# **Ivent Solutions** Market Trend Update
# May 2022

## Are we simply moving from extracting oil from the earth to extracting lithium…???

Meeting the European Union's (EU) goal of climate neutrality by 2050 will require 35 times more lithium compared to that currently used, the study by Belgium's Katholieke Universiteit (KU Leuven) has found. The transition to a net-zero carbon emissions economy will also require 33% more aluminium, 35% more copper, 100% more nickel, 45% more silicon and 330% more cobalt than is currently used, the report noted. Bearing in mind that ultimately there is a limited supply of these elements on Earth, similar to the limited supply of fossil fuels…

These specific materials are all essential to Europe's plans for producing electric vehicles (EV) and their batteries, renewable wind, solar and hydrogen energy technologies, and the grid infrastructure needed to achieve climate neutrality. The report, published on Monday April 25, said that the EU faces critical shortfalls in the next 15 years without more mined and refined metals supplying the start of its clean energy system. Progressive steps will be needed to develop a long-term circular economy, which avoids a repeat of Europe's current fossil fuel dependency, the report added.

Recycling lies at the heart of the solution to these looming shortages, the report said. By 2050, 40-75% of Europe's clean energy metal needs could be met through local recycling. This is only if Europe invests heavily now and fixed bottlenecks, it added. Specifically, the study stated that by 2050, Europe's plans for producing clean energy technologies will require annually 4.5 million tonnes of aluminium, 1.5 million tonnes of copper, 800,000 tonnes of lithium, 400,000 tonnes of nickel, 200,000 tonnes of silicon, and 60,000 tonnes of cobalt. It will also require 300,000 tonnes of zinc, a rise of around 10-15% from current levels, and 3,000 tonnes of the rare earth metals neodymium, dysprosium and praseodymium, an increase of between seven and 26 times depending on the material.

## From Mining to Mining?

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"Although the EU has committed to accelerate its energy transition and produce a great deal of its clean energy technologies domestically, it remains import dependent for many of the metals needed," the study said. "And there is growing concern about the security of supply." According to the study, Europe could face problems around 2030 from global supply shortages for five key metals: lithium, cobalt, nickel, rare earths and copper. Coal-powered Chinese and Indonesian metal production will dominate global refining capacity growth for battery metals and rare earths, the study noted, while Europe also relies on Russia for its current supply of aluminium, nickel and copper. EU primary metals demand will peak around 2040; thereafter, increased recycling will help the bloc toward greater self-sufficiency, assuming major investments are made in recycling infrastructure and legislative bottlenecks are addressed.

According to the study, a paradigm shift is needed if Europe wants to develop new local supply sources with high environmental and social protections. "Today we don't see the community buy-in or the business conditions for the continent to build its own strong supply chains. The window is narrowing; projects really need to be taken forward in the next two years to be ready by 2030," the study said. There is theoretical potential for new domestic mines to cover 5-55% of Europe's 2030 needs, with largest project pipelines for lithium and rare earths, the study said. But most announced projects have an uncertain future despite Europe's comparatively high environmental standards, struggling with local community opposition and permit challenges, or relying on untested processes, it added.

According to the study, Europe would also need to open new refineries to transform mined ores and secondary raw materials into metals or chemicals. The region's energy crisis makes new refining investment challenging and surging power prices have already caused the temporary closure of nearly half the continent's existing refining capacity for aluminium and zinc, while production has increased in other parts of the world, it said. The study found that by 2050, locally recycled metals could produce 75% of Europe-made battery cathodes, all its plans for permanent magnets production, and significant volumes of aluminium and copper. "Recycling is Europe's best chance to improve its long-term self-sufficiency. It's a step-up that our clean energy system will be based on permanent metals which can be recycled indefinitely, compared with today's constant burning of fossil fuels," the report said.

The study noted that metals recycling, on average, saves between 35% and 95% of the carbon dioxide ($CO_2$) compared with primary metals production. Recycling "will not provide a major EU supply source to Europe's electric vehicle batteries and renewable energy technologies until after 2040, however," the study noted. "These applications and their metals are only just being put on the market and will not be available for recycling for the next 10-15 years," it said.

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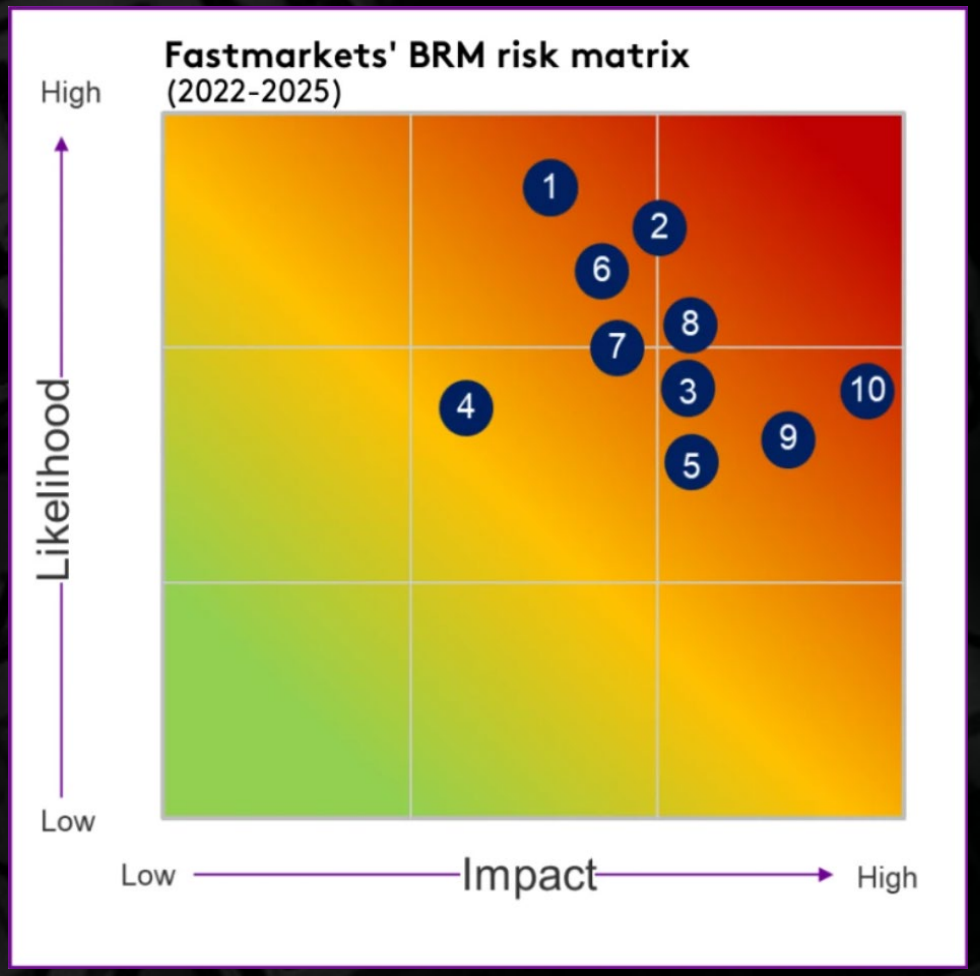
### Battery Raw Material Risk Matrix

The lithium battery is, at the very minimum, the future for our stored energy requirements. But risks lie in wait at the very heart of their production. From supply deficits to price volatility to geographic concentrations to ESG concerns, battery raw material supply represent a strategic risk for all lithium battery applications.

The BRM risk matrix outlines 10 key risks as they stand now and how they may change in the 2025-2030 time period. This helps to give planners and decision-makers a holistic, systematic way to manage risk. The BRM risks are:

1. Price volatility at elevated levels complicates financial performance
2. Supply deficits hold back EV growth
3. ESG concerns complicate local supply
4. Geographic concentrations create supply and logistics risks
5. Limited scrap supply holds back investment in recycling
6. Slow pace of building charging infrastructure slows EV adoption
7. Aged price mechanisms hinder investment
8. Rapid growth of indexing complicates path to $100 per kilowatt hour
9. Inability to clean up supply chains creates reputational risk
10. Geopolitical tensions disrupt production and logistics



# **Ivent Solutions** Market Trend Update
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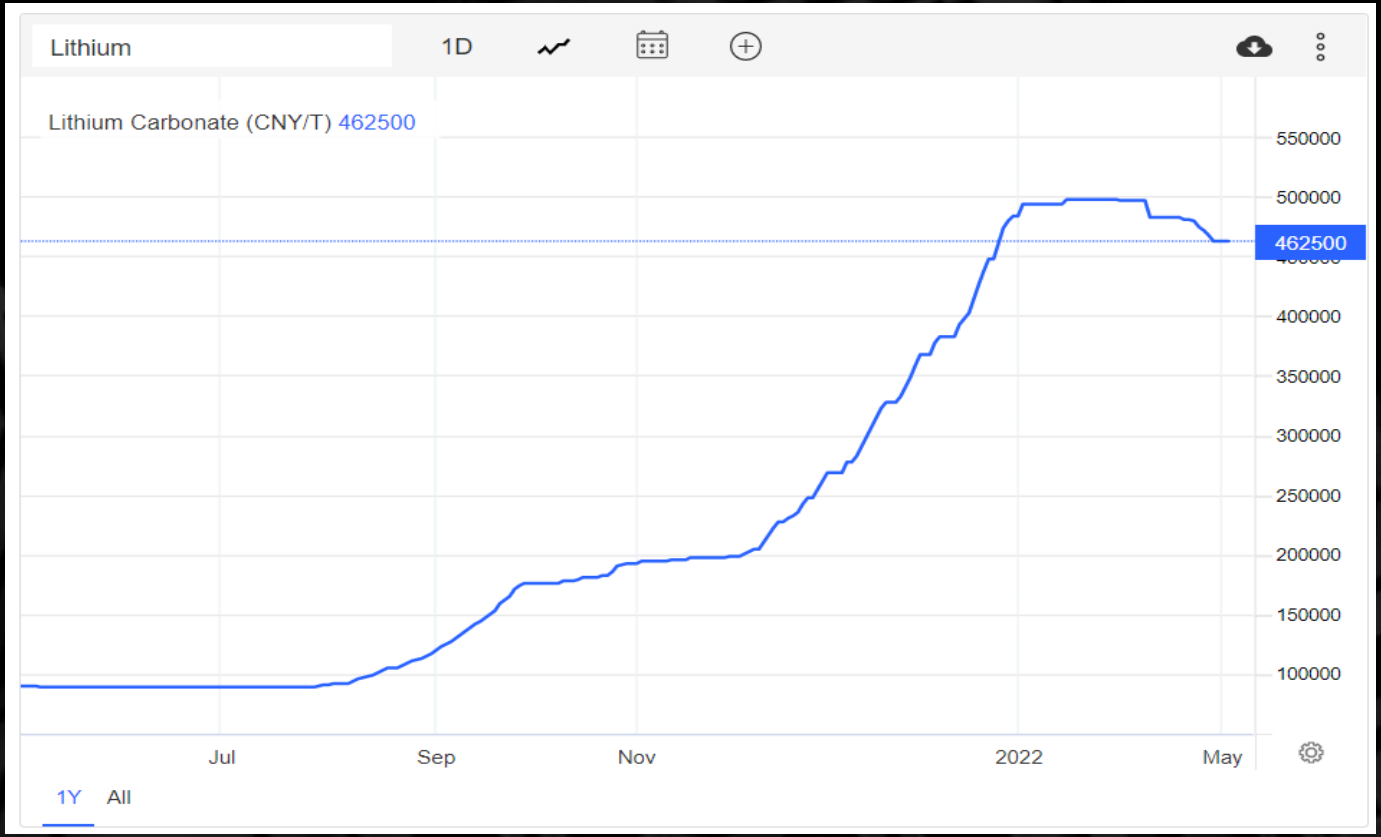
## Slight easing in lithium pricing in China




Lithium carbonate prices in China fell to 462,500 yuan/tonne in late April, the lowest in two months on strong supply and lower demand. Carbonate supply is seen rising after the Chinese Ministry of Industry and Information Technology called for sustained supply and higher output from smelters and miners while promoting the development of lithium ore resources. Fresh figures showed that production in China rose 42% on the year and 41% on the month in March. At the same time, a surge in Covid cases and concerns of more lockdowns hampered demand. Still, carbonate prices are 70% higher year-to-date, and remain near a record high of 497,500 yuan hit in late March as volatile energy prices strengthened the appeal to transition away from fossil fuels, adding to the booming demand for electric vehicles. After rising 157% to 3.2 million units in 2021, electric vehicle sales in China were forecasted to cross 5 million in 2022.

# **Ivent Solutions** Market Trend Update
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## China shipping update from our partner Mondiale

Shanghai is still grappling with its latest outbreak of Covid 19, however after 4 weeks of tight restrictions we may now be starting to see promising signs that the outbreak is contained. The daily case numbers in Shanghai have been steadily declining over the last 7 days, and authorities have begun a limited easing of the citywide lockdown in line with the below three-zone approach…

**Closed:** Areas that have reported a COVID-19 case in the previous seven days. Closed locations must continue lockdown measures for seven days. Residents cannot leave their homes; authorities will deliver food and essential groceries to the affected households. If officials do not find any cases, the area will transition to a control area, and the government will carry out nucleic acid testing on day 13. If no positive cases emerge during the last round of testing, the site will transition to a prevention area. If a case occurs during the 14-day period, authorities will lock down the resident's building until reaching 14 days from the initial designation.

**Control:** Locations without any COVID-19 cases in the previous seven days. Control areas must carry out health monitoring for seven days. People in these locations may leave their homes at staggered hours and move around within their compound or community under strict precautionary measures. Individuals may also collect food deliveries. Gatherings remain prohibited. During the health monitoring period, authorities will close a control area that reports a COVID-19 case.

**Prevention:** Areas without any COVID-19 cases for two weeks. Residents in these areas must continue to reduce their movement but can travel within their sub-district, except for any control or closed locations. Travel between sub-districts is prohibited. Local authorities in some communities have issued temporary passes to each household allowing one person to leave at a time. Certain essential businesses may operate with capacity limits.

Shippers are now operating and able to accept a limited amount of cargo, however due to ongoing lockdown requirements in residential areas with active cases depots are operating with minimal personnel which will continue to prevent loading LCL cargo for the next few weeks. Case numbers should continue to decline over the next few weeks, and LCL cargo loading should be re-initiated towards the end of May. Alternatively, shippers are still looking at the viability of loading LCL cargo from Ningbo. FCL cargo continues to move where factories are open and loading containers, albeit with added intervention at times and utilising options from nearby cities such as Wuxi, Suzhou and Nantong which fall outside of the areas still in lockdown.

# **Ivent Solutions** Market Trend Update
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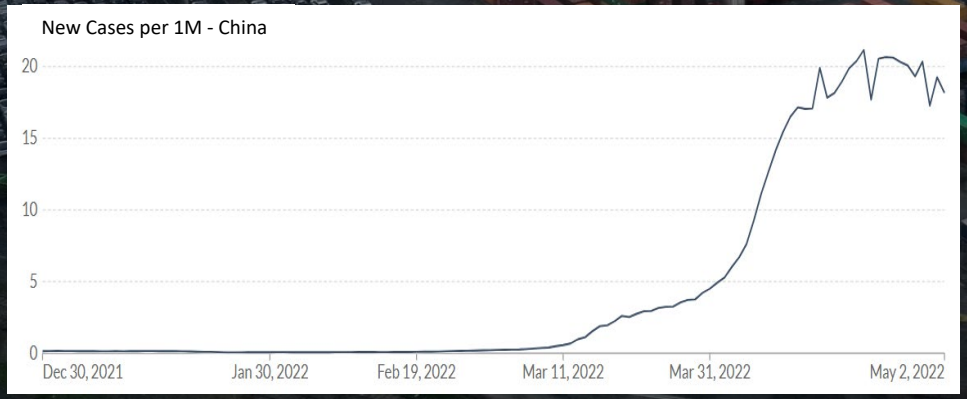
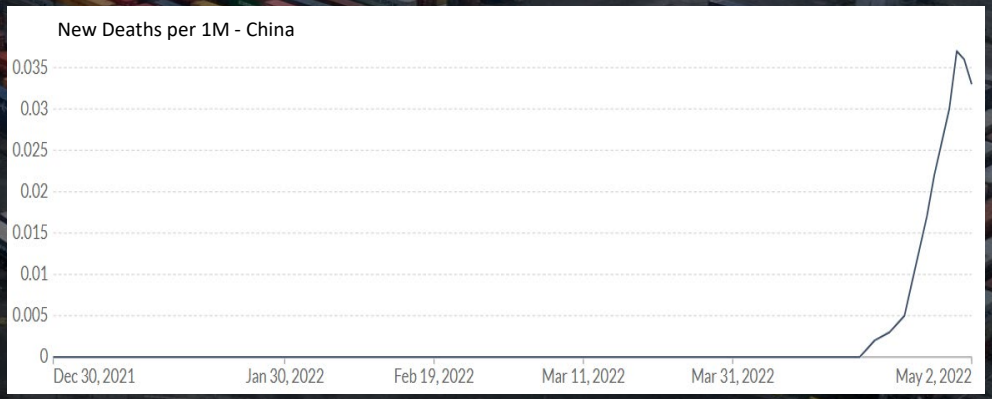
Truck drivers remain in short supply and face additional costs with having to undergo frequent nucleic testing and produce negative antigen tests within 24 hours when completing deliveries. This will continue to add strain to container movements while the outbreak is still being actively managed. Whilst the decline in daily case numbers is welcome, it may still be some weeks until the numbers are at a level which would facilitate a move to a broader lowering of restrictions across the city. Oceania bound container ships are still calling Shanghai, although most services are facing delays due to port congestion through the rotation (notably New Zealand). Vessel bunching causing irregular departure dates to what are forecasted is also still expected to occur.

**Beijing | Guangzhou Update**

The new cases identified in Beijing and Guangzhou have climbed over the last few days, however both areas are still attempting to contain the outbreak using mass testing and imposing targeted lockdowns of buildings and neighbourhoods along with increased restriction of movement in Beijing to prevent another mass outbreak. Beijing officials have closed dine-in services at restaurants and reduced capacity at public parks and cultural and entertainment venues to 50% capacity. Residents must hold a negative nucleic acid test result taken within 48 hours to enter public places. From May 5th, the government will require a negative test result from a test taken in the previous seven days to use public transport or enter public places. Authorities previously suspended large gatherings like exhibitions, sports events and theatre productions and advised employers to permit workers to telecommute.



# **Ivent Solutions** Market Trend Update
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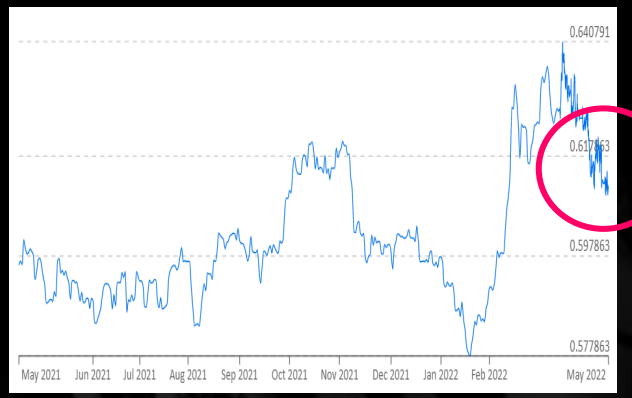
*Poor performance in the kiwi economy is starting to hammer our NZD. Good for exporters bad for importers…*

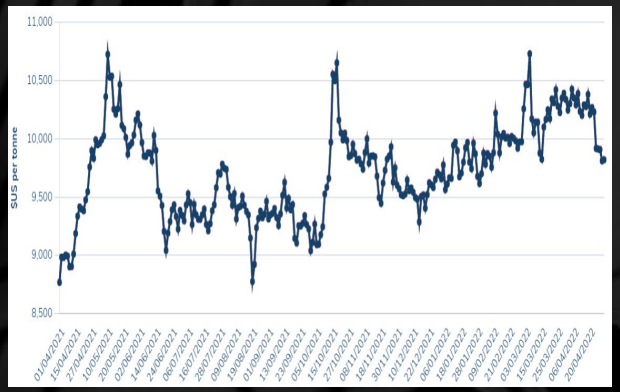
**NZD versus AUD - AU$0.905 vs NZ$1.00**


**NZD versus USD - US$0.645 vs NZ$1.00**

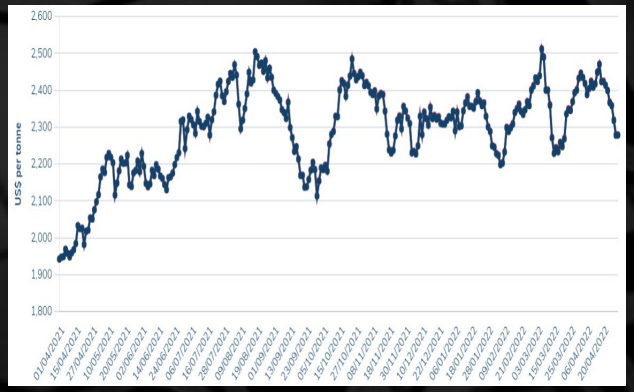

**NZD versus EUR - EU$0.610 vs. NZ$1.00**



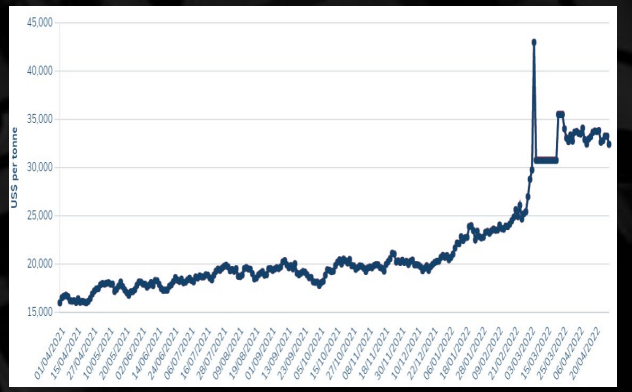

**Copper - USD9850 / tonne**




**Lead - USD2250 / tonne**

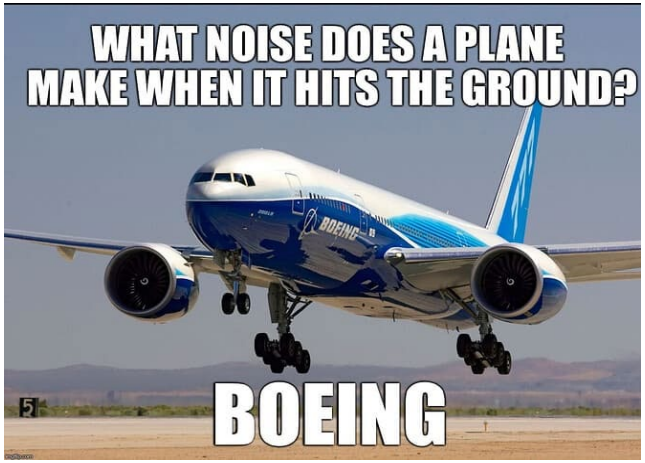



**Nickel - USD32500 / tonne**



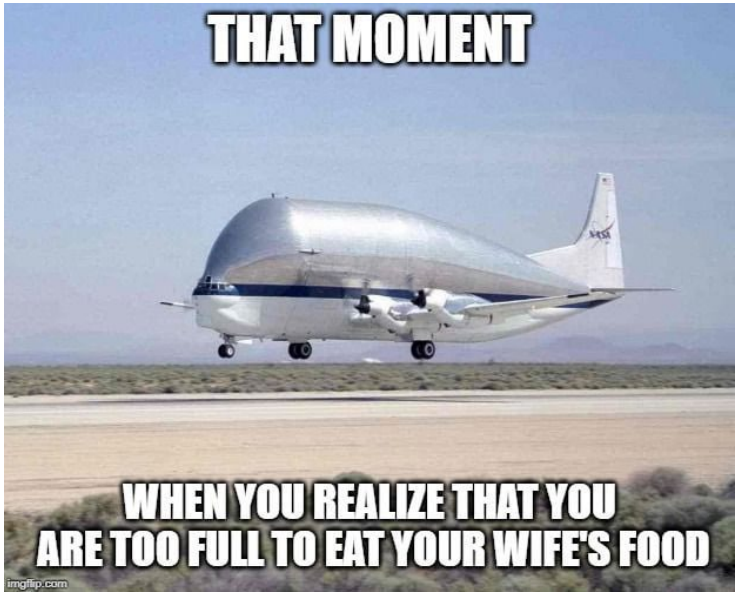

HOWDY
Virgin


HE'S RIGHT
BEHIND ME,
ISN'T HE?


WHAT NOISE DOES A PLANE
MAKE WHEN IT HITS THE GROUND?
BOEING


WELL PLAYED
GOOGLE
WELL PLAYED...


DUDE
I'M SO HIGH RIGHT NOW


THAT MOMENT
WHEN YOU REALIZE THAT YOU
ARE TOO FULL TO EAT YOUR WIFE'S FOOD


THE 747 WHEN HE HEARD THAT
THE A380 IS THE CEASE PRODUCTION.

# This Month in Tech History…

May 10, 1894 – "Wireless" is born when Guglielmo Marconi sends a radio wave three-quarters of a mile. Three years later the Marconi Company will successfully communicate "ship to shore" over a distance of twelve miles. Marconi's work leads to the commercialization and proliferation of most of the radio technologies we know today.

May 30, 1896 – The first auto accident on record occurs in New York City when a Duryea Motor Wagon driven by Henry Wells collides with a bicycle ridden by Evylyn Thomas. New Yorkers probably accused Henry of being from Jersey, but he was actually from Massachusetts.

May 28, 1929 – The Warner Brothers' film "On With the Show", the first talking movie that is all in color, debuts at New York City's Winter Garden theater. The film uses two-color Technicolor and Vitaphone sound.

May 16, 1960 – Physicist Theodore Maiman creates the first laser light, using a synthetic-ruby crystal device. He was not the first to develop the theories behind lasers nor first to apply for patents, but he was the first to create an operating laser device. The light produced by this device was not a true beam as we think of most lasers today, but rather a pulse. Other researchers would create the first laser beam soon after.

May 2, 1983 – Microsoft introduces the Microsoft Mouse for IBM and IBM-compatible PCs. The mouse featured two buttons and is available by itself or will later be bundled with the new Microsoft Word software, which Microsoft would release in September. Microsoft will manufacture nearly one hundred thousand units of the device, but will only sell five thousand before introducing a second, more popular version of the device in 1985.

May 3, 1984 – Dell Computer Corporation is founded by Michael Dell, running the direct-to-order PC company from his dorm room. Dell, Inc. eventually became the largest manufacturer of PCs in the world for many years. It is currently surpassed by HP and Acer.

May 27, 1988 – Microsoft releases 2 versions of Windows 2.1 – One for 286 computers and one for 386 computers. Do you remember this version of Windows? No? Not many people do. It wasn't until version 3 that Windows had any sort of appreciable user base.

May 17, 1991 – The first server "web server" in history is set up by Tim Berners-Lee on a NeXTcube at CERN, the European Particle Physics Laboratory in Geneva, Switzerland. The launch of this first server is considered the public release of the World Wide Web.

May 1, 2000 – The U.S. government removes Selective Availability from its Global Positioning System, improving the accuracy of civilian GPS devices from 100 meters to 20 meters.

# CHINA HOLIDAYS 2022

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## JANUARY

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## FEBRUARY

Chinese New Year

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Lantern Festival

## MARCH

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## APRIL

Qingming Festival

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## MAY

May Day

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## JULY

Dragon Boat Festival

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## AUGUST

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## SEPTEMBER

Mid-Autumn Festival

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## OCTOBER

National Day (Golden Week)

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## NOVEMBER

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## DECEMBER

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