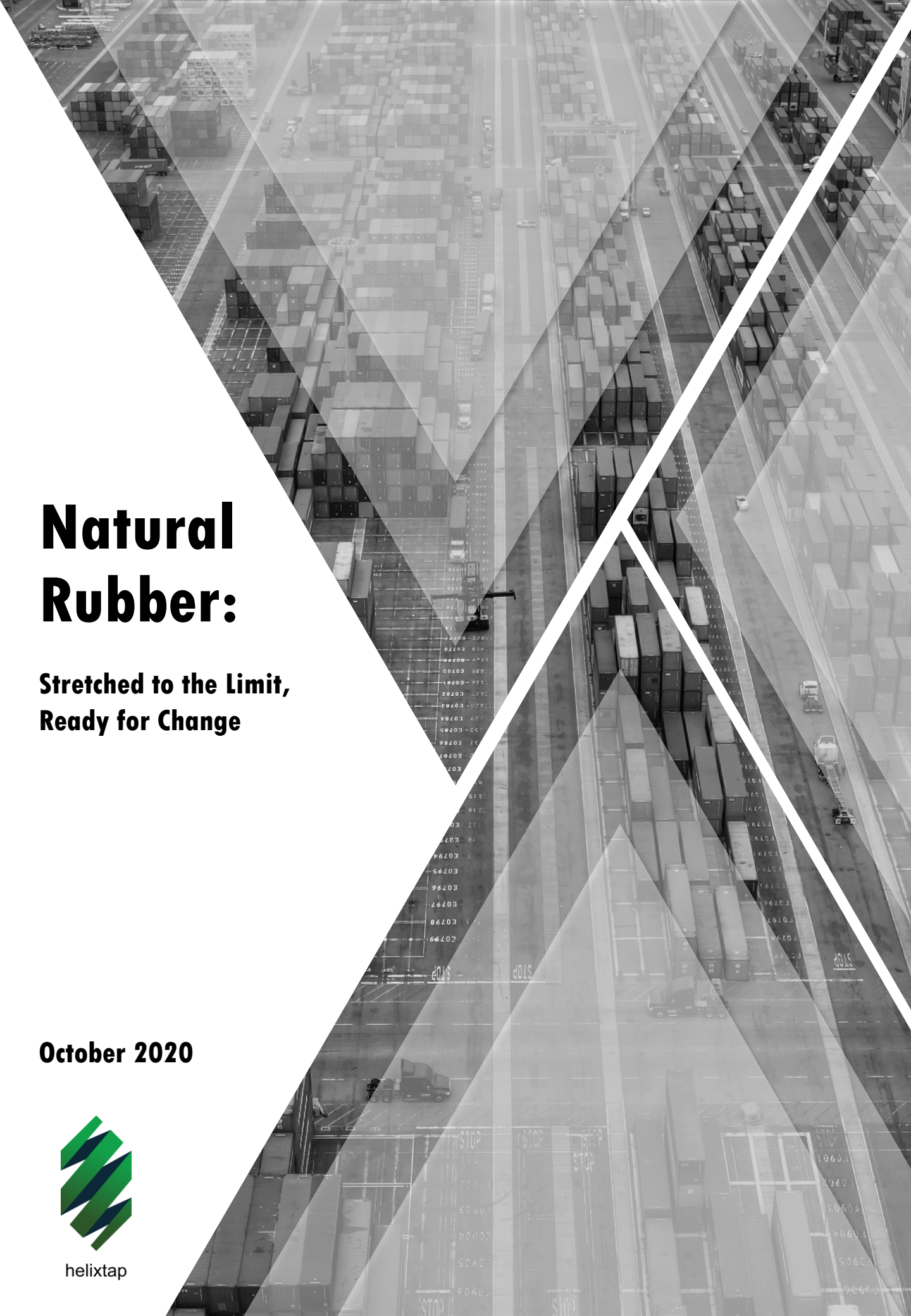

Natural Rubber:

Stretched to the Limit, Ready for Change

October 2020

helixtap

Content

Meet the Author

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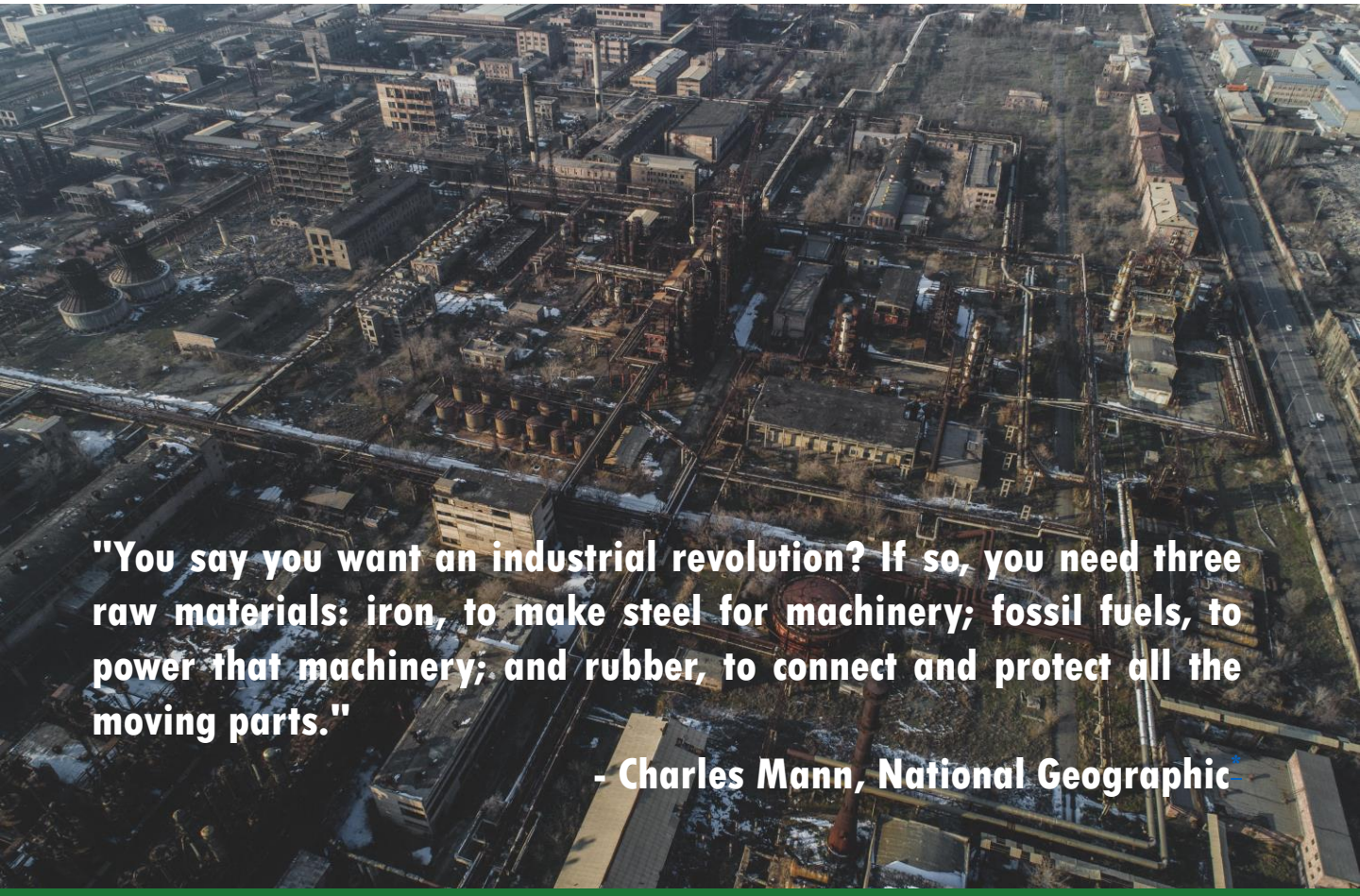
Charles Spencer is a research analyst who covers the global commodities markets and Asian equities; he publishes on Smartkarma, an independent research platform. He previously worked as an Executive Director at Morgan Stanley for over 25 years in New York, London and Singapore. His recent work includes a series of insights focusing on Environmental; Social & Governance (ESG) standards and performance across Morgan Stanley's regional coverage.



"You say you want an industrial revolution? If so, you need three raw materials: iron, to make steel for machinery; fossil fuels, to power that machinery; and rubber, to connect and protect all the moving parts."

- Charles Mann, National Geographic

Executive Summary

Rubber is a Key Commodity

Rubber has long been deeply ingrained in society's history and geopolitical landscape, acting as a key resource in the industrial revolution. It is still a key component across the automotive, medical and industrial sectors today. As a traded commodity, it has languished somewhat, with more traditional, paper-based methods still in place, a lack of transparency around pricing and fewer traded products available. It is an industry ready for change, with large inequities currently seen across the supply chain.

Demand & Pricing Rebound Underway

Despite forecasting a 12% drop in demand in 2020e, we expect 9% growth in demand in 2021e following a rebound in automobile sales, lifting natural rubber consumption back to 13.4mn tons. Our demand forecast is highly dependent on a vaccine being found for the COVID-19 virus by mid-year, however, earlier success could lift demand growth towards our bull-case of 16%, whilst any delay could depress growth towards just 5% in 2021e. The recent rally in rubber prices could continue if our demand growth forecasts tilt more towards our bull-case scenario next year. However, pricing will likely be capped at US$2/kg under our base-case scenario due to industry oversupply.

Digitisation of the Commodities Market

With such pricing pressures, a focus on margins and increasing market opportunities is more relevant than ever. There is an estimated US$ 70 billion in incremental market value from new technology in the commodities sector. With cloud technologies expected to penetrate 50% of enterprise globally by 2025, and recent large increases in Internet users within Southeast Asia - where 80% of the world's natural rubber is produced - the rubber industry is primed for digitisation. For example, six million smallholder farmers supply 85% of the world's rubber and Helixtap Technologies, an independent digital platform driving innovation with the rubber industry, is an example of how smaller industry participants, alongside large corporates, can benefit from innovative cloud-based technologies and improved market access across the trading cycle.

Introduction

It takes about four years for one rubber tree to produce enough latex to manufacture just one car tyre. Despite this slow drip of supply, the natural rubber markets today are painfully oversupplied, and pricing is not far off decade lows. The temporary collapse in global mobility due to the COVID-19 virus is clearly to blame for much of this year's pain, but the natural rubber markets were already under severe pressure even before the virus took hold. Is this just a reflection of a sunset industry, or is something else to blame?

This report is split into three sections:

1. **History:** the historical shifts in the rubber industry and analyses on pricing in 2020 to 2025e
2. **The Basics:** an overview on rubber trading fundamentals and pricing
3. **Technology:** Disruptor & Transformer - digitisation, internet connectivity

HISTORY

The historical shifts in the rubber industry and analyses on pricing in 2020 to 2025e

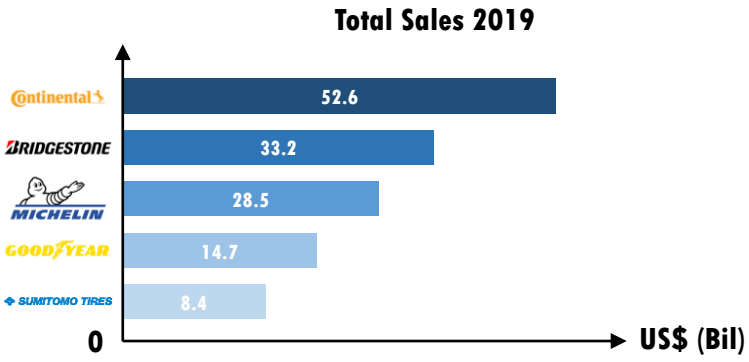
New Geographies, New Supply

There have been two geographically seismic shifts in the rubber industry in the last century.

Rise of Southeast Asia

Historically, natural rubber was foraged from the Brazilian Amazon. In the early 1900s, Brazil was the primary exporter to the burgeoning auto tyre industry dominated by European and US manufacturers such as Michelin & Cie, Goodyear Tire & Rubber Company and Firestone Tire & Rubber Company.

In 1988, Bridgestone of Japan acquired Firestone to catapult itself into the top position of global tyre manufacturing. In 2020, they maintain a top three position, with an annual revenue of US$32bn, a market capitalisation of US$23bn and a valuation of 1.2x book value.



Source: Helixtap Technologies

These global behemoths are nothing without the millions of small-scale farmers who supply, through a long and complex supply chain, the tyre and other industries with the ~14mn tons/yr of latex they require. Early attempts to cultivate rubber plantations in Brazil failed and virtually disappeared by 1945 because of the rapid success in Southeast Asian cultivation.

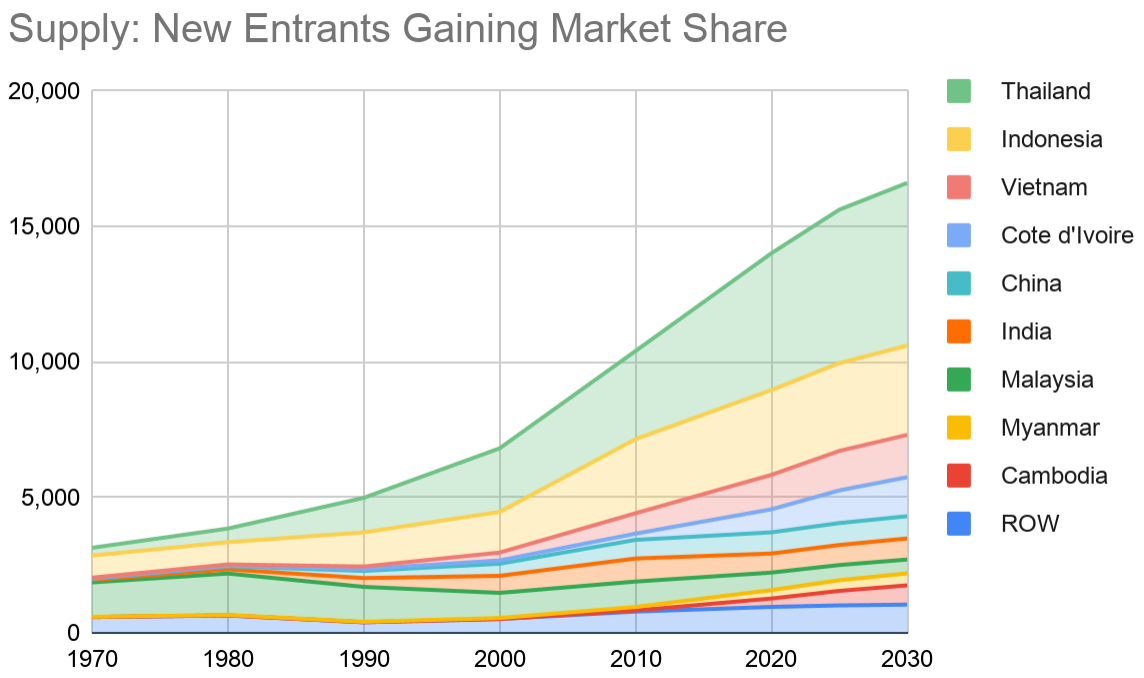
Expansion to Higher Latitudes

The rubber tree had been native to the humid tropics and was traditionally only cropped in the equatorial zone between 10°N and 10°S. Currently, Southeast Asia supplies about three-quarters of the 14mn tonnes of natural rubber forecast to be produced in 2020e. Thailand is the leading supplier with a 36% global market share, followed by Indonesia at 22% and Vietnam at 9%. Interestingly, Vietnam's latitude is mostly above 10°N, and as such is not within the traditional growing area for natural rubber. As we explore below, this shift in the growing region above 10°N proved to be the second big disruptor in the natural rubber industry during the past century.

This widening in the growing region above 10°N has China's state researchers to thank. During the 1950s Korean War, these researchers viewed rubber as a strategic resource. Successful rubber plantations were established in Hainan and Yunnan provinces on areas that lie as far north as 22°N. The success in growing rubber in these 'non-traditional' environments has greatly expanded its habitat and led to significant new investment over the past 20-years. Non-traditional rubber growing areas of Laos, Cambodia, Myanmar, Northwest Vietnam and northeast Thailand have seen exponential growth during the past 20 years.

This rapid growth from non-traditional countries is likely to continue for a few more years given the pace of past investments. For example, data from Global Forest Watch shows that around 699,000 hectares (ha), or nearly five per cent of Cambodia's land area is reserved for rubber plantations. At the moment Cambodia represents just 2% of global natural rubber supply but is forecasted to grow their market share swiftly in the years ahead.

Interestingly, these new entrants have forced out traditional suppliers like Malaysia and encouraged farmers to convert into more profitable agriculture where possible. For example, Malaysian natural rubber supply has declined by nearly 300,000 tons, or over 30%, during the past decade as Malaysian rubber plantations have been aggressively converted into palm oil.



Source: The World Bank

Booms & Busts

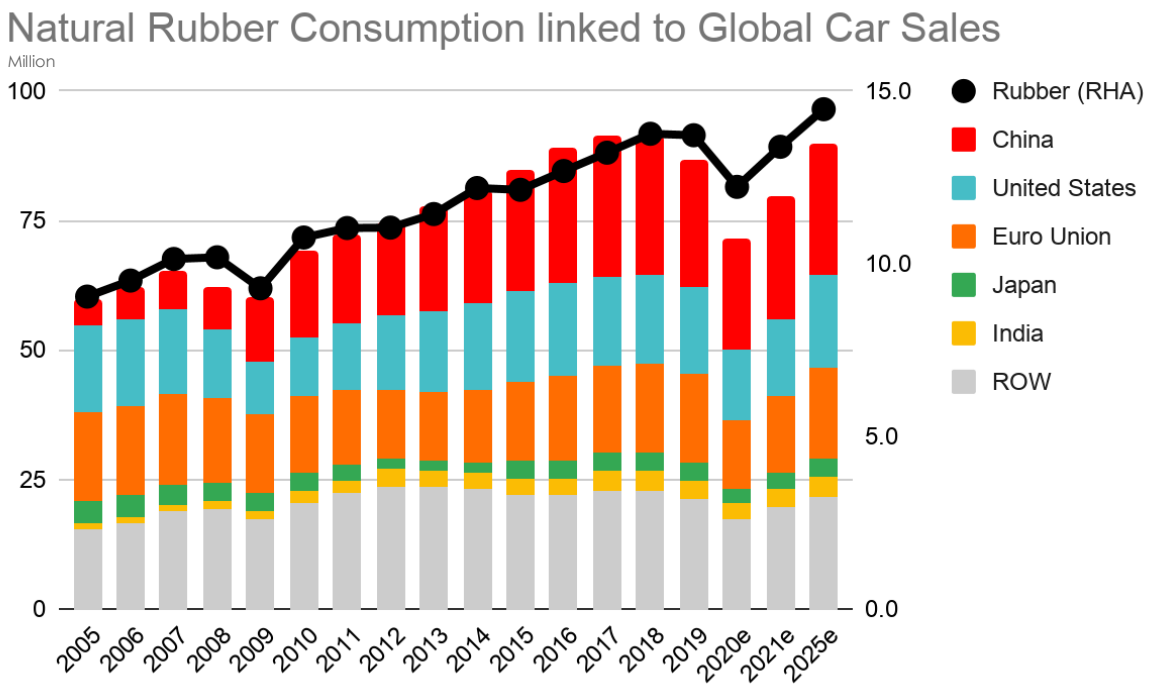
The investment cycle in the natural rubber industry is prone to booms and busts. When prices are high the industry (processors) invests their extra cash-flow in planting new trees. However, as it takes roughly six years for newly planted rubber trees to yield, the supply response can be delayed. Unfortunately, this allows both pricing and the reinvestment cycle to run for an extended period, which leads to booms and busts. For instance, when pricing ran up in 2011, so did new plantings. This resulted in the supply response boom of 2017 which saw production growth jump 7.5%. Of course, pricing was tumbling into the years leading up to this new supply and farmers' returns were sharply deflated.

Surprisingly, these smallholders have a unique response to lower prices. Unlike other commodities, where low prices typically see a scaling back in supply by producers, smallholder rubber farmers instead attempt to maintain cash-flows by boosting volumes through more aggressive tree tapping. As a result, during periods of low pricing, the initial market response can be met with a period of increased supply, which may even exaggerate the oversupply further. This is the current environment, and we forecast the supply rising 2.7% in the face of an 11.8% drop in demand and low pricing.

Ultimately, economics take over and these smallholder farmers slow the pace of their new plantings in response to an extended period of low pricing. They may also look to diversify away from rubber to other more profitable crops by replanting aged rubber trees with other crops like palm oil, which has been underway in Malaysia and Indonesia to a lesser extent. This appears to be a robust economic decision as oil palm has not been commercially grown outside the equatorial zone, yet…

Driving Demand

About 70% of the natural rubber produced is consumed by the tyre industry and its consumption growth has roughly matched global auto sales growth for decades. Comparing growth rates over the past 10-year period ending 2019 illustrates this tight linkage, with natural rubber consumption growth of nearly 4.0% p.a. versus auto sales growth of 3.7% p.a.



Source: International Energy Agency

Global auto sales fell -28% in the first half of 2020, according to the major German automotive industry body Verband der Automobilindustrie. However, it sees sales flattening out in the second half and as a result, they forecast full-year sales contracting by 17%. Based on the latest country by country auto sales data, their forecast looks reasonable, but a lot depends on how the global COVID-19 pandemic unfolds in the months ahead. As a result, our forecast is for natural rubber demand to drop by 12% in 2020e, as strong demand from the rubber glove segment partially offsets the drop in demand from the larger tyre segment.

Looking out to 2021, however, we are more optimistic. We look for low double-digit growth in auto sales, which should drive high single-digit growth in natural rubber demand. However, it's important to highlight that this recovery will be off a very low base and even if our recovery unfolds as expected, demand will still be well below 2018 levels. For example, despite our 9% growth forecast for natural rubber demand in 2021e, this will only lift consumption back to 13.4mn tons, or still 0.4mn tons below 2018 levels.

Our bull-case for natural rubber demand growth of 16% assumes a stronger snap-back in global auto sales (20%), allowing the consumption of natural rubber to bounce back to 2018 levels quicker than forecast. But, our bear-case scenario sees natural rubber demand growth of just 5% in 2021e as auto sales lift just modestly. This would leave the consumption of natural rubber still more than 1mn tons below 2018 levels and markets oversupplied for a few years longer than forecast.

Looking at the five years out to 2025e, we forecast consumption of natural rubber to eclipse its 2018 levels by 2023e as the above-trend growth rate throughout 3.4% p.a. lifts demand to 14.5mn tons by the end of the period. Beyond that, we assume growth returns to a trend rate of 3.1% p.a. during the 2025e-30e period, which lifts demand to nearly 17mn tons.

	2020E	2021E	2022E	2023E	2024E	2025E	2030E
NR Prod. (MT)	12,226	12,715	13,478	13,815	14,160	14,514	16,608
Y-o-Y Growth Rate	-10.9%	4.0%	6.0%	2.5%	2.5%	2.5%	NA

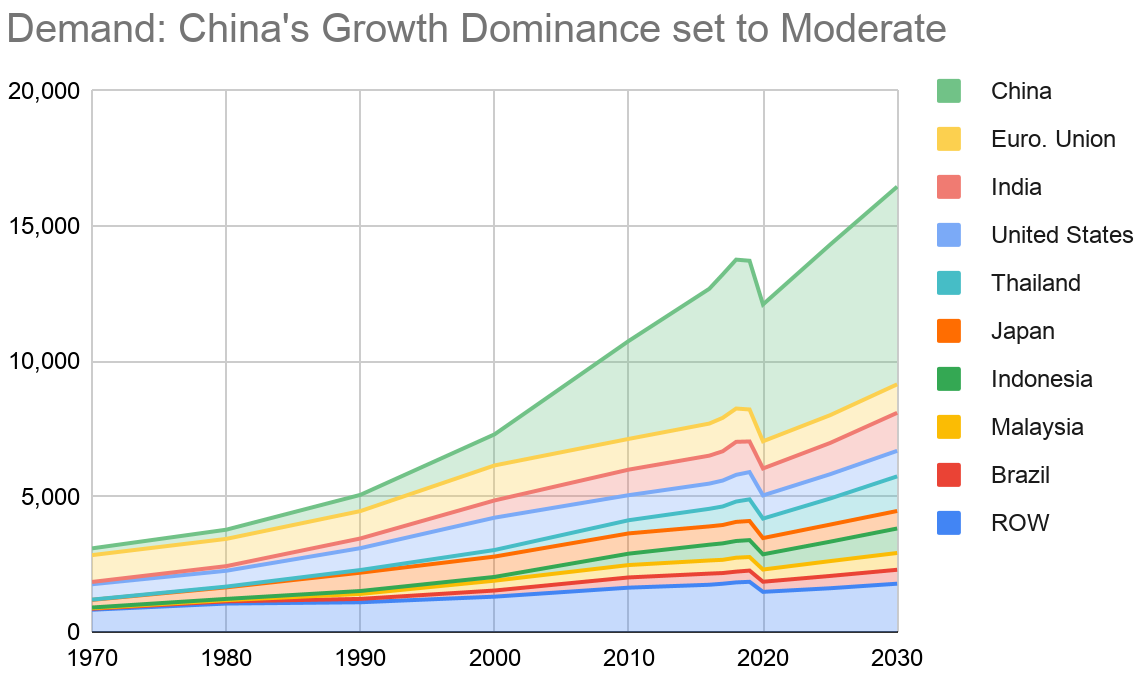
Source: Helixtap Technologies

The China Factor

As with other commodity markets, China has been the key driver of demand growth for the past few decades. In fact, during the past 20 years, China's demand growth for natural rubber grew an impressive 8.6% p.a. Even more remarkable, China has accounted for more than two-thirds of the world's total natural rubber demand growth during that period. China has also accounted for more than two-thirds of the world's growth during that period.

However, this also suggests that China's contribution to global growth has not been purely incremental. Rather it has been boosted by market share shifts in tyre production from the West. Over the past few decades, globalising supply chains were repositioned to capture the lowest possible cost of production, with most Western tyre manufacturers being forced to shift their manufacturing facilities to China or risk not being price competitive.

Whilst supply chains have been all about China in the past few decades, it is critical to reflect on the recent political developments and the impact that COVID-19 may have played in revealing some weakness at the core of such a model. The auto industry has begun to shift production towards more flexibility and local sourcing models and this shift can already be seen in the recent data. China's share of the global demand growth has slipped to under 50% as their market share gains appear mature. As such, we forecast China's high growth rates to moderate to 4.5% p.a. in 2020-25e and 4.0% p.a. in 2025-30e.



Source: International Rubber Study Group; Forecasts: SmartKarma Research

THE BASICS

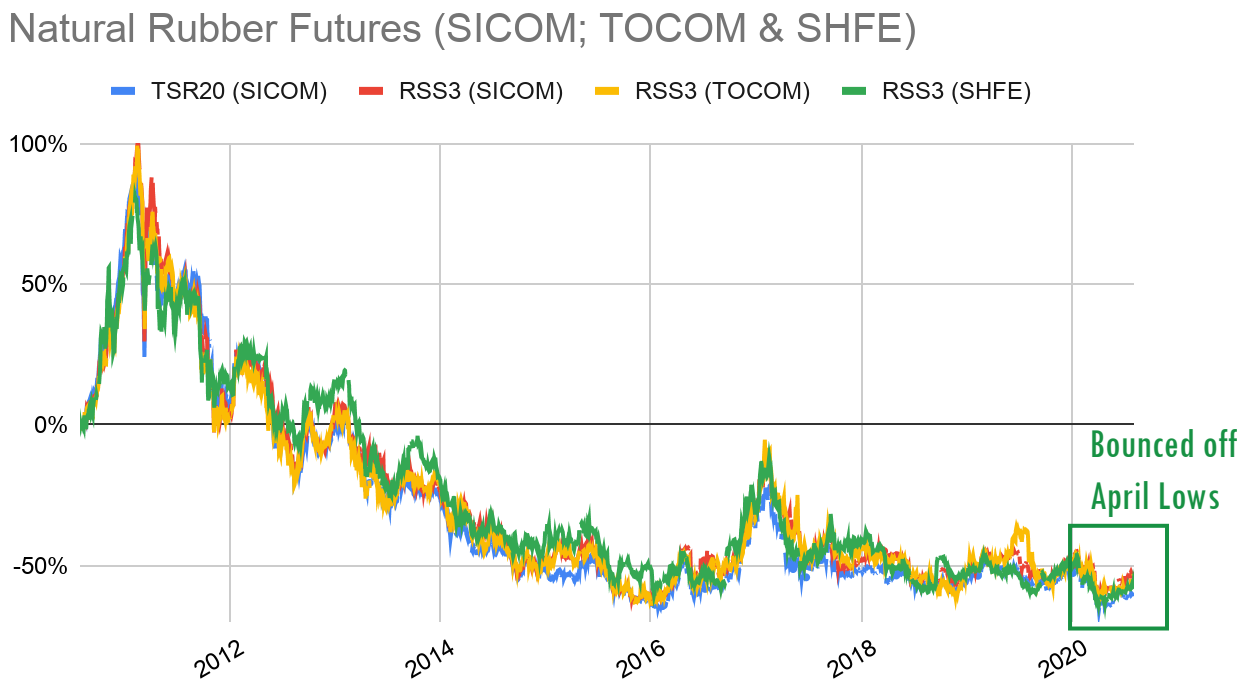
An overview on rubber trading fundamentals and pricing

NR Trading - the Basics

Natural rubber prices are commonly quoted from two futures contracts, TSR20 and RSS3, which trade actively on the Singapore Commodity Exchange (SICOM). The Tokyo Commodity Exchange (TOCOM) and the Shanghai Futures Exchange (SHFE) in their local currency. Generally, the prices of these various futures contracts track each other quite closely.

TSR stands for Technically Specified Rubber, which is also known as block rubber, and it is graded according to precise technical parameters for the amount of dirt, ash and nitrogen it contains. The TSR grade most widely used by the tyre industry is the TSR-20 and TSR-10 grades.

RSS stands for Ribbed Smoked Sheet Rubber and it is made directly from latex which is treated and then coagulated into sheets which are air-dried or smoked in ovens. The smoked sheets are visually graded based on certain parameters and then packed in bales.



Source: S&P Capital IQ

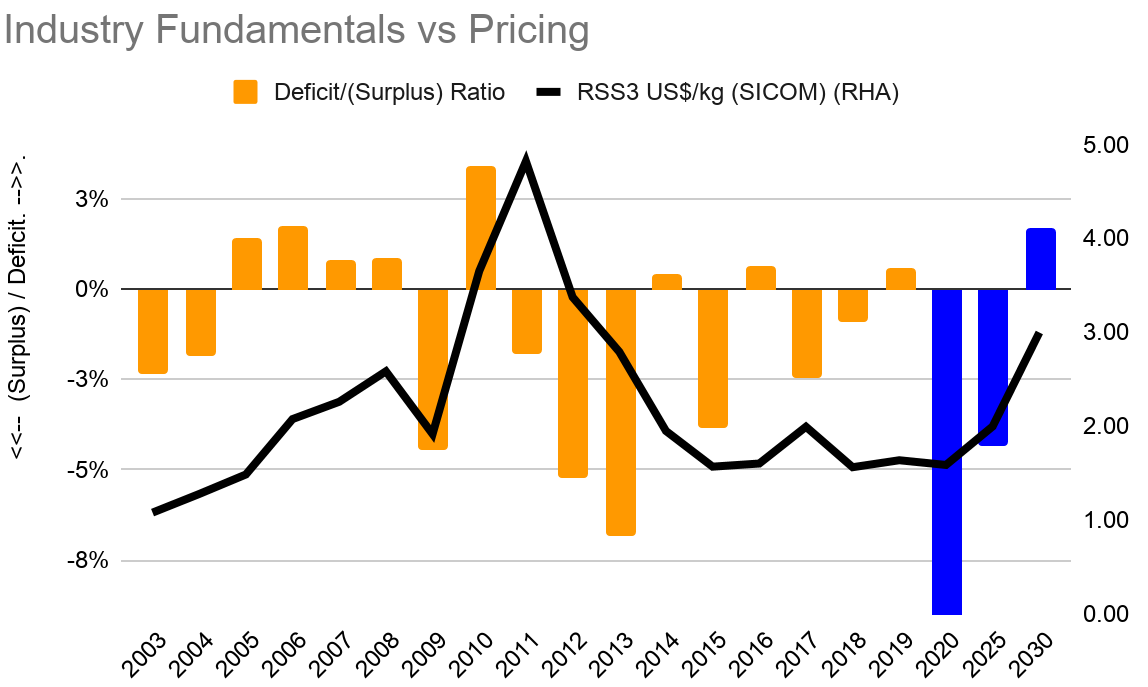
NR Pricing - the Basics

Many factors can influence the short-term direction for natural rubber pricing: bad weather, volatile currencies, trade disputes, and the speculative stocking/destocking swings found regularly within the commodity markets. However, over the longer-term, the prices generally rise and fall in-line with the shifts in industry fundamentals, specifically that of supply versus demand which creates surpluses or deficits.

For example, natural rubber prices doubled from 2004 to 2008 during a period where industry deficits began to appear regularly. The industry experienced four years of deficits beginning in 2005, after an extended period of surpluses.

Pricing had another big run-up in 2010-11, partly due to an extreme rebound in demand following the Global Financial Crisis (GFC) of 2008-09. Pricing more than doubled in two years as buyers scrambled to secure raw material in the tightest market conditions seen within the past 20 years.

We calculate this deficit as a ratio of the current year's demands less the current year's supply, divided by the current year's supply. As such, a ratio higher than 0% indicates a market in deficit whilst a ratio below 0% indicates a market in surplus. During the past 20-years, this ratio has peaked at 3.4% in 2010 and troughed at -6.8% in 2013.



Source: International Rubber Study Group; Forecasts: Smartkarma Research

Today's industry fundamentals are the weakest in 20-years, with a surplus ratio forecast to fall to -13% this year and pricing (RSS3) off by 8% year-to-date. Whilst this may appear to be a relatively muted price action relative to the industry news-flow, it's important to highlight that the market has been over-supplied for much of the past decade and prices had already declined -75% from its Feb-11 peak of US$6.47/kg.

The Road Ahead

Looking ahead, we believe the worst of the industry's oversupply and weak price action is behind us. But the shape of the recovery is very much dependent on when the industry can regain its confidence that global mobility trends are returning to 'normal'. Vaccine developers and government officials are publicly reporting potential timelines for the emergency use of new vaccine candidates between the fourth quarter of 2020 and the first quarter of 2021.

As such, we forecast that the industry will be able to see a couple of years with above-trend growth and modestly tighter industry conditions. However, we also believe the rebound is likely to be slower than following the GFC as the restocking cycle is unlikely to be as aggressive as it was then. But, even with the news-flow getting better the industry still is forecast to be oversupplied through the first half of the decade and that is expected to keep a cap on any significant price recovery.

We feel confident in saying that the pricing lows for the current cycle are behind us. We believe the market-tested this low earlier this year and found it on 1-April at a price of just US$1.27/kg (RSS3). Since then prices have recovered by ~45% to the current level of US$1.85/kg. However, we also feel confident in forecasting that this bounce is unlikely to be the start of a move back to levels seen during earlier bull markets. Instead, we forecast industry oversupply to cap pricing at ~US$2/kg for the next few years.

Looking ahead to the second half of the decade, however, we are more optimistic. We forecast demand eventually catching up with supply and ultimately tightening the market fundamentals to a level where pricing can be squeezed substantially above the US$2/kg level.

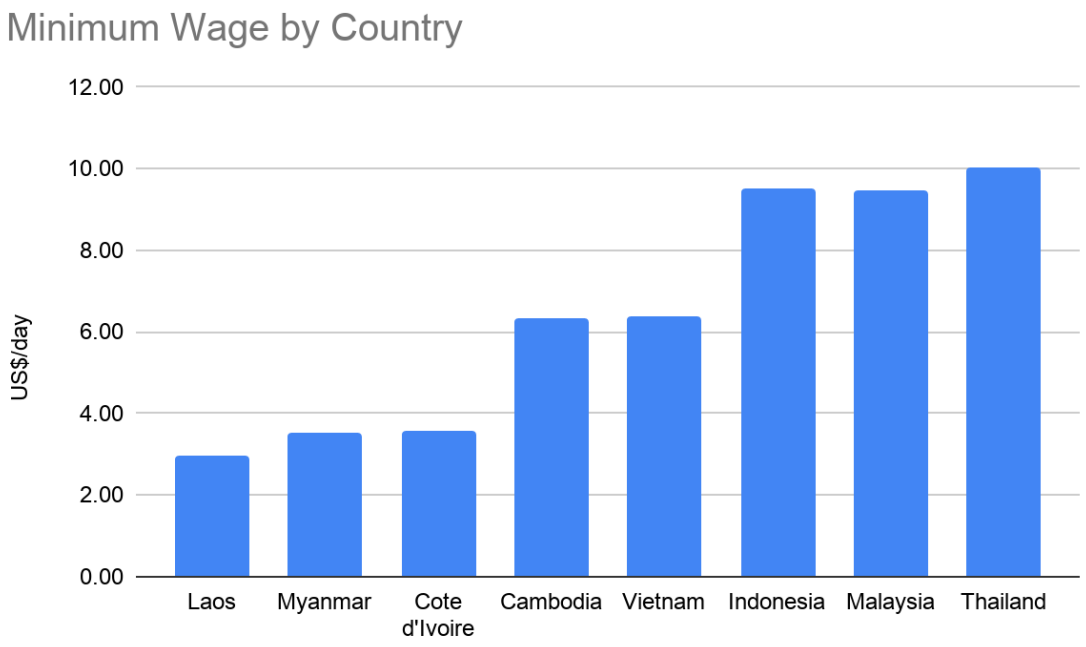
Though rubber prices have cycles of tumultuous booms and busts, there has been little to no tangible action taken by the industry to protect itself from such risks. In the era of smart technology, there has been growing discourse on digitising the commodities market. Modernising the rubber supply chain would shift rubber from being inherently volatile to a commodity that can be risk-managed. The following section expounds on why and how these novel initiatives are being implemented.

Technology:

Disruptor & Transformer - digitisation, internet connectivity

A Bridge into the Future

The historical geographical shifts in the rubber industry paved the way for more cost-effective processes. In 1990, Malaysia was the number one producer of natural rubber but is in seventh place today. The extension of rubber crop growth out to countries such as Vietnam benefitted from substantially lower labour costs than Malaysia – this is important to consider because these account for more than half of the Free on Board (FOB) costs. 13.8 million tonnes of rubber was produced in 2019.[1]



Source: Trading Economics, Minimum-Wage.org

Commoditisation of Rubber

In the mid-1990s, new futures contracts were established to trade natural rubber as a commodity, resulting in increased price transparency. This gave end-customers more negotiating power from the merchant and dealer network, allowing for easier comparisons of regional pricing as well as quality premiums. Eventually, merchant arbitrage opportunities were eliminated.

Rubber Value Chain: Increasing Imbalance

The commoditisation of industry pricing has been the latest disruptive wave to hit the rubber industry. The successful establishment of multiple new futures contracts in the mid-1990s on the SICOM and SHFE, in addition to the TOCOM, resulted in increased pricing transparency. This transparency gave end-customers more negotiating power against the merchant and dealer network. This resulted in easier comparisons of regional pricing as well as quality premiums and, once again, eliminated merchant arbitrage opportunities.

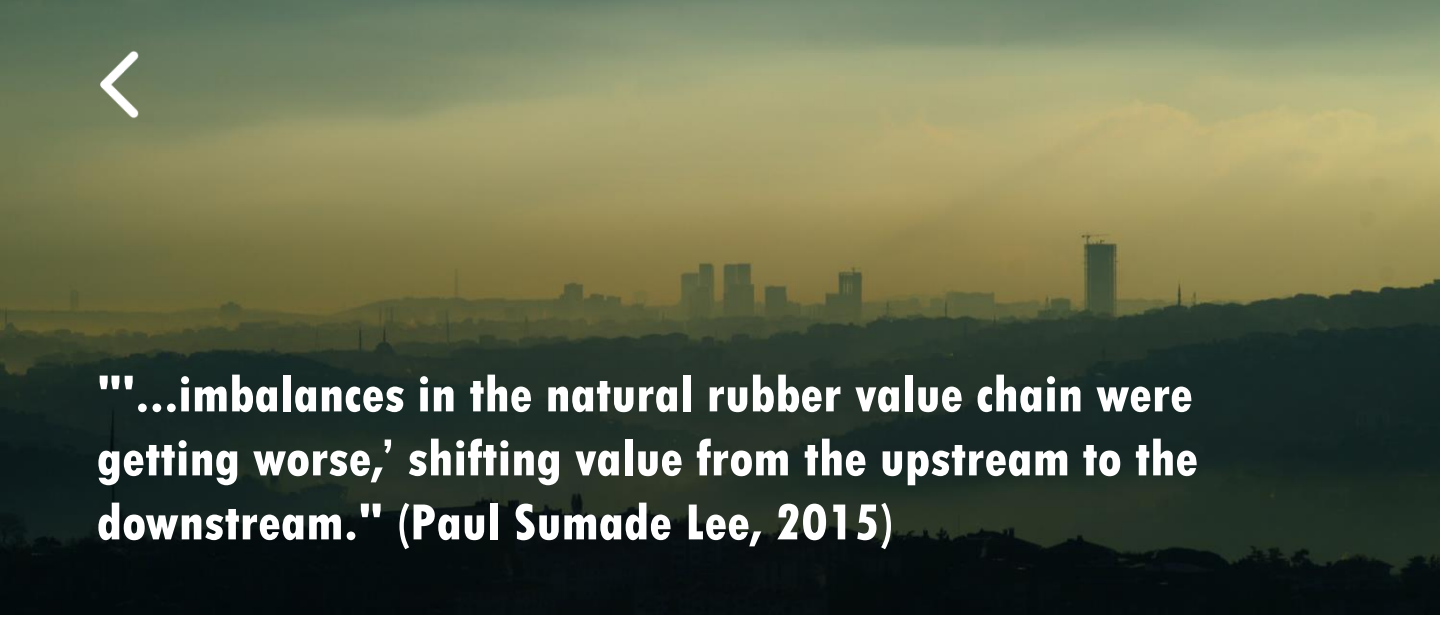
In 2015, then-chairman of the International Rubber Association (IRA), Mr Paul Sumade Lee, stated at the Shanghai Derivatives Market Forum (SDMF) that 'imbalances in the natural rubber value chain were getting worse,' shifting value from the upstream to the downstream. He did, however, conclude on an optimistic note, asserting that 'this situation should not last long and we can expect consolidation in the rubber industry soon.' Unfortunately, conditions have since only become more unbalanced. Natural rubber prices have fallen a further 10% and farmers across Malaysia and Indonesia are suffering losses. But, at the other end of the supply chain, rubber glove manufacturers are minting new billionaires. These imbalances are unsustainable and new digital disruptors are on the horizon, ready to rebalance the industry's supply chain.

Waking the Sleeping Giant

Recent industry reports identified the potential fiscal value in modernising technology in the global commodities industry:

- BCG (2017)[2] estimates US$ 70 billion in incremental market value from new technology
- Oliver Wyman (2019)[3] forecasts margins in commodities trading to fall further unless industry invests in new technology
- Refinitiv (2019)[4] acknowledged investments in "best-of-class" technology are required for commodity trading companies to maximise profit

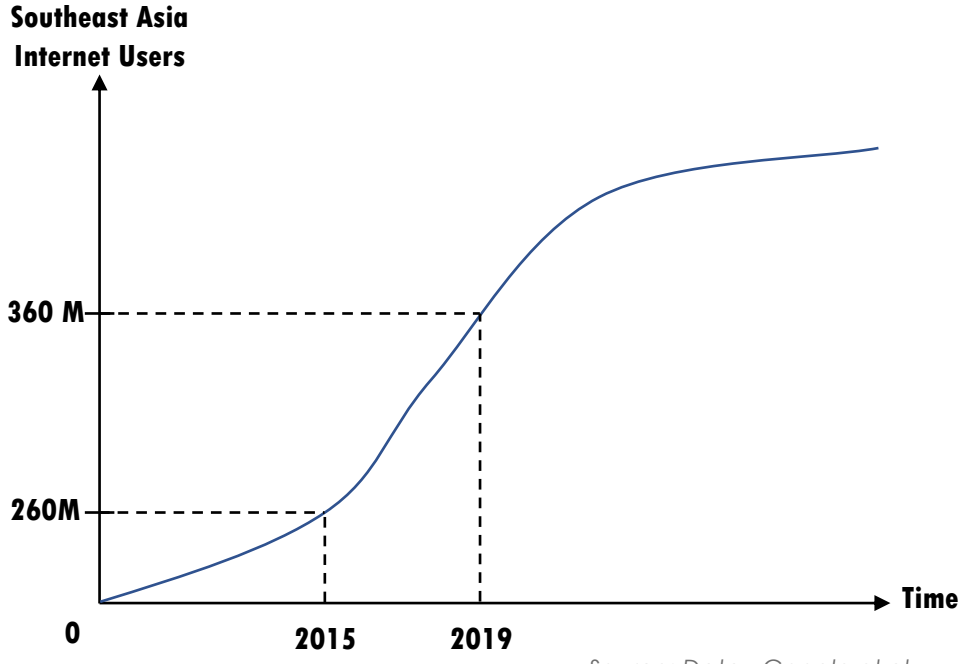
The global commodities market is ripe for change, but in a traditional industry such as rubber, innovation needs to be firmly linked to generating tangible value. Coincidentally or not, an exponential increase in Internet connectivity is paving the way for profound change.



"'...imbalances in the natural rubber value chain were getting worse,' shifting value from the upstream to the downstream." (Paul Sumade Lee, 2015)

Boom: Internet Connectivity in SEA

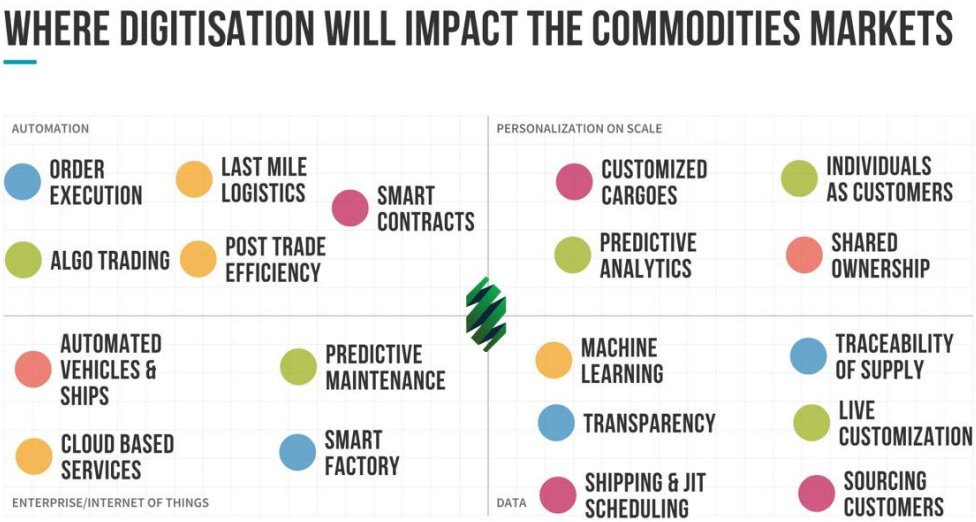
Southeast Asia is primed for digital transformation. Google, Temasek, and Bain & Company[7] report that the region has seen an increase of more than 10 million Internet users in 2019. This brought the total number of people connected to the Internet to 360 million in 2019. The Internet user base is now 100 million larger than it was in 2015.



Source: Data - Google et al., Chart - Helixtap Technologies

As discussed earlier in this report, rubber production has shifted to Southeast Asia and China in only the last century. In 2018, Southeast Asia produced approximately 80% of the world's rubber, and Asia imported more than 50% of it.[3] The growing Internet connectivity in the region will compound the pre-existing interconnectivity in the rubber industry, bringing together producers and buyers rapidly and seamlessly.

Digitisation in Commodities Markets



Source: Helixtap Technologies

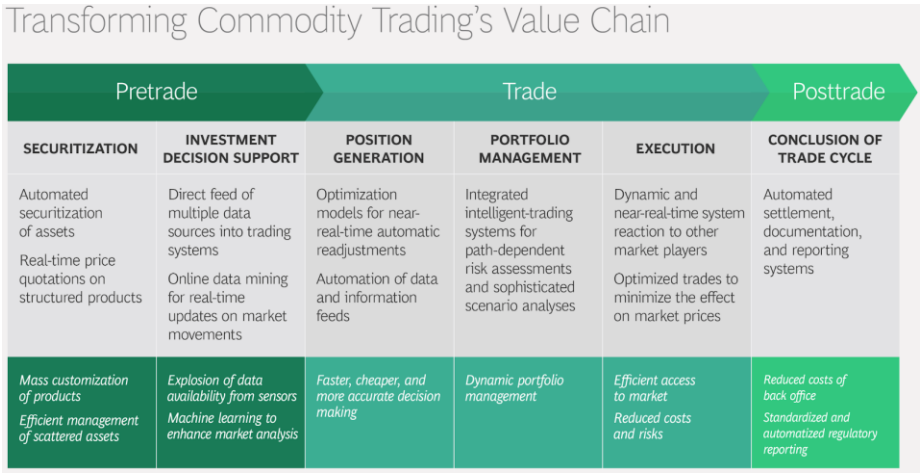
According to well-established agri-business company Olam International,[5] there are several hundred start-ups in Silicon Valley attempting to disrupt various parts of the agricultural supply. However, traditional traders have the home-ground advantage of pre-existing industry relationships and transactional data for early deployment. Sustainability solutions are a growing avenue for digital disruption, with opportunities to create a segregated and traceable supply chain.

The Cloud

Uploading the supply chain onto the cloud would serve as a global equaliser that delivers more opportunity across the supply chain and access to a truly global audience. Silicon Valley's Bessemer Ventures[6] expect the cloud to penetrate 50% of enterprise software by 2025. At the same growth rate, it is predicted that the cloud will power over 75% of software by 2030. Cloud deployments provide a plethora of benefits: faster performance, swift responsiveness, improved connectivity and greater agility. The resulting transparency, speed and efficiency of a cloud-based supply chain would revolutionise how its participants transact. As access to data is no longer exclusive to traders, their processes will be disrupted considerably.

Technology + Rubber Traders

Management consulting group BCG[7] outlined traders' core processes and activities to determine what is subject to digital disruption, transforming commodity trading.



Source: Boston Consulting Group[8]

Pre-Trade

Securitization – bypassing commercial departments and commodity traders, rubber can be grouped, regrouped, and traded instantly

Investment Decision Support – immediate access to new types of data that can help them understand future supply-demand dynamics.

Trade

Position Generation – after posting a position, decision-making is automated to create a faster, more precise, and cost-efficient process.

Portfolio Management – an integrated, intelligent trading system allows traders to perform more realistic, path-dependent risk assessments, and sophisticated scenario analyses instantly through available cloud-based computational capacity.

Execution – intelligent trading systems lower costs, make a company's execution less obvious and optimise the trades to have only a minimal effect on the market price.

Post-Trade

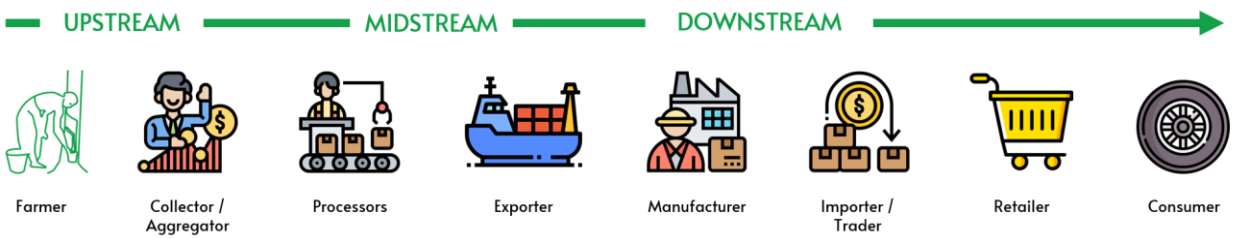
Standardised Reports - digitised and automated back-office processes improve the quality of post-trade reports.

Digital trading platforms, like Helixtap Technologies in the rubber industry, are stepping forward to streamline the entire commodities' supply chain. The benefits of digitisation are not limited to traders, and instead extend to upstream supply chain participants too.

Technology + Rubber Suppliers

Coupling the growing Internet connectivity of SEA with the digitisation of the commodities industry, Helixtap Technologies addresses the urgent need to rebalance the natural rubber value chain. 6 million smallholder farmers supply 85% of the world's rubber[9] but are the very individuals who bear the brunt of the industry's volatility.

The traditional supply chain for natural rubber sees multiple agents and facilitators touching the product on its way to the customer, each adding their margin along the way. For example, farmers usually sell through two or more middlemen agents each charging about 4% for transport and handling fees to connect them to the processor's factory. After processing, rubber merchants will look to connect the factory to the end-customers and can exploit pricing arbitrage opportunities or other pricing anomalies. However, upstream opportunities can now be more balanced between traders and end-customers through digital access to information and market pricing.



Natural Rubber Supply Chain Source: Helixtap Technologies

Conclusion

The rubber industry has undergone several reinventions throughout its history and is now at the start of a new, digital era. The commodities market, as a whole, is already undergoing digitisation to unlock a potential $70 billion in market value and the rubber industry needs to ensure it participates in this move.

Pricing pressures, alongside technology developments are creating the right push and pull factors for this commodities sector to start to enjoy the benefits that digital transformation can bring across the supply chain. These include improved market access, information and pricing. Additionally, timely trades through streamlined processes and improved market products will counteract the inherent price volatility of rubber and mitigate market risks.

Technology start-ups, such as Helixtap Technologies, are also creating opportunities for all market participants with improved market transparency and connectedness to mitigate market risk for those, primarily smaller businesses, who have borne most of the risk up till now. Although the rubber industry has been somewhat slow to move in the past, there are now clear opportunities for market developments through the use of technology to empower and future proof the industry.

Visit:

www.helixtap.com

Helixtap Technologies aims to be the leading independent digital platform for the natural rubber industry, driving collaboration and offering a wholly independent rubber pricing index.

Read more here

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