

# Developing Systems Capable of Creating Only Environmentally Friendly Products

In 1998, Yokohama Rubber blazed a trail for the industry by developing the DNA eco-tire, which helps increase vehicles' fuel efficiency. In the 12 years since, we have continued to enhance systems for the development of environmentally sound products and have launched a succession of new products offering increased environmental performance. Through such action, we have established in-house rules that can only give rise to products that are environmentally friendly.

## 1996

### DNA's development begins Start of Design for Environment review

A Design for Environment (DfE) review encompassing 17 categories was commenced using environmental assessment check sheets to evaluate products.

## 2000

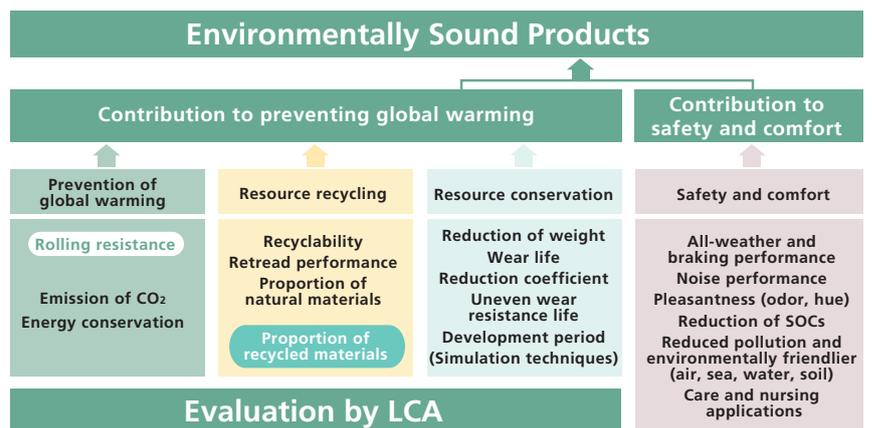
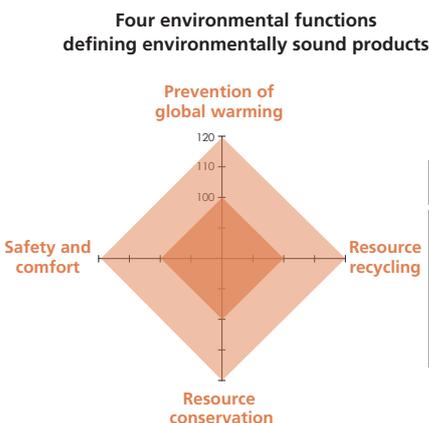
### Revision of DfE review guidelines

Product development guidelines were revised and environmental assessment check sheets for evaluating products were incorporated into the design review process. This has facilitated design review and enabled the continued launch of products in the DNA series.

## 2006

### Addition of four environmental functions (environmental radar chart)

In order to objectively evaluate the environmental performance of new products, an environmental radar chart has been added to the review process. This enables new products to be compared with existing products by assigning points in four categories of environmental functionality, and only those products that are on average 5% superior overall to existing products and not worse in any of the four categories will make it to market.



# PDCA cycle for continuous improvement of environmental performance

Rigorous design reviews are conducted at the product planning, prototyping, pilot run, and full-scale production stages, and continued improvements in environmental performance are pursued by conducting these in accordance with the PDCA (Plan-Do-Check-Action) cycle.

## Customer satisfaction follow-up

### Customer satisfaction survey/ collection of market data

Examination of findings of market surveys 1-2 years after launch and incorporation into planning of next product

### Design review 3: Transition to full-scale production stage

#### Decision on transition to full-scale production

Confirmation of results of pilot run and quality confirmation at plant and decision on whether or not to proceed with full-scale production

## ACTION

Decision on transition to  
full-scale production

3

Confirmation of assessment  
of consumer monitors

## CHECK

4

## PLAN

Planning review

Determination of product concept and target performance based on customer survey findings

1

### Design review 1: Prototyping stage

#### Product planning decision

#### Determination of target performance

Determination of how to attain target performance and develop product based on product proposal

DO

Development of  
new product

2

### Design review 2: Pilot run stage

#### Decision on transition to pilot run

Determination of design specifications of new product based on development results and implementation of pilot run



Launched in August 2007



Passenger car tires. 20% lower rolling resistance compared with conventional products (DNA dB ES501). 80% made from non-petroleum resources.



Launched in September 2008



Studless passenger car tire. Improvement of performance on winter road surfaces thanks to high-density "triple water absorption" rubber and high-density triple-tread design.



Launched in July 2009



Passenger car tires. Premium-class tire for luxury cars that combines outstanding running performance and a significantly quieter ride.



Launched in February 2009



Passenger car tires. Outstanding balance of all forms of road performance, including dry and wet grip, control, and wear and uneven wear resistance.



Launched in February 2008

Passenger car tires. 21% lower rolling resistance than conventional products (DNA ECOS). Suitable for vehicles ranging from sedans to compact cars.

\*Product name and released month of all tires shown on page 12-13 are used in Japanese market only.