

## **From tree to products: Transformation in Total Value Chain**

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### **Abstract**

From tree to products: Transformation in Total Value Chain “Disruption is the process that disrupts existing business model. Transformation is necessary before the existing business being whited out”. History told us that automotive industry was the driving force of many industries. Natural rubber became an essential elastomeric material being consumed in seals, gaskets, driving belts and tires. Followed with the developments and growth in petroleum, petrochemicals and polymer industries to serve the growth of automotive industry. Developments in higher performance of internal combustion engine drove the development of rubber to serve severe requirements of rubber parts at high temperature and bio-fuel in the engine compartment. Total consumptions of rubber in auto parts and tire increases up to 50 % of 30 million metric tons of total rubber consumption per year. However, the world is moving toward to social sustainability and environmentally protection. Transportation sector shares more than a quarter of total greenhouse emission and major air and noise pollution in cities. Automotive industry is moving from internal combustion engine to Electric Vehicle (EV) and Hydrogen Fuel Cell Vehicles, EV is disrupting the leadership of existing auto-industry. It also disrupts petroleum and petrochemical industries. High performance rubber will slowly disappear replacing with rubber for high voltage applications. Existing supply chain of automotive has to transform and adopt to the new value chain of EV. History also told us that industry believed that rubber was a cause of environmental waste and micro-plastic. People believed that natural rubber was the cause of deforestation, biodiversity loss and pollution. With “Good Agricultural Practice (GAP) and Good Manufacturing Practices (GMP)” and collaboration along the value chain of natural rubber plantation and natural rubber, it will prove that natural rubber plantation is green forest and environmental friendly. Rubber tree absorbs carbon dioxide thru its photosynthesis. It is an important income of millions small families. However, total value chain of natural rubber has to be transformed. GAP and GMP standards and traceability system of total supply chain of natural rubber must be implemented in order to produce good quality and consistency of quality of natural rubber latex and dried rubber. Meanwhile, industry should be encouraged to look after end-of-life of rubber products. ‘Total Supply Chain of natural rubber must be benefit from the transformation’.

### **References**

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