

Sustainable NR Production and the Middle Income Trap

Pong Kai See,

FPRI, FPRIM, BSc (Polymer Science), MSc (Tech-Econs),
Plastics & Rubber Institute Malaysia.

The original industrial revolution (ca.1750) plus colonization enabled developed countries (G7/8) to become rich at the expense of poor countries and these countries were able to build up big difference in gross domestic product (GDP), per capita income and standard of living. The rate of growth of GDP was moderate by modern standards, perhaps 1.5% to 2.0% per year, but over a period of more than 200 years this amounts to lots of growth.

Adoption by certain developing countries (G20) of methodology of the developed countries, especially structuring away from subsistence agriculture base to industrial export base and joining the global or open economy led to rapid growth that enabled these countries to catch up with the G7. 13 countries (Oman, Brazil, Botswana, China, Japan, Malaysia, S. Korea, Indonesia, Malta, Taiwan, Singapore, Hong Kong, Thailand) achieved greater than 7% growth over 25 years, from 1960s to 2005. In recent years the list has grown (Vietnam, India, Turkey, Bangladesh, S. Africa, etc).

China grew since opening up by Deng Xiaoping in 1978 at a historical pace averaging 9.5% for more than 35 years; and is now the second largest economy in the world, though still poor in terms of GDP per capita. India is according to some sources is 14 years behind. The economic structure of these economies, including the way they deal with each other and the G7 countries, what they sell and what they buy, will change as these new developing countries catch-up and becoming developed countries in another 20 years or so.

Not all the fast developing countries will achieve developed countries status. Many countries stagnate around USD 6,000-10,000 income per capita and are not able to restructure away from labour intensive exports. Of the 13 countries above only 5 (Japan, Hong Kong, Singapore, Taiwan, S. Korea) made it to become developed countries, i.e., per capita income in excess of USD 25,000. This phenomenon is described as “middle income trap” by economists. A study by IMF indicates that perhaps only 1 in 5 middle income countries will make the breakthrough. Malaysia has been stuck in the “middle income trap” since around 2005.

RUBBER SUPPLY

The reason I bring up the subject of fastgrowing countries is because this has relevance when we discuss prospects and development of the world rubber economy. This involves the supply side of natural and synthetic rubber as well as the demand side. On the supply side or upstream sector, for natural rubber producers, as the GDP per capita increases, they become less competitive. A good example is Malaysia (see box) and perhaps China. They also become major synthetic rubber producers (Japan, S. Korea, Taiwan, Singapore, China). On the demand side or downstream sector, they move away from labour intensive or low value-added products to more technologically demanding ones. The rate of growth of new rubber use also slows down. In the 1960s the top 10 rubber using countries (natural and synthetic rubber) were almost all from developed countries. In 2020 the top 10 (China, USA, India, Germany, Japan, Thailand, S. Korea, Malaysia, Indonesia, Brazil) include 7 Asian countries. Thailand, Malaysia and Indonesia became major users of SR since they started SR production. Growth is negative or static in USA, Germany, Japan and S. Korea, the “developed” countries. Vietnam is now the fastest grower.

Adam Smith, “The Father of Economics” writing in “The Wealth of Nations” in 1776, suggested the reason why nations trade was because one country could produce certain goods cheaper than others while another nation produced a different good more economically. It followed that in international trade there exists a ranking of nations. For example, in oil production, the cheapest producer is the one where oil is easiest accessible (Saudi Arabia) while the most expensive oil come from difficult to extract areas (deep sea). We see a similar story in rubber. This is called “comparative country advantage”.

Natural rubber has been around for a long time. Columbus, in his second voyage to the West Indies, observed natives playing a game with a type of rubber ball. The material did not attract attention in the West till Joseph Priestly, the discoverer of oxygen, found it could rub off pencil marks, and Charles Goodyear in 1839 invented vulcanization, a process that made the material useful in both hot and cold conditions. Demand

for rubber quickly grew with invention of telegraph and electricity on the one hand, and the motor car on the other. Rubber was needed to insulate the telegraph and electric wires and to make tyres for motor transport.

Rubber came from wild plants in Brazil, Central America and the Congo. At its peak, rubber was worth its weight in silver and much atrocities were committed by so-called “rubber barons”, who became very rich, on the native population to ensure the rubber reached the factories in Europe and America.

In 1876 Henry Wickham, a British adventurer, smuggled some 70,000 rubber seeds out of the Amazon basin. These were germinated into seedlings in Kew Gardens, London. A few seedlings reached Malaya and Sri Lanka (Ceylon) and these became the original stock of the millions of trees planted in rubber plantations in the Far East. Wild rubber could not compete: with plantation rubber which was thousand times better in efficiency and productivity. By 1920 the rubber barons were no more.

Malaya became the number one supplier of natural rubber in the world and at its zenith accounted for 60%

the 1970s and 1980s, as Malaysia industrialized, GDP per capita, increased rubber plantations switched to oil palm and by 1990 Indonesia and Thailand had overtaken Malaysia as top producers.

The story could repeat itself. Indonesia and Thailand, two fast developing countries, could follow the fate of Malaysia as they grow rich. The attached graphs show NR production peaked for both countries and are starting a decline. Even as they complained of low prices, other lower income countries are planting ever more rubber.

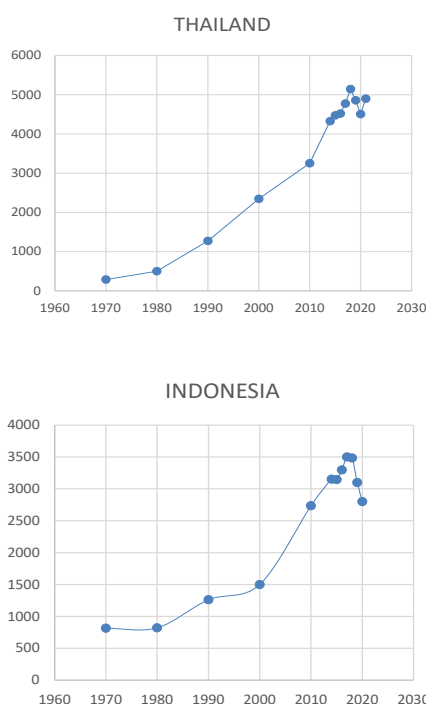
AN ALTERNATE APPROACH TO PRICE

The traditional price model is based on supply and demand. Over the years many more variables have been added: stocks or stocks-to-use ratio, price of oil, price of a basket of synthetic rubbers, U.S dollar exchange, weather, disease, commodity price trends, government action, speculation by unknown investors. A review of the many academic papers on this subject indicated varying degrees of correlation between these variables and price. There is no possibility of assigning cause to effect. The reverse approach, using these variables to predict price has been less convincing.

Rubber economists argue an important difficulty in getting supply right is the long growing period between planting of rubber and start of harvesting. Typically, this is 6 or 7 years. It is difficult to forecast demand that far ahead. This is compounded by fact that 80-90% of rubber is planted by small farmers who instinctively only plant new rubber during times of high prices. Jom Jacob, a rubber economist, argued that new planting overshoots during periods of high prices, and this leads to an oversupply situation when these trees mature. Low prices prevail until demand catches up with the supply overhang. Period of supply shortfall follows leading to high prices and the cycle repeats. Implicit in this scenario is the assumption that supply is relatively inelastic. The conventional view is that smallholders need the income and will increase tapping when prices are low, exacerbating the low-price situation.

Low prices caused hardship among rubber farmers and there is a view that rubber prices are not enough to give farmers a decent standard of living. This also leads to governments ganging together to restrict supply and raise prices or to subsidize farmers to help them make ends meet. This has never worked and in the long run has the effect of making the situation worse.

To explain why, I have to bring back Adam Smith and his concept of “comparative country advantage”. I will argue that Malaysia is no longer competitive and



of world output. But it was not happy days always. Prices rose during times of high demand and slumped during recession and bad times. British planters strived to maintain a monopolistic position in the market. In the 1920s, immediately after end of WWI, prices slumped. The Stevenson Plan was devised to restrict rubber supply. Prices rose but had the undesirable effect of enthralling neighboring Dutch-held Indonesia and French-held Indochina. They planted more rubber. In



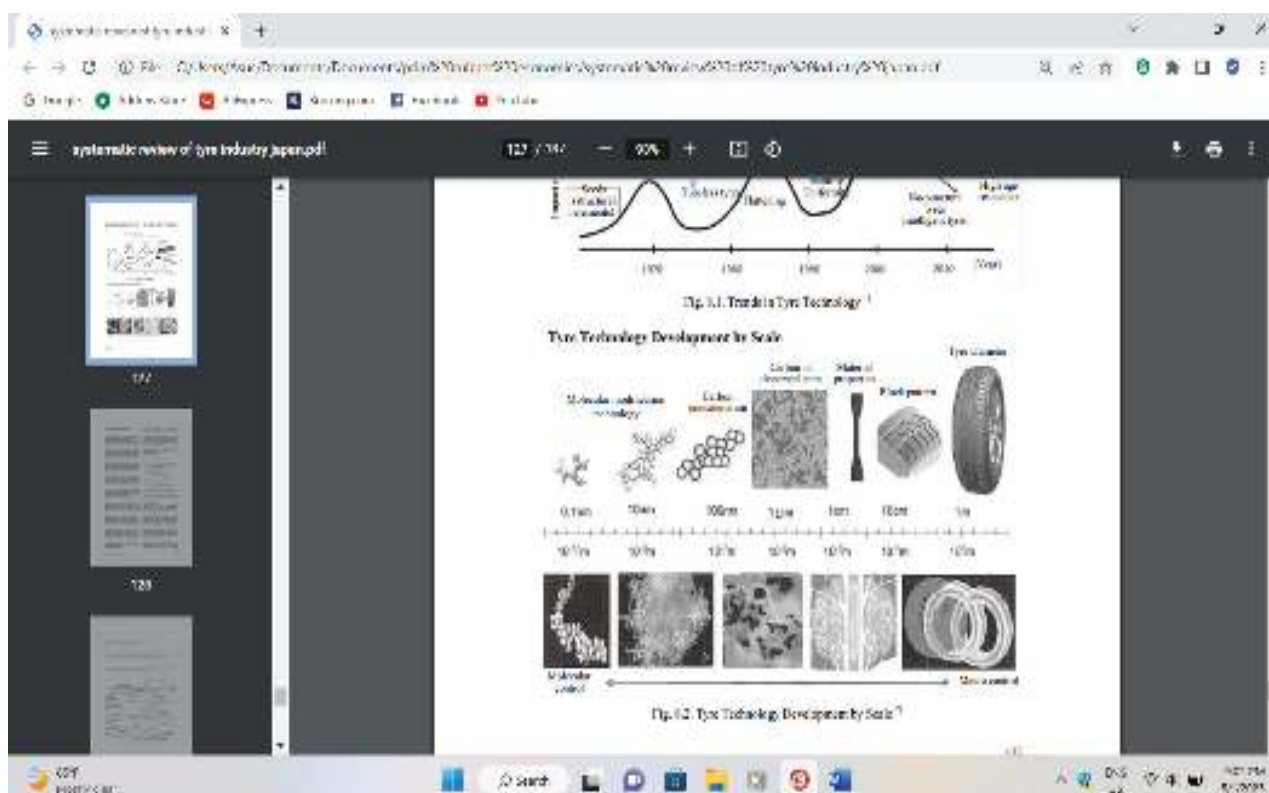
Thailand and Indonesia are at the margin. Look at the graph I have constructed of the relative cost of different countries. I have used a proxy for relative cost (country GDP per capita divided by country average yield of rubber) as actual cost of production is not readily available. Assuming that balancing supply with demand works relatively well for middle term price fixing, for a given demand situation the marginal high-cost farmer needs to stop harvesting to balance supply with demand. Artificially raising prices will encourage more supply from low-cost producers. Similarly, subsidizing farmers to continue tapping will prolong the low price. The better approach is to raise farmer incomes by restructuring the rubber economy via technology (high yielding clones, low frequency automated tapping, improved collecting and novel processing methods), farm ownership reform (size of plots too small), mixed farming, or moving, in part or entirely, to a more lucrative crop. Thailand had the right idea when it announced in 2018 that it planned to reduce rubber area by 20%, raise yields to 2500 kg/ha/

yr and encourage mixed farming. (There are reports that mixing rubber with bee keeping doubles farmers' income.

DEMAND GROWTH SLOWING

From end of WWII to 1970 world rubber demand (NR + SR) grew at 5-7%. This slowed to a half in the next two decades. Growth picked up in the first decade of the new millennium as China began its love affair with the automobile. Growth has since slowed as the Chinese government reined in pollution and the country moved toward a new mobility model based on public transport, shared mobility, EVs, last mile mobility, A.I. and automation. From 2010-2020 the growth of world rubber demand was between 1%-2% per year. Sale of new cars in China peaked since 2017 and even as demand picked up post Wuhan lockdown, the level of new car demand was below the peak.

Tyres of all descriptions make up 80% of rubber demand in China. The technology development of tyres follows world trends: structurally change tyre construction to use less material (less weight) and enhancing tyre performance for lower rolling resistance, less wear (last longer) and better grip in the wet. The concept is illustrated in the graph which seek improvements in all dimensions (from nano to 1 metre). The motto: reduce, reuse, recycle means less new rubber and more recycled (devulcanized) rubber. It also targets multiple times of retreading of bus and truck tyres. The second concept of going green targets less use of fossil material, more from bio sources.



This slowing of growth of new rubber demand means it will take longer to catch up with the NR supply overhang. In 2018 it was forecasted there will be NR supply shortfall by 2022. This has not happened and David Shaw, a tyre consultant, has projected this will not happen until 2027/28. SR has a different dynamic. Capacity overhang existed pre-covid. Covid accelerated plant closures. There are now reports of shortage of certain grades of SR.

CONCLUSION

As Malaysia, Thailand and Indonesia drive toward achieving developed country status (increasing GDP per capita to USD 25,000) and escape the “middle income trap”, the growth strategy is moving away from labour intensive agriculture and low value-added manufacturing towards more high-tech manufacturing and services. Rubber growing is a labour intensive activity. At current low price of NR the three countries need to restructure the economics of rubber growing to ensure farmers get an adequate income: new technology (high yield planting material, low frequency automated tapping, alternate collection, cheaper processing methods), farm ownership reforms (size of farms too small), mixed farming, alternative /supplementary sources of income. The answer to sustainable NR production in these countries lies in more R & D and effective technology transfer targeted towards achieving these results.

References:

1. The Next Convergence: The Future of Economic Growth in a Multi-speed World, Michael Spence, 2011, Macmillan Publishers.
2. The Middle Income Trap, Wikipedia, accessed 6.1.23
3. FAO stats.

MALAYSIA: NO MORE #1

In the 1990s rubber estates, responsible for more than half of Malaysia's rubber output, decided to cut down rubber trees and replace them with oil palm, a more profitable crop. Over a period of a decade or so, the area under rubber owned by estates dropped more than 80% from a peak of over 700,000 hectares. Today, only about 50,000 hectares of estate rubber remained. Smallholder rubber also declined. Production tumbled from around 1.6 million tonnes in the 1980s to 400,000 tonnes today. More than 60% of the estimated 1 million ha of land planted with rubber are untapped because tappers cannot earn a decent income at current low prices. To achieve the government target income of RM 4,000 a month, the rubber farmer needs to either increase his yield from trees to 2500 kg/ha/yr or increase size of his holding to 4 ha. The average size of rubber holding in W. Malaysia is between 1.5 to 2.5 ha. Due to neglect and low income, yield for a well maintained holding is less than 1500 kg/ha/yr; in many cases, due to low quality planting material and poor management, yields are less than 1000 kg/ha/yr.

A recent report in 2018 by researchers at University of Malaya said 90% of smallholders surveyed in Perak, Negri Sembilan, Sarawak and Sabah did not achieve the RM 4000 target. On the contrary, about half of them are living below extreme poverty or poverty line. “Currently almost all smallholders are low income earners below RM800 per month,” they wrote. Only 36% of their total income is from rubber, “they have to find alternative jobs to sustain”.

There is a shortage of workers prepared to tap rubber. Because of the low income from rubber tapping, it is no longer the main source of income. The rubber farmer works on other jobs and taps rubber to supplement. He taps, perhaps two times a week, on weekends and one weekday morning when he finishes his task early, have a quick rest, then goes to attend to his normal job. To do this, he stops harvesting latex, and go for cuplump instead. This is the reason why Malaysia stopped producing latex. Malaysia is the #1 maker of rubber gloves in the world, yet almost all the latex is imported from neighbouring Thailand and Vietnam.

TINNA RUBBER, INDIA'S LARGEST INTEGRATED ELT (END-OF-LIFE-TYRE) MATERIAL RECYCLER.

Tinna[®]
Caring for Environment



**Rubber Granules &
Rubber Powder**



**Micronized
Rubber Powder
(Upto 140 mesh)**



**Reclaim
Rubber
(High Tensile)**

For sales, please contact our distributor: **UD SYNERGY PVT. LTD.**
Ms. Disna Jayawardena: +94-715309897, E: commercial@ud-synergy.com

Tinna Rubber & Infrastructure Ltd. | W: www.tinna.in | E: anurup.arora@tinna.in



AGENTS IN SRI LANKA FOR



Precipitated Silica
For TYRE & RUBBER
APPLICATIONS



Naphthenic low PAH
Tyre & Rubber Oil



Borstar differentiated range of
Polyethylene and Polypropylene

FALCO INTERNATIONAL TRADING PTE LTD

128/3, PHILIP GUNAWARDENA MAWATHA, REID AVENUE, COLOMBO 4, SRI LANKA.

T: +94-11-2599450 | F: +94-11-2599456 | M: +94-77-7712900

lukmanjee@falco.lk | www.falco.lk



MADHU SILICA PVT. LTD.

Bhavnagar, Gujarat- INDIA

Leading Manufacturer of Precipitated Silicas / Silicates

Innovation ■ Sustainability ■ Growth

Precipitated Silica Solutions for the Tire & Rubber Industry



Local Agents:

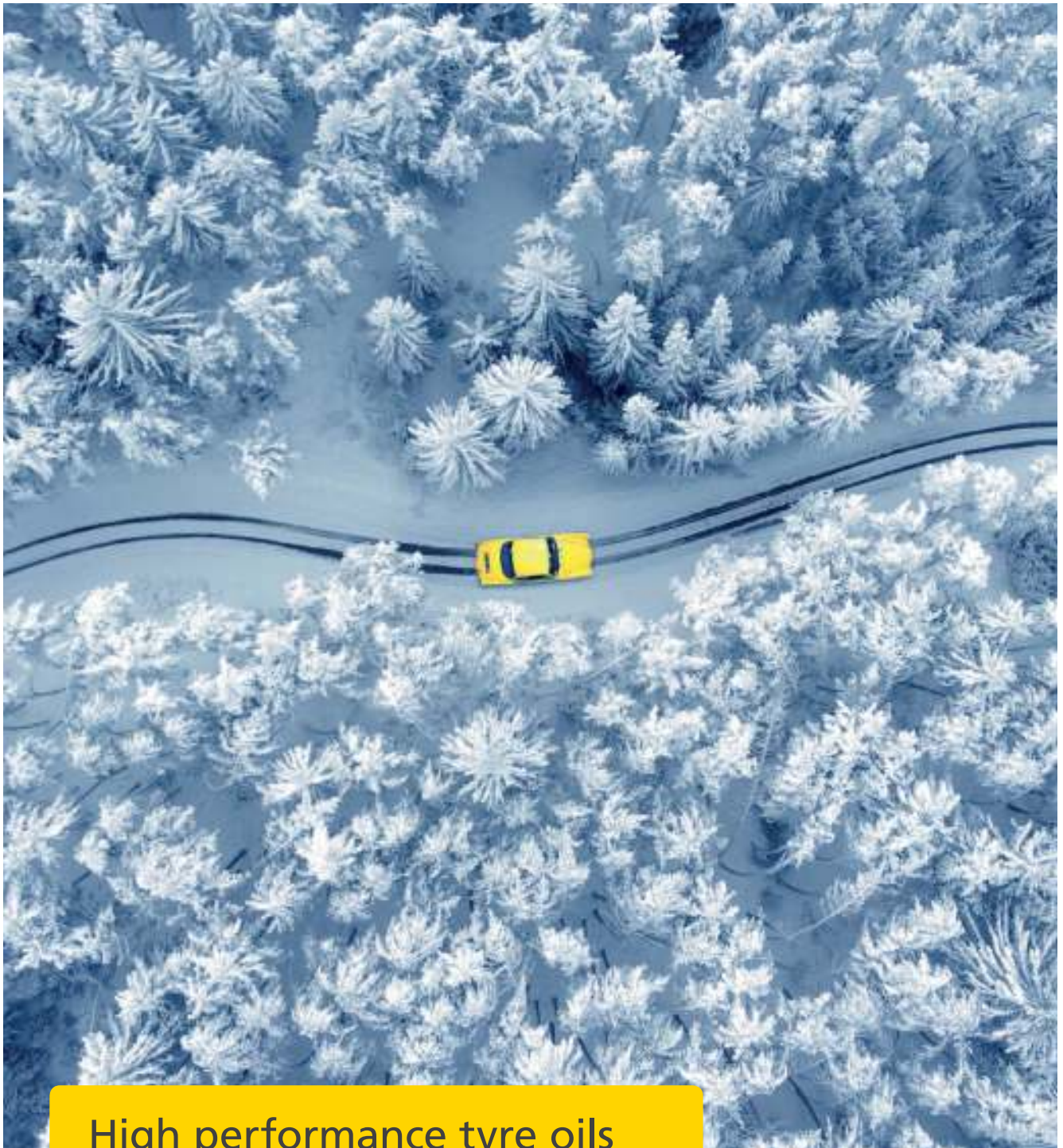


Falco International Trading Pte Ltd

+94-77-7712900

lukmanjee@falco.lk

www.falco.lk



High performance tyre oils
have a name: NYTEX®

Getting a grip just got easier. Our NYTEX® range of naphthenic oils for winter tyres can improve rolling resistance and traction without compromising other properties. Curious to find out what else we know about tyre oils? Visit our website and learn more about how to boost your tyre performance. www.nynas.com/tyre-oils

Local Agents:



Falco International Trading Pte Ltd

+94-77-7712900

lukmanjee@falco.lk

www.falco.lk



LAUGFS

INDUSTRIAL TYRES

DESIGNED FOR PERFECTION BUILD TO LAST



Most Outstanding
Exporter of the Year 2022
At the 30th NCE Awards

LAUGFS Corporation (Rubber) Ltd. uses cutting-edge technology and globally recognized Total Quality Management (TQM) processes to manufacture a full spectrum of industrial tyres for a variety of industrial applications, including material handling, construction, mining, port trailers and ground support equipment for a multitude of industrial operations.



LAUGFS Corporation (Rubber) Limited,

No.101, Maya Avenue, Colombo 6, Sri Lanka. | Tel: +94115566222 / +94777488639

Email: info.rubber@laugfs.lk | Web: www.laugfsindustrialtyres.lk

AMPACET Plastics Reimagined™

Masterbatch

White, Black, Colors & Additives



Vaughan Chemicals (Pvt) Ltd.

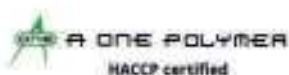


FMJ HOLDINGS

we take pride in our accomplishments and continue to strive for excellence!



FMJ Holdings is an integral player in the Sri Lankan business storyline, with a rich history stretching back to 1974. Plastics manufacturing is our core expertise area, and we have four fully owned subsidiaries: FMJ Plastics, A-One Polymer, JD Polymer, and Wingro with over 500 employees. Our commitment to quality is reflected in our HACCP, ISO 9001, FSSC 22000 certifications and accolades and we attribute our success to our extensive business knowledge, ethical work practices, and unwavering dedication of our workforce. At FMJ Holdings,





Aqua Packaging (Pvt) Ltd
Wattala

dkw-Aqua International (Pvt) Ltd
Hatton

Flex Film International (Pvt) Ltd
Giriulla

Manufacturers of custom-made poly bags

Corporate Headquarters
Business Insource Lanka (Pvt) Ltd
51/3, Dharmapala Mawatha
Colombo 03

Tel : +94 11 5114411 Fax : +94 11 2320492
email : apl@aqualk.com

