

Toyota Environmental Challenge 2050



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TOYOTA ENVIRONMENTAL CHALLENGE 2050



To go beyond zero environmental impact and achieve a net positive impact, Toyota has set itself six challenges. All these challenges, whether in climate change or resource and water recycling, are beset with difficulties, however we are committed to continuing toward the year 2050 with steady initiatives in order to realize sustainable development together with society.

CHALLENGE:1

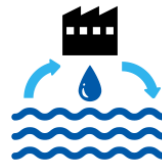
CHALLENGE:2

CHALLENGE:3

CHALLENGE:4

CHALLENGE:5

CHALLENGE:6



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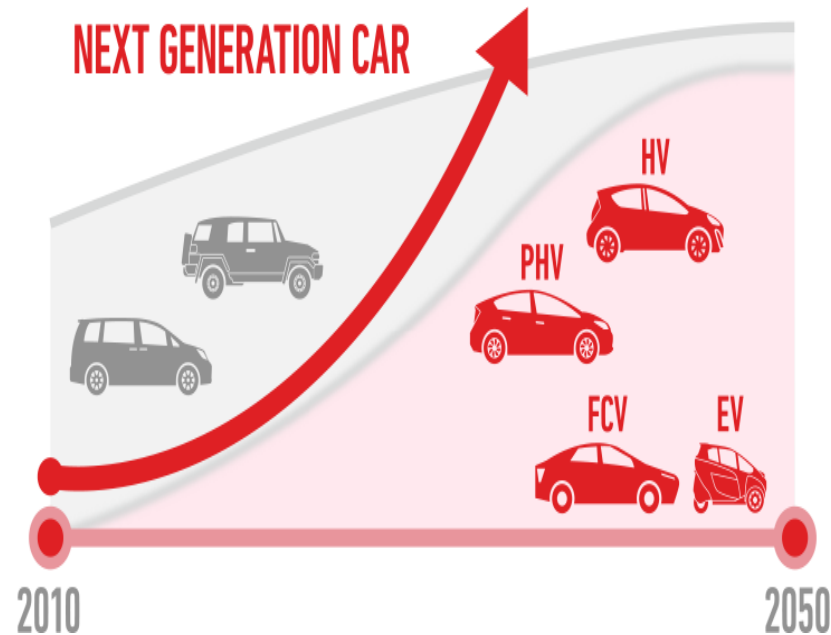
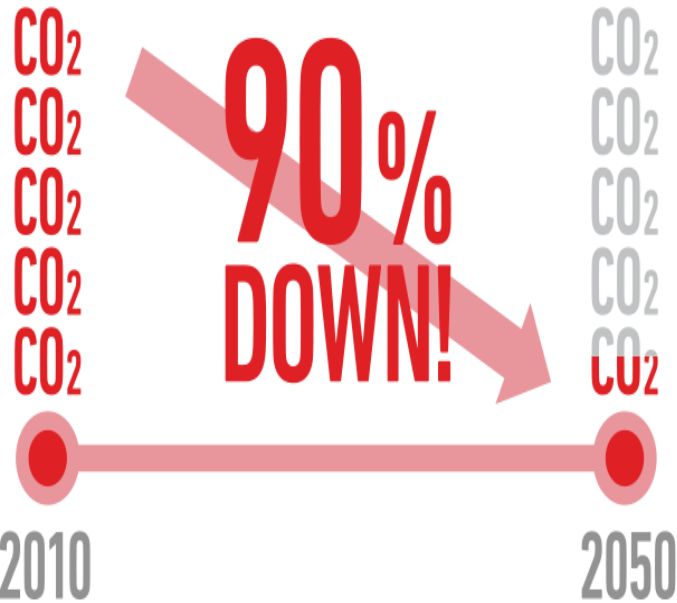
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CHALLENGE

1

CO₂  0

New Vehicle Zero CO₂
Emissions Challenge



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As if to demonstrate the fact of global warming, extreme weather patterns worldwide have been provoking successive disasters. If current conditions continue and increased measures are not taken to reduce greenhouse gases, it is estimated that by 2100 the world's average temperature will have risen by 3.7–4.8°C. It is further estimated that, to hold the temperature rise since before the Industrial Revolution to “below 2°C,” we will not only have to reduce additional CO₂ emissions to zero, but will need to achieve an actual positive trend through absorption.* While the world is trying to move toward “below 2°C” scenario, Toyota has, under the “New Vehicle Zero CO₂ Challenge,” decided to challenge itself to reduce vehicle CO₂ emissions by 90 percent in comparison with 2010 levels, by 2050. To realize this, in addition to mileage improvement of engine-driven vehicles, Toyota will promote the development of next-generation vehicles with low or zero CO₂ emissions—hybrid, plug-in hybrid, electric, and fuel cell vehicles and further accelerate the spread of these vehicles. When these eco-friendly vehicles come into widespread use, they can start making a contribution to society. Toyota will also cooperate with relevant stakeholders to provide possible support as an automobile manufacturer toward the provision of the infrastructure for widespread adoption of electric and fuel cell vehicles.

*5th Assessment Report of IPCC Working Group III (2014)

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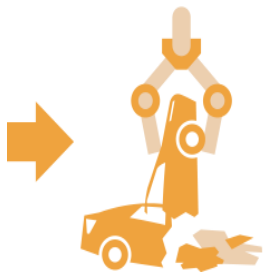
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CHALLENGE

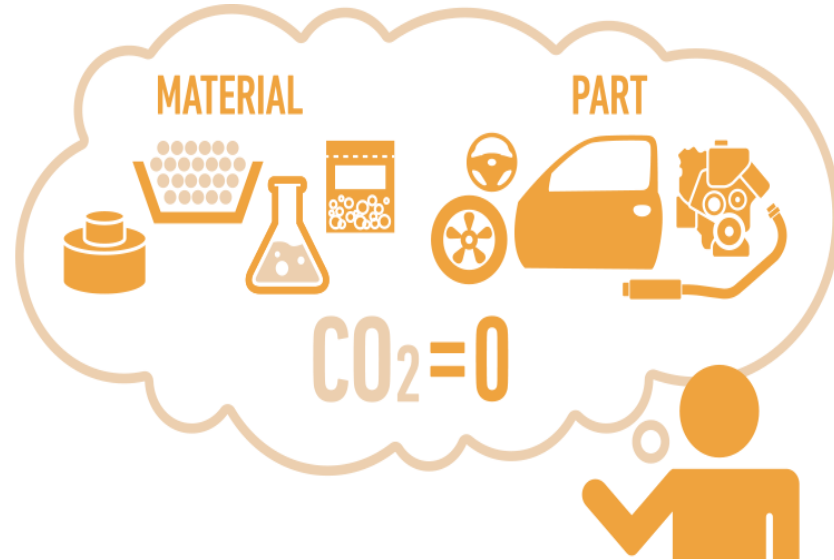
2



Life Cycle Zero CO₂ Emissions Challenge



CO₂=0



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By Lifecycle Zero CO₂ Emissions Challenge, we mean efforts to reduce to zero not simply the CO₂ emissions produced in traveling and manufacturing, but all CO₂ emissions including in the processes of materials production, and disposal and recycling of vehicles. For instance, there are some next-generation vehicles that do achieve reduced CO₂ emissions when driven, but actually cause increased CO₂ emissions at the material and vehicle production stages. Because of this, we will further promote environmentally friendly design such as by choosing appropriate materials. In this way, we are going to pursue “Always Better Cars.” For example, we will develop and expand the use of materials with lower CO₂ emissions during production and will reduce the quantity of materials and number of parts used in a vehicle. We will also adopt more recycling and biological materials for vehicle production and enhance the initiative aimed at easy to dismantle design.

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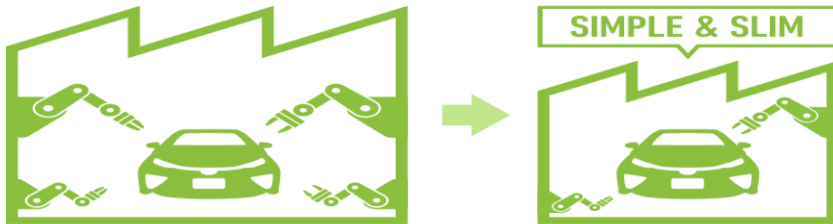
CHALLENGE

3

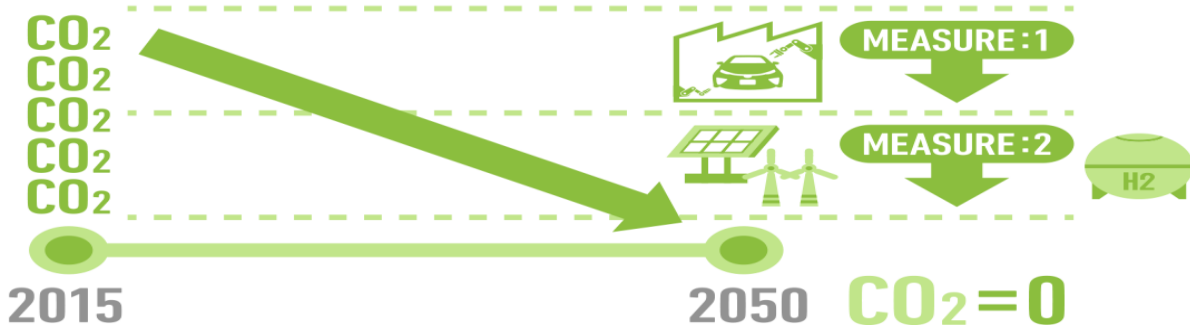
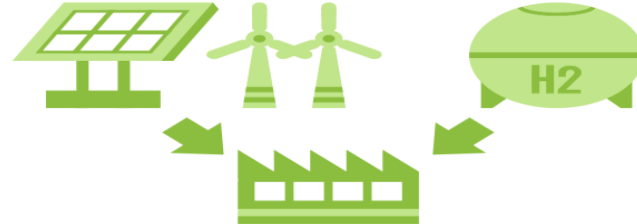


Plant Zero CO₂ Emissions Challenge

MEASURE : 1



MEASURE : 2



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Not only do vehicles emit CO₂ while traveling; CO₂ is also generated during their manufacture process. Reducing CO₂ to restrain climate change is therefore also a challenge for the plants that manufacture automobiles. The two main pillars of our strategy to achieve zero CO₂ emissions at our plants are improvement of manufacturing technology and switching to different forms of energy. Taking first the manufacturing technology, we will carry out simplification and rationalization of the manufacturing process to shorten it and reduce the time, thus cutting CO₂ emissions. Improved efficiency in energy use can also reduce CO₂ emissions. We will further reduce CO₂ emissions in all process types, for instance by introducing mechanisms that do not use energy. Regarding the energy sources used, we will cut CO₂ emissions by adopting renewable energy sources such as solar and wind power, and by utilizing hydrogen energy.

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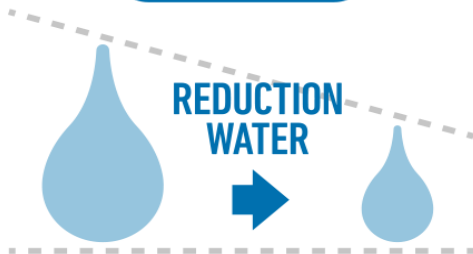
CHALLENGE

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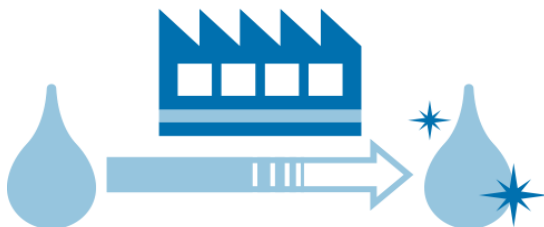


Challenge of Minimizing and Optimizing Water Usage

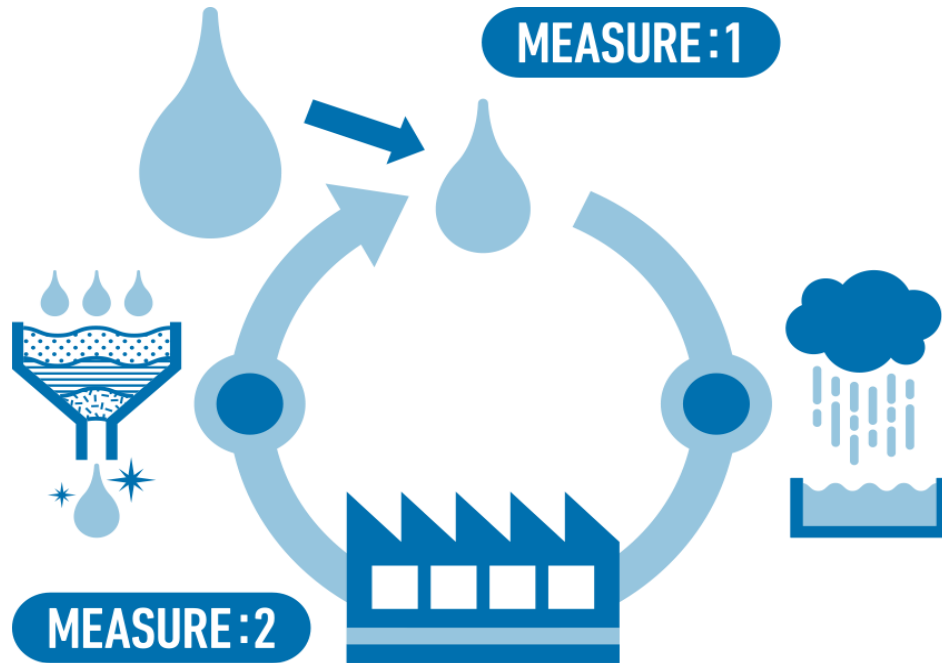
MEASURE:1



MEASURE:2



MEASURE:1



MEASURE:2

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According to forecasts, the world's population will climb to 9.1 billion by 2050, demand for water will increase by 55 percent from current levels, and as a result, the percentage of the total population suffering water shortages will reach 40 percent.* In automobile manufacturing, water is used in painting, forging and other processes. Therefore, even a small reduction of its impact on the water environment is important. Our two measures to achieve this are comprehensive reduction of the amount of water used and comprehensive water purification and returning it to the earth. So far, Toyota has implemented rainwater collection to reduce the amount of water used by production plants, filtering to increase the water recycling rate, and re-use of wastewater through recycling. The local water environment differs greatly depending on region. Going forward, we intend to roll out a range of measures globally to deal with the water environment in a way that is sensitive to local needs.

***Toyota date**

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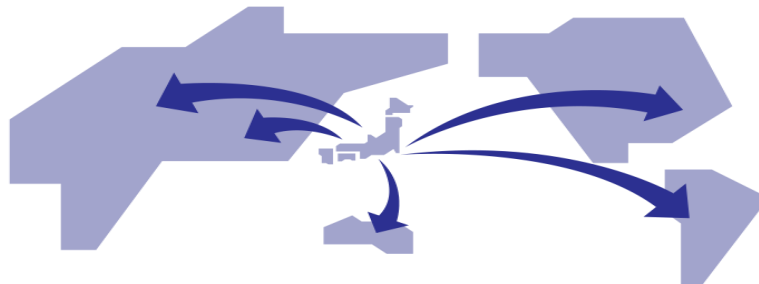
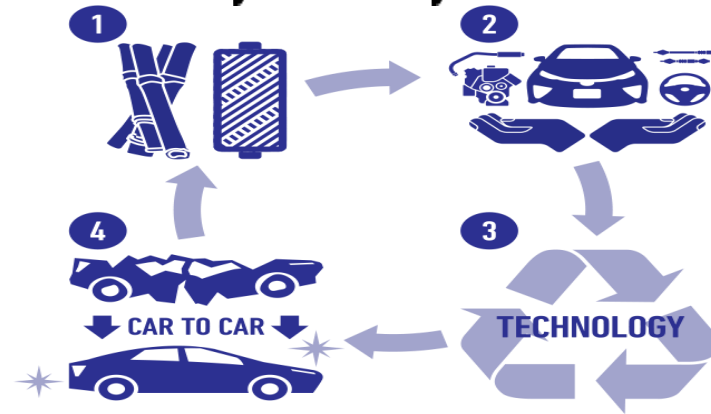
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CHALLENGE

5



Challenge of Establishing a Recycling-based Society and Systems



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With the worldwide increase in population and the pressure for economic growth and convenient lifestyles, the consumption of resources is accelerating. If present trends continue, large-scale exploitation of natural resources will result in depletion, and appropriate disposal will be unable to keep pace with the increasing amounts of waste generated by mass consumption, resulting in environmental pollution. To improve resource efficiency toward an ideal resource-recycling based society (circular economy), initiatives are needed in four key areas: (1) utilization of eco-friendly materials; (2) making use of parts longer; (3) development of recycling technology; (4) making vehicles from the materials of end-of-life vehicles. These last two apply to the whole of the automotive industry. Toyota has been working for 40 years on the challenge of resource recycling, leading the world by developing world-first technologies and in terms of scale of operations. Going forward, by rolling out to the world the technology and systems evolved in Japan and developing them into the future, we will continue working on the challenge of establishing a recycling-based society.

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CHALLENGE

6



Challenge of Establishing a Future Society in Harmony with Nature

1 YEAR

14% LOST



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If humans and nature are to coexist into the future, we need to conserve forests and other rich natural systems in all regions. However, deforestation is progressing around the world, so that every year, forest equivalent to 14 percent of Japan’s land area is lost.* To realize our aim of “enriching lives of communities” in each region, the Toyota group companies have engaged in planting trees at plants, environmental conservation activities in their surrounding area, and environmental education. Going forward, the insights gathered so far will be used to promote activity at Group, region, and organization level. Among the variety of activities we are rolling out are the Toyota Green Wave Project, which aims to connect regions with green corridors; the Toyota Today for Tomorrow Project, providing assistance for environmental activities that connect to the world; and the Toyota ESD Project, contributing to environmental education that connects to the future. Our aim is to establish a society where humans and nature coexist in harmony.

***Toyota date**