Our Commitment to Social Challenges over the Next 100 Years

Relationship between our business and SDGs

Yokohama Rubber has confirmed the current state of initiatives through its business in consideration of the objectives of sustainable development goals (SDGs), and analyzed which target areas initiatives should be strengthened in going forward. Based on this analysis, Yokohama Rubber will endeavor to review its priority issues going forward.
An assessment will be conducted on the efforts in response to social challenges by all Group companies based on documents and interviews from the four perspectives of planning, implementation status, monitoring, and communication of results.

Relationship between efforts through the value chain and SDGs

1. Systematic monitoring and protection of rubber trees, plantations, and the ecological system at the stage of raw materials use
2. Education on agroforestry farming, etc. for rubber farmers at the procurement stage
3. Income support through employment for processors and local companies in developing countries
4. Resource conservation and the development of new materials through LCA analysis on natural resources
5. Indirect contributions to agriculture through the sale of tires in the field of agriculture and forestry through ATG
6. Improvements in CSR procurement and the environmental technologies of suppliers in the MB business
7. Project for considering infrastructure for a hydrogen-based society that has adopted highly durable conveyor belt for a reconstruction project in Rikuzentakata City
8. Preservation of forests and protection of the ecological system by supporting planned agricultural management
9. Recycling of water during production, effective use of groundwater, etc.
10. Introduction of cogeneration systems and renewable energy, spread of environmentally friendly products
11. Reduction of greenhouse gases through 10 above
12. Use of heat from waste tires, achieving zero emissions at plants, promotion of retread tires, development of more highly durable products
13. Prevention of marine pollution through marine hose development and improvements

VOICE Comment from an analysis and assessment organization

Mizuki Kurauchi
Environmental Assessment Section Manager, Global Environmental Project Department, Japan Quality Assurance Organization

We recently confirmed the business performance of the Yokohama Rubber Group and its business processes through the filter of SDGs. As a result of this assessment, we found that nearly all of the activities conducted in accordance with the vectors indicated in the CSR Management Vision, Yokohama Group Action Guidelines, and GD100 and Environmental GD100 mapped with the SDGs, and that actual management of the organization was closely linked with the resolution of social issues for sustainable development.
Looking at the results of mapping in the value chain, there were many extremely positive areas including multiple efforts in upstream processes that assist in achieving SDGs, and multiple efforts that strengthen positive effects and minimize negative effects that have been conducted since in the past with clear objectives related to sustainability. Going forward it would be preferable to review what challenges should be tackled as priorities in sustainable development goals through materiality analysis and dialogue with stakeholders.
We hope that Yokohama Rubber remains to be a global company for the next 100 years and continues to contribute to happiness and prosperity based on sustainable development.

* The CSR Report 2017 that contains this comment has been prepared based on materials including sustainability reports deemed to be generally acceptable, and this comment does not represent the conclusion that information contained within the CSR Report 2017 has been accurately measured and calculated and disclosed without omission.

Yokohama Rubber celebrated its centennial on October 13, 2017. We would like to introduce how we will be involved in the resolution of social challenges and our efforts from the perspective of technology development for the provision of new products and services over the next 100 years.

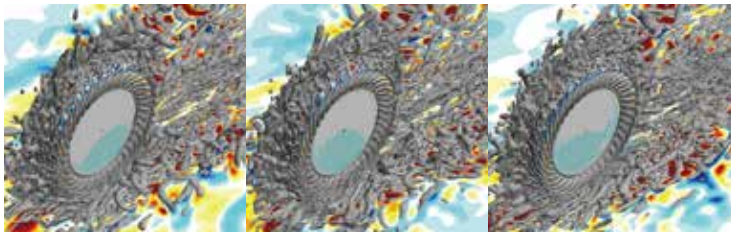
Basic technologies to support the future development of products and services at Yokohama Rubber

Computational Science Aeroacoustic simulation

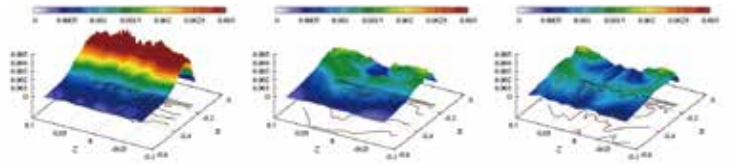
The reduction of tire noise is an important environmental issue. As the disruption of the flow of air around tires and the road surface is one of the main causes of tire noise, we are engaged in research related to direct simulations of air vortex flow structure around tires and the resulting acoustic waves.

(i) No groove (ii) Groove shape A (iii) Groove shape B

Instantaneous pressure fluctuations and vortex structure



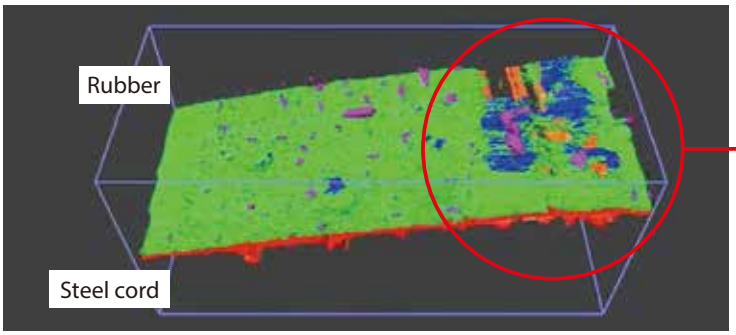
Turbulent kinetic energy in front of tire



In 2014, Yokohama Rubber succeeded in becoming the first in the world to have a precise simulation of the vortex structure and acoustic waves around tires when running.
In 2015, the theme was selected as an HPCI (High Performance Computing Infrastructure) research topic, and the impact of the differences in the depth, width, etc. of grooves on the tire surface on acoustic waves (noise) was clarified.
This has been helpful in the design of tread patterns and facilitated the development of low noise tires.

Analysis 3D structural analysis of tire steel cord / rubber adhesion surfaces

Steel cords are embedded in tires to improve durability.
The adhesion between these steel cords and the rubber that covers them is important for safety.
We have utilized electron microscope technology to become the first in the world to visualize the adhesion layer between steel cord and rubber surfaces in 3D (see diagram).
Some separated areas and/or spaces were discovered in the adhesion layer in the rubber and metal adhesive interface for the wire sample after humidity aging.
The adhesive force between steel cord and rubber is weak in these areas, and can be inferred that this is a source of declines in adhesiveness. Going forward we will further clarify the adhesion mechanism and apply this knowledge to the development of more durable tires.



Result of 3D observation of the adhesion layer between steel cord and rubber (the circle indicates an area with adhesion defects)