to incorporate new technology into the project. The company has always been interested in doing its own thing, from its operating system to, most recently, its M1 chips, and Apple is one of the richest and most innovative companies in the world. In early 2015, the *Wall Street Journal* reported that Apple was trying to build a Tesla competitor. The project, dubbed ‘Titan’, was approved by CEO Tim Cook a year earlier. In 2017, the company got a permit from the California DMV to test self-driving vehicles on public roads in the state. Cook also said that the company was working on autonomous driving software around this time. A year later, an Apple test car (made be Lexus) was rear-ended by another car driven by a human, offering further proof that Apple was still doing something in the space, but an actual car produced by Apple seemed increasingly unlikely though not completely out of the question. Meanwhile, Apple had yet to confirm it was working on an actual car. At the beginning of 2019, it looked like Project Titan was on the brink of death. Apple laid off 200 people on the Titan team in January, but in June it acquired a struggling autonomous-driving startup, renewing hopes that Titan was still going. Other than that, it seemed as though the company’s interest in self-driving technology was waning; its test cars logged far fewer miles in 2019 than in 2018. While there have been reports throughout 2020 that indicate that Apple has revived plans to produce its own cars, the latest *Reuters* report is perhaps the most definitive yet. It says that Apple will use its own self-driving technology and build its own cars, marrying the two phases of Project Titan into one product that could be on the road within five years. **Apple is hoping to bring something new to the table with a battery design that will make electric car batteries cheaper and last longer.** One person involved in the project described the battery technology as “next level.” Apple’s focus on battery design makes a lot of sense given Apple’s work on improving batteries in its existing products. We may be seeing some of the technology Apple hopes to incorporate into Project Titan now: the iPhone 12 Pros and iPad Pros come with lidar sensors, which self-driving cars use to map out their surroundings and detect nearby objects. The report had an impact, even as some analysts seemed unconvinced that a car will actually happen. Lidar stocks soared, and Apple got a bump as well. Tesla, which would likely be the Apple car’s biggest competition, had a bad few days. Founder Elon Musk, on the other hand, didn’t seem too thrown by the report. He also admitted that he tried to sell Tesla to Apple, but Cook wasn’t interested. Any report about Apple’s future comes with plenty of caveats and little certainty, as demonstrated by the car’s path up to this point, but there does appear to at least be a path now.



## AUTOMOTIVE: AMERICAN-STYLE ELECTRIC VEHICLES READY FOR LAUNCH

Electric vehicles are gaining a new cachet, but few bear any resemblance to good old Detroit steel. That changes in 2021 with the anticipated arrival of some green beasts. This summer, startup **Rivian expects to ship the already-sold-out launch editions of its first-generation R1T pickup and R1S SUV**, machines with ranges of over 300 miles and price tags starting around \$70,000. Then there’s the **GMC Hummer EV pickup, due in the fall from General Motors**. Reservations are already full for the \$112,595-and-up Edition 1, which is billed to have a range of over 350 miles and can do zero-to-60 in about 3 seconds. Lower-tier trims will be available in subsequent years, though true to form, the prices will stay on the big side. Ford expects to have its own battery-powered monster, the F-150 Electric,



on sale in mid-2022. Back in pre-pandemic times, the company filmed a prototype towing over a million pounds. Sometime in late 2021 or early 2022, we might even see Tesla’s Cybertruck. Those may be the biggest consumer vehicles coming to market, but they’re not the only ones working to up the EV’s average size. This past year brought battery-powered SUVs from Toyota, Audi and Jaguar, and the trend will continue: In 2021, more than half of the battery-electric and plug-in hybrid options on the U.S. market will be SUVs—82 models in total, as opposed to 66 passenger-car models, according to forecasts by AlixPartners, a global consulting firm.



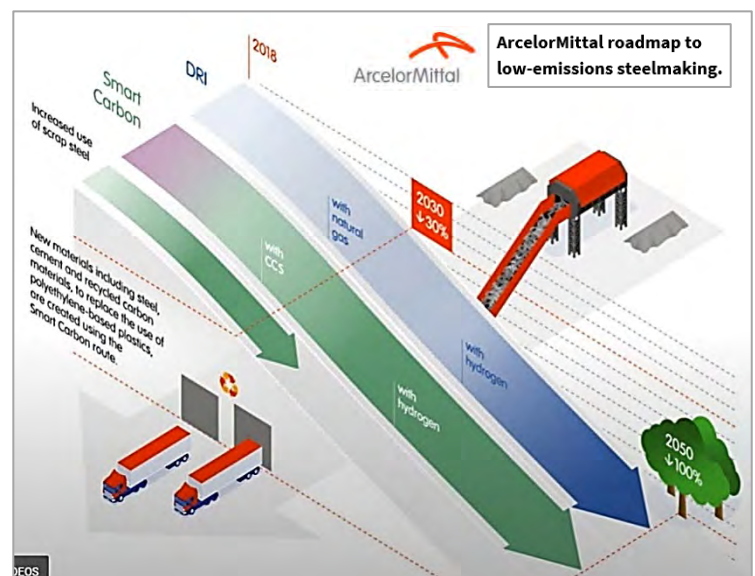
## MEDICAL/MANUFACTURING: ONSHORING FOR CRITICAL MEDICAL DEVICES AND SUPPLIES

Before the pandemic erupted, medical devices were imported into the U.S. from lower-cost-manufacturing countries, but global supply chains experienced interruptions when COVID-19 slowed or stopped incoming shipments from China and other nations. Now, medical device original equipment manufacturers (OEM) are evaluating their supply chains with a renewed emphasis on stability. They want to avoid future disruptions. One of the big questions on the table: What role will U.S. manufacturing play in the new normal? The answer is particularly important for critical medical devices, therapeutics and supplies such as ventilators, pharmaceuticals, personal protective equipment (PPE) and diagnostic tests. These products are necessary to combat the very virus that turned up the spotlight on supply-chain resiliency. Onshoring refers to manufacturing in the U.S., in-house OEM production or outsourced production by contract manufacturing organizations (CMO). **Onshoring has bipartisan political support and growing favor with the U.S. business community and public. From politicians to business leaders to the average American, there is a desire to see the U.S. able to procure mission-critical medical devices and supplies in times of crisis.** With painful lessons of COVID-19 shortages still fresh, businesses and government are rethinking how supply chains should perform in the future. They are putting greater focus on biodefense, crisis preparedness, stability and predictability. In addition, onshoring drives employment, and there is strong support for business strategies that will create U.S. jobs, enhance workforce development and strengthen the economy. For OEMs, onshoring offers a solution to secure at least a part of their overall lateral flow immunoassay device capacity. Outsourcing production to a CMO with domestic manufacturing operations is one onshoring path. With this approach, OEMs do not assume the financial risks and day-to-day challenges of starting up and running their own U.S. factories. Still, establishing new supply chains can be a daunting proposition, even on familiar U.S. soil. **Vital considerations to keep in mind and qualities to look for in a U.S. CMO partner: ability to execute a seamless transition, track record for technology transfer, multifaceted expertise, medical-grade quality systems, automation and reputation.** The U.S. response to COVID-19 depends on rigorous population testing and a secure supply of critical medical devices. Onshoring of medical devices and supplies production is one strategy OEMs can deploy for greater supply-chain resiliency and stability. With the right domestic CMO in their corner, they can outsource this domestic production with minimal risk and optimal predictability.



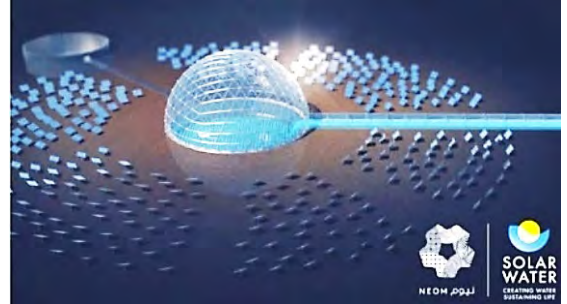
## STEEL/INNOVATION: PIONEERING TECHNOLOGIES FOR CARBON-NEUTRAL STEELMAKING

Europe's largest steelmaker has unveiled breakthrough technologies that will take the company to 30% lower CO2 emissions by 2030 and carbon neutrality by 2050. **ArcelorMittal Europe is investing in two routes to carbon neutrality, Smart Carbon and an innovative DRI-based route, in recognition of the need to act now to reduce CO2 emissions in line with the EU's Green Deal and the Paris Agreement.** Smart Carbon is a carbon-neutral steelmaking route that leverages all clean energies – circular carbon, clean electricity and carbon capture and storage (CCS) - within the high temperature-controlled reduction environment of ironmaking. In its first phase, Smart Carbon will primarily use circular carbon. Reaching carbon-neutral steelmaking via DRI involves moving from using predominantly natural gas, to hydrogen as the key reductant in ironmaking. As this hydrogen becomes 'green', the steelmaking process comes close to carbon neutrality. While both the Smart Carbon route and the DRI-based route have the potential to deliver carbon-neutral steel by 2050, the important difference between the two routes is that Smart Carbon can deliver results sooner through its use of complementary technologies which enable incremental progress. **Uniquely, Smart Carbon has the potential not only to provide carbon-neutral steel, but also carbon-neutral cement and the building blocks to make recycled carbon materials to replace polyethylene-based plastics.** Smart Carbon can also contribute to CO2 removal through the increased use of circular carbon, using sustainable biomass and waste combined with scaling up CCS.



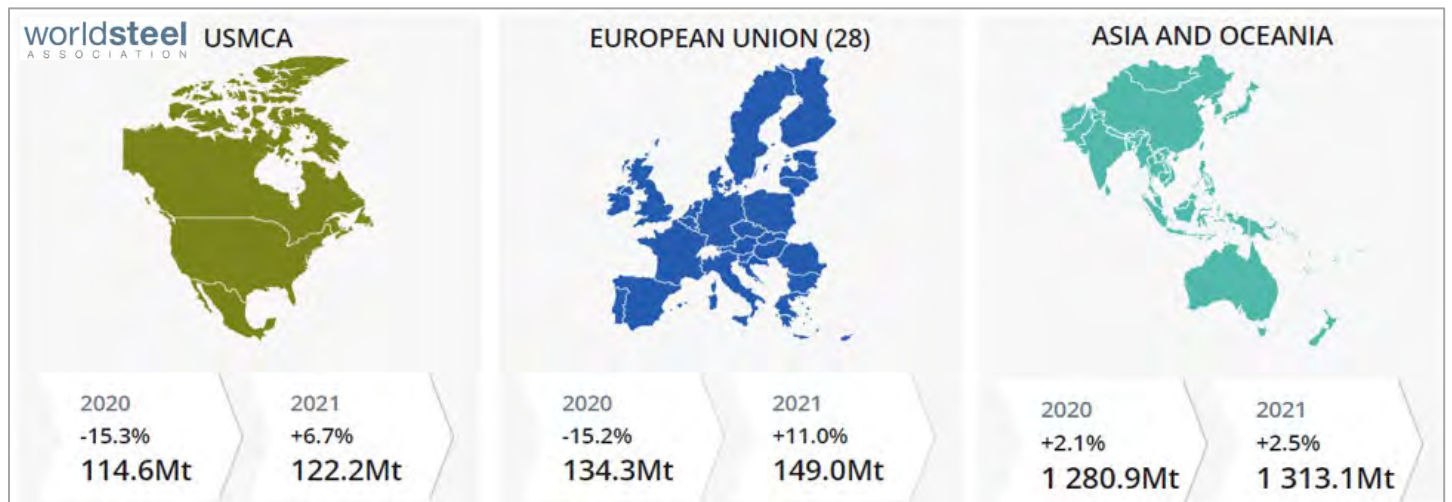
**STEEL: STAINLESS STEEL PLAYS A STAR ROLE IN THE MIDDLE EAST’S VAST DESALINATION INDUSTRY**

In the arid Middle East, where fresh water is scarce and populations continue to grow, drinking or ‘potable’ water remains a highly prized commodity. For decades, the region has depended on the process of desalination, and the steel on which its structures rely, to deliver vital fresh water to its citizens. This is a global industry – to date, more than 17,000 desalination plants have been contracted to deliver usable water to 174 countries worldwide. The plants remove salt and minerals from seawater, rendering it fit for human consumption and agricultural use. The Middle East accounts for more than 60% of this desalination capacity and its largest country, Saudi Arabia, produces more desalinated water than any other. Modern desalination plants typically use one of two processes – thermal distillation or reverse osmosis. Through each process, piped seawater is split into treated water and a salt concentrate with a higher salinity than raw seawater. Thermal distillation, which mimics the water cycle, uses heat to evaporate and condense water in order to purify it. In reverse osmosis plants, saltwater is forced through a membrane at high pressure using pumps, allowing water to pass through, while blocking salts and other mineral solids. **Stainless steel, with its corrosion-resistant properties, is the material of choice in the construction of both types of plant. Its high durability and low maintenance requirements have made it integral to the desalination industry’s success. Newer thermal desalination plants are typically built using a duplex stainless steel – such as grades 2205 and 2304, which contain molybdenum for corrosion resistance.** The innate mechanical strength of the duplex stainless steel means less is needed, enabling the overall density and weight of desalination plant evaporators to be reduced by up to 30% and making it more economical. At seawater reverse osmosis plants, the use of stainless steel containing 6% molybdenum and super duplex stainless steels such as the grade 2507 used in Israel’s Ashkelon plant, has also kept corrosion at bay. While desalination technology has continued to evolve, steel has remained the industry’s reliable and resilient constant. Though essential to the Middle East’s drinking water supply, the energy-intensive desalination industry is known for its large carbon footprint. However, new desalination innovations may help to make the industry greener. In January 2020, Saudi Arabia appointed UK-based enterprise, Solar Water Plc, to construct its first solar dome desalination plant in NEOM, a new development in the country’s northwest. In Solar Water’s solar dome concept, seawater flows into a hydrological dome built of steel and glass. By using parabolic mirrors to concentrate solar radiation onto the steel frame and glass structure, the company believes its innovation has the power to create a “constant water cycle” within the dome, equivalent to “up to 20,000 suns”. Both the corrosive-resistance and super heat conductive properties of steel are vital to success. While desalination technology has continued to evolve, stainless steel has remained the industry’s reliable and resilient constant.



**STEEL: FINISHED STEEL DEMAND DOWN FOR 2020 BUT PROJECTED TO RECOVER IN 2021**

WorldSteel Finished Steel Demand is estimated for 2020 at 1.725 billion mt (-2.4%) and is forecast for 2021 at 1.795 billion mt (+4.1%). **Major consuming regions demand:**

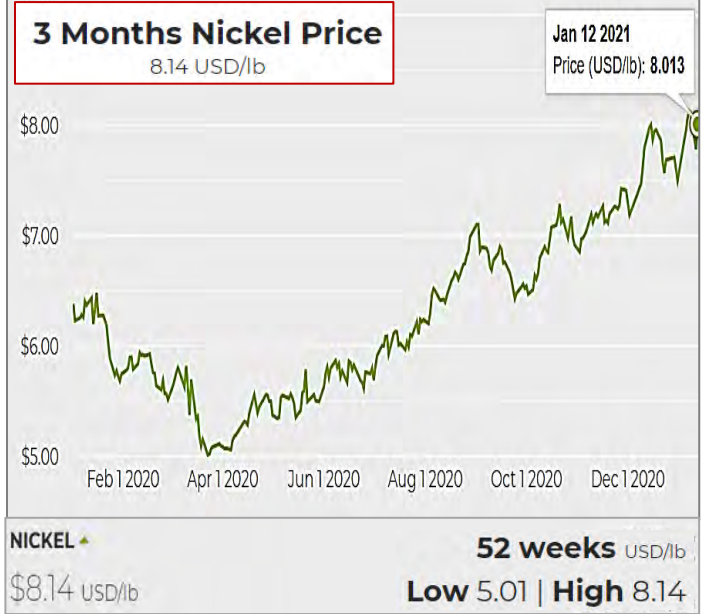
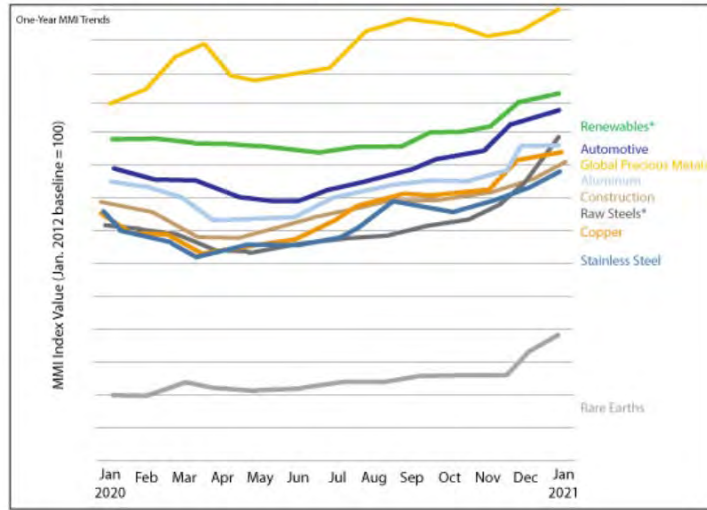






## METAL/COMMODITIES: PRICE INDEX TRENDS 2020 TO JANUARY 2021

### Metal Monthly Report: Price Index Trends – January 2021



## COMMODITIES: IRON ORE PRICES NEAR ALL-TIME HIGH AFTER SURGE IN LATE 2020

Iron-ore prices were teetering near record territory at the end of 2020 as a landslide at a Brazilian iron-ore mine intensified concerns about supply and Chinese demand runs hot. **The price of iron ore soared to its highest level since September 2011, almost doubling its value at the start of 2020.** The commodity surged to \$176/mt in the final week of the year but pulled back to \$163/mt before the end of that week. Iron ore, the main ingredient in steel, is one of the world's most-traded commodities and is among the best performing assets

#### Iron Roar

The value of steel ingredient iron ore has jumped amid fears there won't be enough supply to feed Chinese demand.

#### Iron-ore prices\*



#### Crude steel production, change from a year earlier



of 2020. Up more than 40% since the start of November, it was near a record price of \$193/mt reached in February 2011. A landslide at Vale's Córrego do Feijão mine, which killed one worker, raised fresh concerns about supplies from Brazil. Shipments from that country—the second biggest exporter of iron ore, after Australia—have yet to fully recover from earlier waste-dam collapses and pandemic-related disruptions to port and rail facilities. There were also concerns about supplies from Australia as the country heads into its annual cyclone season, while China—the top buyer of iron ore globally—has taken aim at commodities from coal to wine with tariffs and other restrictions on imports as part of a broader diplomatic dispute with Australia. In January, benchmark iron ore futures in China rose 8% despite the government pledge to "resolutely" cut production of crude steel and ensure it falls year-on-year in 2021, in an effort to promote low-carbon industrial development and green manufacturing. China, the world's top steel producer, has been trying to cut its steel capacity but rarely has asked producers to actually reduce output.

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*Ulbrich's Economic Update* is prepared monthly by Charles Finnegan for the exclusive use of Ulbrich Stainless Steels & Special Metals, Inc. This issue and previous Economic Updates are archived on Ulbrich's website: [www.ulbrich.com/blog](http://www.ulbrich.com/blog)

Charles was a Senior Vice President of procurement in the metal container industry, with a career spanning nearly four decades. He specializes in steel and aluminum procurement and utilizes his expansive knowledge of the steel and aluminum industry in the production of this detailed monthly update for Ulbrich and the company's valued employees and partners.



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