

Growth Strategies

Strategy 1 Development of Advanced Technologies

Looking forward the coming autonomous driving society, the KOITO Group aims to materialize a safe and secure automobile society by enhancing the performance of ADB (Adaptive Driving Beam), developing sensing technologies for LiDAR and cameras, products based on our lighting technologies, and smart infrastructure technologies.

Enhancement of ADB's Performance

The KOITO Group commercializes ADB, which can keep the driver's forward visibility in good condition by automatically control the light distribution patterns of high beams and enabling drivers to drive at high beams all times without glaring preceding and oncoming vehicles.

Since our Japan's first production of ADBs in 2012, we have promoted performance improvement, costs and diversification. In 2019, we have commercialized the world's first BladeScan™ ADB. Currently, ADB adoption is expanding in a variety of vehicles, from luxury vehicles to mini vehicles and trucks. In 2022, the use of ADB was legislated in the United States, and expected to accelerate its adoption.

The current BladeScan™ ADB achieves high-resolution light distribution equivalent to using approximately 300 light sources with 12 LED light sources. To further improve performance, reduce weight and costs, we are striving to commercialize a next-generation BladeScan™ ADB that provides light distribution equivalent to using 600 LED light sources. We are also promoting the development of high-resolution ADB, which achieves high-level of light distribution equivalent to several thousand to tens of thousands of light sources. We are working to further expand ADB's adoption ratio within the KOITO Group's headlamps, with the goal of 20% in FY 2031.

Development of Sensing Technologies

By installing sensors such as LiDAR in the headlamps and rear combination lamps located at the four corners of the vehicle, efficient 360° sensing around the vehicle can be achieved.

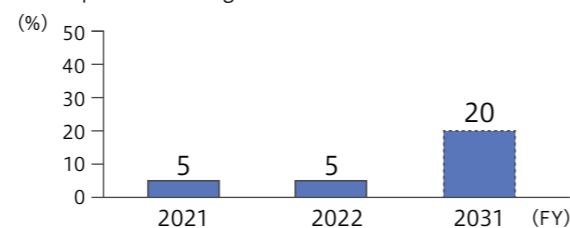
As one of our sensor developments, the KOITO Group is developing a high-precision LiDAR capable of sensing distances of 200 to 300 meters with high resolution. We are also developing all-weather cameras capable of accurately detecting objects in bad weather conditions such as heavy rain and snow.

The market scale for these ADAS, LiDARs and cameras for autonomous driving is forecast to grow by approximately 200 times in LiDAR market and 2.5 times in the camera market over ten years from 2020 to 2030.



Executive Vice President,
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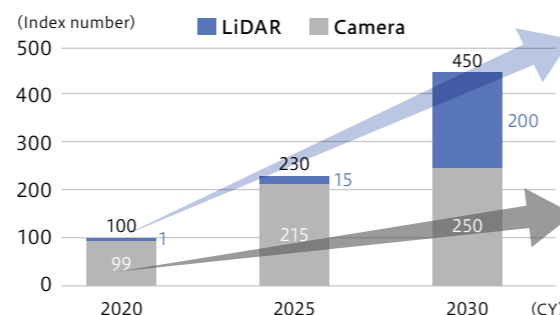
■ ADB penetration targets (Global)



■ Performance of sensors developed by KOITO

	LiDAR	All-weather camera
Distance measurement	200m	150m
Object detection	○	○
Object detection under bad weather condition	△	○
Autonomous driving level	Level 3 and 4	Level 4

■ Market scale of LiDARs and cameras

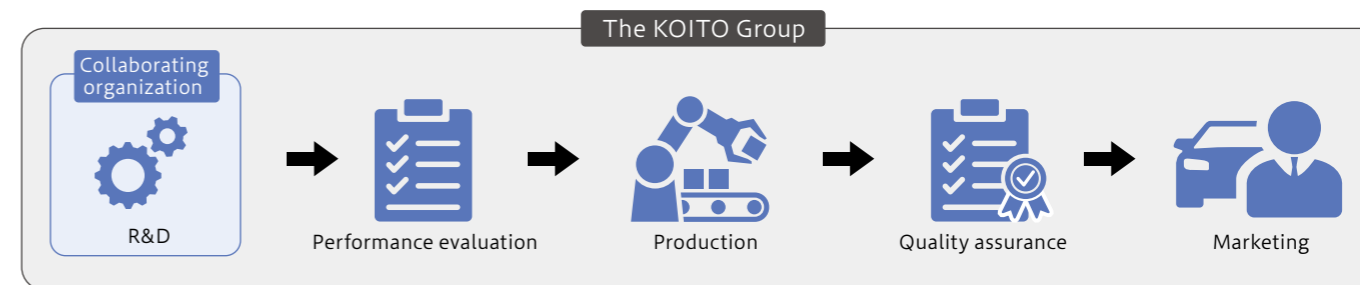


LiDAR

We are promoting product development that combines the KOITO Group's lighting technologies and technologies on product design and mass production that we have cultivated over the years with external collaborative organizations' advanced LiDAR technologies.

KOITO's LiDAR, which uses the MMT™ (Micro Motion Technology) method of Cepton, Inc. (Cepton), achieves superior detection capabilities and is scheduled to be commercialized in 2023. We are currently working to ensure the reliability and improve productivity of products required for automotive sensors.

■ Roles of the KOITO Group and Collaborating Organizations in LiDAR Commercialization



Development of Products Based on Our Lighting Technologies

KOITO is enhancing the added value of lamps by proposing new products with a theme of "Light," by utilizing the technologies cultivated in lamps development to peripheral products. We are aiming to contribute to the safety and security of the society by reducing accidents and etc.

Communication Lamp

Communication lamps contribute to prevent accidents by quickly transit necessary information, such as vehicle movements and warnings, to surrounding vehicles and pedestrians.

■ Communication lamp

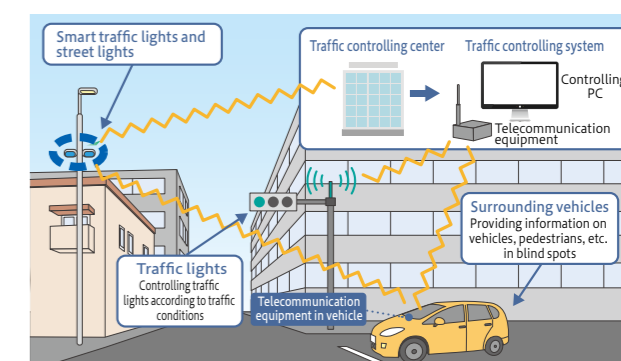


Development of Smart Infrastructure Technologies

KOITO is working with KOITO ELECTRIC INDUSTRIES to develop smart infrastructures. By installing in-vehicle sensors (LiDAR, cameras, etc.) on traffic infrastructures such as traffic lights, those infrastructures enable to detect surrounding traffic conditions and provide information to traffic control systems and surrounding vehicles.

In addition to contributing to safety and security, such as preventing traffic accidents and alleviating traffic congestion, the system is expected to contribute to the environment by reducing CO₂ emissions. We are aiming to commercialize this system in 2024.

■ Telecommunicating image of smart traffic lights



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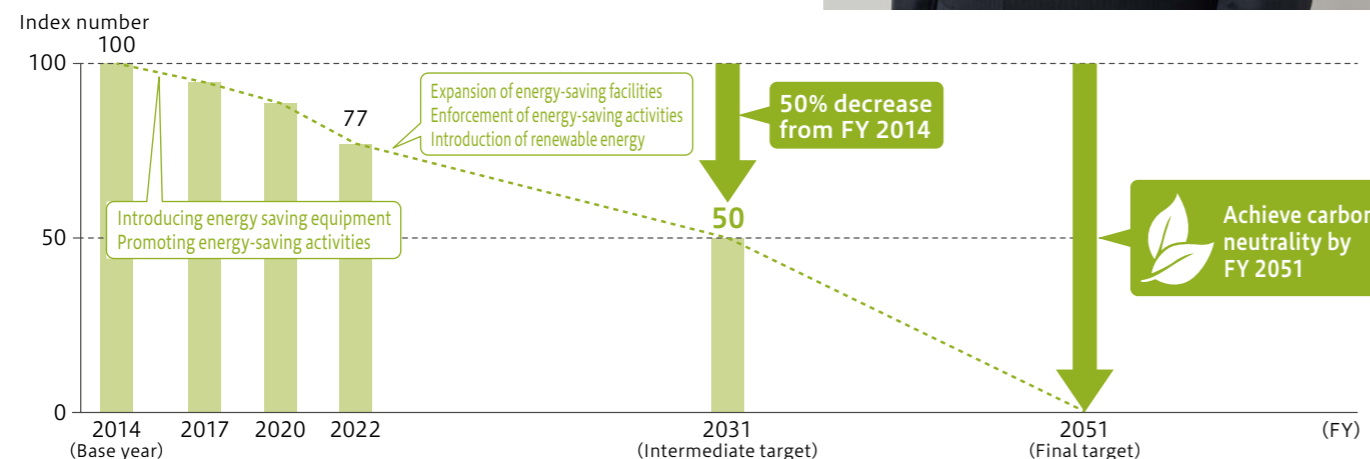
Strategy 2 Initiatives to Achieve Carbon Neutrality

To accelerate our activities on “prevention of global warming,” one of KOITO’s materiality, the entire company is working together on environmental activities to reduce CO₂ emissions in Scope 1 and Scope 2 by 50% in FY 2031 compared to FY 2014, and to achieve net-zero emission, or carbon neutrality by FY 2051.

CO₂ Emissions Results and Targets

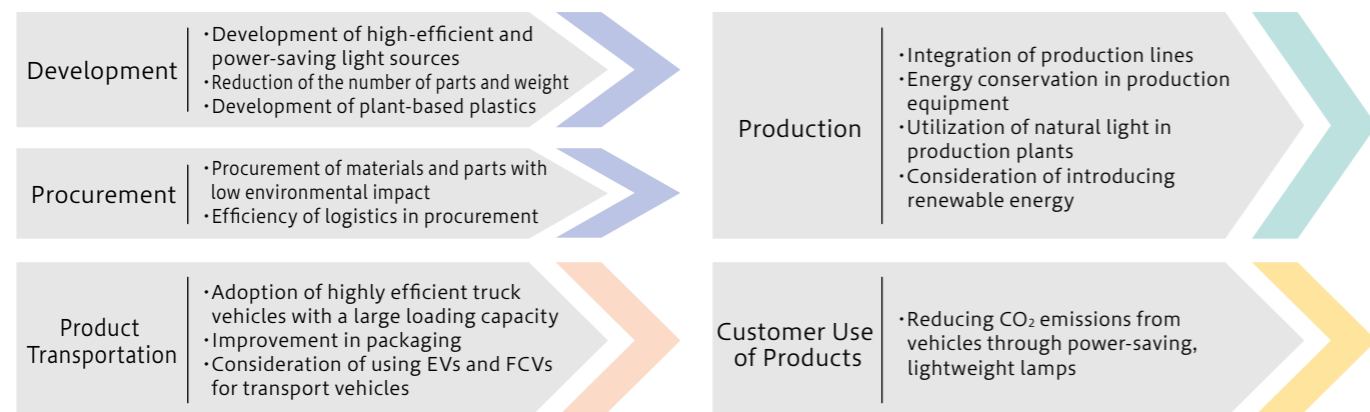
KOITO has promoted the introduction of energy-saving facilities and energy-saving activities, mainly in the manufacturing process, and has worked to reduce CO₂ emissions. As a result, CO₂ emissions in FY 2022 was 23% lower than FY 2014, which is the base year for CO₂ emissions.

We will vigorously promote environmental activities, such as further introducing energy-saving facilities and considering the introduction of renewable energy. With our target of reducing CO₂ emissions by 50% in FY 2031 compared to FY 2014, which exceeds the government target, and achieving carbon neutrality in FY 2051, KOITO will further strengthen our activities to reduce CO₂ emissions.



Reducing CO₂ Emissions Considering Product Life Cycle

In order to contribute to materialize a decarbonized society, KOITO is working to reduce CO₂ emissions from vehicles. We are promoting several company-wide activities by promoting products’ power conservation, size reduction, and weight reduction from the development and design phase, as well as introducing energy-saving facilities at production sites.



Development

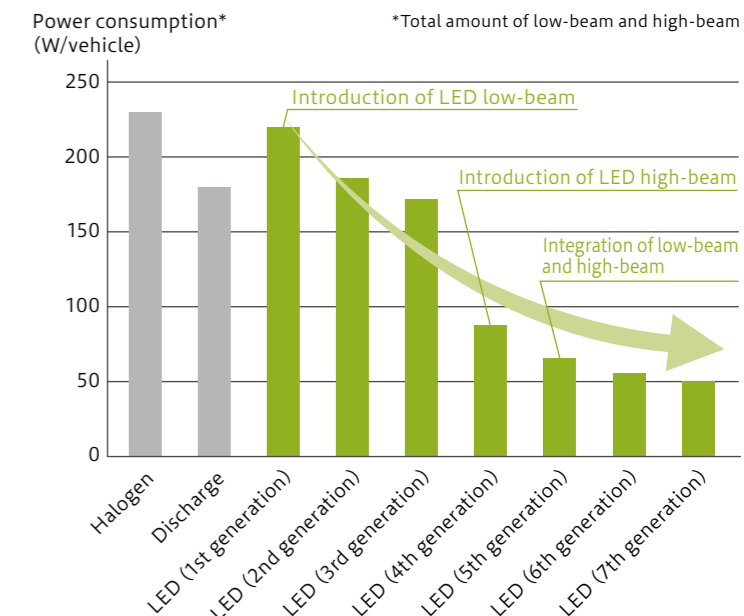
-Reduction of headlamp’s power consumption-

Aiming to reduce CO₂ emissions by improving the fuel efficiency of vehicles, and to respond to the accelerating shift to EVs, KOITO has started to introduce LEDs as the light source for headlamps ahead of its competitors. The latest LED headlamps, consume about 80% less electricity than the conventional halogen headlamps and 70% less electricity than discharge headlamps, contribute to reduce vehicles’ battery load.

Due to their capabilities, the adoption of LED headlamps has expanded to a variety of vehicles, including large-size and compact vehicles, mini vehicles, and motorcycles. In FY 2022, global LED adoption ratio among the KOITO Group’s headlamps was approximately 70%, and is expected to widespread further.

With the aim of commercializing even greater power savings and lighter lamps, we are also working to improve the performance of white LEDs, reduce the number of parts, and use resins efficiently.

■ Reduction of headlamp’s power consumption



LED Headlamp’s Contribution on CO₂ Reduction

The KOITO Group is contributing to improve vehicle fuel efficiency and reduce CO₂ emissions by providing eco-friendly products.

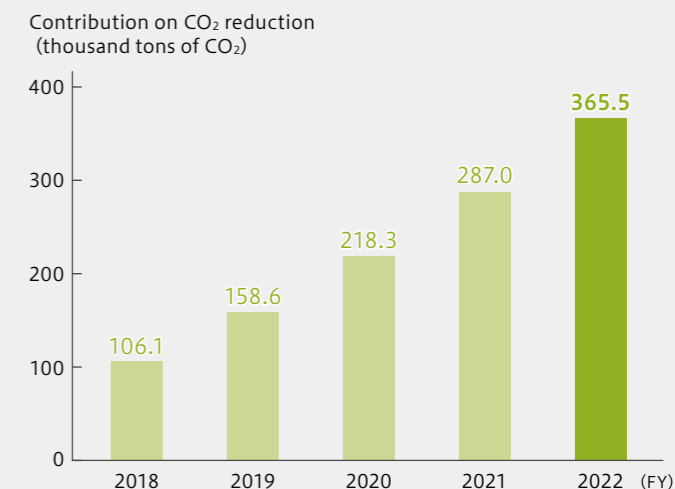
KOITO has evaluated our global environmental contribution of LED headlamps by comparing the amount of CO₂ emissions when using conventional halogen headlamps.

Contributions are increasing year by year due to the evolution of light sources and the spread of LED headlamps.

KOITO has calculated the contribution by referring to the calculation methodologies on the EU’s “Technical Guidelines for the preparation of applications for the approval of innovative technologies pursuant to Regulation (EC) No 443/2009 and Regulation (EU) No 510/2011” and JAPIA’s “Second Version of Regulation 2 of the Guidelines for Calculating LCI (Data Chart for Calculating Environmental Impact at the Stage of Use).”

[Calculation formula]
Energy-saving effect* (W/units) / 1,000 × Consumption of effective power (ℓ/kWh) / Efficiency of alternator × CO₂ emission factor (t-CO₂/ℓ) × Operating hours (hours/year) × Usage factor × the number of vehicles equipped with the KOITO Group’s LED headlamps
*Power consumption differences between LED headlamps and halogen headlamps

■ LED headlamp’s contribution on CO₂ reduction



Production -Reduction of CO₂ emissions by integrating surface treatment lines-

The lenses of headlamps are processed in two processes: hard coating and anti-fogging coatings. Previously, hard coating and anti-fogging coating were done on separate processing lines. Aiming to integrate conventional two lines into a single line, KOITO is developing equipment and materials that can be processed with a single line. We are gradually integrating these lines.

Following the integration, we are aiming to reduce power consumption by 65% comparing with conventional lines.

