




I am Koji Sato.

Thank you very much for coming to our Multi-pathway Workshop today despite the bad weather conditions.

The three companies here today—Subaru, Mazda, and Toyota—will talk about a multi-pathway approach to achieving carbon neutrality, especially in taking on new challenges related to engines.



カーボンニュートラル

Carbon neutrality

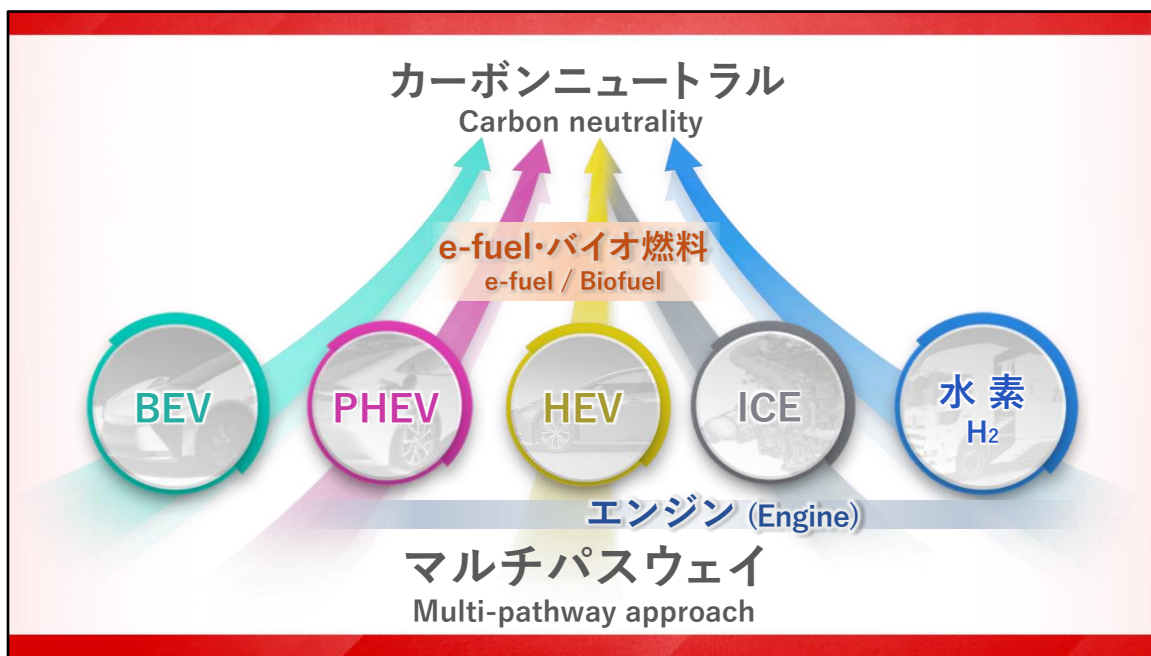
To achieve carbon neutrality, it is important to consider the future of energy and prepare diverse options to ensure reduced CO₂ emissions.



At last year's G7 Hiroshima Summit, we conveyed to the world the Japanese automotive industry's belief in diverse options, using the key messages of “diversity in carbon neutrality” and “there is a uniquely Japanese way to climb the mountain, which is carbon neutrality.”



As one of the diverse options, each of the three companies here is pursuing its own battery EV initiatives, and engines also represent a necessary multi-pathway technology.



To promote the popularization of electrified vehicles, we will pursue the new values required of powertrains and evolve them into ones that are suited for the future energy environment.

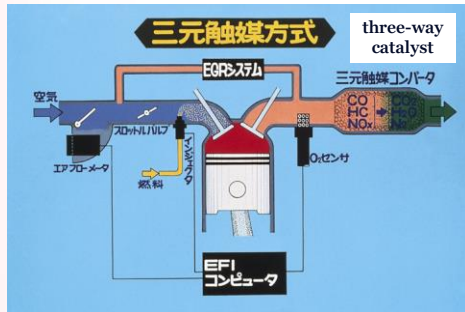
Based on these aspirations, we are advancing the development of new engines.



Today, in the CEO session, we would like to share our thoughts on these initiatives, while in the CTO session, the three companies will provide specifics on technological developments.

1970年代 排ガス規制対応

Response to emission regulations in the 1970s



1990年代 ハイブリッド

Hybrid electric vehicles in the 1990s



Throughout history, internal combustion engines have evolved to meet the social challenges of the times.

In the 1970s, when air pollution began to become a problem, our industry overcame strict emission regulations by pursuing various technologies, such as improvement of combustion and catalyst performance.

The challenge of creating the first-generation Prius, which was based on the goal of doubling fuel efficiency before the 21st century, was also an effort to pursue a new direction for engines.



Similarly, over the past few years, we have taken on the challenge of achieving carbon neutrality and continually refining our engine technology in motorsports by leveraging what is unique to Subaru, Mazda, and Toyota.



We have realized that learning from each other's strengths and challenges drastically increases the speed of the technological evolution.

It is against this backdrop that we are developing the engines that each company is announcing today.

開発コンセプト①

Development concept

電動ユニットとの組み合わせによる さらなる効率の追求 小型化

Pursuing greater efficiency through combination with an electric power unit
More compact

Toyota is developing new low-displacement inline 4-cylinder engines.

This effort is based on two development concepts.
One is the pursuit of greater efficiency and compactness through combination with an electric power unit.

電動ユニットに、エンジンを搭載する

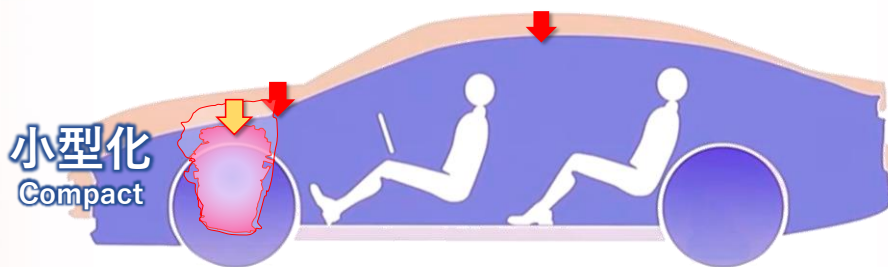
Electric power unit “with Engine”



Based on the concept of adding an engine to an electric unit, we are refining our technology to achieve higher efficiency than before by leveraging the areas in which each electric motor and engine excel.

小型化・搭載の自由度向上

More compact · Flexibility of mounting



By optimizing engines for electrification, we will make their structure more competitive and compact, which will lead to more flexibility in engine installation in cars.

電気リッチなHEV・PHEV

“Electric-rich” hybrids and plug-in hybrids



電動化時代に最適なエンジン

Engine optimized for the electrification era

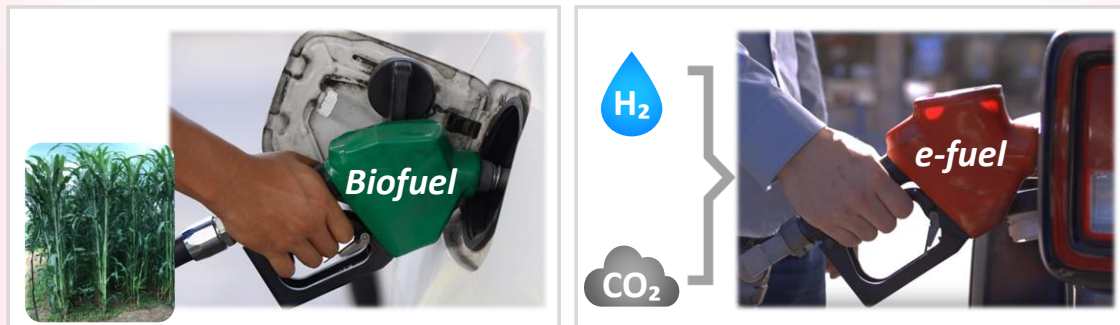
Toyota sees this as an opportunity to develop engines that are optimized for the electrification era and make it possible to create hybrid and plug-in hybrid vehicles that are “electric-rich.”.

開発コンセプト②

Development concept

燃料の多様化への対応

Response to the diversification of fuels



The second concept is responding to the diversification of fuels, such as biofuels and e-fuels.

高度な燃焼技術

Advanced combustion technologies

D4-S



直噴 + ポート噴射

Direct injection and port injection



2GR-FSE

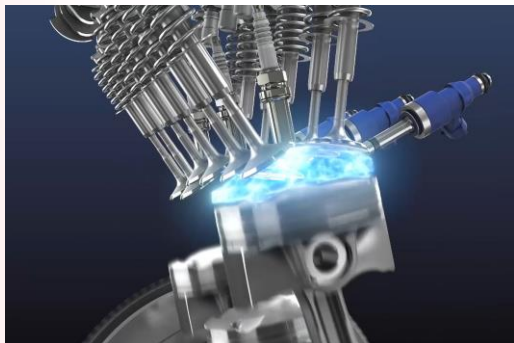
Toyota has, until now, internally developed advanced combustion technologies, such as D4-S.

カーボンニュートラル燃料の普及

Popularization of carbon-neutral (CN) fuels

多様な燃料に対応するエンジン

Developing engines that can use diverse CN fuels



使用量を増やす取り組み

Initiatives to increase the use of CN fuels



By leveraging this strength, we hope to enable engines to efficiently use diverse fuels so we can contribute to the popularization of carbon-neutral fuels.

We also believe that widespread adoption of carbon-neutral fuels requires increasing their use.



As announced yesterday, we will work with Idemitsu Kosan, ENEOS, and Mitsubishi Heavy Industries to consider establishing a carbon-neutral fuel supply chain as part of this effort.



The inline 4-cylinder engine has been refined over its long history.

Its simple structure and highly flexible installation requirements have enabled it to support a diverse product lineup, from family cars to sports cars.

We would like to thoroughly refine the characteristics of Toyota's new inline 4-cylinder engines and develop them into powertrains that can create diverse cars in the age of carbon neutrality.



「共創」と「競争」 Co-creation and Competition

I believe that the key to creating the future is to pursue co-creation and competition.

Technology evolves through friendly competition with colleagues who share the same aspirations for the future.

エンジンで挑戦する カーボンニュートラルの未来へ

Pursuing a carbon-neutral future with engines



Leveraging each uniqueness, we will pursue the possibilities of engines in a multi-pathway approach to achieve carbon neutrality.

Next, I would like Mr. Osaki of Subaru to share his passionate thoughts about this endeavor.

Osaki-san, if you will, please!