

CURRENT CONDITION AND CHALLENGES OF THE RUBBER INDUSTRY IN INDONESIA

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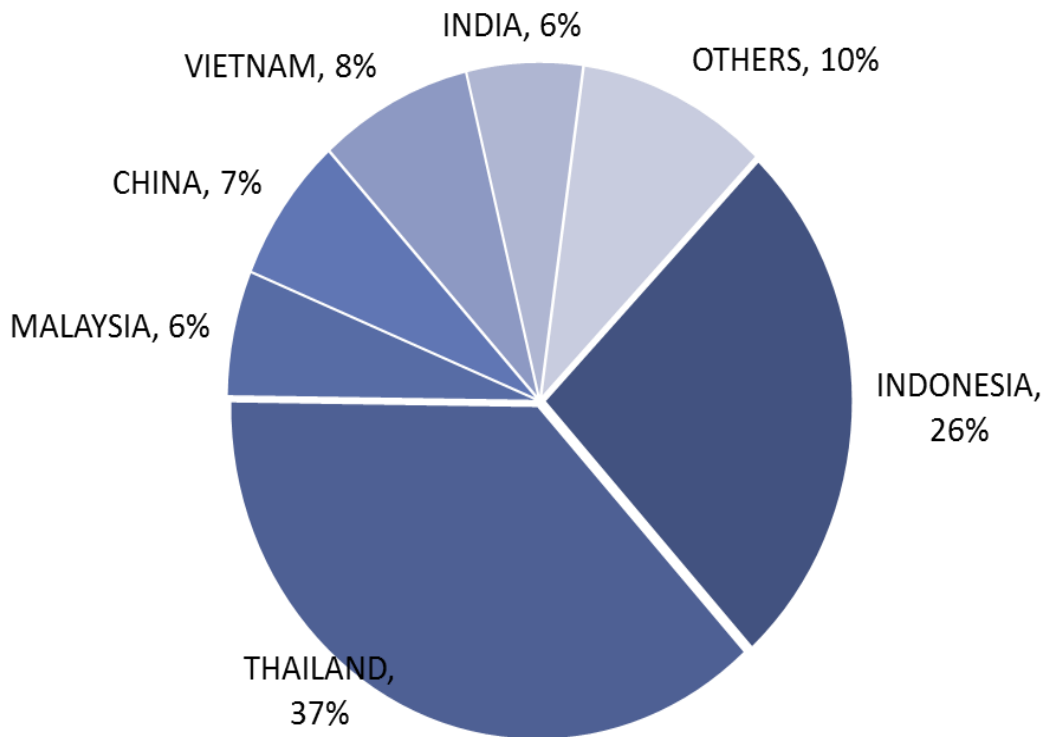
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PUSAT PENELITIAN KARET

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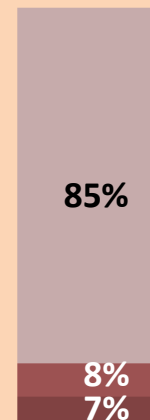
NATURAL RUBBER: Indonesia among other producing countries



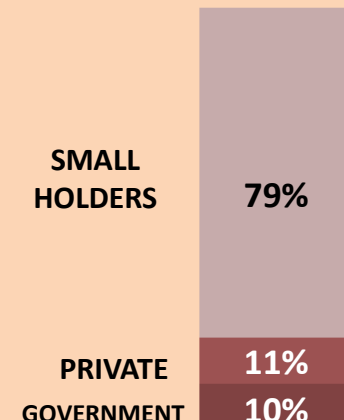
INDONESIA

TOTAL AREA : 3.6 million ha
PRODUCTION : 3.2 million ton
PRODUCTIVITY : 1,036 kg/ha/yr

AREA



PRODUCTION



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NATURAL RUBBER: Production, export & domestic consumption

| DESCRIPTION | | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|----------------------|--------------|-------|-------|-------|-------|-------|-------|
| PRODUCTION | Million tons | 2,735 | 2,990 | 3,012 | 3,237 | 3,153 | 3.175 |
| EXPORT | Million tons | 2,352 | 2,556 | 2,444 | 2,702 | 2,623 | 2.685 |
| DOMESTIC CONSUMPTION | Million tons | 383 | 434 | 568 | 535 | 530 | 611 |
| | % | 14 | 15 | 19 | 17 | 17 | 19 |



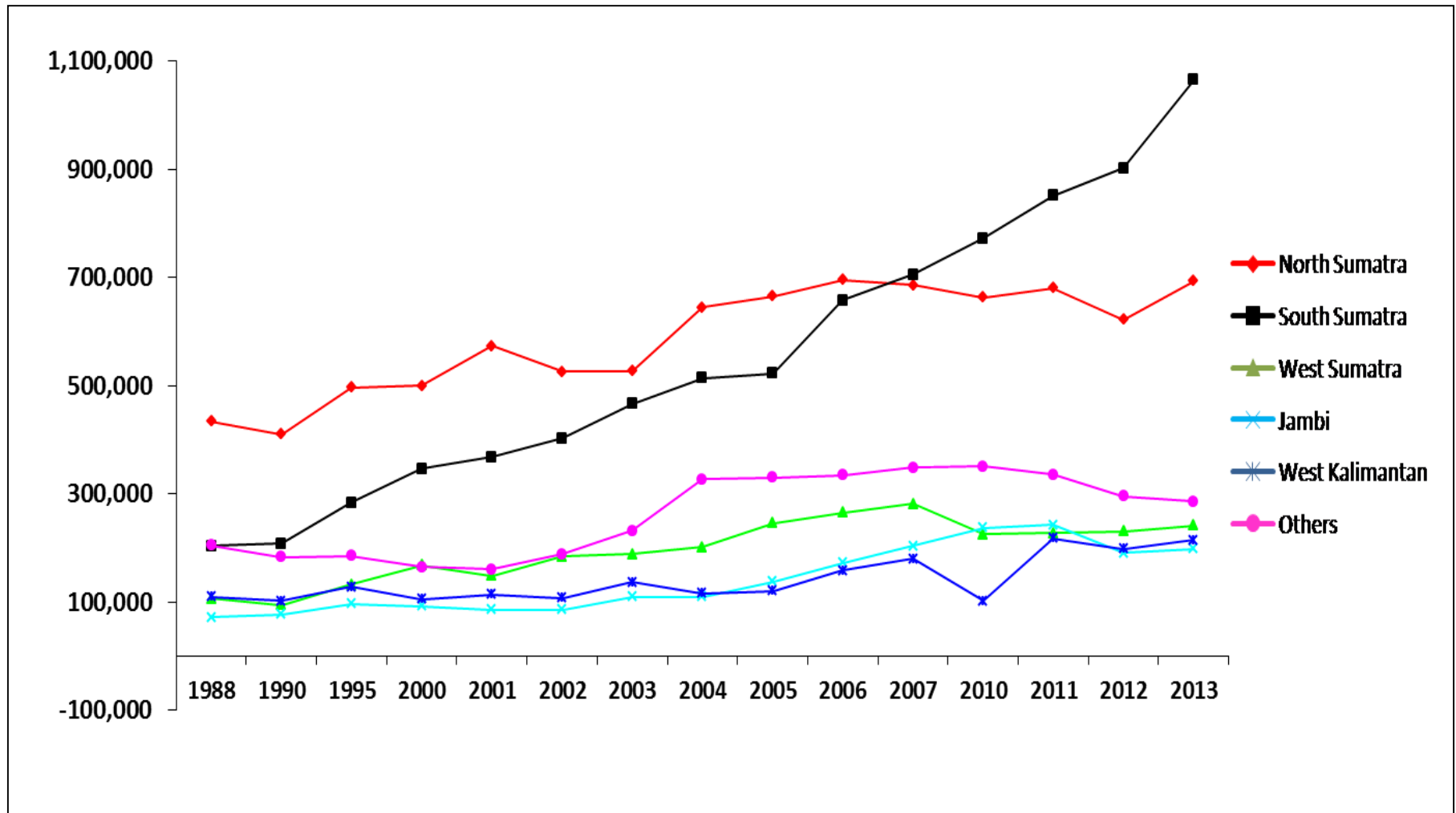
Natural Rubber in Indonesia:

Trend of area, production and productivity

| Year | Total Area (000 ha) | Production (000 tons) | Yield (kg/ha/yr) |
|------|------------------------|--------------------------|---------------------|
| 2011 | 3,456 | 2,990 | 1,071 |
| 2012 | 3,506 | 3,012 | 1,073 |
| 2013 | 3,556 | 3,238 | 1,083 |
| 2014 | 3,606 | 3,153 | 1,053 |
| 2015 | 3,621 | 3,108 | 1,036 |



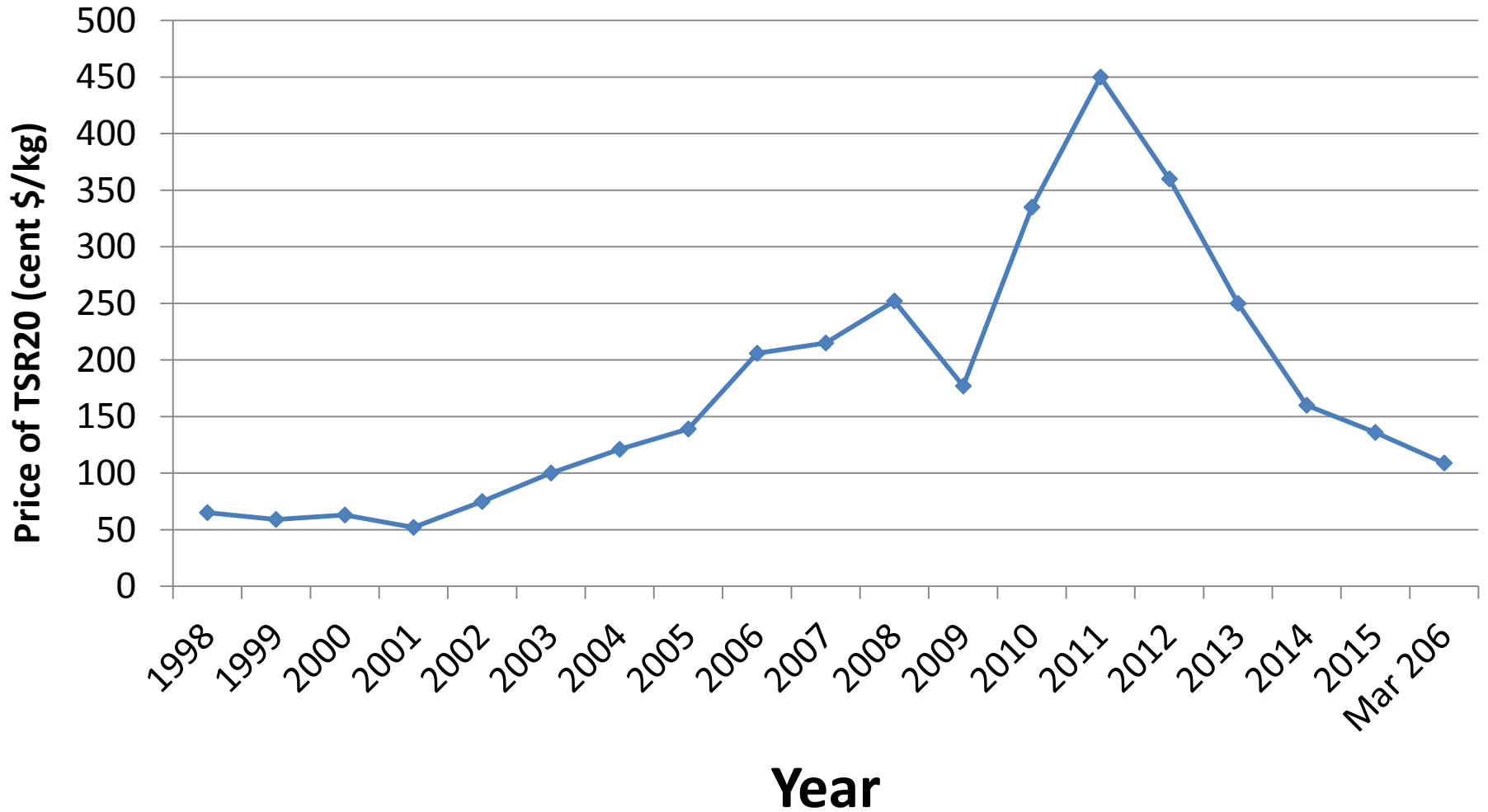
NR Production in the Rubber Producing Provinces in Indonesia (Ton)



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The Decreasing of Rubber Price



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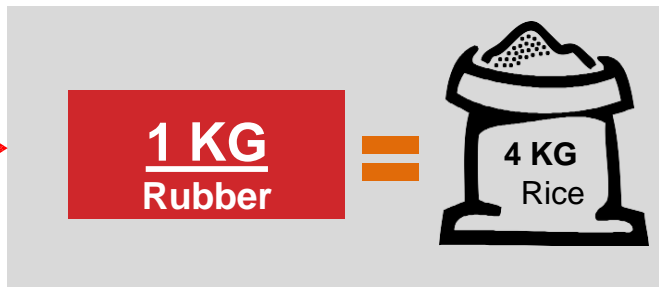
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Change on Rubber Price for Recent Five Years

3 /3- 2011 – 3/3- 2016

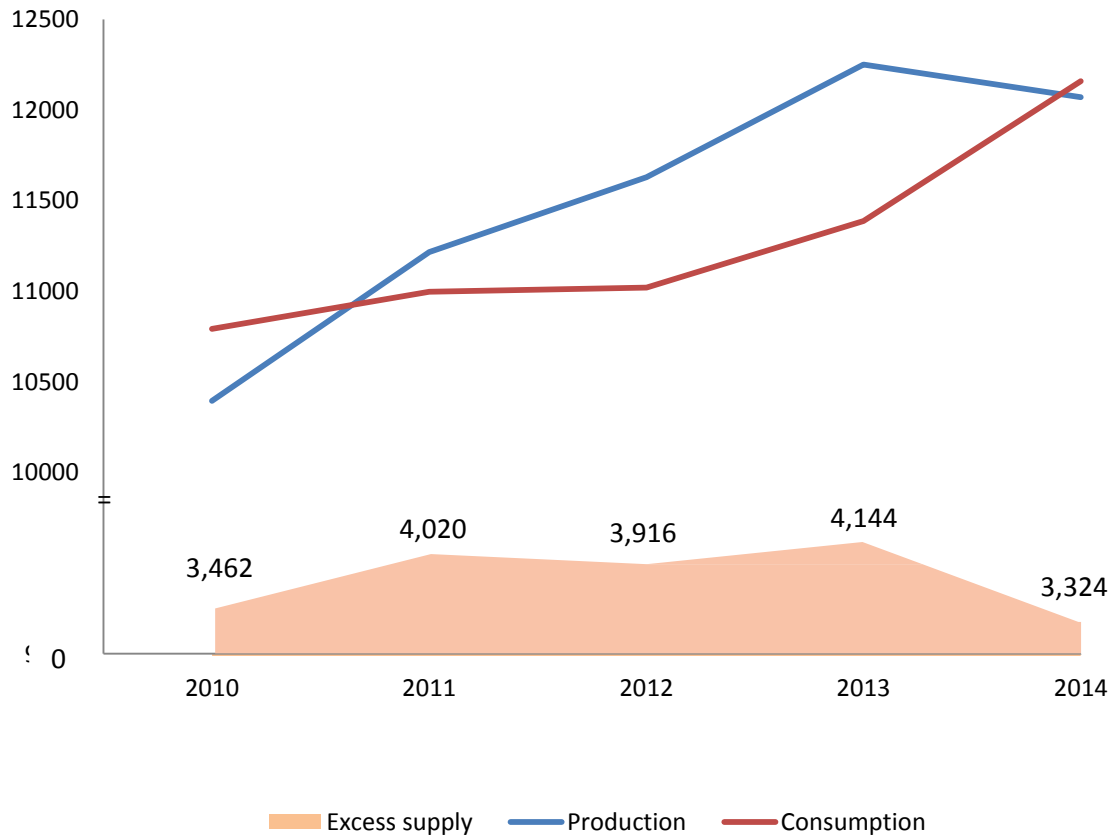


Source:
Bloomberg



The possible Cause of Decreasing Rubber Price

- Excess supply & stock
- Weakening of global economic, especially china
- Low oil price



NATURAL RUBBER: Production for some leading producing countries (000 tons)

| Country | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | Increment |
|-----------|-------|-------|-------|-------|-------|-------|--------------------|
| Thailand | 3,252 | 3,569 | 3,778 | 4,170 | 4,323 | 4,474 | 1,222 (38%) |
| Indonesia | 2,735 | 2,990 | 3,012 | 3,237 | 3,153 | 3,175 | 440 (16%) |
| Vietnam | 752 | 789 | 877 | 947 | 954 | 1,017 | 265 (35%) |
| Malaysia | 939 | 996 | 923 | 827 | 668 | 698 | -241 |



Current Performance : Natural Rubber Industry in Indonesia

Total Area: 3,6
million ha
(85% smallholder)

Production:
3.2 million
tons

- Crumb rubber, RSS, latex concentrate industry
- Total installed capacity: 5.2 million tons/yr

81%

- Export: 2.7 million tons
- 97% Crumb rubber (SIR)
 - 3% RSS, latex concentrate

19%

- Domestic consumption:
0.6 million tons
- Tyre (55%)
 - Non-tyre (45%)
(industrial, technical, medical, general rubber goods)

NR price
decrease



Price SIR 20,
2011 = US \$ 4,8/kg
2015 = US \$ 1,2/kg



Farmers income
decrease

Conversion to
more profitable
crops

Current Issues on Rubber in Indonesia:

- ❑ Purchasing power parity (rubber to rice as a staple food sharply decrease: 4 kg raw rubber equal to 1 kg rice, whilst few years ago 1 kg raw rubber equal to 4 kg rice)
- ❑ Low farm gate price: 50-60% FOB due to high processing cost and long marketing channel
- ❑ Lack of maintenance especially for smallholder with Old & poor rubber trees > 15%, high number inferior planting materials and low productivity
- ❑ Smallholder income lower than local minimum wage and loss of benefit for plantation companies due to low rubber price



STRATEGY TO OVERCOME LOW RUBBER PRICE

- ❑ REPLANTING OLD RUBBER TREES
- ❑ DIVERSIFICATION/INTERCROPPING WITH OTHER CROPS, e.g. FOOD CROPS, HORTICULTURAL CROPS, PERRENIAL CROPS, etc.
- ❑ CONVERSION TO MORE PROFITABLE CROPS
- ❑ REDUCING PRODUCTION COST THROUGH
 - ❑ IMPLEMENTATION OF LOW TAPPING FREQUENCY
 - ❑ LOWERING MAINTENANCE COST (FERTILIZER, HERBICIDES, ETC.)
- ❑ INCREASE IN DOMESTIC CONSUMPTION FOR INFRASTRUCTURE DEVELOPMENT, E.G.: DOCK FENDER, RUBBER ASPALT, WATER GATE, RUBBER PAD FOR TRAIN, BRIDGE BEARING, SEISMIC BEARING



Replanting Rubber Trees

- Total area around 500,000 – 1,000,000 ha would be replanted for few years (program planning of The ministry of Agriculture).
- Priority of replanting in smallholder producing areas, particularly at Sumatera and Kalimantan
- Intercropping with food crops: upland rice, corn, soybean, etc.
- Funding: government and loan



Intercropping Food Crops at Existing Immature Trees Area

- To increase farmer's income from food crops
- To increase national food production
- Funding : government support



Conversion to Other Crops

- Some rubber areas were converted to oil palm, particularly in Sumatera and Kalimantan island
- Some rubber areas particularly in java were converted to sugar cane and other crops



Improvement of Quality and Marketing Channels

- ❑ Farmer group (50-100 farmers) build Group Processing and Marketing Unit (GPMU) institution
- ❑ Each GPMU equipped by an appropriate processing room to produce thin slab or air dried sheet
- ❑ Direct marketing of raw rubber material from GPMU to rubber processor (crumb rubber factory).
- ❑ Funding: government budget (local and central)



Increase in Domestic Consumption of Natural Rubber

- ❑ Besides to encourage tyre industry, Indonesian government is encouraging efforts to diversify of natural rubber utilization
- ❑ Currently, government encourages rubber usage for infrastructure development e.g. additive for asphalt, dock fender, railway pad, rubber dam/cannal blocking, bearing (bridge, seismic isolation)



POTENCY OF ADDITIONAL DOMESTIC NR CONSUMPTION

| No. | Kind of Product | Ton / year |
|-----|---|----------------|
| 1 | Rubberised road non toll | 60,000 |
| 2 | Rubberised road for toll | 3,000 |
| 3 | Dock Fender | 2,500 |
| 4 | Water Gate for irrigation canal | 1,000 |
| 5 | Rubber dam | 200 |
| 6 | Rubber cowmat | 4,000 |
| 7 | Conveyor-belt | 5,000 |
| 8 | <ul style="list-style-type: none">• Bridge bearing• Railway pad• Etc. | 9,300 |
| 9 | Glove | 15,000 |
| | TOTAL | 100,000 |

EXPERIMENTAL RESULTS

INTERCROPPING WITH FOOD CROPS



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Cropping pattern: Upland rice, Maize, Cowpea

| Intercrop | Rubber age | |
|------------------|------------|------------|
| | 1 year | 2 year |
| Rice (kg/ha) | 3 200 | 3 000 |
| Corn (kg/ha) | 3 250 | 3 000 |
| Cowpea (kg/ha) | 2 000 | 1 900 |
| Revenue (Rp) | 33 755 000 | 31 575 000 |
| Cost (Rp) | 32 042 000 | 30 283 250 |
| Labor (man days) | 390 | 370 |
| Profit (Rp) | 1 713 000 | 1 291 750 |
| R/C | 1,05 | 1,04 |

Cropping pattern: Upland rice, Soybean and Cowpea

| Intercrop | Rubber age | |
|------------------|------------|------------|
| | 1 year | 2 year |
| Rice (kg/ha) | 3 300 | 3 000 |
| Soybean (kg/ha) | 2 500 | 2 000 |
| Cowpea (kg/ha) | 2 000 | 1 900 |
| Revenue (Rp) | 37 220 000 | 32 575 000 |
| Cost (Rp) | 32 188 000 | 30 165 500 |
| Labor (man days) | 390 | 360 |
| Profit (Rp) | 5 032 000 | 2 409 500 |
| R/C | 1,16 | 1,08 |

INTERCROPPING WITH HORTICULTURE CROPS



Curly Chili



Small Chili



Long bean



Water melon



Banana+pineapple

Intercropping with Curly chili

| Intercrop | Rubber age | |
|------------------|------------|------------|
| | 1 year | 2 year |
| Yield (kg/ha) | 9.000 | 8.000 |
| Revenue (Rp) | 74.250.000 | 66.000.000 |
| Cost | 38.379.000 | 38.379.000 |
| Labor (man days) | 400 | 400 |
| Profit (Rp) | 35.871.000 | 27.621.000 |
| R/C | 1,93 | 1,72 |

Intercropping with Small chili

| Intercrop | Rubber Age | |
|------------------|------------|------------|
| | 1 year | 2 year |
| Yield (kg/ha) | 6.500 | 6.000 |
| Revenue (Rp) | 71.500.000 | 66.000.000 |
| Cost | 36.504.000 | 36.504.000 |
| Labor (man days) | 375 | 375 |
| Profit (Rp) | 34.996.000 | 29.496.000 |
| R/C | 1,96 | 1,81 |

Intercropping with Long bean

| Intercrop | Rubber age | | |
|------------------|------------|------------|------------|
| | Rainy s1 | Dry s1 | Rainy s2 |
| Yield (kg/ha) | 18.500 | 17.000 | 16.500 |
| Revenue (Rp) | 32.375.000 | 29.750.000 | 28.875.000 |
| Cost | 20.669.000 | 20.669.000 | 19.129.000 |
| Labor (man days) | 220 | 220 | 200 |
| Profit (Rp) | 11.706.000 | 9.081.000 | 9.746.000 |
| R/C | 1,57 | 1,44 | 1,51 |

Intercropping with Water melon

| Intercrop | Rubber age | |
|------------------|------------|------------|
| | 1 year | 2 year |
| Yield (kg/ha) | 34.000 | 32.500 |
| Revenue (Rp) | 59.500.000 | 56.875.000 |
| Cost (Rp) | 26.780.000 | 26.511.250 |
| Labor (man days) | 300 | 300 |
| Profit (Rp) | 32.720.000 | 30.363.750 |
| R/C | 2,22 | 2,15 |

Intercropping with Banana and pineapple

| Intercrop | Rubber age | |
|-------------------|------------|------------|
| | 1 year | 2 year |
| Banana (bunch) | 500 | 750 |
| Pineapple (fruit) | 13.000 | 14.000 |
| Revenue (Rp) | 48.500.000 | 54.875.000 |
| Cost (Rp) | 17.146.500 | 17.021.500 |
| Labor (man days) | 175 | 195 |
| Profit (Rp) | 31.353.500 | 37.853.500 |
| R/C | 2,4 | 2,4 |

Intercropping under Shade Area



Cardamom



Curcurma



Amorphophallus

Intercropping with cardamom

| Intercrop | Rubber age | | | |
|---------------------------|---------------|------------|------------|------------|
| | 4 year | 5 year | 6 year | 7 year |
| Cardamom yield (kg/ha) | 300 | 700 | 800 | 900 |
| Price (Rp/kg) | 13000 - 17000 | | | |
| Revenue (Rp) | 4.500.000 | 10.500.000 | 12.000.000 | 13.500.000 |
| Cost (Rp) | 19.702.500 | 9.352.500 | 9.352.500 | 9.352.500 |
| Labor (man days) | 150 | 100 | 100 | 100 |
| Profit (Rp) | (15.202.500) | 1.147.500 | 2.647.500 | 4.147.500 |
| R/C | 0,23 | 1,12 | 1,28 | 1,44 |

Intercropping with Curcuma

| Intercrop | Rubber age | | |
|------------------|-------------|-----------|-----------|
| | 4 years | 5 years | 6 years |
| Curcuma (kg/ha) | 6.000 | 5.000 | 5.000 |
| Price (Rp/kg) | 3000 - 4000 | | |
| Revenue (Rp) | 28000000 | 24500000 | 24500000 |
| Cost (Rp) | 22475000 | 22475000 | 22475000 |
| Labor (man days) | 150 | 150 | 150 |
| Profit (Rp) | 5.525.000 | 2.025.000 | 2.025.000 |
| R/C | 1,25 | 1,09 | 1,01 |



Thank you for your attention