# PHILIPPINE RUBBER INDUSTRY ROADMAP 2022-2028


PHLRUBBER
Technical
Working Group

# PHILIPPINE RUBBER INDUSTRY ROADMAP 2022-2028

# EXECUTIVE SUMMARY

The Philippine Rubber Industry Roadmap 2022-2028 is a result of various consultations and dialogues with the rubber industry stakeholders from the private and government sectors. This is a successor plan of the Philippine Rubber Industry Roadmap 2017-2022. One of the key initiatives in the roadmap is the creation of the Philippine Rubber Industry Board that would oversee the implementation of the various programs of government agencies and private sector organizations in the development of the rubber industry.

The Philippine Rubber Industry consists of key players from upstream, mid-stream, and downstream sectors. Upstream sector is composed of suppliers of inputs, rubber planters producing latex and cup lumps. Midstream sector includes processors of Technically Specified Rubber (crumb rubber and air-dried sheets), latex concentrate, traders and exporters of TSR/SPR. The downstream sector includes manufacturers of tires, automotive parts, sports products particularly tennis balls, and footwears. There is an untapped industry in manufacturing of health and medical devices, like gloves, condoms, baby feeding nipples and other products from latex concentrate. There is also a potential in producing rubberized asphalt and other innovative and emerging rubber-based products.

The upstream and mid-stream activities are mostly located in Mindanao while downstream is in Luzon and Visayas. Mindanao will soon host the biggest tennis ball manufacturer in the world. With the existence of Dunlop in Bataan, the Philippines will become the largest tennis ball supplier in the world.

The rubber industry is envisioned to be inclusive, globally competitive and resilient industry providing sustainable benefits to all stakeholders by developing a cost-competitive, quality-driven, supply-reliable, innovative products-diversified value chain from primary production to manufacturing and marketing of rubber-based products under sustainable practices.

The goal is to increase the benefits of all the stakeholders in the rubber industry thereby spreading the gains down to the smallholders in the remote barangays in all rubber-producing provinces in the regions. By the end of 2028, the industry shall have established the Philippine Rubber Industry Development Board; increased the number of accredited plant nurseries and budwood gardens (government and private owned);expanded total area planted using certified planting materials under NSIC registered varieties; improved farm productivity; increased investments in rubber plantation, processing plants and rubber products manufacturing resulting in increased export of processed and manufactured rubber products and reduced import of natural rubber by major rubber-based manufacturers.

The plan outlines the development strategies in achieving the goals of the Philippine Rubber Industry including the creation of an institution that will orchestrate, coordinate and oversee the implementation of programs and projects of the government and private sector, and ensure a unified direction for the industry. The development of the industry requires the certification of new rubber clones and use of NSIC certified planting materials from accredited nurseries and certified budwood gardens. Likewise, it focuses on the adoption of Good Agricultural Practices (GAP) and transfer of new

and innovative technologies for midstream and downstream sectors. The plan gives priority to intensified research, development and extension services to improve technology in production, processing and manufacturing. It gives emphasis on the provision of support to farmers through farm mechanization and modernization, and product quality improvement conformant to national and international standards.

The roadmap advocates for the active promotion of investment opportunities in the manufacture of rubber-based products for domestic and international markets. The plan pushes for sustained membership to and linkages with national international industry organizations to facilitate seamless exchange of information to keep abreast with developments across the global rubber value chain. The plan strongly pushes for the creation of new financial facilities to farmers and other industry stakeholders.

This document includes the Philippine Rubber Industry Cluster Action Plan (2022-2028) providing in details various programs, projects, and activities of government agencies allied to the development of the industry. The PHLRUBBER which was created by the Department of Trade and Industry on June 22, 2012 as a Technical Working Group serves as an anchor organization that coordinates and monitors the implementation of the cluster action plan and submit progress reports to the top management of the member-agencies and institutions.

MESSAGE OF DTI-SECRETARY

MESSAGE OF DA-SECRETARY

MESSAGE OF DOST-SECRETARY

MESSAGE OF DAR-SECRETARY

## *RUBBER FARMING :*
## *Is it a SUNSET or a SUNRISE INDUSTRY?*

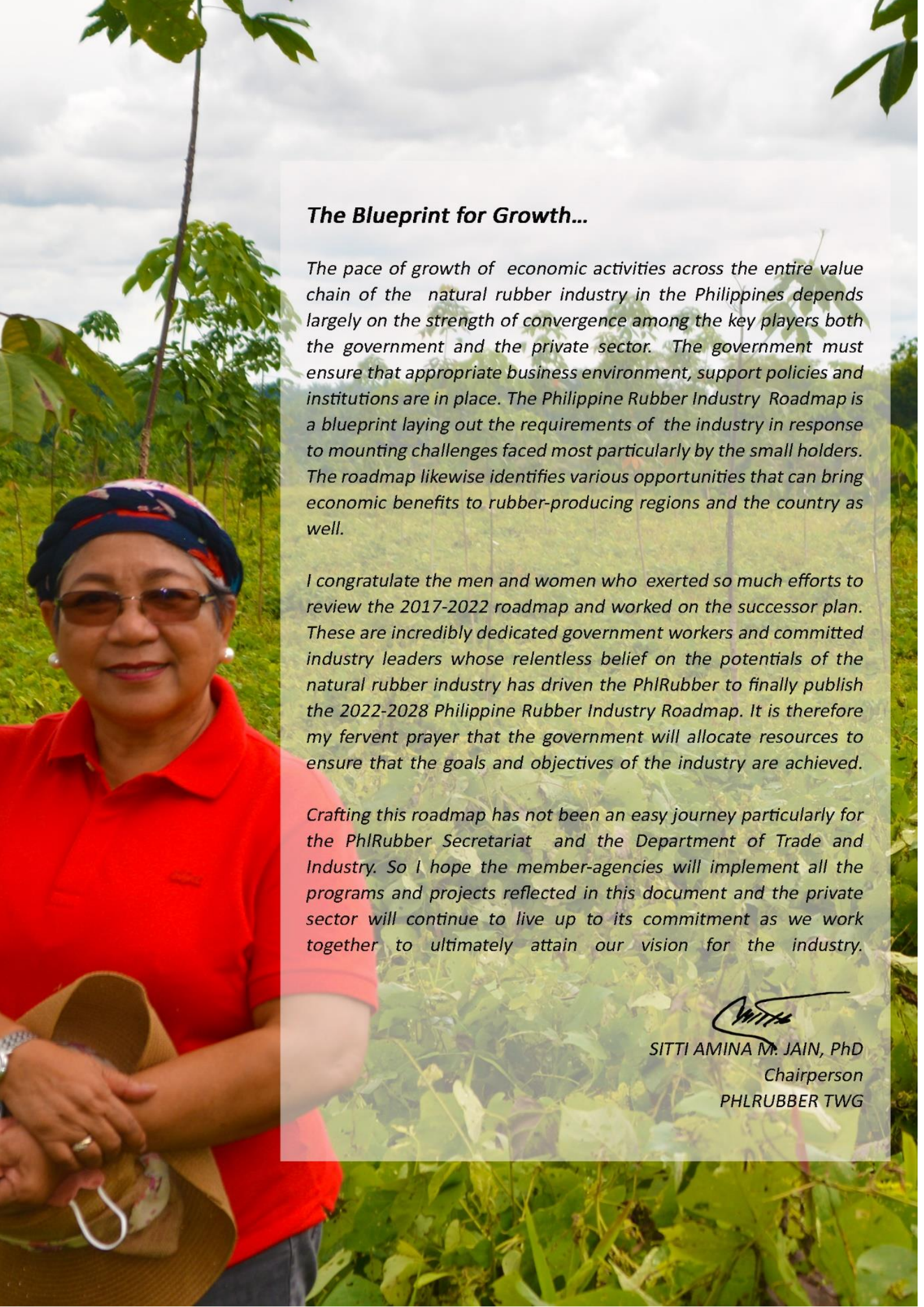
*Growing up with the rubber trees planted by my parents some 50 years ago was indeed an amazing journey. It gave me more meaningful insights on how it affects the lives of the different stakeholders of the supply chain and especially the Filipino rubber farmers. I have witnessed rubber cuplumps bought from farmers for as low as P2.00 to as high as P100.00 per kilo. I saw different ways and farming methods of growing rubber trees from monocropping, intercropping and multi-cropping using seedlings, bud grafted and as well as large planting materials.*

*The collaborative effort of our government led by the Department of Agriculture, other agencies, researchers from different State Universities and the private sectors to find technical solutions not only in farming but also providing support by distributing post-harvest facilities. All these efforts were to address the low productivity resulting to low income faced by the smallholders. Low productivity has always been a major concern through the years and more so today where the living cost is much higher than it was 50 years ago. It has come to a critical point that if our current traditional rubber farming system continues , the poverty issue which our rubber farmers currently face will not be addressed. This is because the monthly income per household will remain way below the poverty threshold set by our government. Planting a perennial crop like rubber is very challenging as the farmers cannot afford to make a mistake today, since this mistake will be carried over in the next 30 years.*

*I would like to acknowledge the efforts of the Chairperson Dr.Sitti Amina Jain and all the members of the PHLRUBBER Technical Working Group for spearheading the crafting of the Philippine Rubber Industry Roadmap which highlights the recommended solutions to help the Rubber Industry withstand and overcome these challenging times. This roadmap, if properly implemented, will ensure sustainable higher productivity, improved processed rubber quality and will have a greater positive impact in the lives of our farmers.*

*Furthermore, I am very optimistic that the convergence of all stakeholders and its respective initiatives will promote inclusive growth across the whole supply chain. Together, we will positively make the Rubber Industry a SUNRISE Industry.*

***Alfonso Jack F. Sandique***
*Chairman*
*DA-HVC NBPC-Rubber*



## *The Blueprint for Growth…*

*The pace of growth of economic activities across the entire value chain of the natural rubber industry in the Philippines depends largely on the strength of convergence among the key players both the government and the private sector. The government must ensure that appropriate business environment, support policies and institutions are in place. The Philippine Rubber Industry Roadmap is a blueprint laying out the requirements of the industry in response to mounting challenges faced most particularly by the small holders. The roadmap likewise identifies various opportunities that can bring economic benefits to rubber-producing regions and the country as well.*

*I congratulate the men and women who exerted so much efforts to review the 2017-2022 roadmap and worked on the successor plan. These are incredibly dedicated government workers and committed industry leaders whose relentless belief on the potentials of the natural rubber industry has driven the PhlRubber to finally publish the 2022-2028 Philippine Rubber Industry Roadmap. It is therefore my fervent prayer that the government will allocate resources to ensure that the goals and objectives of the industry are achieved.*

*Crafting this roadmap has not been an easy journey particularly for the PhlRubber Secretariat and the Department of Trade and Industry. So I hope the member-agencies will implement all the programs and projects reflected in this document and the private sector will continue to live up to its commitment as we work together to ultimately attain our vision for the industry.*

*SITTI AMINA M. JAIN, PhD*
*Chairperson*
*PHLRUBBER TWG*

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| **ACCSQ-RBPWG** | ASEAN Consultative Committee on Standards and Quality – Rubber Based Products Working Group |
| **ADS** | Air-dried sheet |
| **ANRPC** | Association of Natural Rubber Producing Countries |
| **BARMM** | Bangsamoro Autonomous Region in Muslim Mindanao |
| **CMU** | Central Mindanao University |
| **DA** | Department of Agriculture |
| **DA-BAFS** | DA-Bureau of Agriculture and Fisheries Standards |
| **DA-BAR** | DA-Bureau of Agricultural Research |
| **DA-BPI** | Department of Agriculture-Bureau of Plant Industry |
| **DA-PhilMech** | DA-Philippine Center for Postharvest Development and Mechanization |
| **DAR** | Department of Agrarian Reform |
| **DBP** | Development Bank of the Philippines |
| **DENR** | Department of Environment and Natural Resources |
| **DENR-NGP** | DENR-National Greening Program |
| **DILG** | Department of the Interior and Local Government |
| **DLSU** | De La Salle University |
| **DOLE** | Department of Labor and Employment |
| **DOST** | Department of Science and Technology |
| **DOST-ITDI** | DOST-Industrial Technology Development Institute |
| **DOST-FPRDI** | DOST- *Forest Products Research and Development Institute* |
| **DOST-PCAARRD** | DOST-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development |
| **DOST-PCIEERRD** | DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development |
| **DR** | Dry Rubber |
| **DRC** | Dry Rubber Content |
| **DTI** | Department of Trade and Industry |
| **DTI-BPS** | DTI-Bureau of Philippines Standards |
| **DTI-EMB** | DTI-Exports Marketing Bureau |
| **GAP** | Good Agricultural Practices |

| | |
|---|---|
| **IEC** | Information, Education and Communication |
| **IMF** | International Monitory Fund |
| **IRRDB** | International Rubber Research and Development Board |
| **IRSG** | International Rubber Study Group |
| **ISO** | International Organization for Standardization |
| **ISP** | Industry Strategic Plan |
| **ISU** | Isabela State University |
| **ITRC** | International Tripartite Rubber Council |
| **JICA** | Japan International Cooperation Agency |
| **JRMSU** | Jose Rizal Memorial State University |
| **LBP** | Landbank of the Philippines |
| **LGU** | Local Government Units |
| **LSM** | Local Study Mission |
| **MRE** | Malaysian Rubber Exchange |
| **MT** | Metric Tons |
| **NC** | North Cotabato |
| **NC II** | National Certificate II |
| **NR** | Natural Rubber |
| **PEZA** | Philippine Economic Zone Authority |
| **PHIRMA** | Philippine Rubber Manufacturers' Association |
| **PHLRUBBER** | Philippine Rubber Technical Working Group |
| **PNS** | Philippine National Standard |
| **PPA** | Projects, Programs and Activities |
| **PPRPC** | Pioneer Rubber Products Corp. |
| **PRDI** | Platinum Rubber Development, Inc |
| **PRIA** | Philippine Rubber Industries Association, Inc. |
| **PRIME** | Philippine Rubber Investment and Market Encounter |
| **PRFA** | Philippine Rubber Farmers' Association |
| **PRRI** | Philippine Rubber Research Institute |
| **PRTC** | Philippine Rubber Testing Center |
| **PSA** | Philippine Statistics Authority |
| **RDE** | Research Development and Extension |
| **RIAP** | Rubber Industries Association of the Philippines |
| **RICG** | DTI-Rubber Industry Cluster Group |

| | |
|---|---|
| **RPMC** | Rubber Price Management Committee |
| **RPMS** | Regional Price Management System |
| **RSS** | Ribbed Smoked Sheets |
| **SBCorp** | Small Business Corporation |
| **SET-UP** | Small Enterprise Technology Upgrading Program |
| **SLSU** | Southern Luzon State University |
| **SPR** | Standard Philippine Rubber |
| **SSF** | Shared Service Facilities |
| **TESDA** | Technical Education and Skills Development Authority |
| **TSR** | Technically Specified Rubber |
| **USM** | University of Southern Mindanao |
| **UWARBMPC** | United Workers Agrarian Reform Beneficiaries Multi-Purpose Cooperative |
| **WESMAARRDEC** | Western Mindanao Agriculture and Aquatic Resources Research and Development Consortium |
| **WMSU** | Western Mindanao State University |
| **WPU** | Western Philippine University |
| **YTPI** | Yokohama Tire Philippines, Inc. |
| **ZamPen** | Zamboanga Peninsula |
| **ZamPen RUBBER** | Zamboanga Peninsula Rubber Industry Cluster Team |
| **ZDN** | Zamboanga del Norte |
| **ZSP** | Zamboanga Sibugay |
| **ZSP-RIDB** | Zamboanga Sibugay Provincial Rubber Industry Development Board |


Rubber Industry
Situationer

# I. RUBBER INDUSTRY SITUATIONER

## A. THE WORLD RUBBER INDUSTRY

### 1. WORLD RUBBER PRODUCTION

The Covid-19 Pandemic has adversely affected almost all industries worldwide including the rubber industry most particularly the production of natural rubber indicating reduction in the volume of supply during the last two (2) years albeit still higher compared to previous years. Based on the report of the Association of Natural Rubber Producing Countries (ANRPC), the world natural rubber (NR) production recorded at 13.842 million metric tons in 2021 which is 1.8% higher compared to 2020 production.

**Table 1**
**Production of Natural Rubber ('000 MT)**

| Countries | Quantity | | | | | Annual Growth Rate (%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2018 | 2019 | 2020 | 2021 |
| Thailand | 4,429 | 4,974 | 4,851 | 4,863 | 4,673 | 12.3 | -2.5 | 0.2 | -3.9 |
| Indonesia | 3,680 | 3,630 | 3,301 | 3,037 | 3,122 | -1.4 | -9.1 | -8.0 | 2.8 |
| Viet Nam | 1,095 | 1,138 | 1,183 | 1,226 | 1,203 | 3.9 | 3.9 | 3.7 | -1.9 |
| Cote d' Ivoire | 604 | 624 | 808 | 950 | 965 | 3.4 | 29.4 | 17.6 | 1.6 |
| China | 798 | 818 | 813 | 693 | 851 | 2.5 | -0.7 | -14.8 | 22.9 |
| India | 713 | 660 | 702 | 685 | 793 | -7.4 | 6.4 | -2.4 | 15.8 |
| Malaysia | 740 | 603 | 640 | 515 | 520 | -18.5 | 6.1 | -19.6 | 1.0 |
| Cambodia | 193 | 220 | 288 | 349 | 368 | 13.9 | 30.7 | 21.5 | 5.4 |
| Myanmar | 242 | 227 | 260 | 267 | 291 | -6.3 | 14.7 | 2.9 | 8.8 |
| Brazil | 178 | 186 | 189 | 191 | 200 | 4.5 | 1.6 | 1.1 | 4.7 |
| Laos | 78 | 101 | 130 | 154 | 155 | 29.6 | 28.1 | 18.6 | 0.5 |
| Guatemala | 100 | 100 | 102 | 109 | 109 | 0.2 | 2.0 | 6.9 | -0.3 |
| **Philippines** | **102** | **106** | **108** | **106** | **137** | **4.0** | **2.0** | **-2.1** | **29.6** |
| Sri Lanka | 83 | 83 | 75 | 78 | 78 | -0.7 | -9.5 | 4.6 | -0.3 |
| Bangladesh | 21 | 23 | 23 | 22 | 25 | 7.1 | 2.2 | -4.8 | 11.9 |
| Papua New Guinea | 6 | 6 | 6 | 6 | 6 | 0.0 | 0.1 | -3.2 | 3.6 |
| All Others | 320 | 341 | 361 | 344 | 348 | 6.6 | 5.9 | -4.7 | 1.1 |
| **World Total** | **13,381** | **13,8389** | **13,838** | **13,594** | **13,842** | **3.4** | **0.0** | **-1.8** | **1.8** |

*ANRPC Natural Rubber Trends and Statistics, January-February 2022*

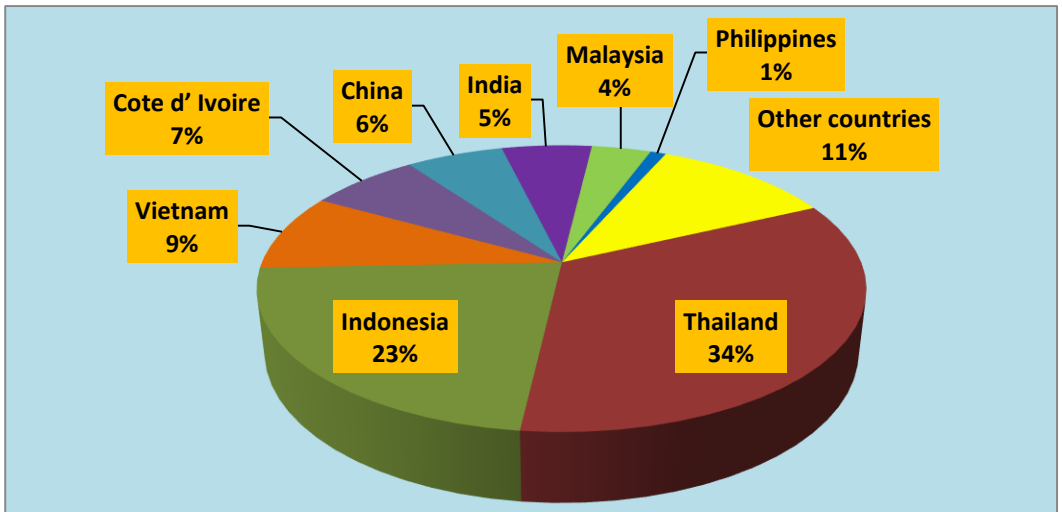



**Figure 1: World NR Share per Country**

*ANRPC Natural Rubber Trends and Statistics, January-February 2022*

Analysis of world NR production released by ANRPC, shows that Thailand is still the major supplier of NR contributing 4.683 million metric tons which represents 34% of the world production. While Indonesia and Vietnam shared 23% and 9%, respectively. Other countries have less than a million MT production (Figure 1).

## 2. WORLD ANNUAL PRODUCTIVITY TREND

Viet Nam has been consistently the first in terms of annual yield among rubber producing countries for the past ten years. As of 2021, Viet Nam has recorded an annual productivity of 1.682 metric tons followed by India and Thailand with 1.571 metric tons and 1.434 metric tons, respectively. On the other hand, Philippines is one of the countries with the lowest annual production yield among rubber producing countries. In fact, from 2017 to 2021, the annual yield of the Philippines ranged from 0.70 to 0.715 metric tons showing practically no improvement on productivity over the last five years. Worst more, ANRPC projected that the annual productivity of the Philippines in 2022 will even go down to as low as 0.685 metric tons as reflected in Table 2.

**Table 2**
**Average Annual Yield (in MT)**

| Year | Cambodia | China | India | Indonesia | Malaysia | Myanmar | Philippines | Sri Lanka | Thailand | Viet Nam |
|---|---|---|---|---|---|---|---|---|---|---|
| **2013** | 1.086 | 1.261 | 1.675 | 1.082 | 1.400 | 0.763 | 1.121 | 1.645 | 1.499 | 1.728 |
| **2014** | 1.073 | 1.208 | 1.576 | 1.052 | 1.37 | 0.765 | 0.942 | 1.182 | 1.488 | 1.696 |
| **2015** | 1.14 | 1.117 | 1.471 | 1.036 | 1.410 | 0.755 | 0.851 | 0.978 | 1.517 | 1.676 |
| **2016** | 1.143 | 1.075 | 1.402 | 1.104 | 1.40 | 0.768 | 0.694 | 0.817 | 1.471 | 1.666 |
| **2017** | 1.136 | 1.073 | 1.498 | 1.205 | 1.45 | 0.776 | 0.700 | 0.809 | 1.449 | 1.676 |
| **2018** | 1.09 | 1.07 | 1.473 | 1.161 | 1.43 | 0.849 | 0.710 | 0.761 | 1.553 | 1.66 |
| **2019** | 1.148 | 1.055 | 1.439 | 1.025 | 1.46 | 0.797 | 0.710 | 0.658 | 1.483 | 1.669 |
| **2020** | 1.194 | 0.93 | 1.381 | 1.018 | 1.415 | 0.785 | 0.710 | 0.649 | 1.477 | 1.682 |
| **2021** | 1.186 | 1.099 | 1.571 | 1.040 | 1.42 | 0.685 | 0.715 | 0.633 | 1.434 | 1.682 |
| **2022** | 1.212 | 1.095 | 1.465 | 1.061 | 1.435 | - | 0.685 | 0.719 | 1.434 | 1.719 |

*ANRPC Natural Rubber Trends and Statistics, January-February 2022*

## 3. WORLD RUBBER CONSUMPTION

The same report released by the ANRPC indicates that the world consumption of NR has registered a strong growth of 8.5% in 2021 due to a better-recovery observed in major consuming countries such as China, India and USA which resulted in the growth of the world demand for rubber.

**Table 3**
**Consumption of Natural Rubber ('000 MT)**

| Countries | Quantity | | | | | Annual Growth Rate (%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2018 | 2019 | 2022 | 2021 |
| China | 5,386 | 5,692 | 5,674 | 5,647 | 5,949 | 5.7 | -0.3 | -0.5 | 5.4 |
| India | 1,082 | 1,220 | 1,144 | 1,040 | 1,240 | 12.7 | -6.3 | -9.0 | 19.2 |
| EU-27 & UK | 1,236 | 1,231 | 1,191 | 1,029 | 1,150 | -0.4 | -3.2 | -13.6 | 11.7 |
| USA | 958 | 987 | 1003 | 806 | 925 | 3.0 | 1.7 | -19.7 | 14.8 |
| Japan | 679 | 706 | 714 | 581 | 666 | 4.0 | 1.1 | -18.7 | 14.7 |
| Thailand | 653 | 627 | 774 | 692 | 662 | -4.0 | 23.5 | -10.6 | -4.3 |
| Indonesia | 619 | 626 | 640 | 598 | 615 | 1.1 | 2.3 | -6.6 | 2.8 |
| Malaysia | 518+ | 542 | 545 | 543 | 528 | 4.6 | 0.5 | -0.3 | -2.7 |
| Brazil | 391 | 399 | 404 | 352 | 398 | 2.0 | 1.4 | -12.9 | 13.2 |
| Korea | 384 | 367 | 354 | 298 | 333 | -4.5 | -3.5 | -16.0 | 11.9 |
| Viet Nam | 214 | 225 | 230 | 247 | 330 | 5.1 | 2.2 | 7.6 | 33.4 |
| Turkey | 176 | 200 | 198 | 200 | 243 | 13.8 | -0.9 | 0.8 | 21.5 |
| Canada | 125 | 139 | 140 | 101 | 128 | 11.1 | 0.6 | -27.7 | 26.2 |
| Russian Fed | 118 | 125 | 127 | 112 | 125 | 6.4 | 1.2 | -11.3 | 11.4 |
| Others | 811 | 832 | 790 | 710 | 764 | 2.6 | -0.05 | -0.1 | 0.07 |
| **World** | 13,350 | 13,918 | 13,928 | 12,957 | 14,057 | 4.3 | 0.1 | -7.0 | 8.5 |

*ANRPC Natural Rubber Trends and Statistics, January-February 2022*

Consumption of NR by country, reflects the dominance of China as it continues to be the top user of natural rubber in the world garnering 42% of the total global consumption as shown in Figure 2. It is followed by India and EU-27 & UK at 9% and 8%, respectively. Other countries consume less than 8% of the global consumption.

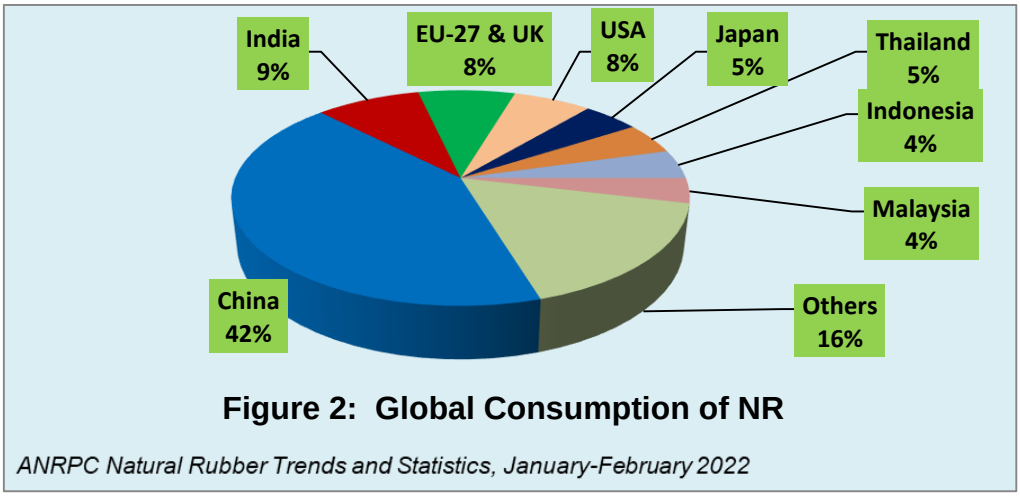



**Figure 2: Global Consumption of NR**

*ANRPC Natural Rubber Trends and Statistics, January-February 2022*

## 4. WORLD PROJECTED PRODUCTION & CONSUMPTION

Based on the 2020 report of International Rubber Study Group (IRSG), there will be a surplus in NR production of an average of 132,500 metric tons annually from 2022 to 2025. It is projected that by 2026, production and consumption will equal at 15.72 million metric tons. Shortage of NR supply is expected starting 2027 to 2029 due to projected increase in global rubber market size propelled by heavy demands from the automotive industries and increasing application of NR in footwears, industrial goods, construction, textiles, and other consumer products.

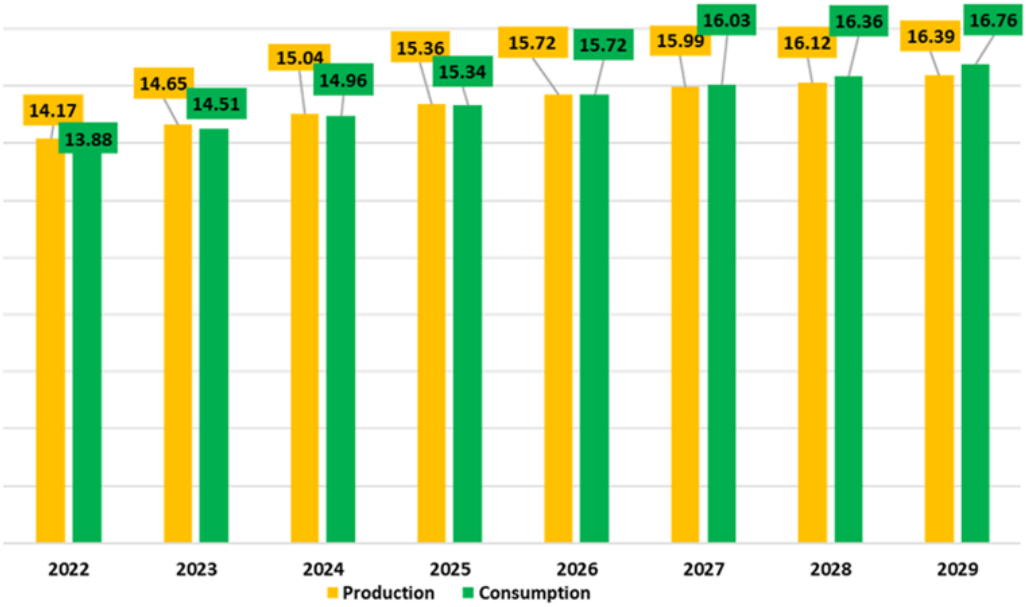



***Figure 3: Word Project Trends in Production and Consumption***

*International Rubber Study Group (IRSG)*

However, based on the analysis of Mr. Jom Jacob, Rubber Industry Analyst, the projected demand of rubber will start to increase in 2025 by 260,000 metric tons or an annual average increase of 870,000 metric tons over 4 years. The increase in consumption forecast is due to the improvement in the world economic outlook projected by IMF and improvement of GDP of individual countries.

## 5. SHORT TERM MARKET PROSPECT

The ANRPC recently identified some factors that may positively influence the NR market despite uncertainties of post-pandemic economic recovery. The organization reported that based on the latest updates given by member-governments, the world supply of NR is expected to grow by 1.9% to 14.107 million tons in 2022 while demand is projected to hit 14.232 million tons exhibiting a moderate increase of 1.2% this year. The ANRPC observed the following factors:

a) The industry will experience a tight supply of NR in the coming months due to off-tapping season.
b) The market improvement is driven by recovering global manufacturing activities, as well as positive growth in auto sales in major economies, and anticipated strong demand for gloves and other healthcare related products.
c) Post-pandemic economic recovery may be triggered by the decisions of some countries like Thailand and Malaysia to reopen its borders to boost its economy.
d) Chinese government's implementation of measures to prop up its slowing economy by reducing further its loan prime rate to 3.7% in January 2022 after a 5-point cut in December 2021.
e) Surge in the price of crude oil prices due to several factors such as war in Ukraine and the OPEC+ decision may influence the NR market.
f) Despite the increase in the average weekly inventory level at Shanghai Futures Exchange during the first two months of 2022 compared to the same period in 2021, the inventory of 240,000 tons is still lower than the pre-pandemic level of around 435,000 tons.

The reports of ANRPC claimed however, some factors may affect the recovery of the NR industry in short-term such as:

a) The Ukraine-Russia crisis has led to a further soar in global commodity prices. The crisis may consequently weaken global economic recovery following the sanctions imposed on Russia.
b) Rising inflation driven by substantial spike in the prices of crude oil could subsequently influence economic growth.
c) The lower projection of economic growth by International Monetary Fund (IMF) and World Bank for 2022.
d) The expectation of interest rates hike by Federal Reserve in March 2022 could influence the market.
e) The increase in infectious rate of Covid-19 from Omicron variant may hinder national or global economic recovery.

# B. PHILIPPINE RUBBER INDUSTRY PROFILE

## 1. INDUSTRY STRUCTURE

The Philippine Rubber Industry consists of key players from upstream, mid-stream, and downstream sectors. Upstream sector is composed of suppliers of inputs, rubber planters producing latex and cup lumps. Midstream sector includes processors of TSR/SPR (crumb rubber & air-dried sheets) and latex concentrates, traders and exporters of TSR/SPR. Downstream sector includes manufacturers of tires, automotive parts, sports products particularly tennis balls, and footwears. There are however untapped opportunities in manufacturing of health and medical devices like gloves, condoms, baby feeding nipples and other products from latex concentrates. There are likewise potentials in producing rubberized asphalt and other innovative and emerging rubber-based products.

The upstream and mid-stream activities are mostly located in Mindanao while downstream is in Luzon and Visayas. Mindanao will soon host the biggest tennis ball manufacturing in the world. With the existence of Dunlop in Bataan, the Philippines might become the largest tennis ball supplier in the world.

Figure 4 maps out various operators and enablers in all the operational nodes of the entire industry value chain.

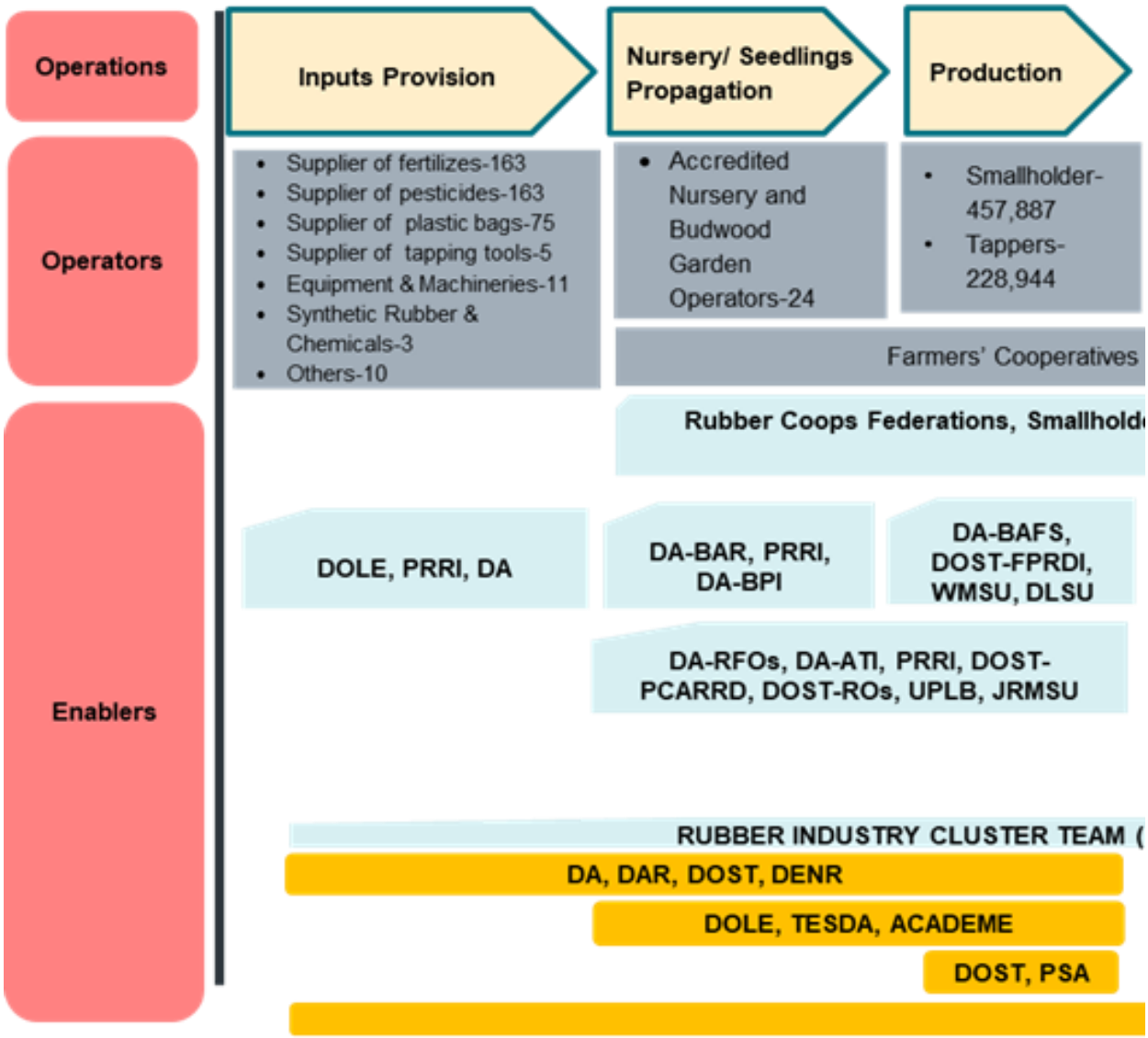
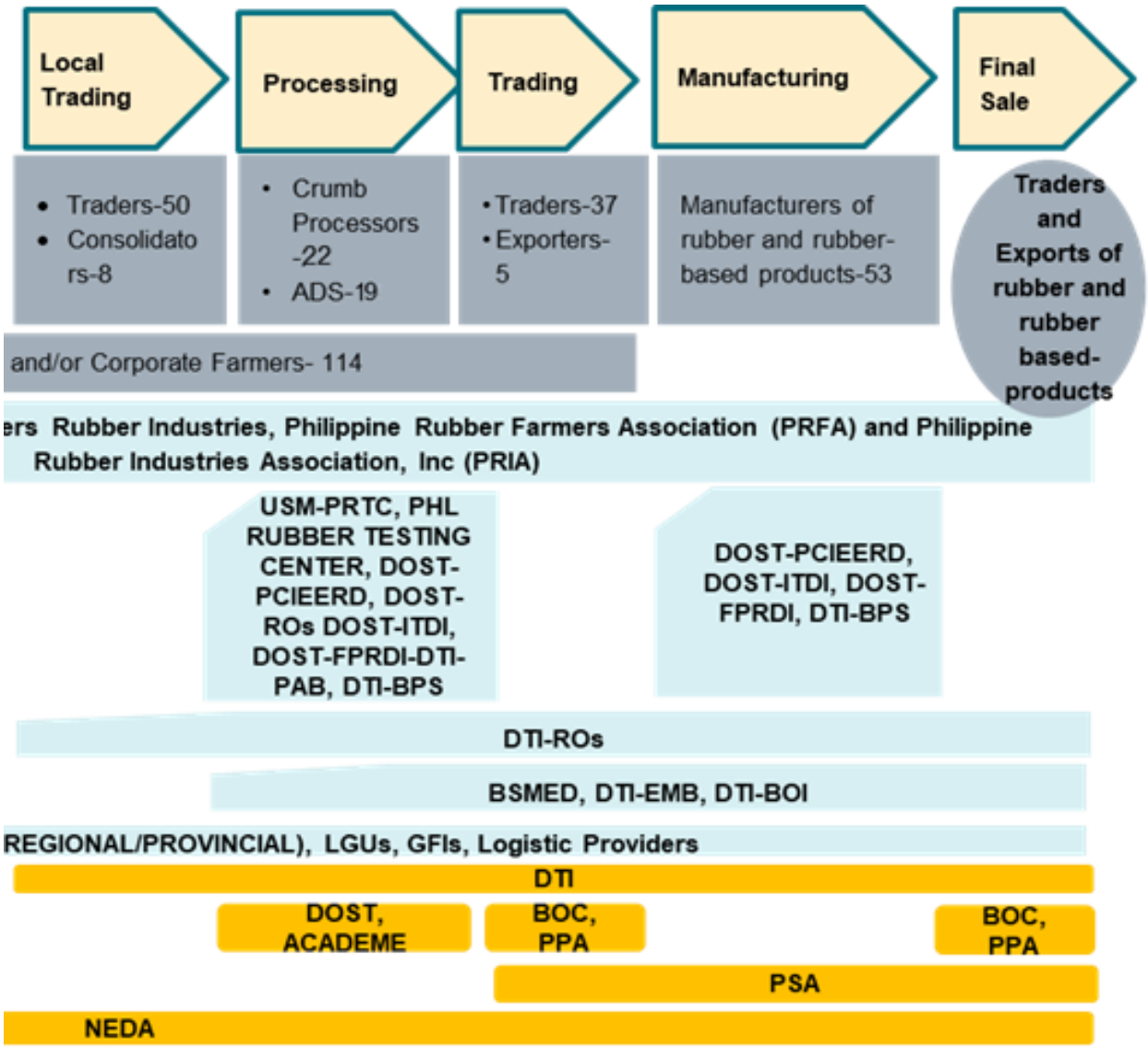



**Figure 4: Value Chain Map of Rubber and Rubber-based Products**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DOST-PCIEERD, DOST-ITDI, DOST-FPRDI, DTI-BPS
DTI-ROs
BSMED, DTI-EMB, DTI-BOI
REGIONAL/PROVINCIAL), LGUs, GFIs, Logistic Providers
DTI
DOST, ACADEME
BOC, PPA
BOC, PPA
PSA
NEDA

## 2. AREA PLANTED TO RUBBER

Based on the Philippine Statistics Authority (PSA) data, area planted to rubber in the Philippines continuously increased from 2016 to 2021 by a total of 12,855.85 hectares or an annual average growth rate of 1.39%, as shown in Table 3.

**Table 4**
**Area Planted to Rubber by Region (in hectares)**

| Regions | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| 1. Zamboanga Peninsula | 90,918.18 | 91,195.18 | 91,312.00 | 91,669.00 | 99,088.00 |
| 2. SOCCSKSARGEN | 61,063 | 63,423.00 | 63,543.00 | 63,961.00 | 64,908.00 |
| 3. Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) | 38,815 | 38,815.00 | 38,830.00 | 39,087.00 | 39,095.00 |
| 4. CARAGA | 12,651 | 12,666.00 | 12,851.00 | 13,111.00 | 13,186.00 |
| 5. Davao Region | 10,421.17 | 10,442.00 | 10,502.00 | 10,502.00 | 10,449.60 |
| 6. Northern Mindanao | 8,797.30 | 8,797.45 | 8,818.00 | 8,818.01 | 8,816.90 |
| 7. MIMAROPA | 1,879 | 1,879.00 | 1,879.00 | 1,879.00 | 1,867.00 |
| 8. Central Visayas | 966 | 966 | 966 | 966 | 1,000.00 |
| 9. CALABARZON | 435 | 435 | 435 | 435 | 435.00 |
| 10. Cagayan Valley Region | 305 | 305.00 | 275.00 | 275.00 | 275.00 |
| 11. Cordillera Administrative Region | 27 | 12 | 12 | 12 | 12 |
| 12. Bicol Region | 4 | 4 | 4 | 4 | 4 |
| 13. Eastern Visayas | 3 | 4 | 4 | 4 | 4 |
| **PHILIPPINES** | **226,284.65** | **228,943.63** | **229,431.00** | **230,723.01** | **239,140.50** |
| **Percentage Increase** | **1.34%** | **1.18%** | **0.21%** | **0.56%** | **3.65%** |

*Philippine Statistics Authority (PSA), July 2022*

Mindanao is home to 98% of the rubber plantation in the country. Figure 5 indicates that the top rubber producing region is Zamboanga Peninsula recording the largest area planted to rubber in 2021 with 99,088 hectares or 41% of the total area of 239,140.50 hectares. SOCCSKSARGEN comes second with 64,908 hectares (27%), and BARMM with 39,095 hectares (16%). Other regions in Mindanao registering significant increase in areas planted to rubber are CARAGA with 13,186 hectares (6%), and Davao Region with 10,449.60 (4%) hectares. The rest of the regions identified in Table 4 registered an area of less than 10,000 hectares or less than 4% of the total area planted to rubber in the Philippines.

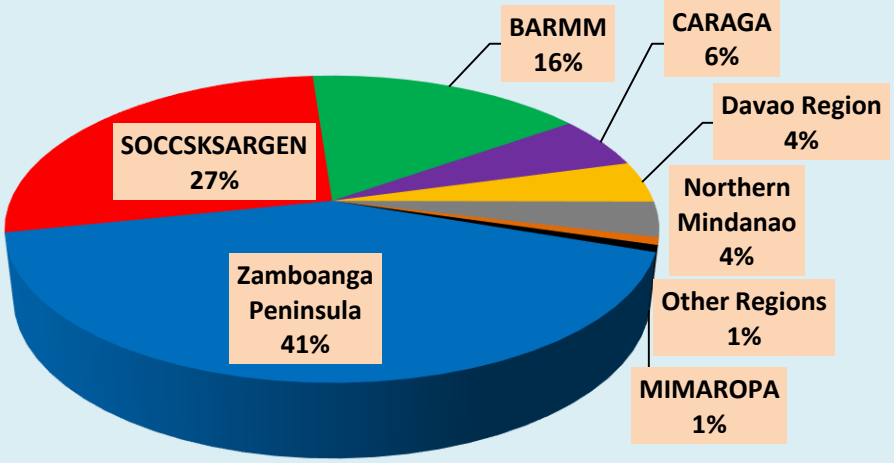



***Figure 5: Percentage Share of Regions in Area Planted to Rubber***

*Philippine Statistics Authority (PSA), July 2022*

Local industry players and international organizations questioned the accuracy of the data presented by PSA. In the absence of an industry study or primary data on the actual hectares planted to rubber, this document relies plainly on the official statistics published by PSA. This is also for consistency purposes since the same data is also being supplied by PSA to international organizations like ANRPC and IRSG.

## 3. AREA HARVESTED/TAPPED

The percentage of area harvested represents the actual area tapped for each year excluding new plantation and areas that are no longer productive and senile. For the past five years the percentage of the total area harvest/tapped is continuously increasing from 68% in 2017 to 78% in 2021 as reflected in Table 5.

**Table 5**
**Area Harvested (in hectares)**

| Year | Total Area Harvested | Total Area Planted | % of Area Harvested/Tapped |
|---|---|---|---|
| 2017 | 153,000 | 226,284.65 | **68%** |
| 2018 | 162,000 | 228,943.63 | **71%** |
| 2019 | 171,800 | 229,431.00 | **75%** |
| 2020 | 176,900 | 230,723.01 | **77%** |
| 2021 | 186,400 | 239,140.50 | **78%** |

*Philippine Statistics Authority (PSA), July 2022 and,*
*ANRPC Natural Rubber Trends and Statistics, January-February 2022*

## 4. NATURAL RUBBER PRODUCTION

The data on production volume reported by PSA is in cuplump. However, to conform with international statistics on the production of natural rubber, it is converted to dry rubber and for purposes of discussion it is assumed that the country's average dry rubber content (DRC) is at 50%. Thus the data presented in this document already applied the 50% DRC per PSA Board Resolution No.9 series of 2021.

Philippines has a total NR production of 215,317.87 metric tons in 2021 which was 1.95% higher than the output in 2020 (Table 6). As shown in Figure 6, Zamboanga Peninsula is still the biggest producer of NR in 2021 contributing 38% to the country's output. It is followed by SOCCSKSARGEN at 34% or 72,207.29 metric tons of NR and BARMM with 18% or 39,088.77 metric tons. CARAGA, Northern Mindanao, Davao Region, MIMAROPA, Central Visayas, CALABARZON, and Eastern Visayas produce less than 10,000 metric tons.

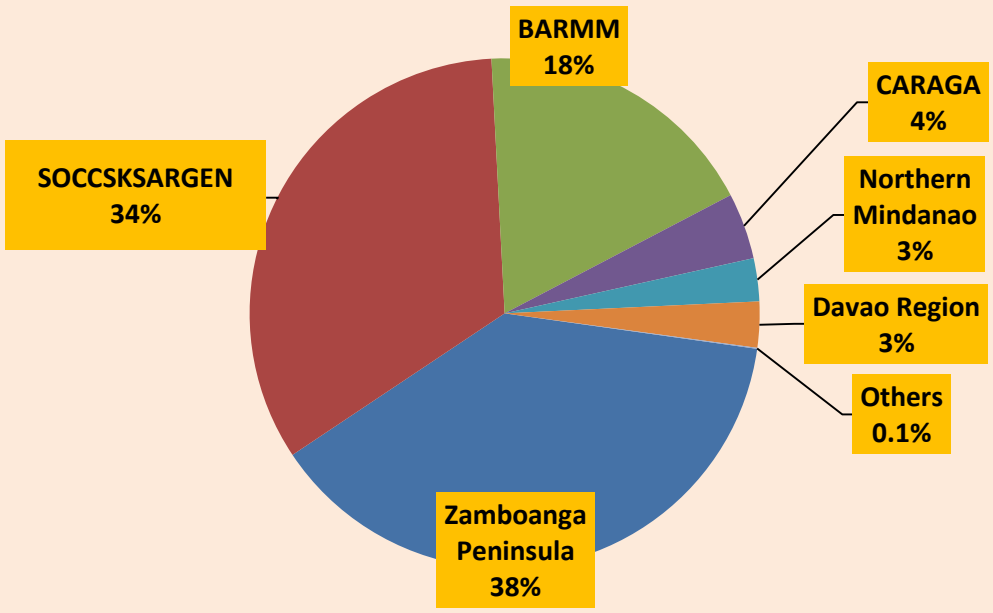



***Figure 6: Percentage Share of Regions in NR Production Volume***

*Philippine Statistics Authority (PSA), July 2022*

Table 6 indicates that from 2017 to 2019, there was an increasing trend in the country's production but dropped in 2020 by 2.15% due to the outbreak of COVID-19.

**Table 6**
**Production Volume of NR by Region (in MT DR)**

| Regions | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| 1. Zamboanga Peninsula | 77,859.45 | 78,746.69 | 80,915.06 | 82,847.70 | 82,717.35 |
| 2. SOCCSKSARGEN | 73,740 | 77,335.98 | 76,362.25 | 68,363.08 | 72,207.29 |
| 3. BARMM | 32,621.13 | 35,269.52 | 37,309.83 | 38,801.42 | 39,088.77 |
| 4. CARAGA | 7,096.37 | 7,808.26 | 8,375.55 | 8,814.22 | 9,039.12 |
| 5. Davao Region | 5,593.71 | 5,731.68 | 5,882.94 | 6,052.63 | 6,257.43 |
| 6. Northern Mindanao | 6,482.05 | 6,688.90 | 6,880.30 | 6,207.89 | 5,870.04 |
| 7. MIMAROPA | 66.19 | 69.95 | 72.51 | 73.40 | 81.41 |
| 8. Central Visayas | 16.58 | 15.22 | 18.89 | 24.39 | 37.21 |
| 9. CALABARZON | 10.65 | 6.60 | 6.37 | 6.20 | 7.64 |
| 10. Eastern Visayas | 6.10 | 12.67 | 13.69 | 12.65 | 11.63 |
| **PHILIPPINES** | **203,492.22** | **211,685.46** | **215,837.38** | **211,203.55** | **215,317.87** |
| **Percentage Increase (Decrease)** | **12.23%** | **4.03%** | **1.96%** | **-2.15%** | **1.95%** |

*Philippine Statistics Authority (PSA), July 2022*

## 5. MARKET PERFORMANCE

### 1) Supply Chain of Philippine Natural Rubber

In 2015, Dr. Rolando Dy of the University of Asia and the Pacific (UA&P) presented an analysis on the flow of natural rubber from the processors to the end market. Figure 7 tracks down the movement of Philippine NR products both in the domestic and export markets. NR as an intermediate raw material to both industrial products and consumer goods is either marketed locally to rubber-based product manufacturers located in industrial areas and export processing zones in Luzon or exported in raw (cuplump) to Malaysia and in processed form (TSR/SPR) to China, Taiwan, Japan, Korea, India and other countries.

The rubber manufacturers in the country produce tire and non-tire products which are sold locally and exported. Meanwhile, only three (3) rubber processing plants in the country are able to market its products to Yokohama Tire Philippines (YTPI). This is so because currently only five (5) NR processors are ISO certified which is the minimum requirement for supplying YTPI and the export market. YTPI is the single biggest user of SPR and the only car tire manufacturer in the country. Located in an export processing zone in Central Luzon, YTPI exports 93% of Yokohama Tires while only 7% of its production is distributed to dealers in the Philippines. While there are various processors and traders of cuplumps in the country, industry source claimed that more than 50% of the country's NR production is exported in raw to Malaysia leaving some processing plants to operate at 50% to 60% capacity utilization. Although

recently there has been a shift to processing of NR for export as SPR which could favorably translate to bigger utilization of processing plants production capacity.

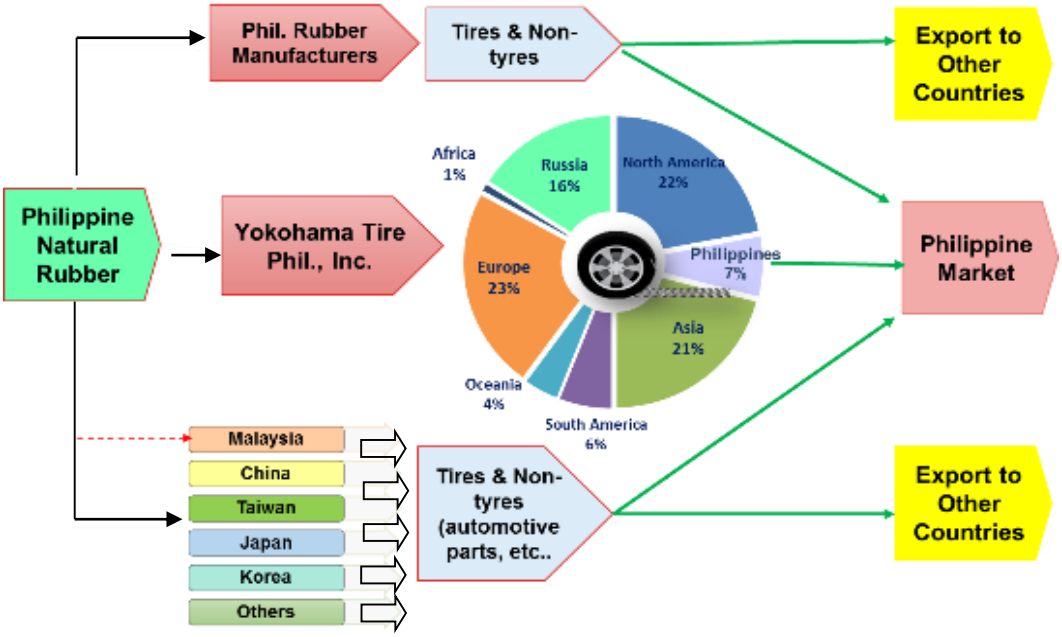



**Figure 7: Philippine Natural Rubber Global Link**

*Dr. Rolando Dy, PRIME 2015*

## 2) Domestic Market

Currently, the total estimated domestic consumption of natural rubber of local manufacturers amounts to 35,000 metric tons. Yokohama Tires Philippines, Incorporated (YTPI) remains to be the biggest user of natural rubber sourcing 51% of its total consumption locally, while the remaining percentage is utilized by PRIA members and manufacturers located in the export processing zones.

PRIA

**QUICK FACTS**

NR Annual Estimated Consumption of Local Manufacturers (MT)

| Particulars | Est. Annual Consumption |
|---|---|
| Yokohama Tires Phil. Inc | 18,000 |
| PRIA Members | 8,500 |
| Non-PRIA Members | 8,500 |
| Total | 35,000 |

**Figure 8: Estimated Consumption of Local Manufacturers (MT)**

*Mr. Elpidio Carlota of Philippine Rubber Industries Association, Inc. (PRIA)*

Given the statistics released by PSA (2022) on production of NR in 2021 of 215,317.87 metric tons, where more than 50% is reportedly exported in cuplump form to Malaysia, there should have been 107,658.94 metric tons assumed to have been processed to TSR/SPR and sold to domestic users and the export market. Since the domestic requirement is estimated to be only 35,000 metric tons or only 33%, so it is further assumed that 67% of TSR/SPR production is exported.

### 3) Rubber Trading & Auction Centers

Rubber Trading and Auction Centers (RTACs) or locally known as “Bagsakan Centers” serve as a venue for farmers, traders and consolidators to transact business under the supervision of the local government units (LGUs).

Currently, there are fifty-six (56) RTACs in the country of which 17 centers are located in Zamboanga Peninsula and 39 in North Cotabato Province. The establishment of RTACs in North Cotabato is thru the Executive Order No. 42 dated October 24, 2016 by Governor Emmy Lou Taliño- Mendoza – An Order Establishing the Cotabato Rubber Trading Center, Otherwise Known as “Bagsakan ng Rubber Cup lump” In Strategic Areas of Cotabato Province.

Most trading centers are provided with weighing scales by the Department of Trade and Industry through its Shared Service Facility (SSF) Program. The weighing scales are regularly calibrated in coordination with DOST and the concerned local government units to prevent or minimize manipulation of weighing by some unscrupulous traders or buying agents. In some trading centers, price reference is posted to serve as guide for farmers in their decision to sell.

## 4) Export Market

Export of natural rubber and rubber-based products in 2017 amounted to USD 391.20 million and increased to USD 578.34 million in 2021, recording an average annual growth rate of 11.69%.

Figure 9 indicates a decrease in total exports value in 2020 which could be attributed to the COVID-19 pandemic affecting all rubber producing countries. Majority of the processing and manufacturing plants were temporarily closed due to travel and health restrictions. Thus, stakeholders opted to export raw rubber resulting in the increase of the exports value from USD 79.14 million in 2019 to USD 161.597 million in 2021 registering an increase of more than 100% over a 3-year period.

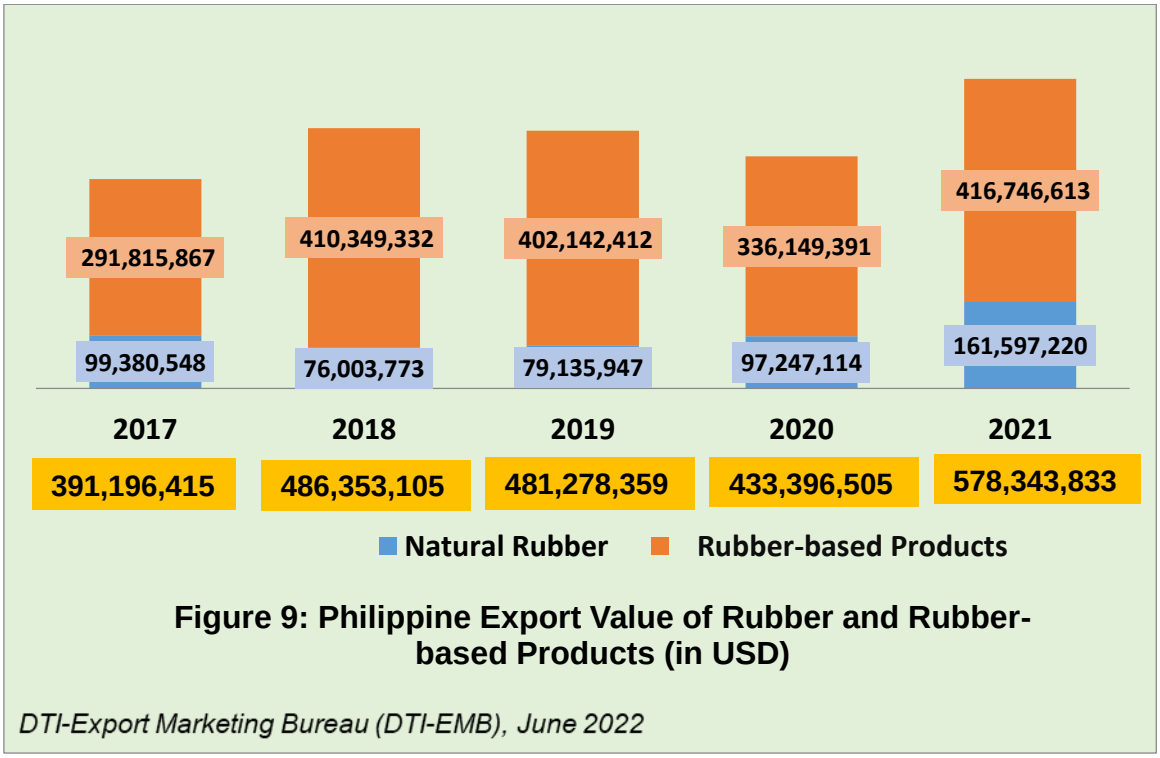



**Figure 9: Philippine Export Value of Rubber and Rubber-based Products (in USD)**

*DTI-Export Marketing Bureau (DTI-EMB), June 2022*

Figure 10 shows the export destination of rubber and rubber-based products in 2021. Most of the country's export of rubber products are cornered by United States of America accounting for 32% of the total export value of rubber and rubber-based products. Malaysia and Japan shared 20% and 15%, respectively.

China which is the biggest importer of natural rubber in the world shared only 7% of the total Philippine exports of rubber and rubber products. This is one lucrative international market that local exporters should explore more. China consumes 42% of the total world production of natural rubber. In fact, during the first five (5) months of 2022, China imported a total volume of 2.22 million tons of natural rubber including mixture rubber and rubber compounds, an increase of 5.7% from the same period in the previous year (Jom Jacob, July 2022).

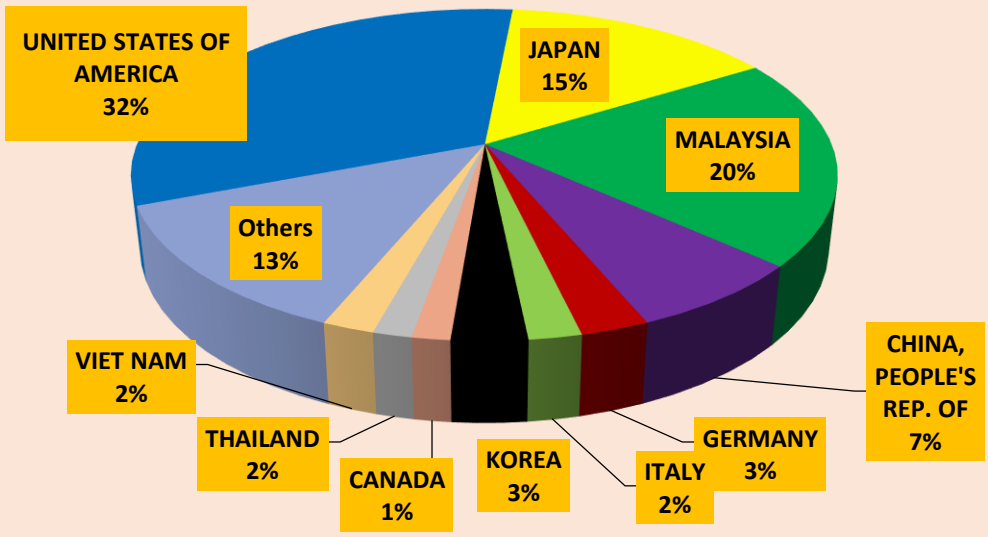



**Figure 10: Export Destination of Rubber and Rubber-based Products (2021)**

*DTI-Export Marketing Bureau (DTI-EMB), June 2022*

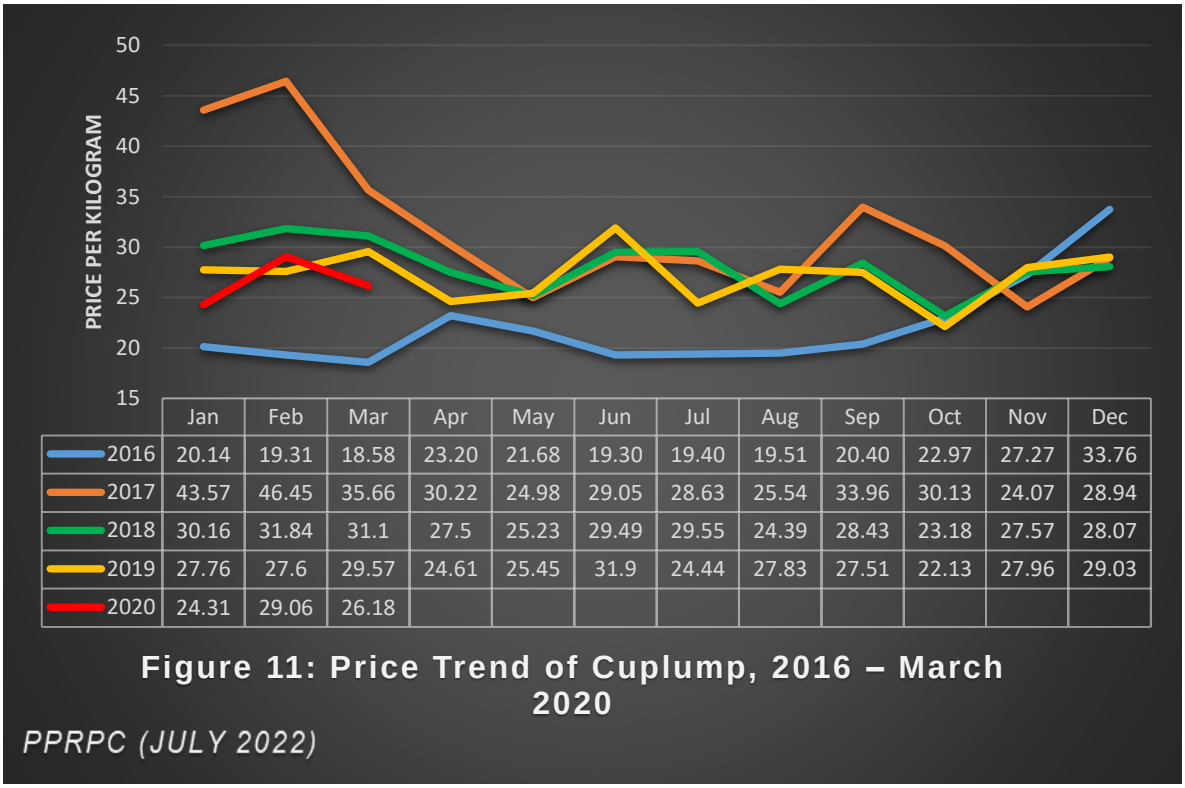
Other countries contributed less than 10% of the exports value of Philippine rubber and rubber products. Germany and Italy in EU are potential markets that local exporters of natural rubber should consider. The same attention must be done for Korea and Canada to expand market opportunities for natural rubber producers and rubber-based products manufacturers.

## 6. RUBBER PRICE MANAGEMENT SYSTEM

The Regional Price Management System (RPMS) was institutionalized in 2014 as a major program of the Zamboanga Peninsula Rubber Industry Cluster Team (ZamPen RUBBER). The RPMS has since then been benefiting thousands of small farmers who were taught to calculate the rubber price reference. The price reference serves as basis for farmers to negotiate with the traders and/or buying agents who in the past several years have been allegedly dictating the price taking advantage of farmers' lack of access to market information. Since the calculated price is only for reference purposes, the actual price is still subject to negotiations between buyer and seller and depends largely on the quality of cuplump which is actually one of the major factors in determining the price.

The formula in calculating the price reference was the results of series of meetings, consultations, and agreements with the industry stakeholders. The RPMS is reviewed regularly to address concerns raised by either the traders or the farmers. The price reference is based on the Malaysian Rubber Exchange managed by the Malaysian Rubber Board (SMR 20, Seller's Offer Price) which is accessible at www3.lgm.gov.my/mre.

Considering that natural rubber is a global commodity, various factors usually influence rubber prices such as supply, consumption, weather in the rubber producing countries, foreign exchange rate, crude oil prices, policy changes in major markets, as well as adverse changes in geo-political environment.




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2016 | 20.14 | 19.31 | 18.58 | 23.20 | 21.68 | 19.30 | 19.40 | 19.51 | 20.40 | 22.97 | 27.27 | 33.76 |
| 2017 | 43.57 | 46.45 | 35.66 | 30.22 | 24.98 | 29.05 | 28.63 | 25.54 | 33.96 | 30.13 | 24.07 | 28.94 |
| 2018 | 30.16 | 31.84 | 31.1 | 27.5 | 25.23 | 29.49 | 29.55 | 24.39 | 28.43 | 23.18 | 27.57 | 28.07 |
| 2019 | 27.76 | 27.6 | 29.57 | 24.61 | 25.45 | 31.9 | 24.44 | 27.83 | 27.51 | 22.13 | 27.96 | 29.03 |
| 2020 | 24.31 | 29.06 | 26.18 | | | | | | | | | |

**Figure 11: Price Trend of Cuplump, 2016 – March 2020**

*PPRPC (JULY 2022)*

Figure 11 shows the price trend of cuplump from January 2016 to March 2020 in the Philippines. With the surge of COVID-19 cases in 2020, the data source stops its monitoring activities due to lockdown in all areas in the regions. Based on Figure 11, rubber price was low in 2016 due to high inventory in the international market and the decrease in demand in China. As mentioned repeatedly, China is the largest rubber consumer in the world, so a slight downward movement in the manufacturing activities in the country in most instances adversely affects the global consumption of natural rubber.

However, there was a spike in prices of natural rubber in the early part of 2017 due probably to the growth of China's automobile sector during the year. Likewise, during the same period, Thailand experienced extensive flooding resulting in damage to infrastructure that significantly hampered rubber production. Considering that Thailand is one of the major rubber-producing countries, this phenomenon resulted in a shortage of NR supply triggering an increase in prices.

# C. VALUE CHAIN OPERATORS

This portion discusses various industry operators and their corresponding contributions in the entire value chain of rubber and rubber products.

The industry is composed of key players ranging from suppliers of inputs for production and maintenance to manufacturers of rubber-based products. As reflected in the value chain map, industry players include nursery and bud wood garden operators, planters who are more than 90% small farmers, traders of cuplumps and operators of trading centers in strategic areas, processors of TSR/SPR (crumb rubber and ADS), traders and exporters of natural rubber (TSR/SPR), and manufacturers of tires, automotive parts, sports products, and footwear.

The upstream sector of the industry is composed of different rubber holdings. Over 90% of rubber farms are small growers and the rest are rubber-based cooperatives (Agrarian Reform Cooperatives), privately-owned and corporate plantations.

## 1. INDUSTRY ASSOCIATIONS

There are two (2) major national industry associations. The Philippine Rubber Industries Association, Inc. (PRIA) based in Manila, and the newly organized Philippine Rubber Farmers Association, Inc. (PRFA) based in North Cotabato. There are also provincial farmers' associations in most rubber producing provinces in Mindanao and in the Province of Palawan in MIMAROPA Region.

### 1.1 Philippine Rubber Industries Association, Inc. (PRIA)

Some of the manufacturers in the country are members of the Philippine Rubber Industries Association, Inc. (PRIA). The association has 67 members of which industry players of the rubber value chain are well-represented. The following are the classification of PRIA members:

a) 6 Tire Manufacturers/Suppliers & Tire Retreaders
b) 18 Automotive, Industrial Parts & Sporting Goods Manufacturers
c) 14 Natural Rubber Processors/Traders
d) 3 Footwear Manufacturers
e) 3 Latex-based Product Manufacturers
f) 18 Synthetic Rubber & Chemicals
g) 5 Other Suppliers

PRIA was formed in 1979 with the merger of the Philippine Rubber Manufacturers' Association (PHIRMA) and the Rubber Industries Association of the Philippines (RIAP) by prominent personalities in the rubber industries. The Philippine Rubber Industries Association, Inc. (PRIA) has become a single voice of the rubber industries in the country since then. The membership of PRIA is composed of companies from diverse fields in the manufacturing, trading, input and chemical suppliers, producers and processors (www.priainc.org).

### 1.2 Philippine Rubber Farmers Association, Inc. (PRFA)

The PRFA was organized by the Department of Agriculture during the Rubber Farmers' Assembly in Kidapawan, North Cotabato on January 21, 2017. The Department of Agriculture intended to organize the rubber farmers down to the barangay level in all rubber-producing regions nationwide. Existing regional and provincial farmers' associations are expected to affiliate with PRFA creating a stronger and more empowered rubber smallholders' group in the country. The momentum however has slowed down as soon as the leadership of the agency was changed in the later part of 2018.

## 2. PROCESSORS OF TSR/SPR (CRUMB RUBBER & ADS/RSS)

There are forty-one (41) processors operating mostly in Mindanao. Twenty-two (22) are millers of TSR/SPR (crumb rubber) while nineteen (19) of them are village-type processors of air-dried sheets and/or ribbed smoked-sheet (ADS).

**Table 7**
**No. of Village-type ADS/RSS Processors**

| Regions | Number of ADS/RSS Processing Plants |
|---|---|
| Central Visayas | 6 |
| Zamboanga Peninsula | 1 |
| Northern Mindanao | 2 |
| SOCCSKSARGEN | 5 |
| MIMAROPA | 5 |
| **TOTAL** | **19** |

*DTI, 2022*

Table 8 shows that the total annual production capacity of the twenty-two (22) TSR/SPR operating processing plants is 116,496 metric tons. Nine (9) of these processors are located in Zamboanga Peninsula contributing 60% of the total production capacity.

There are also five (5) non-operational processing plants in the country where two (2) are located in Zamboanga Peninsula, two (2) in the Province of Basilan in BARMM and one (1) in Caraga Region. In Basilan, additional processing plants are being established by the provincial government to cater to the milling needs of the small holders in the area.

**Table 8**
**Annual Capacity of TSR/SPR Processing Plants**

| Regions | Processing Plants | | Annual Plant Capacity (MT) |
|---|---|---|---|
| **Region IX** | 1 | CTK Asia Rubber Corp | 30,000 |
| | 2 | FJC Agro Industries | 3,600 |
| | 3 | MJ Saha Rubber | 3,600 |
| | 4 | Philippine Pioneer Rubber Products Corporation (PPRPC) | 7,200 |
| | 5 | Standard Rubber Development Corporation | 12,000 |
| | 6 | Tire King Rubber Products | 3,600 |
| | 7 | United Workers Agrarian Reform Beneficiaries MPC (UWARBMPC) | 3,600 |
| | 8 | ZANORTE Palm-Rubber Plantation, Inc. | 3,600 |
| | 9 | New Atlas Rubber Industries | 2,400 |
| | | | **69,600** |
| **Region X** | 1 | Pioneer Amaresa | 2,400 |
| | | | **2,400** |
| **Region XI** | 1 | FARMA Rubber Industries, Inc. | 7,200 |
| | | | **7,200** |
| **Region XII** | 1 | AO Rubber Plant Corporation | 2,400 |
| | 2 | DAVCO Development Corporation | 3,600 |
| | 3 | Kian Tek Rubber Factory Corp | 7,200 |
| | 4 | Pioneer Amaresa | 4,800 |
| | 5 | Platinum Rubber Development Inc. | 3,600 |
| | 6 | Supreme Solutions Strategist, Inc-Olmecs & Co. Devt. Corp | 3,600 |
| | 7 | Banisilan Rubber Farmers Arb Cooperative | 2,400 |
| | | | **27,600** |
| **Region XIII** | 1 | VPO Rubber Processing Plant | 2,400 |
| | | | **2,400** |
| **BARMM** | 1 | EJN Processing Plant | 3,600 |
| | 2 | ASL Rubber Processing Plant | 1,056 |
| | 3 | Lumbang Rubber Processing Plant | 2,640 |
| | | | **7,296** |
| **Total** | | | **116,496** |

*Industry Data, May 2022*

## 3. RUBBER-BASED PRODUCT MANUFACTURERS

The processed rubber is either sold to manufacturers in the country or exported. The manufacturing sector in the country consists of four sub-sectors:

3.1 Tires – Car, motorcycle, bicycle
3.2 Automotive, industrial parts and sporting good, transmission belts, rubber conveyor, radiator and fuel hoses, rubber rings, gaskets, linings, bearing pads, OEM parts, tennis balls
3.3 Footwear – Rubber soles, sandals, boots
3.4 Latex –baby feeding nipples, balloons, medicine droppers, and hoses

The other sub-sectors are engaged in the manufacturing of synthetic rubber, chemicals and other supplies needed as inputs by the industry.

Based on initial data from PRIA, a total of 23 firms are using natural rubber requiring about 8,500 metric tons annually. The DTI has been however experiencing difficulty in collecting data on domestic consumption not just from the members of PRIA but more so from non-members that are located in the PEZA-accredited export processing zones.

## 4. YOKOHAMA TIRE PHILIPPINES, INC. (YTPI)

Yokohama Tire Philippines, Inc. (YTPI) is the only car tire manufacturing company in the Philippines. YTPI is considered as the largest individual user of natural rubber in the country. With its expansion from 20,000 tires in 2012 to 50,000 tires per day in 2017, this makes the company the second largest Yokohama tire manufacturing plant in the world.

As part of its commitment to help develop the Philippine Rubber Industry, YTPI declared to support the rubber industry cluster by expanding the use of local NR as raw materials.

Furthermore, as a result of the efforts of the DTI in cooperation with JICA in several meetings with YTPI, the latter increased their local sourcing from 15% in 2012 to 55% and 54% in 2018 and 2019, respectively as shown in Table 9. The increase is attributed to the improvement of the quality of natural rubber supplied by local processors particularly those who took bold steps in seeking ISO certification or alignment to meet the requirements of the market. Local sourcing decreased however, in 2020 and in 2021 to only 49% due to unstable inventory of SPR-20 caused by the late delivery of some local suppliers.

**Table 9**
**Percentage Share of YTPI NR Consumption by Country Source**

| Sources | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| THAILAND (STR5 CV60) | 0% | 0% | 1% | 1% | 0% | 0% | 0% | 0% | 0% | 0% |
| THAILAND (STR20) | 22% | 23% | 25% | 22% | 23% | 23% | 23% | 22% | 23% | 24% |
| INDONESIA (SIR20) | 63% | 56% | 54% | 45% | 42% | 28% | 21% | 24% | 28% | 27% |
| **PHIL (SPR20)** | **15%** | **21%** | **21%** | **33%** | **35%** | **49%** | **55%** | **54%** | **49%** | **49%** |
| **TOTAL** | **100 %** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** |

*Yokohama Tire Philippines, Inc. (YTPI), 2021*

As shown in Figure 12, the tire production of YTPI is fluctuating, thus, raw material requirements follow the same pattern. As observed, YTPI increased its local NR consumption from 1,316 metric tons in 2010 to 8,979 metric tons in 2019. However, this went down to 6,761 metric tons in 2020 due to the delay in delivery as mentioned earlier. The lifting of some COVID19 restrictions in 2021, saw an improvement in YTPI's consumption of natural rubber as the company recorded a total utilization of 8,777 metric tons.

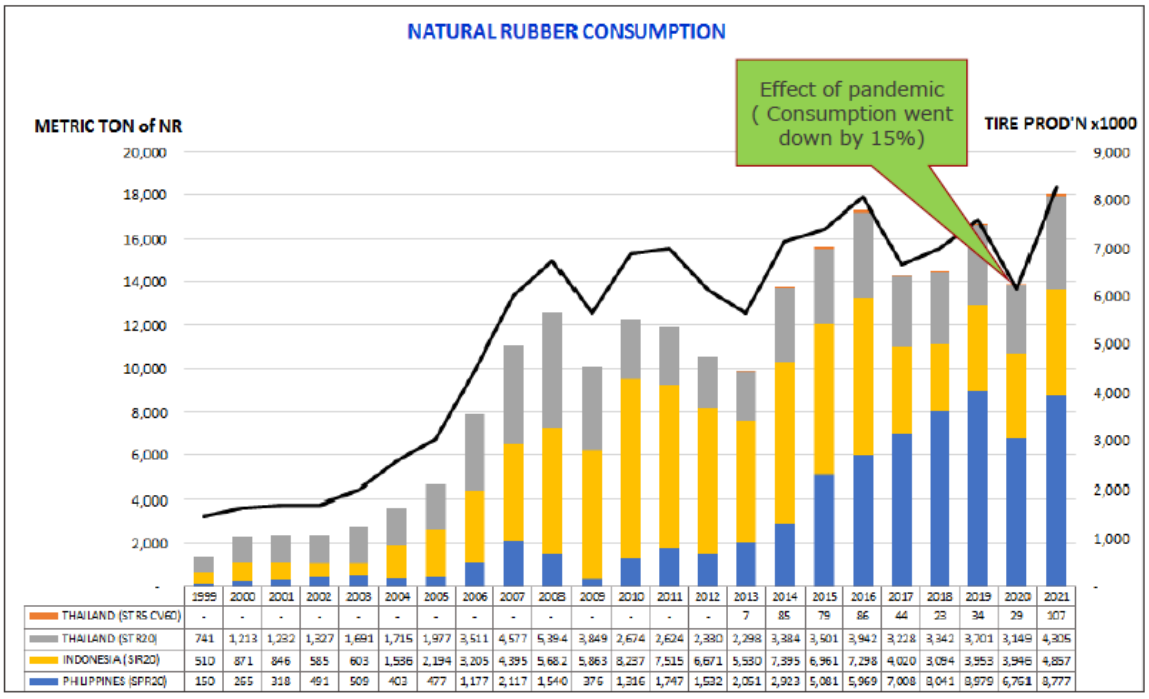



**Figure 12: YTPI NR Consumption in MT (1999-2021)**

*Yokohama Tire Philippines, Inc. (YTPI), 2021*

## 5. RUBBER-BASED MANUFACTURERS LOCATED IN PEZA EXPORT PROCESSING ZONES

There are 36 registered enterprises engaged in the manufacture for export of rubber products that are located in the Philippine Economic Zone Authority (PEZA). The following are the distribution:

**Table 10**
**Number of Registered Enterprises into Manufacturing of Rubber Products located in PEZA**

| Economic Zone | Number of Registered Enterprises | Location |
|---|---|---|
| Carmelray Industrial Park | **2** | **Calamba, Laguna** |
| Cavite Economic Zone | **3** | **Cavite** |
| Daiichi Industrial Park | **1** | **Silang, Cavite** |
| First Cavite Industrial Estate | **1** | **Dasmariñas, Cavite** |
| First Philippine Industrial Park | **4** | **Batangas** |
| Greenfield Automotive Park | **2** | **Santa Rosa, Laguna** |
| Laguna International Industrial Park | **1** | **Biñan, Laguna** |
| Laguna Technopark | **3** | **Biñan, Laguna** |
| Light Industry and Science Park | **6** | **Sto. Tomas, Batangas** |
| Lima Technology Center | **6** | **Batangas** |
| Mactan Economic Zone | **3** | **Lapu-Lapu, Cebu** |
| Pampanga Economic Zone | **1** | **Angeles, Pampanga** |
| People's Technology Complex | **2** | **Carmona, Cavite** |
| Suntrust Ecotown Tanza | **1** | **Tanza, Cavite** |
| Total | **36** | |

*Philippine Economic Zone Authority, June 2022*

## 6. RUBBERWOOD PROCESSING FACILITIES

The Forest Product Development and Research Institute (FPRDI) of the Department of Science and Technology (DOST) established a rubberwood processing plant in Naga, Zamboanga Sibugay to serve the needs of the partner-cooperative, the Tambanan Agrarian Reform Beneficiaries Cooperative (TARBEMCO) as well as other rubber cooperatives and individual farmers with rubber plantations where trees aging 35 years and above already considered senile or unproductive. The objective is primarily to process treated and kiln-dried lumber for use in high value furniture products, mouldings and joineries, and other wood-based products.

The project is an offshoot of the DOST-FPRDI's active participation in the PHLRUBBER Study Mission to India in 2014. The group visited one of the biggest rubberwood processing plants in Kerala with the objective to primarily acquire technology for transfer to interested MSMEs back in the Philippines. The project with a total cost of P57.7 million was launched in November 2018 and started operation in 2021 making products such as beds, chairs, tables, doors, baby cribs, shelves, and other wood-based products. However, the operator reported early this year that the facility stopped its production due to skills deficiency of the workers. The workers also refused to accept wage below the government set minimum wage. Worst more, one of the equipment has been declared unserviceable due to wear and tear of certain parts which require immediate replacement.

## 7. ENABLERS AND SUPPORTERS

The different programs, projects and activities for the development of the rubber industry are initiated and implemented by the member-agencies of the Philippine Rubber Technical Working Group (PHLRUBBER).

The PHLRUBBER was formed on June 22, 2012 as a convergence of government agencies, local government units, academe, government financinfg institutions, private sector, and other institutions committed to help promote and sustain the development of the rubber industry. Table 11 shows the industry enablers and supporters and their corresponding functions and roles in the promotion and development of the rubber industry.

**Table 11**
**Philippine Rubber Industry Enablers and Supporters**

| Industry Functions | Enablers |
|---|---|
| Production and Productivity Improvement | ➢ Department of Agriculture (DA)<br>o *Bureau of Plant Industry (BPI)*<br>o *Philippine Rubber Research Institute (PRRI)*<br>o *Agricultural Training Institute (ATI)*<br>➢ Philippine Statistics Authority (PSA)<br>➢ Department of Environment and Natural Resources- Forest Management Bureau (DENR-FMB)<br>➢ Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD)<br>➢ Technical Education and Skills Development Authority (TESDA)<br>➢ Department of Agrarian Reform (DAR)<br>➢ Local Government Units (LGUs) |
| Processing and Manufacturing | ➢ Department of Trade and Industry (DTI)<br>o *Philippine Accreditation Bureau (PAB)*<br>o *Board of Investments (BOI)*<br>➢ Department of Science and Technology Philippine Council for Industry, Energy, and Emerging Technology Research and Development (DOST-PCIEERD)<br>➢ Department of Agriculture (DA) |
| Domestic & Export Marketing | ➢ Department of Trade and Industry (DTI)<br>o *Bureau of Philippine Standards*<br>o *Export Marketing Bureau*<br>o *Bureau of Small and Medium Enterprise Development*<br>➢ Department of Agriculture (DA)<br>➢ Philippine Rubber Industries Association, Inc (PRIA) |
| Research & Development and Extension | ➢ Department of Science and Technology (DOST)<br>o *Philippine Council for Industry, Energy, and Emerging Technology Research and Development (DOST-PCIEERD)*<br>o *Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD)*<br>➢ Department of Agriculture (DA)<br>o *Philippine Rubber Research Institute (PRRI)*<br>o *Bureau of Agricultural Research*<br>➢ Philippine Statistics Authority (PSA)<br>➢ Westerm Mindanao State University (WMSU)<br>➢ University of the Philippines-Los Baños (UPLB)<br>➢ University of the Philippines-Diliman (UP-Diliman)<br>➢ Jose Rizal Memorial State University (JRMSU)<br>➢ University of Southern Mindanao (USM)<br>➢ Central Mindanao University (CMU)<br>➢ Palawan State University (PSU)<br>➢ Western Philippines University-Palawan (WPU)<br>➢ Cotabato Foundation College of Science and Technology (CFCST)<br>➢ Southern Luzon State University (SLSU)<br>➢ Agusan del Sur State University (ASSU) |
| Finance & Investment | ➢ Landbank of the Philippines (LBP)<br>➢ Development Bank of the Philippines (DBP)<br>➢ Department of Trade and Industry (DTI)- Small Business Corporation (SBCorp)<br>➢ Local Government Units (LGUs) and Other Financing Institutions |
| Information/ Policy Formulation and Advocacy | ➢ Department of Agriculture (DA)<br>o *Bureau of Agricultural and Fisheries Product Standards (BAFS)*<br>o *Philippine Council for Agriculture and Fisheries (PCAF)*<br>➢ Philippine Statistics Authority (PSA)<br>➢ Department of Environment and Natural Resources (DENR)<br>➢ Department of Trade and Industry (DTI)<br>➢ Department of Science and Technology (DOST)<br>➢ Technical Education and Skills Development Authority (TESDA)<br>➢ Mindanao Development Authority (MinDA)<br>➢ Department of Labor and Employment (DOLE)<br>➢ Department of Agrarian Reform (DAR)<br>➢ Department of Interior and Local Government (DILG)<br>➢ Local Government Units (LGUs) and Academe |

# Industry Performance 2017-2021

## II. INDUSTRY PERFORMANCE

The Philippine Rubber Technical Working Group (PHLRUBBER) was formally organized in June 2012 as an AdHoc team to oversee and coordinate the development of the industry. The group which is attached to the Department of Trade and Industy, is composed of government agencies, private industry organizations, academe, and R&D institutions. The PHLRUBBER is a convergence of public and private stakeholders committed to help promote and sustain the development of the rubber industry, enhance its competitiveness and ensure sustainable practices for inclusive growth.

The PHLRUBBER is chaired by a private sector, and co-chaired by Department of Agriculture (for upstream sector) and Department of Trade and Industry (for downstream sector). The latter serves also as the national secretariat. The group created six (6) Action Teams responsible for the effective implementation of the programs and projects under the six (6) major development strategic agenda.

The Consolidated Rubber Industry Performance is the product of the collective initiatives and implementations of the 2017-2021 Philippine Rubber Industry Roadmap by the members of the PHLRUBBER and other support organizations. The performance covers the six major development strategic agenda namely: 1) Production & Productivity Improvement; 2) Processing & Manufacturing; 3) Domestic & Export Marketing; 4) Research, Development and Extension; 5) Finance & Investment Promotion; and 6) Information/Policy Formulation and Advocacy.

## A. FIVE-YEAR MILESTONES

Since the creation of the PHLRUBBER, various projects, programs and activities (PPAs) were initiated and conducted by its members that have resulted to the performance of the industry as shown on Table 12.

For the period covering 2017 to 2021, the industry was able to generate a total of 51,000 jobs, PhP 5.1 billion in investments, PhP 18.81 billion in domestic sales and an export value of USD 2.37 billion. Export of rubber-based products hit USD1.86 billion about 78% of the total industry exports, while export of natural rubber amounted to a five-year total of USD0.51 billion or 22% of the total exports of rubber and rubber-based products.

As shown in Table 12, the average productivity of the rubber farms in the country is slowly increasing from 0.70 metric tons in 2017 to 0.715 metric tons in 2021 which may be attributed to the various assistance of the PHLRUBBER Member-agencies. On the accumulated area planted to rubber, the industry was able to accomplish 239,140 hectares or over by 4,823 hectares on the target of 234,317 hectares in 2021.

On the other hand, the industry failed to achieve the target on volume of production and area tapped/harvested which the percentage of accomplishment ranged only from 62% to 88% over the past-five years. With this, the Production and Productivity Action Team shall increase the projects and activities that will contribute to the performance of these indicators.

In terms of the farmer's income, which is the most vital indicator, the industry was not able to alleviate rubber farmers from the poverty which is evident in Table 12. The rubber farmers generated only an average monthly income of PhP 7,277.31 which is below by 20% of the poverty threshold of PhP 9,064.00. Thus, to be able to alleviate the farmers from poverty, the industry must concentrate on providing programs or assistance that would increase the productivity of their farms since the government does not have control over the price of NR.

**Table 12**
**Rubber Industry Performance Milestones**

| Item / Year | 2017 | | | 2018 | | | |
|---|---|---|---|---|---|---|---|
| | Target | Accomp | % Accomp | Target | Accomp | % Accomp | Target |
| [1]Yield (MT/ha) | 0.8 | 0.70 | 88% | 0.8 | 0.71 | 89% | 0.8 |
| [1]Volume of Production ('000 MT) | 140.98 | 101.76 | 72% | 148.38 | 105.84 | 71% | 174.15 |
| [1]Area Harvested/ Tapped (hectares) | 176,224 | 153,000 | 87% | 185,476 | 162,000 | 87% | 217,687 |
| Area Planted | 228,883 | 226,284.65 | 99% | 235,603 | 228,943.63 | 97% | 245,123 |
| [1]Increment in primary production areas | 5,600 | 10,000 | 179% | 6,720 | 10,000 | 149% | 9,520 |
| [2]New Jobs Created | 11,200 | 20,000 | 179% | 13,440 | 20,000 | 149% | 19,040 |
| **Farmers' Income** (PSA 2015-Poverty Threshold @ PhP 9,064.00 per month | 9,064 per month | **PhP 7,651.40** per month<br>✓ If farmer is also the tapper (670 kg/ha, 2 has, average price for the year is PhP68.52 kilo of DR)<br>**PhP 4,590.84 per month**<br>✓ 60:40 sharing (farmer: tapper) | 84% | 9,064 per month | **PhP 6,192.33 per month**<br>✓ If farmer is also the tapper (650 kg/ha, 2 has, average price for the year is PhP57.16 kilo of DR)<br>**PhP 3,715.40 per month**<br>✓ 60:40 sharing (farmer:tapper) | 68% | 9,064 per month |
| [3]**Investments (in PhP B)** | 1.12 B | **2.0 B** | 179% | 1.34 B | **2.0 B** | 149% | 1.9 B |
| **Domestic Sales (in PhP B)** | 1.46 | **3.09** | 212% | 1.61 | **3.19** | 198% | 1.77 |
| **Exports Sales (in USD M)** | 148.59 | **391.20** | 263% | 163.45 | **486.35** | 296% | 179.80 |

**Revised 2020 and 2021 based on the agreement in the PHLRUBBER 2019 Assessment and 2020 Planning Workshop*
*[1]Accomplishments were derived from the submitted report of the Philippines to Association of Natural Rubber Producing Countries*
*[2] Per World Bank Study, one hectare of rubber will generate two jobs*
*[3]Per World Bank Study, one hectare of rubber will require PhP 200,000.00 investments*

| 2019 | | *2020 | | | *2021 | | | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Accomp | % Accomp | Target | Accomp | % Accomp | Target | Accomp | % Accomp | |
| 0.71 | 89% | 0.65 | 0.71 | 109% | 0.70 | 0.715 | 102% | |
| 108 | 62% | 144.69 | 106 | 73% | 156.30 | 136.9 | 88% | |
| 171,800 | 79% | 222,602 | 176,900 | 79% | 223,283 | 186,400 | 83% | |
| 229,431 | 94% | 231,861 | 230,723 | 99% | 234,317 | 239,140 | 102% | |
| 1,500 | 16% | 2,430 | 1,500 | 62% | 2,456 | 2,500 | 102% | 25,500 |
| 3,000 | 16% | 4,860 | 3,000 | 62% | 4,912 | 5,000 | 102% | 51,000 |
| **PhP 6,228.08 per month**<br>✓ If farmer is also the tapper (650 kg/ha, 2 ha, average price for the year is PhP57.49 kilo of DR)<br><br>**PhP 3,736.85 per month**<br>✓ 60:40 sharing (farmer:tapper) | 69% | 9,064 per month | **PhP 6,378.61 per month**<br>✓ If farmer is also the tapper (586 kg/ha, 2 has, average price for year is PhP65.31 kilo of DR)<br><br>**PhP 3,827.17 per month**<br>✓ 60:40 sharing (farmer:tapper) | 61% | 9,064 per month | **PhP 9,936.12 per month**<br>✓ If farmer is also the tapper (715 kg/ha, 2 has, average price for the year is PhP83.38 kilo of DR)<br><br>**PhP 5,961.67 per month**<br>✓ 60:40 sharing (farmer:tapper) | 95% | |
| **0.30 B** | **16%** | 0.48 | 0.30 | **62%** | 0.49 B | **0.50** | **102%** | **5.1** |
| **3.88** | **220%** | 4.17 | 4.19 | **101%** | 4.59 | **4.46** | **97%** | **18.81** |
| **481.28** | **268%** | 529.41 | 433.34 | **82%** | 582.35 | **578.34** | **99%** | **2,370.51** |

# B. PERFORMANCE HIGHLIGHTS

## 1. PRODUCTION AND PRODUCTIVITY IMPROVEMENT

The Production and Productivity Improvement Action Team has achieved remarkable performance in responding to issues and concerns related to low productivity of rubber plantation particularly those that are operated by the smallholders. Efforts of the team were focused on seeds selection and distribution, certification of bud wood gardens, establishment and accreditation of rubber nurseries, expansion of areas, and distribution of planting materials giving priority as much as possible to high yielding clones.

Various trainings and seminars on production and productivity improvement were also conducted. Local benchmarking missions were also done to facilitate transfer of new and improved production technology and replicate good agricultural practices of regions and countries visited.

The Production and Productivity Improvement Action Team is composed of DA, DENR, DAR, DOST, LGUs, Academe, PRFA, rubber producers, and other support institutions. DA is represented by PRRI, ATI, BAR, and BPI. DA serves as the lead agency ensuring that all programs and projects under the Production and Productivity Improvement Strategy are duly implemented.

### 1.1 Budwood Garden and Nurseries

The Department of Agriculture through Bureau of Plant Industry (DA-BPI) accredited fifteen (15) rubber nurseries. Of this, 11 are privately owned and 4 are operated by the government. Table 13 shows the distribution of nurseries per region. With these accredited nurseries, farmers, either smallholder or corporate are assured that the procured seedlings are high yielding clones.

**Table 13**
**Accredited Rubber Nurseries**

| Particulars | Number of Accredited Nurseries | | |
|---|---|---|---|
| | Private Owned | Government | Total |
| **Zamboanga Peninsula** | - | 2 | **2** |
| **Northern Mindanao** | 2 | 1 | **3** |
| **Davao Region** | 1 | - | **1** |
| **SOCCSKSARGEN** | 7 | 1 | **8** |
| **BARMM** | 1 | - | **1** |
| **Total** | **11** | **4** | **15** |

*DA-Bureau of Plant Industry (DA-BPI), November 2020*

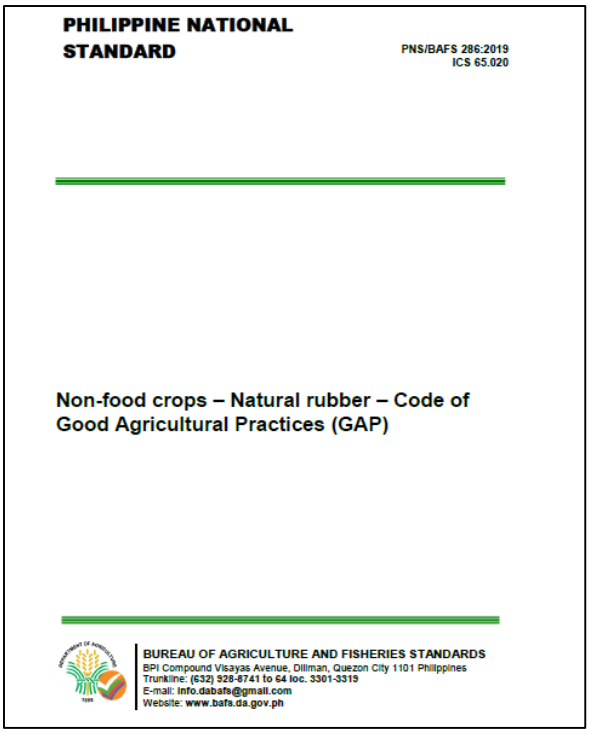
## 1.2 Distribution of Planting Materials and Supplies

Various government agencies distributed budded planting materials to rubber farmers, cooperatives, associations, and Peoples Organizations. A total of 886,627 planting materials were distributed during the last five (5) years. The Department of Agrarian Reform (DAR) aside from giving planting materials to rubber coops and individual beneficiaries, the agency also provided fertilizers and other input materials under its Project ConVerge.


Hauling of rubber budded clones to different beneficiaries

## 1.3 Good Agricultural Practices (GAP) for Natural Rubber

Philippine National Standard for Good Agricultural Practices (GAP) for Natural Rubber was developed by the Bureau of Agriculture and Fisheries Product Standards (BAFPS) and had been approved by the Secretary of the Department of Agriculture in 2019.


PHILIPPINE NATIONAL STANDARD

PNS/BAFS 286:2019
ICS 65.020

Non-food crops – Natural rubber – Code of Good Agricultural Practices (GAP)

BUREAU OF AGRICULTURE AND FISHERIES STANDARDS
BPI Compound Visayas Avenue, Diliman, Quezon City 1101 Philippines
Trunkline: (632) 928-8741 to 64 loc. 3301-3319
E-mail: info.dabafs@gmail.com
Website: www.bafs.da.gov.ph

The development of GAP for Natural Rubber aims to assist farmers and processors to provide assurance on the quality of raw and semi-processed rubber products that will enhance competitiveness of natural rubber for domestic use and international trade. It also aspires to help increase productivity and income, and ensures compliance to relevant national legislations, proper use of natural resources and promotion of sustainable agriculture.

## 1.4 Capability Building

Convergence of resources and commitment among support institutions and agencies resulted in the conduct of various trainings and seminars on production and productivity improvement. These activities benefited a total of 4,545 individual farmers in rubber-producing regions in the country.

These initiatives inculcated the needed knowledge, skills and desirable attitudes geared towards the increase in production and productivity transforming into best practices.

*(Productivity and Quality Improvement Training on Rubber Bark Management and Latex Harvesting in Perez, Kidapawan City and Kibudoc, Matalam on December 15 and 16, 2020)*

*(Rubber Tapping Upgrading Training on March 21-23, 2018 in Bayawan City benefitting 22 rubber farmer tappers)*

*NC II Rubber Production Training of in Misamis Occidental in February 2019*

*(Training On Rubber Production & Tapping Technology on Aug. 31-Sept. 1, 2021 (1st Batch) and Sept. 6-7, 2021 (2nd Batch) in Surigao del Sur)*

**Table 14. Trainings Conducted by various PHLRUBBER Members**

| Training Title | Agency | Number of Participants |
|---|---|---|
| Agri-Productivity and Rubber Product Diversification | DTI-Zamboanga Peninsula | 30 |
| Training and Trading Advocacy Caravan | | 1,018 |
| Skills Training on Rubber Tapping cum Production | | 42 |
| Refresher Course on Rubber Tapping | DTI-Central Visayas | 20 |
| Skills Training on Rubber Tapping | | 102 |
| Rubber Tapping and Bark Management Training | | 65 |
| Rubber Industry Production Technical Updating Form and the Rubber Investors' Briefing and Orientation | | 85 |
| Skills Training on Rubber Tapping, and Pests and Diseases Control on Rubber Trees | DTI-MIMAROPA | 63 |
| Skills Training on Rubber Tapping | | 45 |
| Rubber Management for Rubber Farmers - Proper Tapping methods | DA-ATI | 30 |
| Training in Rubber Production NC II | TESDA | 1,364 |
| Skills Training on Rubber Production | DTI-Northern Mindanao | 44 |
| Skills Training on Rubber Production & Rubber Tapping | | 113 |
| NC II Rubber Production Training | | 14 |
| Skills Enhancement Training on Rubber Tapping | | 30 |
| Basic Skills Training on Rubber Tapping & Bark Management | | 279 |
| Rubber Production Protocols and Industry Clustering | | 17 |
| Rubber Stakeholders Forum and Ceremonial Tapping of Serbisyong Totoo Rubber Development Program | DTI-SOCCSKSARGEN | 150 |
| Rubber Forum and Quality Advocacy Training/Seminar | | 40 |
| Training on Rubber Bark Management | | 223 |
| Training on Rubber Productivity and Tapping Management | | 16 |
| Training on Rubber Tapping and Market Opportunity Session | | 14 |
| Productivity and Quality Improvement Training on Rubber Bark Management and Latex Harvesting | | 50 |
| Training on Rubber Field Quality Control, Production Consolidation and Marketing | DAR | 40 |
| Hands On Training on Rubber Farm Development and Good Production Practices | | 52 |
| Skills Training on Rubber Tapping | DTI-Davao Region | 30 |
| Training on Rubber Tapping and Bark Management | | 54 |
| Seminar on GAP on Rubber Plantation Management | | 54 |
| Rubber Industry Stakeholders Forum w/ Rubber Plantation Management | | 55 |
| Strengthening of Rubber Farmers Association and Cooperatives | PRRI | 225 |
| Productivity Improvement on Post Harvest Handling of Rubber Cuplumps | DTI-Caraga | 14 |
| NR Product Quality Improvement Seminar | | 42 |
| Quality Improvement: Techno Training on How to Detect, Identify and Manage Pests & Diseases of Rubber Plantations | | 40 |
| Training On Rubber Production & Tapping Technology | | 85 |
| **TOTAL** | | **4,545** |

## 1.5 Local Study Missions

There were various local benchmarking activities or local study missions (LSM) conducted by rubber enrolled regions. These LSMs exposed participants to a more advanced rubber production plantation, observed/learned market system and encourage producers/traders to establish market linkages to other regions/provinces.

*(DTI-Bukidnon initiated a Benchmarking mission in Platinum Rubber Development Inc on May 18, 2018)*

*(Rubber Plantation Visit at Platinum Rubber Development Inc in North Cotabato on April 24, 2019 and in Bebeladan, Palawan on May 2, 2019)*

## 1.6 Distribution of Tools and Facilities/Gadgets

To improve the quality of products of rubber farmers, the following tools and facilities/gadgets were provided which may have an impact on their rubber price.

a) 20,040 tapping cups were distributed to 668 farmers during the Training & Trading Advocacy Caravan of DTI-Sibugay in collaboration with LGUs on May 10, 2017;
b) 200 coagulating tanks were provided to 275 farmers by DTI and DAF ARMM in 2017;
c) 500 rubberized coagulating tanks were provided by DTI-Zamboanga Peninsula in Zamboanga del Sur last 2018; and
d) 23 nano sensor known as Surface Toughness Analyzer for Rubber (STAR) were distributed to selected farmer organizations, LGUs in Zamboanga del Norte and Zamboanga Sibugay to be used in Bagsakan Centers, and processors. This gadget is developed by De La Salle University and funded by DOST-PCAARRD.


*(Testing of Nano-Sensor or STAR)*


*(Distribution of tapping cups in Zamboanga Sibugay)*

## 2. PROCESSING AND MANUFACTURING

Rubber processing involves the transformation of latex and cup lumps to rubber sheet, crumb or crepe rubber for use as intermediate raw materials in the manufacturing of various rubber-based products. Semi-processed products are pale crepe and crumb rubber are generally classified as Standard Philippine Rubber (SPR 5L, SPR 10 & SPR 20) pressed into bales at 33.33 or 35 kilograms and packed in a translucent plastic to protect the product from dirt and other contaminants. Market requirement dictates that processed natural rubber should be compliant to ISO 2000:2015, standards for Technically Specified Rubber (TSR) or PNS/ISO 2000.2015, product standards for Standards Philippine Rubber (SPR).

The downstream sector concentrates on the manufacturing of processed rubber into finished products such as tires, automotive rubber-based parts, footwear, sports items and other industrial manufactures.

Campaign for ISO certification for the existing rubber processing plants and rubber testing laboratories are being conducted to comply with the requirements of the market and to improve the competitiveness of the rubber industry in the country.

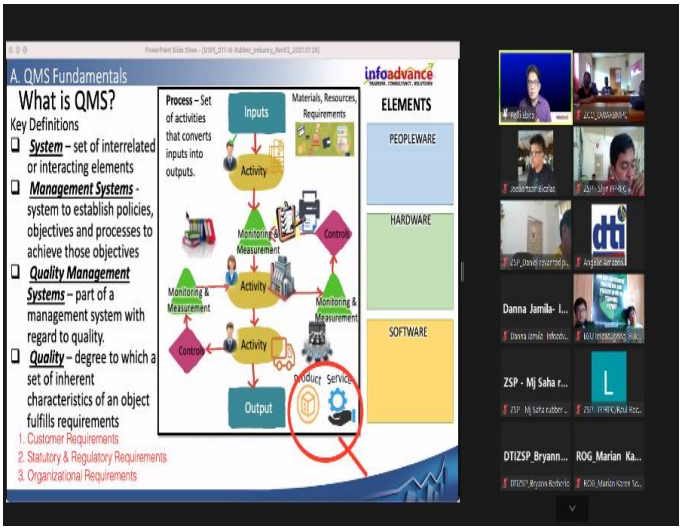
The Processing and Manufacturing Action Team is composed of the PRIA, PRFA, Traders, Processors, DTI, DOST, DA- PhilMech and other support institutions.

### 2.1 Conduct of ISO 9001:2015 Orientation

To encourage rubber processing to certify their plant to ISO 9001:2015, DTI-Zamboanga Peninsula conducted Orientation Seminar on ISO 9001:2015 on:

- August 16-18, 2017 in Zamboanga City; and
- August 10-12, 2021 via zoom.

*(Orientation Seminar on ISO 9001:2015 on August 16-18, 2017 in Zamboanga City)*




*(Online Orientation on ISO 9001:2015 on Aug 10-12, 202 via Zoom).*

## 2.2 Upgrading of Processing Plants

In order to increase the capacity of the existing rubber processing plants, to improve quality of products and to produce new product line, DTI and DOST provided assistance through provision of equipment and updating of rubber processing plants.

a) DOST-FPRDI approved the Rubber Wood Processing Project for TARBEMCO in Zamboanga Sibugay amounting to PhP 57.70 Million. The project is expected to produce 5,000 cu. meters/year of rubber wood.

*(Rubberwood Processing Plant in TARBEMCO, Zamboanga Sibugay)*

Aside from the establishment of the said wood processing plant, DOST-FPRDI also provided trainings to the cooperative. These were the trainings conducted for the said project:

- Training on Sawmilling which includes modules on harvesting, sawmilling, and non-pressure wood treatment using soaking and spraying last 23-24 April 2018 at TARBEMCO Board Room, Tambanan, Naga, ZSP;
- Training on Rubberwood Lumber Treatment on Jan 15-16, 2020;
- Training Kiln Drying and Furniture Making Training on Feb 11-19, 2020; and
- Training on Operations of the Lumber Dryer and Furniture Making on 15 March 2020

*(Training on Sawmilling in Zamboanga Sibugay on April 23-24, 2018)*

b) Under the Innovation System Support (Technology Needs Assessment) of DOST-Zamboanga Peninsula, the Centrifuge Latex Processing Facility of FJC Agro-Industries - Phase II project located in Zamboanga Sibugay was given one-unit Rubber Latex Centrifuge Separator Machine worth PhP1.750 Million.

*(Rubber Latex Centrifuge Separator Machine provided by DOST to FJC Agro-Industries)*

c) DTI-Northern Mindanao delivered three equipment to Central Mindanao University for their rubber processing plant under the Shared Service Facility (SSF) Program on September 17, 2020. The equipment are: Shredder Machine, Rubber Crumb Dryer/Oven and single Rubber Bailing Press Machine; and,

d) DTI-Caraga approved the "SSF on Upgrading of Crumb Rubber Processing Plant" on September 28, 2020 of DTI-Caraga amounting to PhP 31.25M of which PhP 5.00 M were funded by DTI.

*(SSF TWG approving the Upgrading of Crumb Rubber Processing Plant)*

## 2.3 Rubberized Asphalt Road

During the 2nd Meeting of Expert Group on Natural Rubber Price Stabilization conducted on March 15-17, 2016 in, Krabi, Thailand, member-countries were unanimous in the decision to intensively promote the use of rubberized bitumen to increase domestic consumption of natural rubber.

The initial step done by the Philippines in introducing the use and benefits of rubberized bitumen in road construction was the conduct of Rubberized Asphalt Technology Mission and Field Visits in Thailand and in Malaysia on November 20-24, 2017. Thailand and Malaysia are two of the few countries which pioneered the use of the said technology. Thailand is using latex and Ribbed Smoked Sheet (RSS) while Malaysia is using cuplumps.

During the 20th PHLRUBBER Meeting on July 4, 2018 in Makati City, the Committee on Rubberized Asphalt was created. It is composed of DTI, PLGUs, DOST PCIEERD and ITDI, DPWH, DA, PRRI and USM, PRIA, MinDA, and Sunshine Rubber Technology Resources Company.

Currently, the University of Philippines-Los Banos Rubbers is conducting a study on Waste Plastics as Reinforcement Additives for Asphalt Binder-based Pavement Infrastructures of which pilot testing will be implemented.


*(Rubberized Asphalt Technology Mission and Field Visits in Thailand and Malaysia on November 20-24, 2017)*


*(Philippines participated to the Seminar on Economics of Rubberized Road on August 26-28, 2019 in Malaysia which was organized by the Association of Natural Rubber Producing Countries)*

## 2.4 International Benchmarking Activity

DTI-Zamboanga Peninsula organized an international Benchmarking on Best Practices for Rubber Marketing, Processing and Manufacturing on July 20-21, 2018 in Hat Yai, Songkhla Province, in Thailand. It was attended by 13 participants composed of Mayors from Matalam, North Cotabato, Zamboanguita, Neg. Oriental, Buenavista Agusan del Norte, Agriculturist and DRRM Officer from Mabinay, Neg. Oriental, Consultant of PLGU Basilan, Zamboanga Ecozone, and staff of DTI-Zamboanga Peninsula and DTI-SOCCSKSARGEN.

The objective of the said benchmarking activity was to learn new technologies and explore the best practices of Thailand for possible application in the Philippines particularly in the following areas:

- Central Rubber Market, a sophisticated trading center where business transaction is done online during auction day;
- Good Manufacturing Practice (GMP) Certified Rubber Bale Facility and Rubber Smoked Sheet Factory; and
- Rubber City, a large industrial park dedicated to locators investing in rubber-based products manufacturing.


*(Benchmarking on Best Practices for Rubber Marketing, Processing and Manufacturing on July 20-21, 2018 in Hat Yai, Songkhla Province, Thailand)*

### 2.5 Harmonization of Standards for Rubber and Rubber-based Products

The Philippines is an active member of the ASEAN Consultative Committee on Standards and Quality – Rubber Based Products Working Group (ACCSQ-RBPWG). The group meets twice a year to discuss and decide on the adoption and harmonization of various standards for rubber and rubber products. Currently, Philippines is 87.5% harmonized to International Standards identified by the RBPWG for harmonization with ASEAN Region

**Table 15**
**International Standards on Rubber and Rubber Products for Harmonization**

| Standards | No. of Identified Standards | PH Harmonized | Not Yet Harrmonized |
|---|---|---|---|
| **Test Methods** | 40 | 38 | 2 |
| **Hoses** | 17 | 16 | 1 |
| **Non-Hoses** | 13 | 9 | 4 |
| **New and Innovative** | 2 | - | 2 |
| **TOTAL** | **72** | **63** | **9** |

*Bureau of Philippine Standards, July 2022*

## 3. DOMESTIC AND EXPORT MARKETING

Traditionally, the market structure of the natural rubber industry in the Philippines allows local rubber traders, middlemen, and consolidators to dictate and manipulate the rubber price resulting farmers with no other market options and a loss or decrease of possible income.

With the various interventions of the PHLRUBBER such as establishment of bagsakan centers, formulation of Regional Price Management System (RPMS) and introduction of NR Price computation, and provision of calibrated weighing scales, farmers were: educated on proper calculation of NR resulting to a transparent trading system in bagsakan centers; reduced transportation cost for remote-based rubber farmers; and eradicated the manipulation of traders/middlemen.

Furthermore, selling missions and other market development initiatives have made it possible for rubber farmers and processors to establish themselves both in the local and international markets have greatly accelerated the growth of their rubber businesses.

The Domestic and Export Market Action Team is composed of DTI, DA, LGUs, PRIA, Producers, Processors and other support institutions.

## 3.1 Establishment of Rubber Trading & Auction Centers (RTAC)

Rubber Trading and Auction Centers (RTACs) or locally known as “Bagsakan Centers” serve as a venue for farmers, traders and consolidators to transact business under the supervision of the local government units (LGUs).

Currently, there are fifty-six (56) RTACs in the country of which 17 centers are located in Zamboanga Peninsula and 39 in North Cotabato Province.

The establishment of RTACs in North Cotabato is thru the Executive Order No. 42 dated October 24, 2016 by Governor Emmy Lou Taliño- Mendoza-“An Order Establishing the Cotabato Rubber Trading Center, Otherwise Known As “Bagsakan ng Rubber Cup lump” In Strategic Areas of Cotabato Province”.

*Rubber trading day (every Thursday) at Titay Bagsakan Center*

## 3.2 Benchmarking Activities to Rubber Trading/Bagsakan Centers

Other rubber enrolled regions witnessed the advantage of having a rubber trading and auction center (RTAC) or bagsakan center in the region. Thus, to be able to replicate the said practice, benchmarking activities were initiated by DTI:

a) DTI-North Cotabato facilitated field Visit and Benchmarking of Sultan Kudarat and Sarangani Rubber Industry Cluster to RTACS – Singao, Kidapawan City and Kisante, Makilala on March 12 & 19, 2018;
b) The Basilan Rubber Cluster Team joined the study mission organized by DTI-BARMM Basilan to Matalam and Kidapawan, North Cotabato on August 2, 2018;
c) Benchmarking Activity to Rubber Bagsakan Centers, Processing Plants and PRRI on November 21-23, 2018; and,
d) DTI-North Cotabato initiated the Benchmarking of Rubber Smallholders from Sultan Kudarat Province to the RTAC – Pangao-an, Magpet and KAMASI Village Level Processing Plant on March 3, 2021.

*(DTI-North Cotabato facilitated the field Visit and Benchmarking of Sultan Kudarat and Sarangani Rubber Industry Cluster to RTACS – Singao, Kidapawan City and Kisante, Makilala on March 12 & 19, 2018)*

*(Basilan Rubber Cluster Team joined the study mission organized by DTI-BARMM Basilan to Matalam and Kidapawan, North Cotabato on August 2, 2018)*

*(Benchmarking Activity to Rubber Bagsakan Centers, Processing Plants and PRRI on November 21-23, 2018)*

## 3.3 Regional Price Management System

The Regional Price Management System (RPMS) was institutionalized in 2014 as a major program of the Zamboanga Peninsula Rubber Industry Cluster Team (ZamPen RUBBER). The RPMS was benefiting thousands of small farmers who were taught to calculate the rubber price reference using their smart phones. The rubber price reference serves as basis for the farmers to negotiate with the traders and buying agents who in the past several years were the ones dictating the price offered to the farmers, thus, taking advantage of the latter's lack of access to market information

DTI-MIMAROPA, Central Visayas, Northern Mindanao, Zamboanga Peninsula, Davao Region, SOCCSKSARGEN and CARAGA have adopted the Regional Price Management System. The daily computed NR Price Reference is posted in Price Reference Board in all Negosyo Centers of rubber producing municipalities, bagsakan centers and DTI-Provincial Offices located in rubber-producing provinces in Zamboanga Peninsula.


*(Price Reference Board in Bagsakan Center/RTAC in Zamboanga SIbugay)*

## 3.4 Accreditation of Laboratory Testing Centers

There are two rubber testing laboratories in the countries accredited to ISO 17025:2005:

a) DOST-Zamboanga Peninsula Rubber Laboratory Testing Center in Zamboanga City; and
b) DOST-ITDI.

These laboratories provide objective evidences on the state and quality of rubber and rubber products. It is a scientific approach to ensure compliance to industry regulations and market requirements.

*(Rubber Laboratory Testing Center of DOST 9 in Zamboanga City)*

In addition, DTI-Zamboanga Peninsula thru SSF Project provided Philippine Pioneer Rubber Products Inc a NR Testing Laboratory Equipment worth PhP8.0M which was launched in July 2018.

*Some of the equipment in NR Testing Laboratory of PPRPC in Region 9*

### 3.5 Market Matching Activities

To connect the local manufacturers and processors with big companies, market matchings were conducted:

a) DTI-Export Marketing Bureau (DTI-EMB) conducted a Focus Group Discussion (FGD) titled, “Consultative meeting on Market Opportunities for Philippine Rubber” on February 7, 2018 in Makati. It was attended by 23 participants composed of private and government sectors.

b) DTI-Zamboanga Peninsula coordinated with the Office of Asec. Rafaelita Aldaba thru the office of Director Romulo V. Manlapig, CARS-PMO and facilitated a meeting between Philippine Rubber Industries Association (PRIA), Toyota Motor Philippines, Mitsubishi Motor Philippines Corporation, and JICA. The meeting was held on March 22, 2018 at the Board Room, Penthouse, BOI. The meeting discussed market linkage between the local rubber-based products manufacturers and the two major car manufacturers in the country.

c) DTI-EMB matched rubber companies to 2 Korean importers during the KOIMA (Korean Importers Association) Business Activity on July 11, 2019 at Conrad Hotel, Pasay City; and

d) DTI- Zamboanga Peninsula conducted the Zamboanga Peninsula Exposition (ZAMPEX) 2019 at SM Megamall on August 1-5, 2019 of which one of the exhibitors is a rubber stakeholder, FJC Agro Industries. The said MSME contributed around 60% of the total sales of PhP 86.15 M of the fair which includes the sales in business matching to local manufacturers.

*(Market Matching with Korean Importers on July 11, 2019 in Pasay City)*


*(Zamboanga Peninsula Exposition (ZAMPEX) 2019 at SM Megamall on August 1-5, 2019)*

## 3.6 Support Facilities

a) DTI-SOCCSKSARGEN through the Shared Service Facility Project distributed 36 Units Foldable Beam Platform Scales for RTACs in North Cotabato which amounted to PhP658,800.00. This would omit the manipulation of traders to rubber smallholders;

b) DA-PRPD in CARAGA approved the construction of the rubber cup lump Consolidation Warehouse of KM7 Farmers Producers Cooperative amounting to PhP 4.47 M;

c) DA-PRPD in CARAGA funded the acquisition of vehicle for hauling and collection of cup lump amounting to PhP2.24M to KM7 Farmers Producers Cooperative and PhP9.39M to Bayugan Rubber Producers Cooperative; and,

d) Turned-over of DA-PRDP Integrated Rubber Production and Marketing Project to KM. 7 Farmers Producers Cooperative (KFPC) in Agusan del Sur amounting to PhP 8.22 M on June 25, 2020.

*(Blessing of the vehicle provided by DA-PRDP to KM7 Farmers Producers Cooperative)*

*(On-site construction of the Rubber Cup Lump Consolidation Warehouse)*


*(Turned Over of the 36 Units Foldable Beam Platform Scales for RTACs in North Cotabato)*


*(Turned Over Ceremony of the Integrated Rubber Production and Marketing Project to KM. 7 Farmers Producers Cooperative (KFPC) on June 25, 2020)*

## 4. RESEARCH AND DEVELOPMENT EXTENSION

The Research, Development and Extension initiatives are handled by different research institutions. The Department of Agriculture (DA) implements its RDE programs through the Bureau of Agricultural Research (BAR), the Bureau of Plant Industry (BPI), the Philippine Rubber Research Institute (PRRI), and its regional field offices and research centers.

R & D projects implemented by the Academe are funded by the Department of Science and Technology (DOST) through the Philippine Council for Agriculture, Aquatic and Natural Resources Research Development (PCAARRD). Rubber is one of the priority commodities under the Industry Strategic S&T Plan (ISP). The DOST - Rubber ISP is aimed to address the supply chain problems of the industry through S&T solutions. Other support institutions are the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD), *Forest Products Research and Development Institute* (FPRDI) and Industrial Technology Development Institute (ITDI).

Extension services are provided by the Local Government Units (LGUs) through the Offices of the Provincial, City and Municipal Agriculturist with coordination and assistance from the Department of Agriculture and other support organizations.

Research, Development and Extension Action Team is composed of DA (PRRI, BAR, & BPI), DOST (PCAARRD, FPRDI, ITDI, PCIERRD), Academe (USM, JRMSU, WMSU/WESMAARRDEC), PRFA, PLGU, other state universities & colleges), LGUs of rubber-producing regions and provinces, and the private sector.

### 4.1 Innovation of Root Trainer Technique and Precision Grafting Technology for Rapid Production of Quality Planting Materials of Rubber

Modern rubber nursery establishment using root trainer planting technique is being introduced in the country as an alternative to the traditional rubber nursery which used polybag. Rubber seedlings produced in root trainer produce large number of lateral roots into the well-aerated potting medium. The vertical ridges provided in the container wall direct these lateral roots downwards and thus prevent their circular growth within the container. As a result, the enhanced production of lateral roots influences growth of the rubber plant positively during the juvenile phase.

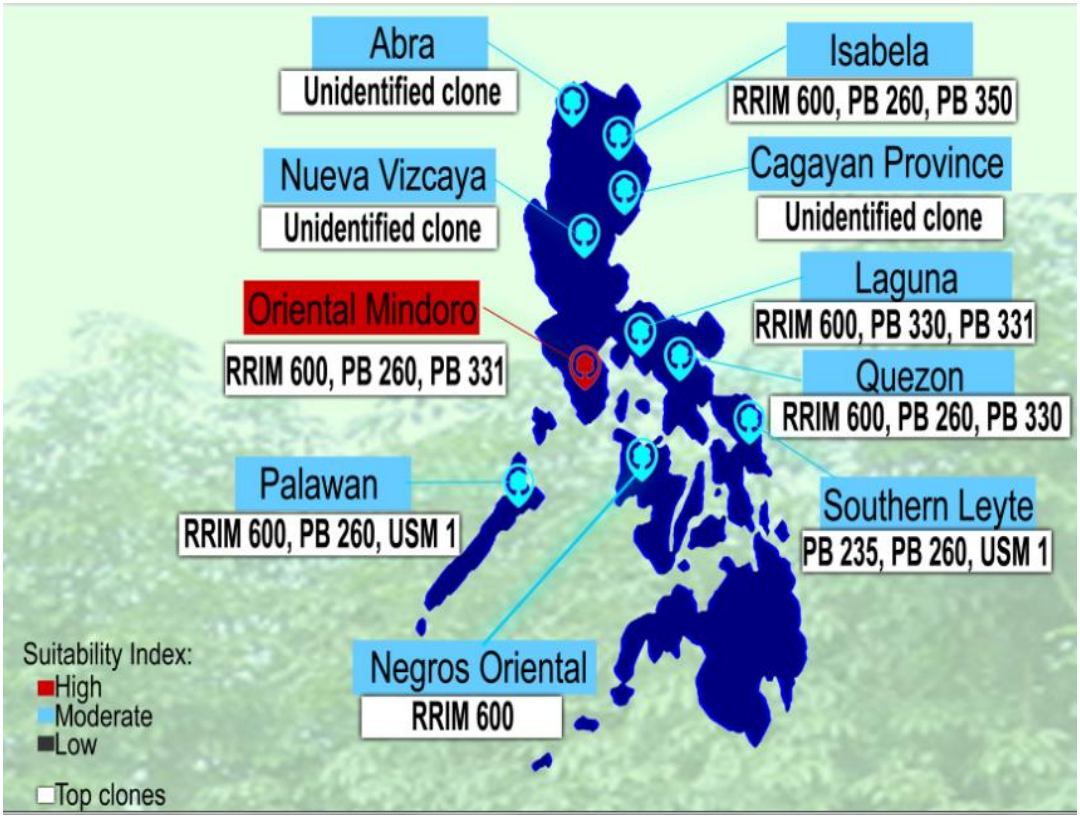
This research project was funded by DOST-PCAARRD and have won “Best Research Paper Award 3rd place” during National Symposium for Agriculture, Aquatic and Natural Resources Research and Development.

### 4.2 Technology Adaptation and Performance Trial of Different Rubber Clones in Zamboanga Peninsula

This project is funded by DA-BAR amounting to PhP 1M. It has won “2nd Runner Up” during the 2019 Regional Research Symposium on Development and Highlights under Research Category, and Best Paper Award during the DA-Agency In House Review. To date, there is a continuous conduct of care and maintenance data gathering on plant girth and morphology.

### 4.3 Assessment on the Growth and Yield Performance of Rubber Planted in Non-Traditional Areas of the Philippines

This project is funded by DOST-PCAARRD amounting to PhP 4.24M which aims to assess the performance of the rubber plantation in Non-Traditional Areas such as Visayas and Luzon. The result may be used as a strategy to either advocate or not the plantation of rubber in such areas. Moreover, this proposal won “2nd Runner Up” during the 2019 Regional Research Symposium on Development and Highlights, Poster Category and was considered as the “Most Promising Research Award” during the DA-Agency In House Review.



## 4.4 Multilateral Clone Exchange Trial (IRRDB/PRRI)

As member of the International Rubber Research and Development Board (IRRDB), the Philippines is party to the Multilateral Clone Exchange Program. The country is set to receive 51 Class a Rubber Clones under the Multi-Lateral Clone Exchange Program of the IRRDB.

Initially acquired new and high yielding rubber clones for nationwide trials from Thailand (RRIT 251), Malaysia (RRIM 928; RRIM 929; RRIM 2023; RRIM 2027); France (IRCA 331) are planted for multiplication in selected bud wood gardens of DA and its partners in the regions. Established clonal trials plots with ready replicate clones of newly acquired HY clones in ISU, WPU, SLSU, CMU, USM, and DA.

To date, there are evaluation of IRRDB exchange rubber clones under nursery condition taking into account the suitability of each rubber clones against biotic and abiotic stresses as well as the environmental factors of PRRI.

Budding of Multilateral Exchange Clones

Temporary greenhouse

Gathering of data on plant girth of multilateral exchange clones

## 4.5 Influence of Different Coagulants on the Quality of Rubber Sheets

PRRI conducted research on the “Influence of Different Coagulants on the Quality of Rubber Sheets” and prepared rubber sheets using two (2) types of coagulants – formic acid and coconut vinegar. On-going initial observations were made since the sheets will be pre-dried at room temperature for 7 days followed by drying for 48 hours at 50-60 °C in a conventional oven.

Fresh latex coagulated in a pan using two coagulants in various concentrations

Milled coagulated latex turned into sheets allowed to dry for 7 days for the pre-drying

## 4.6 Evaluation on the Agronomic Performance of Rubber RRIM Series in Luzon And Mindanao For NSIC Registration

DA-RFO9 conducted field visits and identified project sites in Basilan, Cotabato and Zamboanga Sibugay for the Evaluation on the agronomic performance of rubber RRIM Series in Luzon and Mindanao for NSIC registration

## 4.7 Rainguard Utility Model

PRRI fabricated four (4) rainguards' utility model and installed to nine (9) sites with 180 rubber trees in each location.


## 4.8 Rubber Based Farming System

PRRI pilot tested the

a) Rubber Based Farming System: Crop-livestock Integration in JARBECO, Sulo, Naga, Zamboanga Sibugay and TARBEMCO, Tambanan, Naga, Zamboanga Sibugay
b) Technology Demonstration of Rubber – Based Farming System: Rubber+Crop+Livestock Integration Under Mining Areas in Pigbogolalan Nog Subanon Sog Konotoan (PNSSK), Inc, Canatuan, Tabayo, Siocon, Zamboanga del Norte; and Guintolan, Payao, Zamboanga Sibugay

## 5. FINANCING AND INVESTMENT

One of the major constraints cited by rubber stakeholders particularly the smallholders is to access finance either for additional working capital or acquisition of equipment or machineries. Thus, it hinders the stakeholder's plan to expand their production and increase market penetration both local and abroad.

The PHLRUBBER from its inception already includes government financing institution to address the industry's concerns for lack of financing facilities. The Land Bank of the Philippines (LBP) and Development Bank of the Philippines (DBP) supported the development of the industry by providing specific financing portfolio for rubber business from plantation to manufacturing. The facilities are of course subject to regular loan requirements. With the improved access to financing, it enhances the ability of the industry to expand production capacities, improve productivity, and ultimately increase income. Strong support from the banking sector also contributes to the national government's goal of promoting inclusive growth.

The Financing and Investment Action Team is composed of LBP, DBP, LGUs, DTI – Small Business Corporation (SBCorp), DA and other institutions with financing assistance.

### 5.1 Loans Assistance

a) Regional Technical Evaluation Committee, headed by DOST- Zamboanga Peninsula, approved the Truck Scale Proposal of MJ Saha Rubber Processing Plant amounting PhP1.1M.

b) DBP approved the following:
   - MJ Saha amounting PhP 60.00M for supply, processing, production and trading of rubber materials;
   - Mato Rubber Trading amounting PhP15M for rubber plantation and inventory build-up; and
   - FJC Agri Industries amounting PhP 45M for rubber processing.
   - Small rubber growers located in Poblacion Antipas, North Cotabato for PhP 5M

c) LBP approved the following:
   - Rubber Plantation in Basilan, ComVal, Quezon, South Cotabato, Sultan Kudarat, Zamboanga del Norte and Zamboanga Sibugay amounting to PhP 533.78M
   - Rubber Processing and Trading in Basilan amounting Php 17.5 M
   - Rubber manufacture of other products in Zamboanga Sibugay amounting PhP 7.5 M48775555

d) DTI-Davao Region facilitated the loan of farmers' cooperative engaged in rubber production located in Laak, Compostela Valley, the Laak MPC. Soft loan granted by LGU Laak amounting to PhP5.00 Million.

e) DTI-11 facilitated the loan for Antipas, North Cotabato amounting to PhP2.50 million granted by SB Corp.

## 5.2 Investment Opportunity Seminars, Regional and Financing Fora

Aside from loan assistance, continuous promotion of investment opportunities were also conducted that would eventually lead to additional investments and generate additional employment.

a) Business Meeting among BOI, DTI rubber industry experts, and Mr. Gerald Skrobanek, COO, Head Group – a Dutch Tennis Balls Manufacturing Company in Davao City on July 20, 2018. Another meeting with Mr. Skrobanek was held in Bukidnon, attended by Bukidnon Rubber Industry Council, BOI, and DTI- Zamboanga Peninsula. The meetings discussed the possible location of the HEAD Tennis Balls manufacturing either in Davao City or Cagayan de Oro. The present company is located in China.

*(Business Meeting with BOI, DTI and HEAD Group on July 20, 2018)*

b) DTI-North Cotabato conducted the Rubber Forum with Basak Farmers Association in Magpet, North Cotabato on March 6, 2019 with 40 participants/ beneficiaries.

*(Rubber Forum on March 26, 2019 in Magpet, North Cotabato)*

c) DTI-MIMAROPA conducted the Investment Opportunity Seminar on Rubber Production and Processing on September 9, 2019 at Provincial Capitol, Puerto Princesa, Palawan.

*(Investment Opportunity Seminar in Palawan on Sept 9, 2019)*

d) DTI-Central Visayas conducted Rubber Industry Production Technical Updating Forum and the Rubber Investors' Briefing and Orientation with Tuko Distribution and Motherland Industries with RUBBERCO and LGU-Bayawan on December 8, 2019 in Bayawan City with 85 participants.

*(Rubber Industry Production Technical Updating Forum and the Rubber Investors' Briefing of DTI7 on December 8, 2019)*

e) DTI – Davao Oriental initiated the region-wide Rubber Stakeholders Forum with Business Matching on February 5, 2020 in Mati, Davao Oriental


*(Rubber Stakeholders Forum with Business Matching on February 5, 2020 in Mati, Davao Oriental)*

f) DTI-Caraga conducted a Virtual Financing Forum last September 15, 2020 which was attended by Agusan Del Norte Rubber IC Stakeholders.

*(Virtual Financing Forum last September 15, 2020 of DTI-Caraga)*

## 6. Information & Policy Formulation & Advocacy

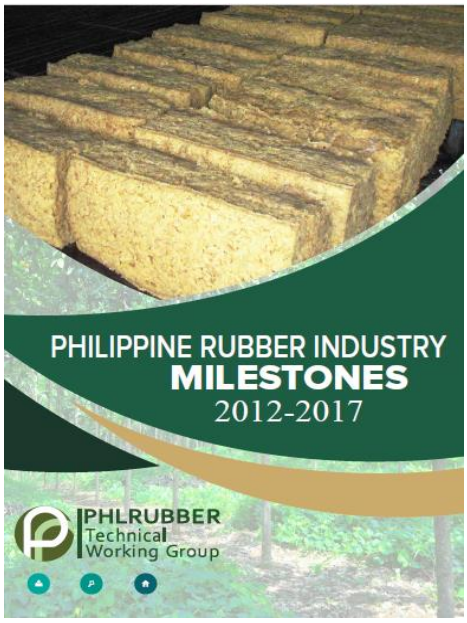
Ensuring the maximum awareness and involvement of all stakeholders in each rubber producing regions, industry clusters and sub-clusters were organized. Industry clusters oversee and monitor the implementation of programs and projects and institutionalize convergence among enablers in different regions. This is also to assure that PHLRUBBER can carry out its programs harmoniously with different institutions through policies and advocacies implemented. It allows the five other Action Teams to operate under a supportive and appropriate institutional framework and in an environment of convergence.

Supporting the Information & Policy Formulation Advocacy Action Team are the LGUs, DTI, DA, TESDA, DOST, DOLE, DILG, DAR, DENR, Academe, PSA, PRIA, PRFA, DKKT, Inc., private sector and other support institutions.

### 6.1 Information, Education and Communication (IEC)

a) PRRI distributed 4,652 IECS materials in 2020 on Establishment of Management of Immature Rubber, Establishment and Management of Rubber Nursery, Rubber Insect Pest and its Management, Natural Rubber Processing, Latex Harvesting, Status, Challenges and Prospects of Philippine Rubber Industry, and Intercropping of Immature Rubber Plantation.


b) PHLRUBBER Secretariat distributed 500 copies of the Philippine Rubber Industry Milestones 2012-2017 to DTI-Secretary, DTI-Functional Groups. DTI-PDs, PHLRUBBER and R9 member agencies



## 6.2 Planning Workshops, Meetings and Conferences

Various planning workshops and seminars were also conducted. This is to make sure that the organization is clear about the initiatives to be done. It would also help to get all the commitment of members and other stakeholders and to develop concrete plans and directions for achieving organization's purpose and objective.


*(2016 Year-End Assessment & 2017 Action Planning Workshop on January 25-26, 2017 in Makati Palace Hotel, Makati)*

*(PHLRUBBER 2019 Year-End Assessment and 2020 Action Planning on February 13-14, 2020 at Hue Hotel, Puerto*

## 6.3 Signing of the Joint Statement of Commitment for the Philippine Rubber Industry Roadmap 2017-2022

With the finalization of the Philippine Rubber Industry Roadmap 2017-2022, a Joint Statement of Commitment was signed on April 16, 2018 at BOI Conference Room in Makati by the different Secretaries of various NGAs (DTI, DA, DOST, DAR, DENR, TESDA, MinDA), President of USM, PRIA and PRFA. Other Signatories as witnessed are Usec. Maglaya of DTI-ROG, Usec. Laviña of DA-HVC, Chairperson of PCAF Rubber Sub-Committtee, Chairperson of PHLRUBBER, representatives from the processing and manufacturing sectors.


*(Signing of Joint Statement of Commitment on April 16, 2018 at Makati City)*

## 6.4 Localization of the Philippine Rubber Industry Roadmap

At least two regions conducted a workshop on the localization of the Philippine Rubber Industry Roadmap 2017-2022.

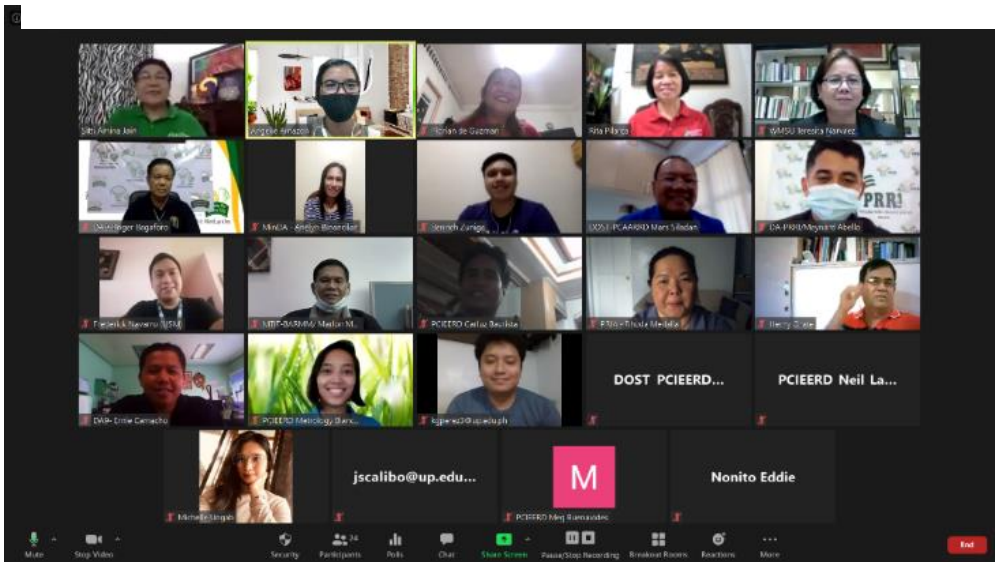

*(Bayawan City on September 28, 2018)*

*(Puerto Princesa, Palawan in 2019)*

## 6.5 Validation and Finalization of the Philippine Rubber Industry Roadmap 2022-2028

After drafting the Philippine Rubber Industry Roadmap 2022-2028, there was a validation of targets by action team conducted last November 29-December 2, 2020. This was facilitated by RGIP Empowerbiz Consultancy, Ms. Rita Pilarca.


*(Philippine Rubber Industry Roadmap Validation Session on November 29-December 2, 2020)*



## 6.6 Rubber Stakeholders Summit & Congress

a) Provincial Government of Basilan in partnership with DOST ARMM held the 1st Basilan Rubber Industry Summit on January 13, 2018 in Basilan. The summit was able to provide a platform to address issues and concerns while finding solutions at the end through interactive rational discussions.

*(1st Basilan Rubber Indusry Summit on January 13, 2018)*

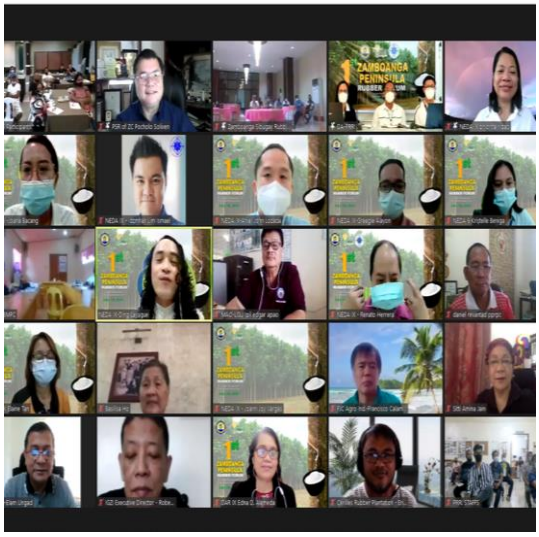
b) DTI-North Cotabato facilitated the conduct of "Provincial Rubber Farmers Congress" on August 30, 2018 in Amas, Kidapawan City.

c) PCAF in coordination with PRRI conducted National Rubber Stakeholders' Summit on September 16-18, 2019 in Kidapawan City, North Cotabato. Total of participants:
    - Farmers- 120
    - Researchers-10
    - Policy Makers-5
    - Professional-20
    - LGU personnel-15; and
    - Other rubber stakeholders-30


*(National Rubber Stakeholders' Summit on September 16-18, 2019 in Kidapawan City, North Cotabato)*

d) PRRI in coordination with NEDA- Zamboanga Peninsula conducted the ZamPen Rubber Forum on July 15, 2021

| PARTICIPANTS | No. |
|---|---|
| RDC IX Officers | 3 |
| NGAs/RLAs | 19 |
| RDC IX Private Sector Representatives | 4 |
| Representatives from LGUs | 36 |
| Non-Government Organizations | 3 |
| Guests | 6 |
| Rubber Processors | 11 |
| Rubber Farmer Associations/Cooperatives | 44 |
| Zamboanga del Norte | 10 |
| Zamboanga del Sur | 16 |
| Zamboanga Sibugay | 8 |
| Zamboanga City & Isabela City | 10 |
| TOTAL | 119 |




*Online ZamPen Rubber Forum on July 15, 2021*

### 6.7 House Bill "An Act to Develop the Rubber Industry, Establishing for the Purpose the Philippine Rubber Industry Development Board"

a) Conducted two regional consultations on the enhanced draft House Bill 2912
   - 1st Leg was held on April 18 in Kidapawan City, North Cotabato.
   - 2nd leg was held on April 23 in Dipolog City, Zamboanga del Norte.

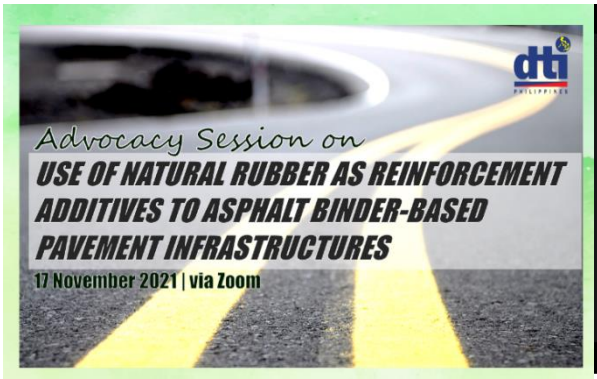

b) DTI Regions IX, X, XI, XII and CARAGA thru the Regional Development Councils adopted Resolution manifesting strong support for the passage of the Bill. Copy of Resolution was endorsed to the Office of Congressman Amatong.
   - RDC-IX Resolution No. 032 s. 2018
   - RDC-X Resolution No. 19 s. 2018
   - RDC-XI Resolution No. 37 s. 2018
   - RDC-XII Resolution No. 84 s. 2018
   - RDC XIII Resolution No. 35-B s. 2018

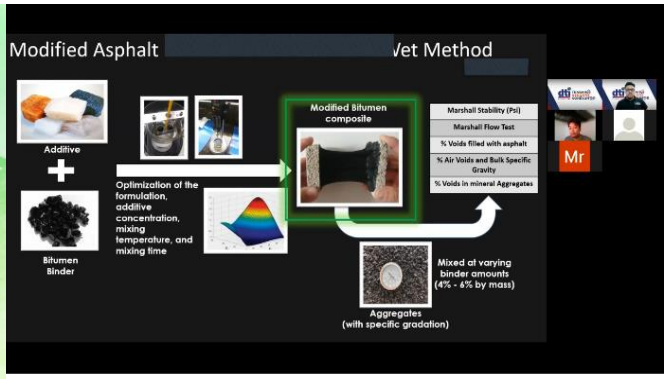
c) DTI-9 conducted a quick briefing with Senator Cynthia Villar on the status of the Philippine Rubber Industry and the needs for legislative support on August 24, 2019 in Zamboanga City.

### 6.8 Advocacy Session on the Use of Natural Rubber as Reinforcement Additives to Asphalt Binder-Based Pavement Infrastructures

a) DTI9 conducted the Advocacy Session on Rubberized Asphalt Road on July 27, 2021 with a total of 124 participants.

b) DTI9 conducted the Advocacy Session on the Use of Natural Rubber as Reinforcement Additives to Asphalt Binder-Based Pavement Infrastructures on November17, 2021 with contractors in the Philippines

## 6.9 PCAF Endorsed Resolutions

Table 16 shows the list of PCAF resolutions passed and endorsed to concerned agencies for the appropriate action.

**Table 16**
**List of PCAF Endorsed Resolutions**

| YEAR | RESO NO. | TITLE |
|---|---|---|
| 2017 | 6 | Recommending to the HVCDP the Philippine Fiber Industry Development Authority, the Philippine Rubber Research Institute and the Department of Environment and Natural Resources-Forest Management Bureau to conduct a joint-site validation of rubber and abaca plantation to serve as a basis in coming up with appropriate plans and budget proposals |
| | 17 | Recommending to the Committee on Agriculture and Food of the House of Representatives the immediate approval of House Bill No. 2912: An Act Establishing the Philippine Rubber Industry Development Board, Defining Its Powers and Functions and Appropriate Funds Therefor |
| | 18 | Recommending to the Philippine Statistics Authority the adoption of methodology presented by the Association of Natural Rubber Producing Countries in data collection of natural rubber |
| | 19 | Recommending to the Department of Agriculture Secretary the approval of the revised Rubber Industry Roadmap 2017-2022 adopting the comments from the Philippine Rubber Farmers Association |
| 2018 | 1 | Recommending to the House of Representatives on Agriculture and Food and Government Reorganization and Consolidation of House Bill No. 2912 (Phil. Rubber Industry Development Board) and 4064 (Phil. Rubber Industry Development Authority) and its harmonization with the functions of the Philippine Rubber Research Institute |
| | 9 | Recommending to the Department of Agriculture Secretary through the Bureau of Plant and Industry-National Seed Industry Council the revision of the seed registration process for rubber clones to expedite the registration of RRIM 2000 and 3000 series of rubber clones |
| | 10 | Recommending the Technical Education and Skills Development Authority the revision of the Rubber Production National Certification II Qualification Module |
| 2019 | 12 | Recommending to the Department of Agriculture Secretary through the Bureau of Plant and Industry-National Seed Industry Council the inclusion of the Philippine Rubber Research Institute in the NSIC Technical Working Group |
| | 17 | Recommending to the House Of Representatives the Approval of House Bill No. 2664 on the Creation of the Philippine Rubber Industry Development Board |
| | 18 | Recommending to the Department of the Interior and Local Government through the Local Government Units the adoption of local ordinances relative to confiscation of cuplumps mixed with battery solutions |
| | 22 | Recommending to the Department of Agriculture Secretary the approval and immediate implementation of the Philippine Rubber Information Management System proposed by the DA-Information and Communication and Technology System |
| | 23 | Recommending to the Department of Agriculture Secretary through the Agricultural and Training Institute and Technical Education and Skills Development Authority the development of yearly training program on Good Agricultural Practices for Rubber Production |
| | 24 | Recommending to the Department of Agriculture Secretary through the High Value Crops Development Program the yearly budget allocation for the establishment of rubber processing facilities in strategic production areas |
| | 25 | Recommending to the Department of Agriculture Secretary through the High Value Crops Development Program and the Department of Trade And Industry the development of a Traceability System For Rubber Products |
| | 26 | Recommending to the Department of Agriculture Secretary through the Agricultural and Training Institute the development of information and education communication materials on new technologies on rubber production |
| | 27 | Recommending to the Land Bank of the Philippines and the Development Bank of the Philippines of a loan program for rubber processing facilities |
| | 28 | Recommending to the Department of the Interior and Local Government through the Local Government Units the suspension of the collection of the php 1/kg tax for cuplumps in Zamboanga Peninsula |
| 2020 | 6 | Recommending to the Bureau of Plant Industry through the National Seed Industry Council to expedite the registration of RRIM 2000 series of rubber clones |
| | 7 | Recommending PRRI to conduct a study on the efficient operation of the Philippine Rubber Development, Inc. for possible adoption of new technologies and best practices |
| | 8 | Recommending to the PRRI to analyze a compendium of studies on intercropping with rubber to be used as basis in determining viability of intercropping |
| | 9 | Recommending to the Philippine Rubber Technical Working Group to review the Philippine Rubber Industry Roadmap 2017-2022 and consider the DA guidelines set forth in updating existing roadmaps |
| | 10 | Recommending to the DA And DTI To jointly establish information system of rubber farmers production data to strengthen partnership mechanism with prospective markets |
| 2021 | 3 | Recommending to the Department of Agriculture-High Value Crops Development Program to review and re-evaluate budget allocation for rubber production anchored on the optimal realization of the targets as indicated in the Philippine Rubber Industry Roadmap |
| | 4 | Commending the Technical Education and Skills Development Authority (TESDA) for the development and revision of the Training Regulation for Rubber Production National Certificate II Qualification |
| | 15 | Recommending to the DA Secretary through the PRRI to revisit modern rubber technologies from the seed production To harvesting, and introduce the adoption to farmer-growers |
| | 18 | Recommending the DA Secretary through the BAFS to review the Philippine National Standards Code of Good Agricultural Practices for Natural Rubber and align with the Technical Regulations for Rubber Production National Certification II |
| | 27 | Recommending to the DPWH to spearhead the completion of the pilot testing of the Rubber-Modified Asphalt and its implementation/application to asphalt overlay projects |
| | 28 | Recommending to the DA through the BPI-NSQCS to review the guidelines on the certification of mother trees and tagging of budded rubber planting materials for distribution |

## 6.10 Philippine Rubber Marketing Conference

a) Conducted the Philippine Rubber Marketing Conference on November 19, 2021 via Zoom a total of 232 participants.


## 6.10 Hosting of International Meetings/Workshops

a) ANRPC Workshop on Supply, Demand and Modelling of Natural Rubber Industry was conducted on July 11-14, 2017 at Marco Polo Davao, Davao City. It was participated by 6 member countries.


*(ANRPC Workshop on Supply, Demand and Modelling of Natural Rubber Industry was conducted on July 11-14, 2017 at Marco Polo Davao, Davao City)*

b) ANRPC Workshop on Supply, Demand & Modeling of Natural Rubber Industry held at Holiday Inn & Suites, Makati City on July 2-5, 2018. Discuss on estimation methods of area, production, import, export, stock and consumption of rubber which shall provide data on statistics and other rubber industry updates.

*(ANRPC Workshop on Supply, Demand and Modelling of Natural Rubber Industry was conducted on July 2-5, 2018 at Holiday Inn and Suites, Makati City)*

c) The Philippines hosted the 27th ASEAN Consultative Committee on Standards and Quality – Rubber-Based Product Working Group (ACCSQ-RBPWG) at Marco Polo Hotel, Davao City on August 13-16, 2018. The activity was participated by the following countries:

- Cambodia- 3 Delegates
- Indonesia- 5 Delegates
- Lao PDR- 2 Delegates
- Malaysia- 4 Delegates
- Myanmar- 2 Delegates
- Philippines- 23 Delegates
- Thailand-10 Delegate
- ASEAN Secretariat-2 Delegates

A total of 7 countries with total delegates of 49 delegates excluding two (2) ASEAN Secretariat. The third day meeting was held at USM in Kabacan, North Cotabato with a visit at the Philippine Rubber Testing Center in USM.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GOODYEAR

## III. PHILIPPINE RUBBER INDUSTRY ROADMAP

### A. CHALLENGES AND OPPORTUNITIES

Constraints are the factors that hinder the growth and competitiveness of the industry. Opportunities are facilitating factors that may contribute to the development of the industry. While there are challenges plaguing the industry during the last several years particularly the upstream sector, there are also potentials for business expansion and development. In fact, some of the constraints identified can even be transformed into business opportunities for MSMEs in rubber-producing regions in the country. However, one of the most pressing concerns of the industry is the lack of policy supports and specific institution to serve as anchor in the efforts of both government and the private sector to develop the industry.

The creation of the Philippine Rubber Industry Development Board has been the battle cry of the industry since the first Philippine Rubber Investment and Market Encounter in 2012 (PRIME 2012) in Clark, Pampanga. The Rubber Bills filed in both House of Representatives and in the Senate are still pending since the 17$^{th}$ Congress. Most of the concerns reflected in Figure 12 are recurring factors that the government failed to properly address during the past many years due to inadequate budget earmarked for the industry by the concerned agencies or simply the failure to put the rubber industry in the top priority list of the government.

The challenges and opportunities identified in Figure 13 are the results of several workshops and meetings with various rubber stakeholders. These have been validated every year during the annual performance assessment for the last five (5) years. Most of these concerns are carried over from the previous roadmap. The PHLRUBBER member-agencies continue to promote all business opportunities indicated in the following chart so as to pump prime fresh investment in the industry that would result in more employment and ultimately reduction in poverty most particularly among the smallholders and workers who are totally dependent on the industry.

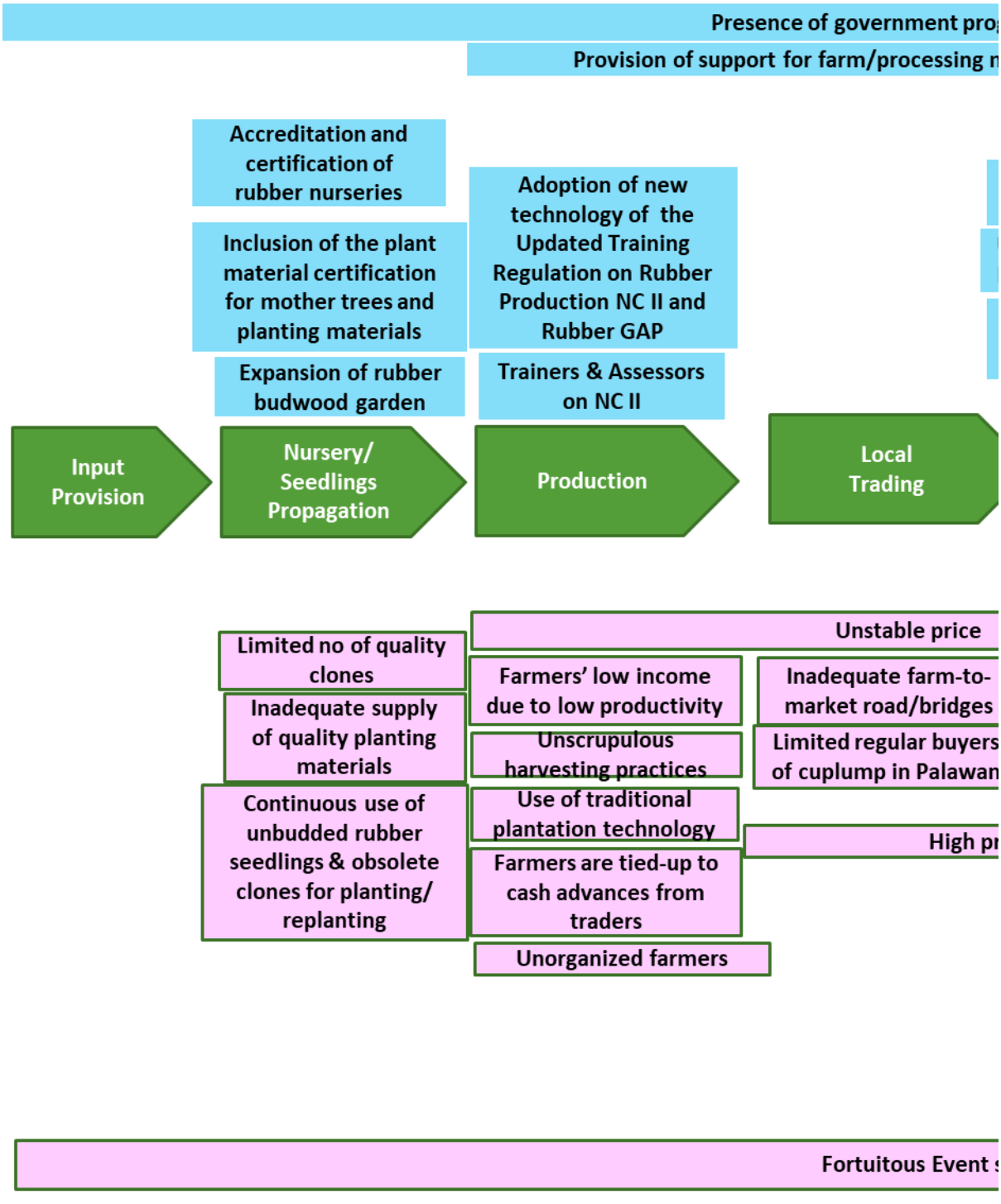
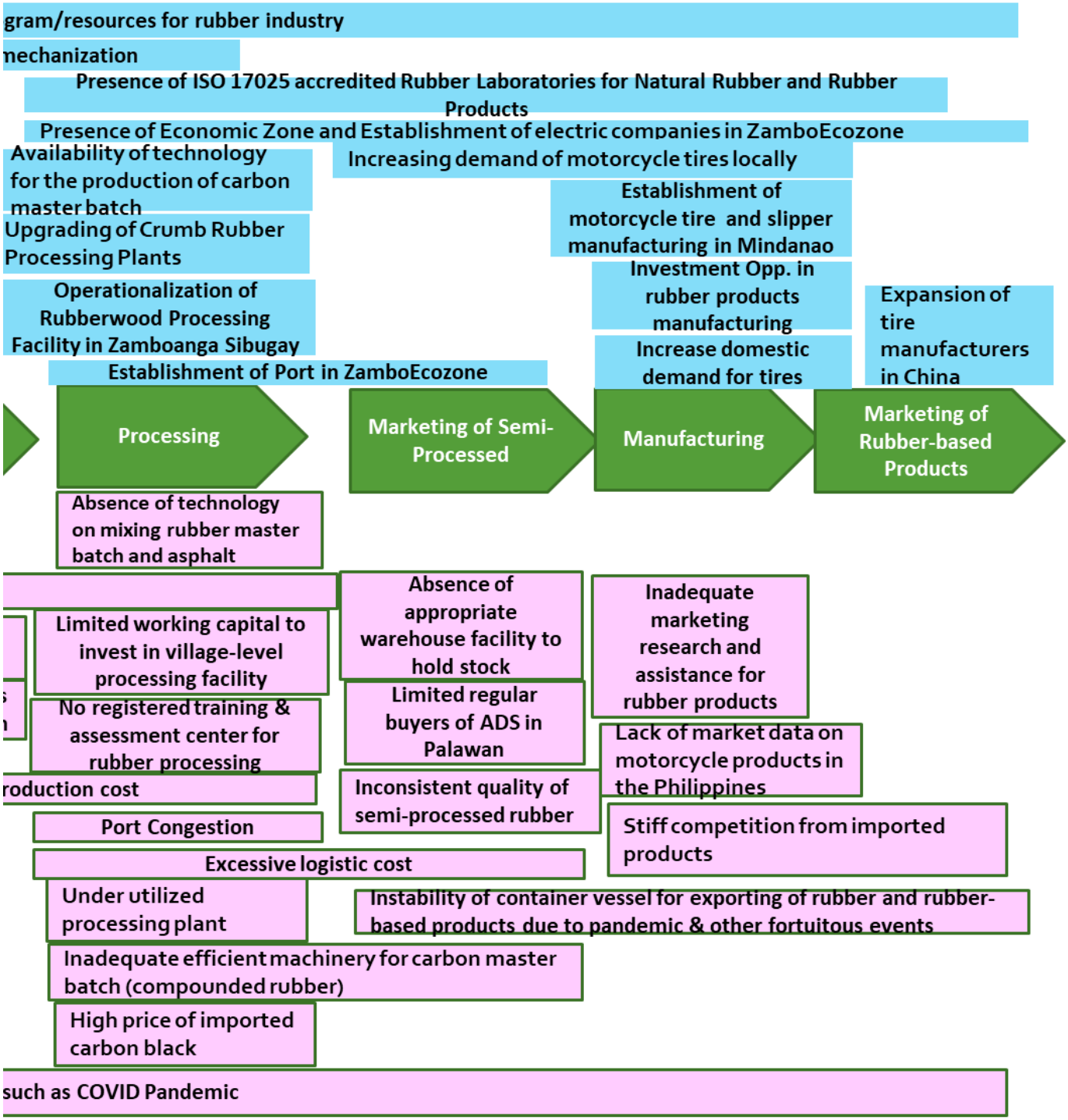



**Figure 13: Industry Constraints and**




**Opportunities per Value Chain Function**

## B. Vision

Industry stakeholders, government and private sector alike are one in their aspirations for the growth of the Philippine rubber industry. They envisioned the industry to be -

**An inclusive, globally competitive, and resilient rubber industry providing sustainable benefits to all stakeholders.**

## C. Mission

Every key player in the industry whether the small farmers or the big rubber-based product manufacturers are committed to work together in convergence with the government for the -

**Development of a cost-competitive, quality-driven, supply-reliable, innovative products-diversified value chain from primary production to manufacturing and marketing of rubber-based products under sustainable practices.**

## D. Goal

Given the mission subscribed to by all stakeholders in the industry, it is expected that the growth of the industry would ultimately result –

**To increase the benefits of all the stakeholders in the rubber industry thereby spreading the gains down to the smallholders in the remote barangays in all rubber-producing provinces in the regions.**

## E. Objectives

The growth of the industry is anchored on the attainment of specific development objectives spelled out in this roadmap. By end of year 2028, the industry should have achieved the following:

1. Establish the Philippine Rubber Industry Development Board;
2. Improve farm productivity per hectare;
3. Expand total area planted to rubber to at least 265,391 hectares using certified planting materials under NSIC registered varieties;
4. Increase the number of accredited plant nurseries and budwood gardens (government and private owned) by 20% annually;
5. Increase investments in rubber plantation, processing plants and rubber products manufacturing;
6. Increase the export volume of processed and manufactured rubber products by 10% annually; and
7. Increase import substitution of natural rubber by 5% by major rubber-based manufacturers.

## F. Development Strategies

The achievement of the seven (7) industry development objectives requires the implementation of ten (10) strategic agenda. Specific Programs and projects under each of the following strategies shall be implemented by government agencies in close collaboration with industry leaders:

1. Creation of the Philippine Rubber Industry Development Board that will oversee, implement policies, and set direction in all aspects of the rubber industry value chain;
2. Promotion of policies on the plant nursery accreditation and planting material certification of DA-BPI;
3. Quality improvement by Increasing number of NSIC registered clones;
4. Productivity improvement by adopting new and innovative technologies and Good Agricultural Practices (GAP);
5. Provision of support to rubber farmers in farm expansion, farm mechanization, modernization and quality production through the convergence to be led by the Department of Agriculture and other concerned government agencies and stakeholders;
6. Intensify research, development and extension services to improve technology in production;
7. Promoting investment in the manufacture of rubber-based products for domestic and global supply;
8. Development of industry financial services to facilitate access to financing by farmers and entrepreneurs;
9. Promotion and advocacy for compliance with product standards and market requirements in order to increase the export of rubber and rubber products;
10. Improvement of information network and linkages to ensure sustainability of assistance and provide access to new markets and technologies, and sustain membership in intergovernmental organizations as a platform for the exchange of information, technology and market.

The implementation of the various programs, projects and activities of the different government agencies and private organizations shall be coordinated by the Philippine Rubber Technical Working Group chaired by th private sector.

## G. Major Development Projects

Based on the attached Philippine Rubber Industry Cluster Action Plan (2022-2028), the following are identified as major projects for implementation during the next six years by the members of the PHLRUBBER TWG:

1) Implementation of the revised GAP on Rubber and Rubber Production NC II;
2) Adoption of root-trainer in nursery operation and rain guard in latex production;
3) Accreditation of rubber laboratories for natural rubber and rubber based products to ISO 17025;
4) Certification/alignment of rubber processing plants to ISO 9001:2015;
5) Establishment of Rubber Slippers Manufacturing;
6) Pilot Testing of Rubberized Asphalt Road;
7) Development of digital marketing platform for rubber products;
8) Development of Standards on Air-Dried Sheets;
9) Passage of house bill and senate bill, “Establishment of the Philippine Rubber Industry Development Board”; and,
10) Membership with International Rubber Study Group.

## H. Industry Performance Indicators

| Indicators | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|
| **New Jobs Created**<br>(Per WB Research Data, 2 jobs per additional hectare) | **4,160** | **3,800** | **4,160** | **6,240** | **10,220** | **10,400** | **13,520** |
| **Productivity: Average Yield per hectare per year (DR)**<br>(WB Research Data)<br>• Old plantation<br>• Newly developed plantation (4 year-gestation period) | **0.80MT** | **0.80MT** | **0.80MT** | **0.80MT** | **0.80MT**<br>**2MT** | **0.80MT**<br>**2MT** | **0.80MT**<br>**2MT** |
| **Farmers' Income (Poverty Threshold @ PhP 14,498.00/Month**<br>**Note:**<br>• **Current production of traditional farms which is 800kg dry/ha /yr needs a price equal or higher than P110.00/ kg to meet the poverty threshold set by govt.** | | | | | | | |
| **Total production areas (hectares)** | **241,221** | **243,121** | **245,201** | **248,321** | **253,431** | **258,631** | **265,391** |
| **Production Volume (MT of DR)**<br>• Old plantation<br>• Newly developed plantation (4 year-gestation period) | **218,434**<br>*218,434*<br>*-* | **221,595**<br>*221,595*<br>*-* | **224,802**<br>*224,802*<br>*-* | **228,055**<br>*228,055*<br>*-* | **235,516**<br>*231,356*<br>*4,160* | **242,664**<br>*234,704*<br>*7,960* | **250,221**<br>*238,101*<br>*12,120* |
| **Investments in Plantation development & Manufacturing (PHP B)**<br>• For production (P 250,000/hectare)<br>• For Manufacturing | **0.52** | **0.48** | **0.52** | **0.78** | **1.28** | **1.30** | **1.69** |
| **Domestic Sales ( in PhP M)** | **5.05** | **5.55** | **6.11** | **6.72** | **7.39** | **8.13** | **8.94** |
| **Exports Sales (in M USD)** | **640.58** | **704.64** | **775.11** | **852.62** | **937.88** | **1,031.67** | **1,134.83** |


**Figure 14: Industry Performance**


**Indicators' Target on Area Planted**

**Table 17**
**Source of Planting Materials**

| TARGETS | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|
| Existing BWG (has) | 8 | 8 | 8 | 20 | 20 | 20 | 30 |
| Bud wood Garden (has.) establishment | | 20 | 0 | 0 | 10 | | |
| Cumulative BWG | 8 | 28 | 28 | 20 | 30 | 30 | 30 |
| Available Budwood Garden for Planting Materials | 8 | 8 | 8 | 20 | 20 | 20 | 30 |
| No. of hills per hectare | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 |
| No. of budeye per hill (Existing) | 50 | 50 | 50 | | 50 | 50 | 50 |
| No. of budeye per hill (New) | | | | 30 | | | 30 |
| 65% survival rate for planting | 65% | 65% | 65% | 65% | 65% | 65% | 65% |
| Total no. of planting/bagging materials | 1,040,000 | 1,040,000 | 1,040,000 | 1,560,000 | 2,600,000 | 2,600,000 | 3,380,000 |
| Less: No. of planting materials for budwood establishment (4,500 per hectare) | | 90,000 | - | - | 45,000 | - | - |
| Total Planting Materials Available | 1,040,000 | 950,000 | 1,040,000 | 1,560,000 | 2,555,000 | 2,600,000 | 3,380,000 |
| No. of planting materilas per hectare | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| **Total New Area Planted (hectare)** | **2,080** | **1,900** | **2,080** | **3,120** | **5,110** | **5,200** | **6,760** |

**Table 18**
**Physical Targets for Rubber Planting, Model Farm and Techno-Caravan**

| TARGETS | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|
| New Planted Area | **2,080** | **1,810** | **2,080** | **4,680** | **7,800** | **7,665** | **7,665** |
| Establishment of bud wood gardens | | 20 | - | - | 10 | - | - |
| Establishment of model farms on strategic areas | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Techno-caravan / seminars / training | 24 | 24 | 24 | 24 | 24 | 24 | 24 |

**Table 19**
**Production Volume Target**

| Item / Year | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|
| [1]Production Volume (MT of DR) | **218,434** | **221,595** | **224,802** | **228,055** | **231,356** | **234,704** | **238,101** |
| | | | | | | | |
| Yield (MT/ha) *Newly developed area | | | | | 2 | 2 | 2 |
| [2] Area Harvested (hectares) *4- year gestation period* | | | | | **2,080** | **3,980** | **6,060** |
| Production Volume | | | | | 4,160 | 7,960 | 12,120 |
| **Total Production Volume** | **218,434** | **221,595** | **224,802** | **228,055** | **235,516** | **242,664** | **250,221** |

**Assumptions:**
[1] Projection is based on the average increase in production volume for the past five-years
[2] Area developed with quality planting materials starting 2022 will only have a 4-year gestation period and will be harvested in 2026

## I. Budgetary Requirements for Rubber Plantation and Production

| TARGETS | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|
| **New Planting areas (ha)** | **2,080** | 1,900 | 2,080 | 3,120 | 5,110 | 5,200 | 6,760 |
| New Budwood Gardens (ha) | - | 20 | | | 10 | - | - |
| **BWG establishment cost PhP750k/ha (PhP M)** | | **15** | | | **7.5** | **-** | **-** |
| Total No of Baggings ('000 pcs) | 1,040 | 1,040 | 1,040 | 1,560 | 2,600 | 2,600 | 3,380 |
| **Cost per Bagging is PhP70.00 (PhP M)** | **72.80** | **72.80** | **72.80** | **109.20** | **182.00** | **182.00** | **236.60** |
| Equipment (in units: | | | | | | | |
| 1) Heavy Machinery Needed | | | | | | | |
| -Bulldozer | 10 | 20 | 20 | 20 | 20 | 20 | 20 |
| -Backhoes | 10 | 20 | 20 | 20 | 20 | 20 | 20 |
| 2) Small Bulldozers | 10 | 20 | 20 | 20 | 20 | 20 | 20 |
| 3) Tractor | 10 | 20 | 20 | 20 | 20 | 20 | 20 |
| **For financial requirement (PhP M) Php 250,000/ha *(provided that the land prep is subsidized)*** | **-** | **475.00** | **520.00** | **780.00** | **1,277.50** | **1,300.00** | **1,690.00** |
| **Techno demo farms (PhPM)** | **5** | **5** | **5** | **5** | **5** | **5** | **5** |
| Credit facilitation | | | | | | | |
| **Techno Caravan and Training (PhP M), P2,000/pax/day, 2 days, 50pax @ 3 sets/year/enrolled region** | **4.2** | **4.2** | **4.2** | **4.2** | **4.2** | **4.2** | **4.2** |
| **Total Costs (PhP M)** | **82.0** | **572.00** | **602.00** | **898.40** | **1,476.20** | **1,491.20** | **1,935.80** |

## J. Implementing Organization

The different programs, projects and activities for the development of the rubber industry are initiated and conducted by the members of the Philippine Rubber Technical Working Group (PHLRUBBER).

During the 15th meeting of PHLRUBBER hosted by the Bureau of Plant Industry (DA-BPI) on May 18, 2016, the body decided that the private sector must lead the PHLRUBBER TWG to push for the development of the rubber industry. Below is the organizational structure of the Technical Working Group.

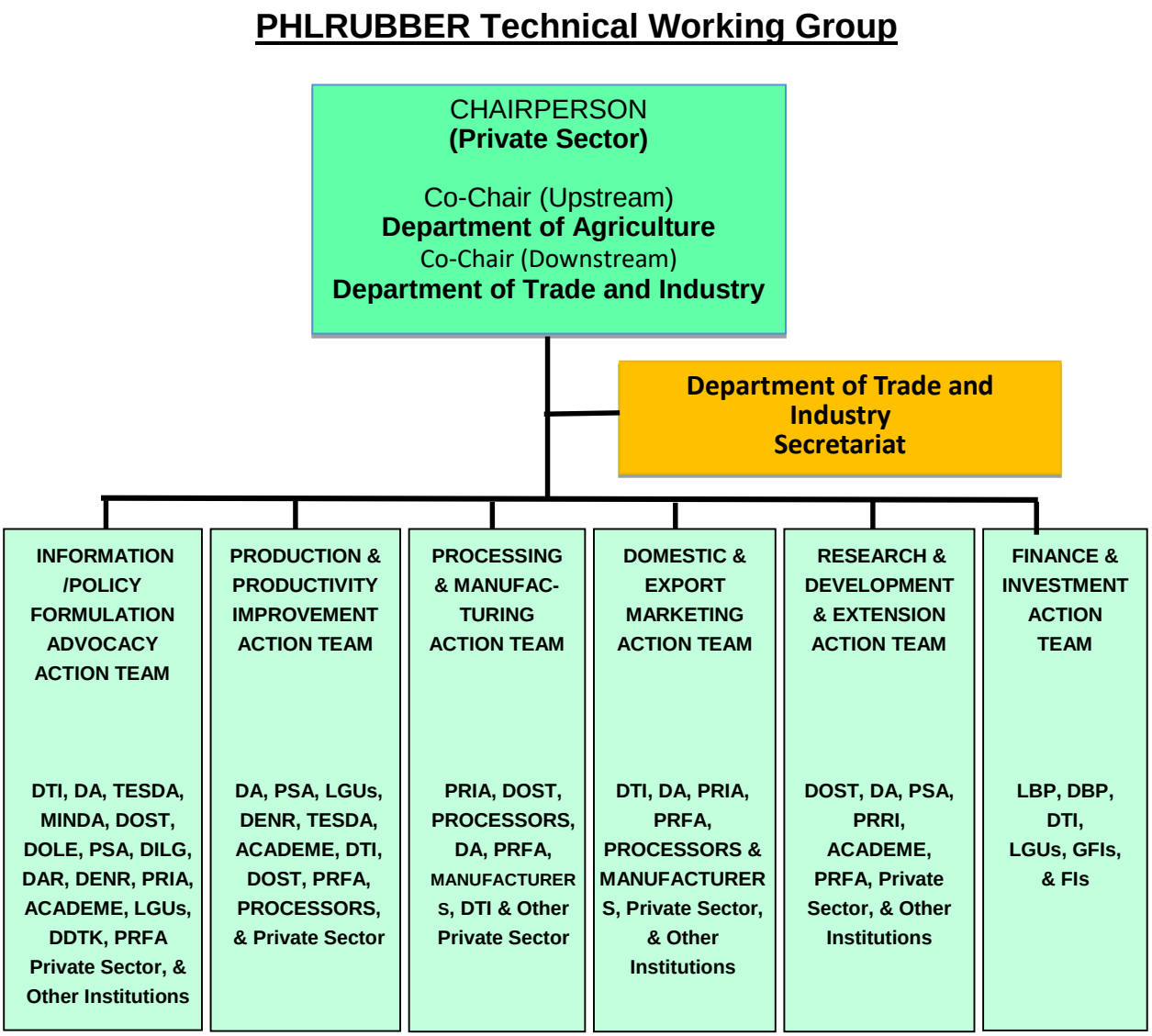



**Figure 15: PHLRUBBER Organizational Structure**

# Philippine Rubber Industry Cluster Action Plan

PHLRUBBER Technical Working Group

**PHILIPPINE RUBBER INDUSTRY CLUSTER ACTION PLAN 2022-2028**

| STRATEGY | | Project/Programs/ Activities | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Production and Productivity Improvement** | **Strategy 1: Adoption of the plant nursery accreditation and plant material certification of DA-BPI** | | | | | | |
| | **1.1.1** | Intensify/strengthen the Nursery Accreditation and Budwood Garden Certification | 2 (2022) | DA-BPI | DA, LGU's, Private sectors | 2022-2028 | 0.10 M (2022) |
| | **1.1.2** | Maintenance of Rubber Budwood Garden | 3<br>•1-PRRI<br>•2-DA | PRRI/DA | Res. Stations and LGUs | 2022-2028 | 0.02 M |
| | **1.1.3** | Expansion of existing budwood gardens using the 3 approved NSIC clones | 1 | DA-BPI | DA-HVCDP, PRRI | 2022 | 0.15M |
| | **1.1.4** | Establishment of Budwood Garden using 7 NSIC Recommended clones | Carmen, North Cotabato) – 2,500 sq.m. | PRRI | DA-ARES | 2022 | 0.2 M |
| | **1.1.5** | Support existing nurseries | (6) Nurseries | DA-Caraga | LGUs | 2022 | 0.70 M |
| | **1.1.6** | Establishment of bud wood gardens | (7) Budwood Gardens | DA-Caraga | LGUs | 2022 | 3.5 M |
| | **Strategy 2: Expand production by adopting new and innovative technologies and good agricultural practices (GAP)** | | | | | | |
| | **1.2.1** | Seedling Production and Distribution of Budded Rubber | •15,000-DA<br>•190,910-PLGU-ADS<br>•16,533-PRRI | PRRI/DA | rubber farmers, MLGUs, POs | 2022 | 8.59 M (PLGU-ADS) |
| | **1.2.2** | Implementation of developed GAP | | Private Stakeholders | PRFA, LGUs, DA, DTI | 2022 | |
| | **1.2.3** | Training for Work Scholarship Program –Rubber Production NC II | 120 | TESDA | TVET Institutions | 2022 | 2.18 M |
| | **1.2.4** | Package of Technology training on Good Agricultural Practices on Latex Production | 2 | DA-HVCDP | Municipal Agriculturist Office People's Organizations, | 2022 | 0.40 M |

PHLRUBBER Technical Working Group

**PHILIPPINE RUBBER INDUSTRY CLUSTER ACTION PLAN 2022-2028**

| STRATEGY | | Project/Programs/ Activities | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Production and Productivity Improvement** | **Strategy 3: Provide support to rubber farmers in the form of farm expansion, farm mechanization, modernization and quality production through the convergence initiative platform to be led by Department of Agriculture and other concerned government agencies and stakeholders** | | | | | | |
| | **1.3.1** | Piloting of Rubber-Based Farming Technologies | 7 sites | PRRI | DA-HVCDP, Phil-FIDA, LGUs, Private sectors | 2022-2025 | 21.69M |
| | **1.3.2** | Field Verification Trials of Rubber Farming Technologies for the Socio-economic Improvement of Smallholder Rubber Farmers | 1 | PRRI | DA-HVCDP, Phil-FIDA, LGUs, Private sectors | 2022 | 1.95 M |
| | **1.3.3** | Rubber Quality Enhancement, Post-Harvest Management and Tapping Workshop-Seminar | 2 | DA-RFO 9 | LGU's, Private sectors | 2022 | 0.20 M |
| | **1.3.4** | Provision of fund for the Production of Seedlings and Plantation Establishment | 50 ha<br>25,000 seedlings | DENR | Pos, Family Beneficiaries | 2022 | 1.2 M |
| | **1.3.5** | Promote cost-effective fertilizer management and application and the complementary use of organic fertilizer | 1,914 bags | PLGU-ADS | LGU's, Private sectors | 2022 | 3.57 M |
| | **1.3.6** | Provision of Formic Acid to Farmers Association | 12,000 lifers | PLGU-ADS | Farmers Association, DTI | 2022 | 3.6 M |
| | **1.3.7** | Strengthening of Rubber Farmers Association and Cooperatives | 16 trainings<br>4 batches<br>62 trainings | PRRI<br>DAR<br>PLGU-ADS | DA, LGU's, Private sectors | 2022 | 2.486 M PRRI<br>0.096 DAR<br>1.653 M PLGU-ADS |
| | **1.3.8** | Provision of Hauling Trucks ( Zambo Sibugay Rubber Enterpise Project ARBO Consolidators) | 3 units | DAR | Project ConVERGE ARBO rubber consolidators | 2022 | 3.394 M |
| | **1.3.9** | Provision of Herbicides (Zambo Sibugay) | 800 liters | DAR | Project ConVERGE ARBO rubber consolidators | 2022 | 0.296 M |
| | **Others** | | | | | | |
| | **1.4.1** | Maintenance and Protection of Rubber Plantation | 50 ha (Year 1)<br>872 ha (Year 2)<br>279 ha (Year 3) | DENR | Pos, Family Beneficiaries | 2022 | 5.86 M |

PHLRUBBER Technical Working Group

**PHILIPPINE RUBBER INDUSTRY CLUSTER ACTION PLAN 2022-2028**

| STRATEGY | Project/Programs/Activities | | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Processing and Manufacturing** | **Strategy 1: Promote investment in the manufacture of rubber-based products for domestic and global supply** | | | | | | |
| | **2.1.1** | Preparation of PFS on Rubber Gloves and Slippers Manufacturing Plant in Zamboanga Sibugay | | PLGU-ZSP | JICA, PPRPC, ZamPen RUBBER | 2022 | |
| | **2.1.2** | Develop high value products from rubber wood | | DOST-FPRDI | TARBEMCO, DTI,DOST-IX, Phil Chamber of Furniture, CITC | 2022-2028 | |
| | **2.1.3** | Operationalization of Crumb Rubber Processing Plant | 1 | DTI-Caraga | FASRMCO, MLGUs | 2022 | DTI-CARAGA – P3.5M<br>DA-Caraga P5M |
| | **2.1.4** | Piloting of the Rubberized Asphalt Road | 500 meters | PLGU-North Cotabato | UPLB, MinDA, DPWH-BRS, DOST-PCIEERD, Sunshine Rubber | 2022 | 3 M |
| | **2.1.5** | Provision of Rubber Quality Improvement Facility thru SSF | 4 cooperators | DTI9 | Private Stakeholders | 2022 | 1.768 M |
| | **2.1.6** | Establishment of Motorcylce Tire Manufacturing in Mindanao | 1 | PRFA | EU thru MinDA | 2023 | PhP 150 M |
| | **Strategy 2: Promote and advocate for compliance with product standards and market requirements in order to increase export rubber and rubber products** | | | | | | |
| | **2.2.1** | Certification/Alignment Rubber Processing Plants to ISO9001-2015 | 1 | New Atlas Rubber Processing s | DTI9 | 2022 | |
| | **2.2.2** | ISO 17025 accreditation of NR laboratory Testing Facility | 2 | USM-PRTC and PRRI | DTI12, PAB | 2022 | |
| | **2.2.3** | Operationalization and upgrading of Rubber Laboratory | 1 | PRRI | DA-BAR | 2022 | |

PHLRUBBER Technical Working Group

**PHILIPPINE RUBBER INDUSTRY CLUSTER ACTION PLAN 2022-2028**

| STRATEGY | | Project/Programs/Activities | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Domestic and Export Marketing** | **Stategy 1: Enhance existing and develop new information exchange to ensure sustainability of assistance and provide access to new markets and technologies** | | | | | | |
| | **3.1.1** | Conduct Info-Session:<br>a.DBFTA – AEC<br>b.Market Opportunities<br>c.Direction of Export Trade | | DTI, EMB | Private Stakeholders | 2022-2028 | |
| | **3.1.2** | Market Matching Forum /Marketing Contract Signing | 1 | DAR | ARBOs/ rubber farmer | 2022 | 0.08M |
| | **3.1.3** | Dissemination of Daily NR Price Reference | | DTI-9 | | 2022-2028 | |
| | **3.1.4** | Conduct of Virtual Business Matching with PRIA and 1 India-Based Company (For validation of EMB with PTIC-India) | 1 India-based company | DTI-EMB | PTIC-India, PRIA | 2022 | |
| | **3.1.5** | Establish Market Linkages among rubber stakeholders in Mindanao | 1 per rubber region | DTI and BARMM-MTIT | PRFA, Farma Rubber | 2022 | |
| | **3.1.6** | Develop digital marketing platform for rubber products | | DTI (BDTP/EMB) | | 2023-2028 | |
| | **Others** | | | | | | |
| | **3.2.1** | Construction/concreting of farm to market roads | 13 Brgy. Bucac-Brgy. Marcelina, Bayugan City(4.749km) | DA-PRDP | LGUs | 2021-2022 | 60,987,845.17 |
| | **3.2.2** | Construction of GARBEMCO Multi-Purpose Building/ Warehouse | 1 unit | DAR (Project ConVERGE) | GARBEMCO | 2022 | 0.85M |
| | **3.2.3** | Provision of Hauling Trucks (Isuzu ) for Rubber Enterprise Activity | 3 Units | DAR (Project ConVERGE) | ARBOs/ Rubber farmers | 1st Qtr 2022 | 3.394M |

| STRATEGY | | Project/Programs/Activities | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Research and Development and Extension Services** | ***A. RESEARCH*** | | | | | | |
| | **4.1.1** | Rubber and waste plastic as reinforcement additives for asphalt binder based pavement infrastructure | | UPLB | King's Rubber, PRRI, Yokohama, PRIA, DTI IX, DPWH, Sunshine Rubbertech Inc, | 2022 | |
| | **4.1.2** | Land Management of Rubber-based Cropping Systems in Southern Philippines | 1 | USM | Griffith University, Caraga State University, Provincial Government of Agusan del Sur | 2019-2024 | P42.2M |
| | **4.1.3** | Multilateral Clone Exchange Field Trial | 1 site | PRRI | USM, DA-RFO IX, Private Sectors | 2021 - 2025 | 2.5 M |
| | **4.1.4** | Field Trial of Rubber Tree Rainguards for Improved Latex Yield | Established 9 sites;<br>Installation of rainguards (4 types);<br>Data gathering | PRRI | DOST-PCAARRD (Funding Agency), rubber farmers, MLGUs | 2022 | Php 3.7 M<br>(DOST-PCAARRD) |
| | **4.1.5** | Exploring the Potentials of Mucuna bracteata as Weed Control and Biofertilizer Supplement for Efficient Growth | 1 | PRRI | LGU and Rubber Farmers Associations/ Cooperatives | 2022-2024 | 600,000.00 |
| | **4.1.6** | Developing High Yielding Clones (Ortet Selection) | 1 | PRRI | LGU and Rubber Farmers Associations/ Cooperatives | 2022-2024 | 144,000.00 |
| | **4.1.7** | Inventory and Duplication of Rubber Collection | 1 | PRRI | | 2022-2024 | 420,000.00 |
| | **4.1.8** | Morphological and Molecular Identification of Pathogens Infecting IRRDB Clones | 1 | PRRI | Tambanan Agrarian Reform Multipurpose Beneficiaries Cooperative (TARBEMCO), Naga, ZSP | January-December 2022 | 446,000.00 |
| | **4.1.9** | Field Verification Trials of Rubber Farming Technologies for the Socio-economic Improvement of Smallholder Rubber Farmers | (1 project site) | PRRI | PRRI | 2022-2024 | 1,954,000.00 |
| | **4.1.10** | Adaptability in Early Growth Performance Trial of IRRDB Exchange Clones | 1 | PRRI | DA-RFO XII | January 2021-December 2022 | 2,544,000.00 |
| | **4.1.11** | Yield Assessment of Rubber Clones under Different Latex Harvesting System | | USM | DA-1X CMU, SLSU, ISU WPU | 2019-2022 | 4.8.0M |
| | **4.1.12** | Field Trial of Root Trainer Grown Rubber Planting Materials in selected Traditional and non-Traditional Areas | Promotion and evaluation of root trainer rubber plants in different locations | USM | SLSU, CMU<br>LGU-BAYAWAN, DA-RFO-9, 11, 12, 13, SLSU-Leyte, SLSU-Quezon | 2022-2024 | Php 5 M<br>(DOST -PCAARRD) |
| | **4.1.13** | Evaluation on the agronomic performance of rubber RRIM Series in Luzon and Mindanao for NSIC registration/Roger O. Bagaforo | Geotagged and documented areas with RRIM series clones<br>Compiled data and characteristics of RRIM series clones for NSIC Registration | DA-RFO 9 | USM-ARC; Basilan State College; DA-PRRI; DA-RFO XIII | 2022-2023 | 5,000,000<br>DOST PCAARRD |

| STRATEGY | Project/Programs/Activities | | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Research and Development and Extension Services** | **4.1.14** | Development of application to identify rubber clones in the field | | DOST-PCAARRD | | 2023-2024 | 10 M |
| | **4.1.15** | Molecular studies and field performance evaluation studies of new rubber clones obtained from the Multilateral Clone Exchange of IRRDB | | DOST-PCAARRD | | 2025-2026 | 25 M |
| | **4.1.16** | Facilitation of the NSIC registration of new rubber clones | | DOST-PCAARRD | | 2025-2027 | 35 M |
| | **4.1.17** | Development of rubber molecular and experimental laboratory at PRRI | | DOST-PCAARRD | | 2026-2028 | 35 M |
| | **4.1.18** | Development of rubber testing laboratory | | DOST-PCAARRD | | 2027-2028 | 15 M |
| | **4.1.19** | Development and field testing of novel latex harvesting methods | | DOST-PCAARRD | | 2022-2023; 2026-2027 | 20 M |
| | **4.1.20** | Development of an Efficient Rubber Tapping Device for the Improvement of Rubber Latex Harvesting | | DOST-PCAARRD | | 2022-2023 | 5 M |
| | **4.1.21** | Field Trial assessment of Endophytic Fungi as biocontrol agent against white root rot disease of rubber | | DOST-PCAARRD | | 2024-2025 | 8 M |
| | **4.1.22** | Development of biocontrol agent against major and emerging leaf diseases of rubber | | DOST-PCAARRD | | 2024-2025 | 8M |
| | **4.1.23** | Development of an Online Rubber Clinic for the management and surveillance of rubber pests and diseases | | DOST-PCAARRD | | 2022-2023 | 5 M |
| | **4.1.24** | Development of a monitoring software for rubber pest and diseases | | DOST-PCAARRD | | 2028 | 10M |
| | **4.1.25** | Assessment of emerging pest and disease in rubber plantations | | DOST-PCAARRD | | 2023-2028 | 15 M |
| | **4.1.26** | Economic Valuation Studies of rubber plantations affected by pest and diseases | | DOST-PCAARRD | | 2022 | 5M |
| | **4.1.27** | Fabrication of state-of-the-Art Rubber Sheeting Machine | | DOST-PCAARRD | | 2022-2023 | 8 M |
| | **4.1.28** | Formulation of ready to use formic acid into smaller volumes for smallholder farmers for sustainability of quality crumb rubber | | DOST-PCAARRD | | 2022-2023 | 5M |
| | **4.1.29** | Determination of Management Practices and Development of Protocols to Minimize Odor-Causing Microorganisms in Rubber Processing Plants | | DOST-PCAARRD | | 2023-2024 | 5 M |
| | **4.1.30** | Development and valuation studies of primary rubber products for value-adding for the benefit of smallhold rubber farmers | | DOST-PCAARRD | | 2025-2026 | 5M |
| | **4.1.31** | Development of products from senescent and unproductive rubber trees | | DOST-PCAARRD | | 2025-2026 | 5M |
| | **4.1.32** | Development of "ready to mix" formic acid enterprises in Zamboanga and other key rubber producing areas in Mindanao | | DOST-PCAARRD | | 2026 | 5M |
| | **4.1.33** | Roll-out of budwood garden establishment technologies for new high yielding rubber clones | | DOST-PCAARRD | | 2022-2024 | 13 M |
| | **4.1.34** | Field testing and economic assessment of advanced technologies on rubber plantation development | | DOST-PCAARRD | | 2022-2023 | 5M |
| | **4.1.35** | Design and Fabrication of an economical and reproducible mechanized soil auger for small-hold rubber farmers | | DOST-PCAARRD | | 2024-2025 | 7 M |

| STRATEGY | Project/Programs/Activities | | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Research and Development and Extension Services** | **4.1.36** | Development and field testing of novel technologies on nursery production | | DOST-PCAARRD | | 2023-2024 | 45 M |
| | **4.1.37** | Development of Rubber-based Agroforestry model with windbreakers for resiliency using the anticipatory action approach | | | | 2026-2027 | 10M |
| | **4.1.38** | Policy Advocacy on the Management of Stem Bleeding and Tapping Panel Dryness of Rubber | | | | 2022 | 5M |
| | **4.1.39** | Policy Advocacy on the management of white root rot and leaf diseases in rubber | | | | 2025-2026 | 10M |
| | **4.1.40** | Policy analysis on Emerging issues on rubber | | | | 2024;2027 | 10 M |
| | **4.1.41** | Setting up digital traceability system for rubber to address trade-related and quality concerns | | | | 2025 | 5M |
| | **4.1.42** | Developing a traceability system for rubber to improve global competitiveness | | | | 2023 | 5M |
| | **4.1.43** | Impact assessment of R&D Projects on Rubber | | | | 2023-2024 | 5M |
| | **4.1.44** | Impact Assessment of Technologies Developed for Rubber | | | | 2028 | 5M |
| | **4.1.45** | Adoption of Advanced Technology on Rubber Farming System: an Alternative for a Sustainable Rubber Production | | | | 2024-2025 | 5M |
| | **4.1.46** | I-CRADLE on Mainstreaming PQPM thru root trainer technology in Mindanao | | | | 2022-2023 | 25 M |
| | **4.1.47** | Technology roll-out of PRRI-developed technologies for improved latex yield | | | | 2024-2025 | 15M |
| | **4.1.48** | Technology roll-out of the tool for site matching of rubber | | | | 2023-2025 | 12M |
| | **4.1.49** | Technology Roll-out of Rubber Sheeting Machine in Traditional and Non-Traditional Rubber Areas | | | | 2024-2025 | 12M |
| | **4.1.50** | Roll-out of endophytic fungi against white root rot | | | | 2026-2027 | 8 M |
| | **4.1.51** | Roll-out of endophytic fungi against major and emerging leaf diseases of rubber | | | | 2026-2027 | 8 M |
| | **4.1.52** | Technology Roll-out of Developed Novel nursery production and latex harvesting technologies | | | | 2027-2028 | 8M |
| | **4.1.53** | Roll-out of new high yielding and NSIC registered clones | | | | 2028 | 10M |
| | **4.1.54** | Training on the use of Root Trainer Technology and propagation techniques for improved rubber production | | | | 2023;2025; 2027 | 3M |
| | **4.1.55** | GREAT Program | | | | 2022-2028 | 9M |
| | **4.1.56** | NICER R&D Center for Rubber | | | | 2028-2032 | 10M |

| STRATEGY | Project/Programs/Activities | | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| Research and Development and Extension Services | **Project 3: Field Evaluation of Multiple Shoot Induction Macro Propagation Techniques for Rapid Rootstock Production** | | | | | | |
| | **4.2.1** | • Evaluation of Multiple Shoot Induction Techniques for Rubber Rootstock Production | The most effective method that would induce the highest quantity of shoots | USM | SLSU, CMU, LGU-BAYAWAN | 2022-2023 | 1 0M DOST PCAARRD |
| | **4.2.2** | • Efficient Propagation of Macro-cuttings under Screen House with Mist System | Massive and efficient propagation of macrocutting rootstocks | USM | SLSU, CMU LGU-BAYAWAN | 2020-2024 | 2 M DOST PCAARRD |
| | **4.2.3** | • Establishment of Macro-cuttings in Root Trainer for Promotion of Rapid Growth and Optimization of Budding Technique | Well-developed root system of macrocuttings | USM | SLSU, CMU LGU-BAYAWAN | 2020-2024 | 1 M DOST PCAARRD |
| | **Project 4. Survey, Identification, and Management/ Control of Emerging Diseases of Promising Rubber Clones in the Philippines** | | | | | | |
| | **4.3.1** | •Assessment of rubber diseases in different location in the Philippines | 1 | PRRI, Technical Working Group on Emerging Diseases of Rubber Clones | USM, JRMSU, SLSU, CMU LGU-BAYAWAN, DA-RFO-9, 11, 12, 13, SLSU-Leyte, SLSU-Quezon | 2022 | 2 M |
| | **4.3.2** | •In-vitro evaluation of rubber diseases | 1 | | | 2022 | 2 M |
| | **4.3.3** | •Management of rubber diseases in different locations in the Philippines | 1 | | | 2022 | 2 M |

| STRATEGY | Project/Programs/Activities | | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Research and Development and Extension Services** | ***A. RESEARCH*** | | | | | | |
| | **4.4.1** | Management of White Root Rot (*Rigidoporus lignosus*) using Endophytic Fungi from the Roots of Healthy Rubber Tree/DA-RFO 9/Ms. Blair Adora | Economical Control measures of white root rot disease utilizing endophytic fungi from the roots of healthy rubber trees | DA-RFO 9 | JRMSU-Tampilisan, CMU, USM | 2021-2022 | Php 5 M (New/On-going – DOST PCAARRD) |
| | **4.4.2** | Screening of Potential Endophytes as Biocontrol Agent against major anad emerging Leaf Diseases of Rubber /Mr. Tamie Solpot/USM | Identification of potential endophytes as bio-fungicide to control major and emerging leaf diseases in rubber | USM | Rubber Farmers and Cooperatives, LGUs, PAOs | 2021-2022 | Php 5 M (New/On-going – DOST PCAARRD) |
| | **4.4.3** | Stocktaking of Various Rubber-Based Agroforestry Models/Systems in Different Climatic Types of the Philippines | Inventory/Baseline information on Rubber-based agroforestry systems | PRRI | Rubber Farmers, LGUs | 2022-2023 | Php 5 M (DOST-PCAARRD) |
| | **4.4.4** | Value Chain Analysis of Rubber Production and Marketing | Identification of support activities that will add value to the production and marketing of rubber | PRRI | WMSU | 2021-2022 | Php 2.5 M (DOST-PCAARRD) |
| | **4.4.5** | Latex Yield Evaluation of Conventional (S/2) and Novel (S/4) Rubber Tapping Systems | Evaluate and Compare Rubber Tapping systems in terms of yield and cost. | PRRI | CFCST and USM | 2022-2023 | Php 5 M (DOST-PCAARRD) |
| | **4.4.6** | Field Trial Assessment of SKSU-Developed Effective Microorganisms for Potential Biocontrol Agents Against *Phytophthora* and White Root Rot Disease of Rubber | Assessment Report on the efficacy of SKSU-Developed Effective Microorganisms as Biocon Agent | SKSU | Nursery and Plantation Owners/Operators | 2021-2022 | Php 5 M (DOST-PCAARRD) |
| | **4.4.7** | Utilization of Activated Carbon from Agricultural Waste Products for Natural Rubber Wastewater Treatment in Zamboanga Peninsula | | PRRI | Rubber Crumb Processing Plants | | PCIEERD |
| | **4.4.8** | Potential of Rubber Trees for Phytoremediation in Abandoned Mining Areas | | PRRI | Abandoned Mining Areas, LGUs, MGB | | PCIEERD |

| STRATEGY | | Project/Programs/Activities | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| Research and Development and Extension Services | ***B. DEVELOPMENT*** | | | | | | |
| | **4.5.1** | Rubber RDE Program: A Support Towards the Revitalization of NR Industry in Davao Region (for validation with DA_11) | 6 sites | DA-RFO XI | LGU, DA-BPI | 2019 - 2025 | P3.4M – DA-BAR |
| | **4.5.2** | Field Trial of Rubber Tree Rainguards for Improved Latex Yield | Established 9 sites;<br>Installation of rainguards (4 types);<br>Data gathering | PRRI | CFCST, WMSU | 2021-2022 | 3,700,000 (DOST-PCAARRD) |
| | **4.5.3** | Showcasing of improved rubber production and harvesting in non-traditional rubber producing areas (NTRPAs) of the country | Showcase the improved rubber farming technology to small hold rubber farmers in NTAs and introduce the package of technologies that are lacking in these NTAs | DA-RFO 9 | DA-RFO 9; DA-MIMAROPA; DA-RFO 2; LGU Bayawan City, Negro Oriental; Rubber Farmer Cooperatives in Palawan, Isabela and Bayawan City | 2021-2023 | Php 7 M<br>(DOST-PCAARRD) |
| | **4.5.4** | Development of Standard Philippine Rubber - Modified Asphalt for Pavement Applications | UPLB | DOST-PCIEERD | | | PROPOSED. PhP 5M |
| | **4.5.5** | Establishment of a world class rubber nursery and budwood garden at PRRI for germplasm conservation and production of quality planting materials | To establish a 1-ha state-of-the art rubber nursery and budwood garden<br>Cater to the nursery and budwood garden-related R&D | PRRI | | 2023-2025 | Php 5 M<br>(DOST-PCAARRD) |
| | **4.5.6** | S&T Community-Based Farm on Improved Rubber Farming Technology in Zamboanga Sibugay | Showcase the improved rubber farming technology to small hold rubber farmers in Zamboanga Sibugay<br>Model Site for farmers in the Zamboanga Peninsula | PRRI | | 2022-2024 | Php 17 M<br>(DOST-PCAARRD) |
| | **4.5.7** | Fabrication of state of the Art Rubber Sheeting Machine for Non-Traditional Areas (NTAs) | Advanced Rubber Sheeting Machine for NTAs | PRRI | Rubber Farmers and cooperatives | 2026-2028 | Php 5 M<br>(DOST-PCAARRD) |
| | **4.5.8** | Development of a Smallhold-Farmers' Village-based Rubber Processing for Cleaner and Value-added Raw Material for the Upstream Rubber Industry | Develop, validate and replicate the Village-type rubber sheet processing of Kerala, India for value-adding and cleaner rubber raw material product | PRRI | | 2021-2022 | Php 7.8 M<br>(DOST-PCAARRD) |
| | **4.5.9** | S&T Community Based Farms on Natural Rubber Nursery, Budwood Garden and Demonstration Farm Establishment in Mindoro Island | Showcase the improved rubber farming technology to small hold rubber farmers in Mindoro Island<br>Model Site for farmers in Mindoro Island | DA-MIMAROPA (Research Division) | Farmer Cooperatives and Nursery Operators, LGUs, PAOs and MAOs | 2024-2026 | Php 7 M<br>(DOST-PCAARRD) |
| | **4.5.10** | S&T Community Based Farms on Natural Rubber Nursery, Budwood Garden and Demonstration Farm Establishment in Negros Oriental | Showcase the improved rubber farming technology to small hold rubber farmers in Negros Island<br>Model Site for farmers in Negros Island | NOrSU (Bayawan City Campus) | Farmer Cooperatives and Nursery Operators, LGUs, PAOs and CAOs | 2022-2024 | Php 17 M<br>(DOST-PCAARRD) |

| STRATEGY | Project/Programs/Activities | | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Research and Development and Extension Services** | ***C. EXTENSION SERVICES*** | | | | | | |
| | **4.6.1** | Technology Roll-out of Young and Mini-seedling budding techniques for the Production of Quality Planting Materials of Rubber | For rapid and efficient production of rubber plants | USM | SLSU, CMU<br>LGU-BAYAWAN, DA-RFO-9, 11, 12, 13, SLSU-Leyte, SLSU-Quezon | 2022-2024 | 5M-DOST PCAARRD |
| | **4.6.2** | Reconstitution of ready to use formic acid into smaller volumes for small farmers to replace sulfuric acid for sustainability of quality crumb rubber | Ready to use and easy access formic acid solution for rubber farmers | WESMAARRDEC | Local Stores, Rubber Farmers and Cooperatives | 2021-2022 | Php 3M<br>(DOST-PCAARRD) |
| | **4.6.3** | Agri- Technology Mobile: A blended - Learning Platform for Sustainable Rubber Extension Program in Zamboanga Peninsula | Awareness of rubber farmers on better rubber production | WESMAARRDEC | Rubber farmers and Cooperatives, LGUs, PAOs and MAOs | 2021-2025 | Php 8M<br>(DOST-PCAARRD) |
| | **4.6.4** | Technology Roll-out of Root Trainer to Commercial Nurseries ( 3 to 5 nurseries) | Commercialization of young budding technology using root trainer in the production of high quality planting materials of rubber | DA-RFO IX | USM, CMU, WMSU and DA-RFO 11 | 2021-2022 | PhP 5 M |
| | **4.6.5** | Development of Good Agricultural Practices (GAP) in the collection, coagulation, storage, transport and handling system of rubber cuplumps | Document the current rubber latex coagulation, collection, transport, storage, and handling system and serve as baseline for the improvement of quality of rubber raw materials/rubber cuplumps | WMSU/PRRI | Rubber Farmers and Rubber-based Manufacturing Industries | 2022-2023 | Php 8 M<br>(DOST-PCAARRD) |

PHLRUBBER Technical Working Group

**PHILIPPINE RUBBER INDUSTRY CLUSTER ACTION PLAN 2022-2028**

| STRATEGY | | Project/Programs/Activities | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Finance and Investment Promotion** | **Strategy 1: Promote investment in the manufacture of rubber-based products for domestic and global supply** | | | | | | |
| | **5.1.1** | Preparation and Development of Investment Promo Collaterals in AVP and Hard copy (infographics):<br>•Investment Brief for the different rubber and rubber-based products<br>•Cost of Doing Business (Regional/Provincial)<br>•Company Profiles of Interested Local Investors | | DTI-ROG | DTI-ROs / POs / BOI, MinDA, Private Stakeholders | 2022-2028 | |
| | **5.1.2** | Investment promotion of rubber and rubber products in various outbound industry | | BOI | Relevant government agencies, other rubber | 2022-2028 | |
| | **5.1.3** | Inclusion of rubber industry stakeholders in BOI Geomapping<br>Preparation of Value Proposition for Motorcycle Tires Manufacturing | | BOI | Private Stakeholders, LGUs, NGAs | 2022 | |
| | **Strategy 2: Develop industry financial services to facilitate access to financing by farmers and entrepreneurs** | | | | | | |
| | **5.2.1** | •SULONG SAKA (LBP) or High Value Crops Financing<br>•I-RESCUE financing Program of LBP<br>•ACEF program in coordination with DA of LBP | | LBP/DBP/GFIs | DTI, DA, DAR, DBM, PCIC, LGUs, Coops, CFI, Private Sector, Other Agencies | 2022-2028 | 10 B (2022)<br>50 B (2022)<br>1.4B (2022) |
| | **5.2.2** | PRDP | | DA | Rubber Cooperatives/ Associations | 2022-2028 | |
| | **5.2.3** | Crop Insurance | | PCIC | GFIs, CFIs, rubber stakeholders | 2022-2028 | |
| | **5.2.4** | SME Financing | | SB Corp | | 2022-2028 | |
| | **5.2.5** | SET-UP | | DOST | | 2022-2028 | |
| | **5.2.6** | Equity Financing/Venture Capital | | NDC | | 2022-2028 | |
| | **5.2.7** | Conduct of financing forum<br>•Webinar series | | MinDA | GFIs, DA, DOST, DTI, NDC, Rubber Coops/Asso | 2022 | |

PHLRUBBER Technical Working Group

**PHILIPPINE RUBBER INDUSTRY CLUSTER ACTION PLAN 2022-2028**

| STRATEGY | | Project/Programs/Activities | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Information, Policy Formulation and Advocacy** | **Strategy 1: Create the Philippine Rubber Industry Development Board that will enforce policies and set direction in all aspects of the rubber industry value chain** | | | | | | |
| | **6.1.1** | Lobby for the re-filing of the SB 526 and HB 2664 on the creation of the Philippine Rubber Industry Development Board | | DTI/DA | NGAs, Private Stakeholders | 2022 | |
| | **6.1.2** | Policy on Requiring Government agencies to prioritize the use of locally produced products | | DTI-NICC | | 2023-2028 | |
| | **Strategy 2: Enhance information exchange to ensure sustainability of assistance and provide access to new markets and technologies** | | | | | | |
| | **6.2.1** | Present recommended conversion factor (yield per tappable tree, yield per area planted/hectare) | Revise the conversion rate from 25% to 50% | PSA | Panel of experts coordinated with PRRI | | As per PSA Board Resolution No.09 Series of 2021, the PSA will maintain the cup lump product form of rubber in some reports as this is the form required in the valuation of production in agriculture. Also, stated in the Board Resoution that the use of the new conversion rate will start in July 2021. Thus, revision of production-related statistics before the approval of the conversion rate of 50 percent for rubber is not possible. |
| | **6.2.2** | Review of past records and existing PSA methodologies and align with ANRPC on data generation of rubber statistics | Revise production data | PSA | Panel of experts coordinated with PRRI | | |
| | **6.2.3** | Development of digital platform for marketing and technology exchange | | DTI9 | Private Stakeholders | 2023 | |
| | **6.2.4** | Use of social media in disseminating rubber updates/information | | DTI9 | Private Stakeholders | 2022-2028 | |

| STRATEGY | Project/Programs/Activities | | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Information, Policy Formulation and Advocacy** | **6.2.5** | Conduct of public consultations for rubber | 4 Public consultations | DA-PCAF | Member agencies and Private stakeholders | 2022-2028 | |
| | **6.2.6** | Maintain database on rubber manufacturers' sources for domestic and international materials suppliers (raw rubber, chemicals, tool & die machinery,etc) | | PRIA /DTI- BOI | DTI enrolled regions, FTSC | 2022-2028 | |
| | **6.2.7** | Preparation/printing of Compendium of Rubber Farmers, Coops, Processors, Manufacturers, Suppliers, Exporters | 1 | DTI | DA, BPI, DAR, Farmers, LGUs, PRIA, PRFA | 2022-2028 | |
| | **6.2.8** | Organize/strengthen rubber farmers' group | | PRFA, DA, LGUs, DTI | | 2022-2028 | |
| | **Strategy 3: Promote and advocate for compliance with product standards and market requirements in order to increase export rubber and rubber products** | | | | | | |
| | **6.3.1** | Development of Standard for Rubberized Asphalt Road | | DPWH-BRS | Private Stakeholders, UPLB, DOST | 2023-2025 | |
| | **6.3.2** | Development of Standard for Air-Dried Sheet (ADS) | | BPS TC16 | DOST-ITDI and ROs | 2022-2023 | |

| STRATEGY | Project/Programs/Activities | | Target | Implementing Agency | Collaborator/s | Timeline | Resources |
|---|---|---|---|---|---|---|---|
| **Information, Policy Formulation and Advocacy** | **6.3.3** | Promulgation and Implementation of the revised TR on Rubber Production NC II | ` | TESDA | DA-ATI, LGUs, Private Sector (Industry Association/ Farmers cooperative/association-Budders, Tappers-PRFA) , DA-RFOs Research Division, DOST-FPRDI, Academe/ Training/Extension | 2022 | |
| | **6.3.4** | Crafting of the EO on the Use of Rubberized Asphalt in Road Overlay Pavement | | DTI-NICC | UPLB, LGUs, DPWH, Academe, DOST, Private Stakeholders | 2023 | |
| | **6.3.5** | Advocacy on the use of rubberized asphalt | | DTI-ROs | LGUs, DPWH, Academe, DOST, Private Stakeholders | 2022-2028 | |
| | **Strategy 4: Sustain membership to intergovernmental organizations as a platform for the exchange of information and technology and market** | | | | | | |
| | **6.4.1** | Hosting of international conference/seminars/ meetings | | DA/DTI/DOST | Small farmer organizations, LGUs, PHLRUBBER Members, PRFA, PRIA | 2022-2028 | |
| | **6.4.2** | Active participation in international activities of IRRDB, IRSG, ANRPC and other international rubber organizations | | DA/DTI, Private Sector, LGUs, Academe, | | 2022-2028 | |
| | **6.4.3** | Regular attendance/Participation in ISO TC 45 and ACCSQ-RBPTWG Meetings and Related activities | | DTI-BPS, DOST-ITDI, DOST-RO9, DA, Private Sector, and Rubber Laboratories | | 2022-2028 | |
| | **6.4.4** | Seek membership with IRSG | | DTI | | 2022 | |
| | **6.4.5** | Submission of research studies to international journals for publication | | DA, DOST, PRRI, Academe | DOST-PCIEERD | 2022-2028 | |
| | **6.4.6** | Publication of rubber research studies and extension | | WESMAARRDEC | Academe, DA-BAR, PRRI | 2022-2028 | |
| | **6.4.7** | Presentation of rubber research studies to international conferences | | DA, DOST, PRRI, Academe | | 2022-2028 | |

**PHLRUBBER**
Technical
Working Group

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