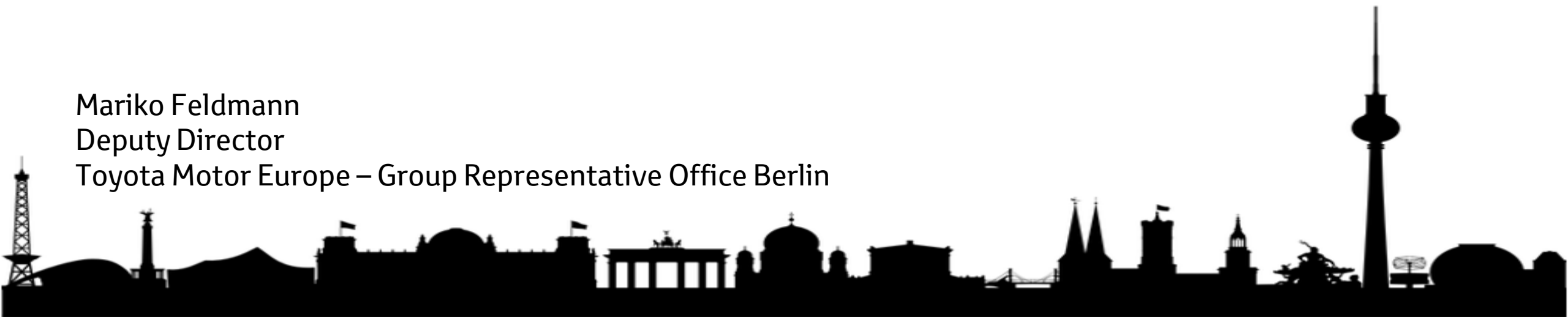


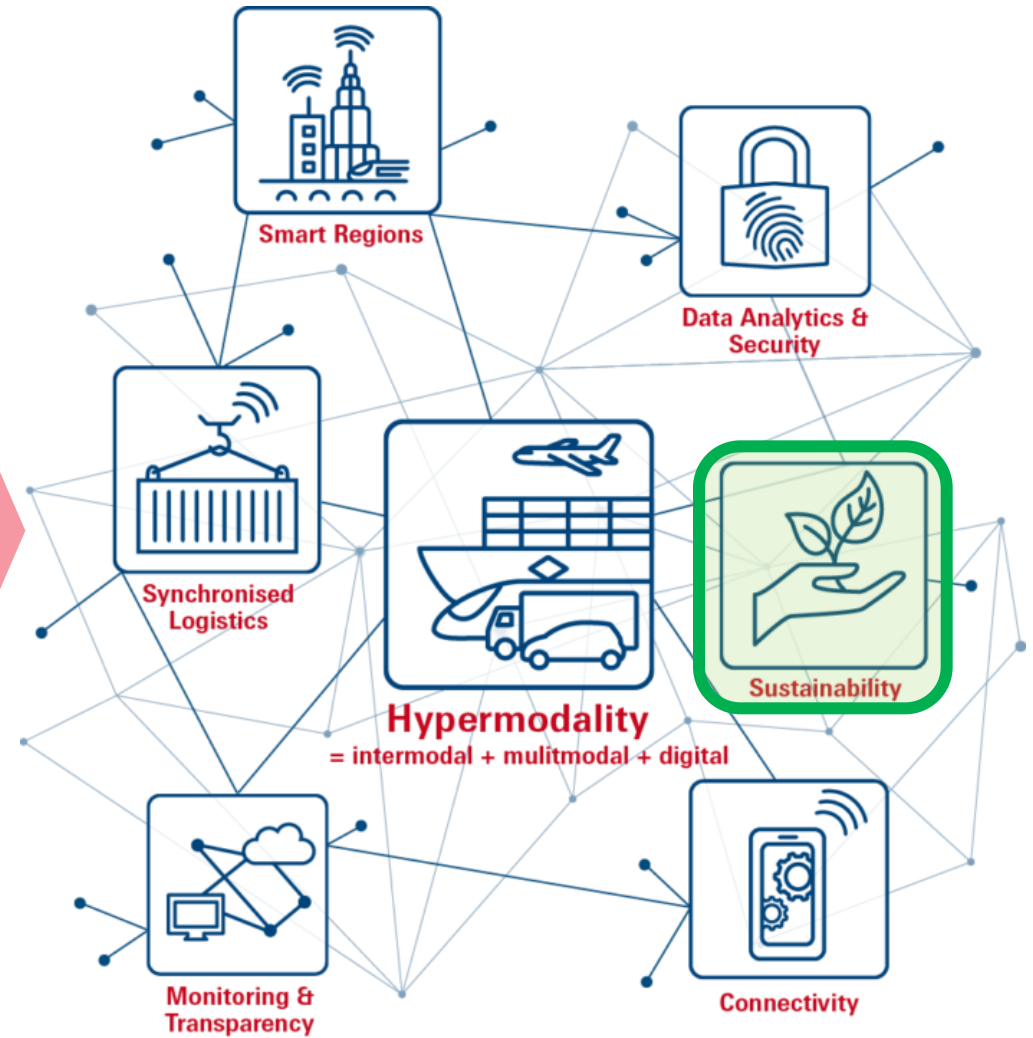


Driving Change – Environmental Challenge 2050

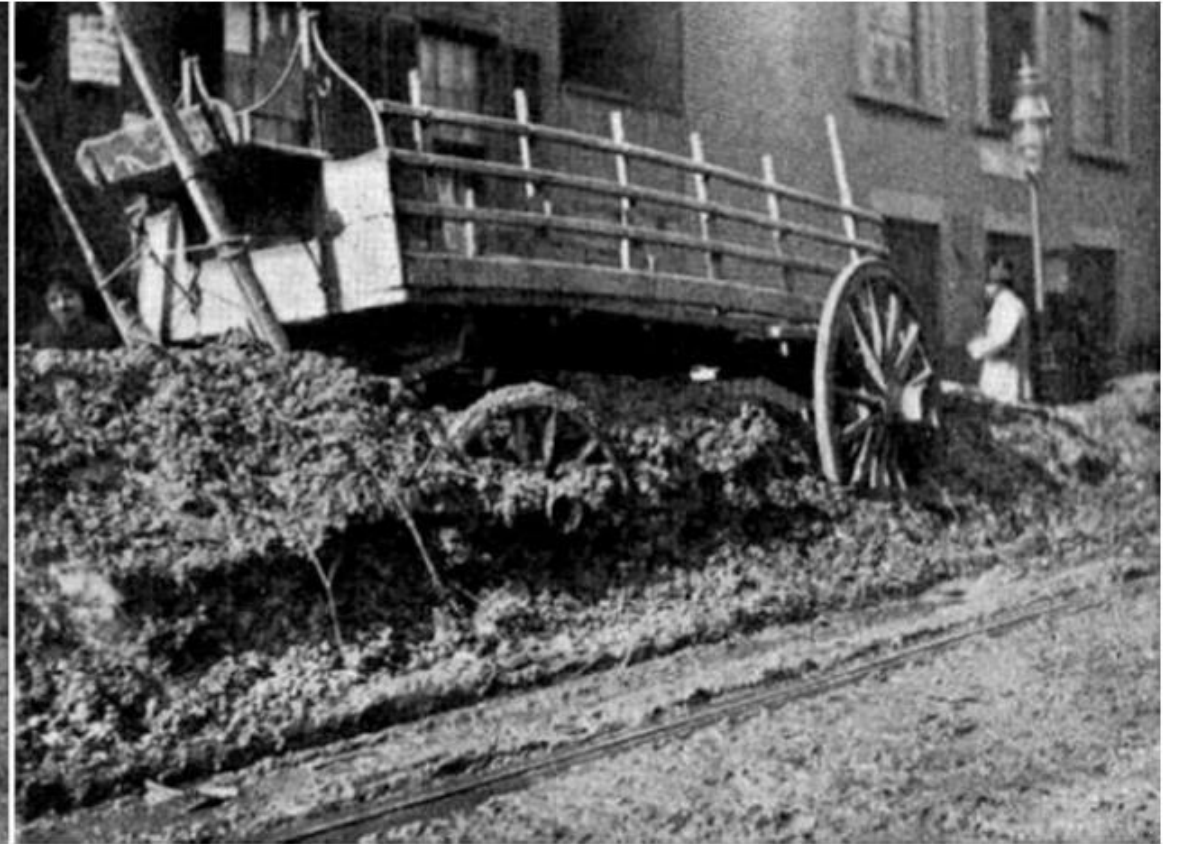
Mariko Feldmann
Deputy Director
Toyota Motor Europe – Group Representative Office Berlin



Driving Change



The car - a positive disrupter



New York City, 19th Century

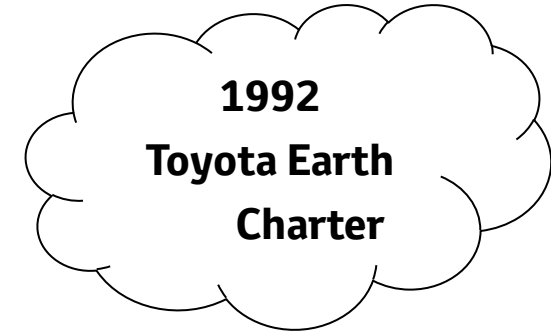
Global Challenges



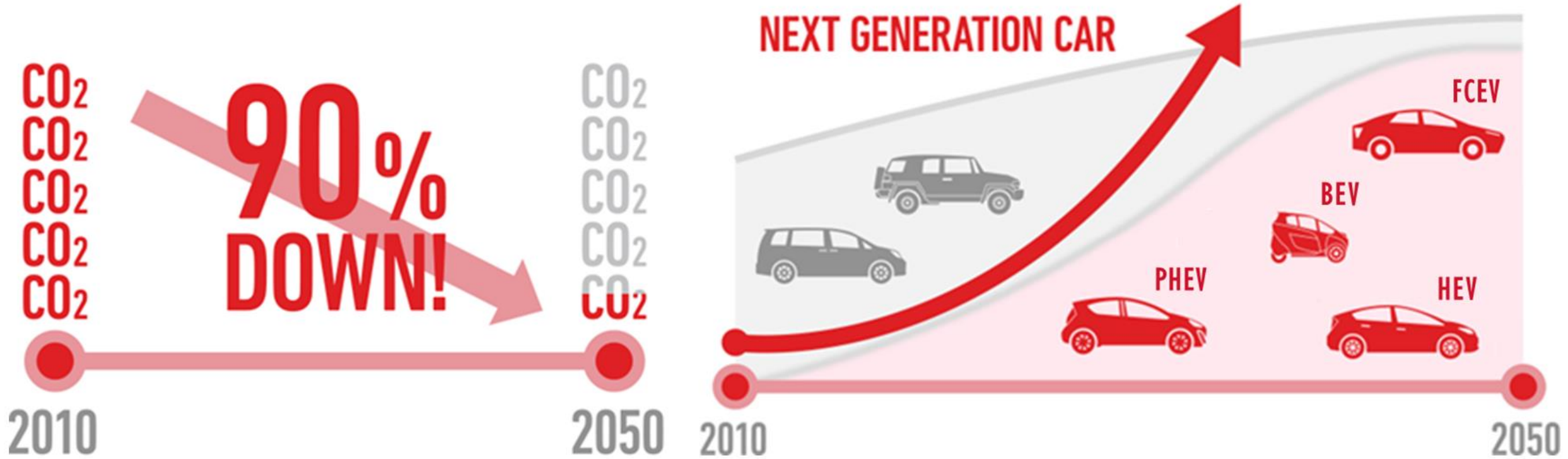
Increasing global resource consumption



Toyota Environmental Challenge 2050

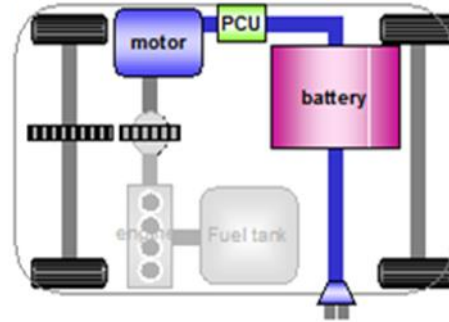
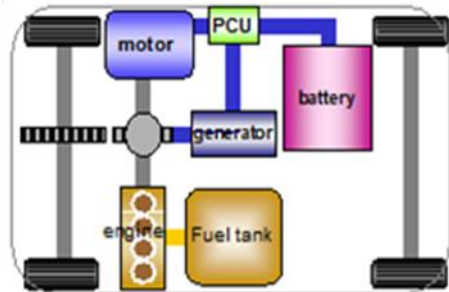


Challenge No 1 – CO₂ Reduction

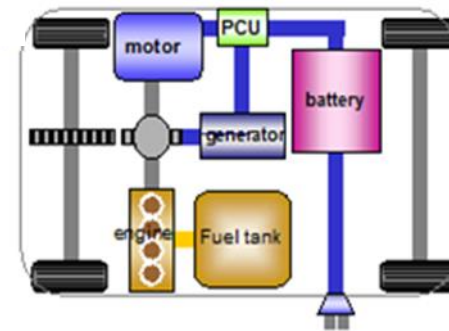


Toyota Hybrid Electric System

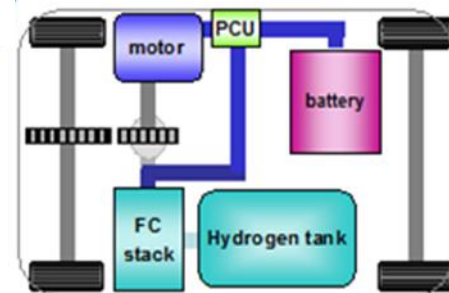
**Full Hybrid
Electric Vehicle
(HEV)**



**Battery
Electric Vehicle
(BEV)**



**Plug-in Hybrid
Electric Vehicle
(PHEV)**



**Fuel Cell
Electric Vehicle
(FCEV)**

TOYOTA

Hybrid Electric as Core Technology

Sustainable Mobility

Energy diversity

CO₂ reduction

Air quality

HYBRID ELECTRIC TECHNOLOGY

Gasoline,
diesel

Gaseous
fuels

Biofuels

Synthetic
fuels

Electricity

Hydrogen

TOYOTA

All began with *PRIUS*

Prius Concept
Tokyo Motor Show
1995



TOYOTA

20 Years of Hybrid EVs

12

Million Hybrid EVs
sold worldwide
since



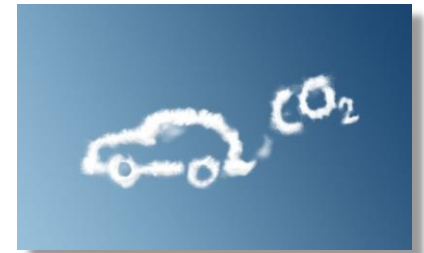
36

Hybrid EV
models on sale
in



-85

Million tons of CO₂



1997

>90

Countries & regions

Electrification Frontrunner - Prius

5.1

l/100km
(28.0 km/l)

4.3

l/100km
(29.6km/l)

3.9

l/100km
(32.6 km/l)

3.0

l/100km
(40.8 km/l)

16%

Improvement

9%

Improvement

21%

Improvement



1997

2003

2009

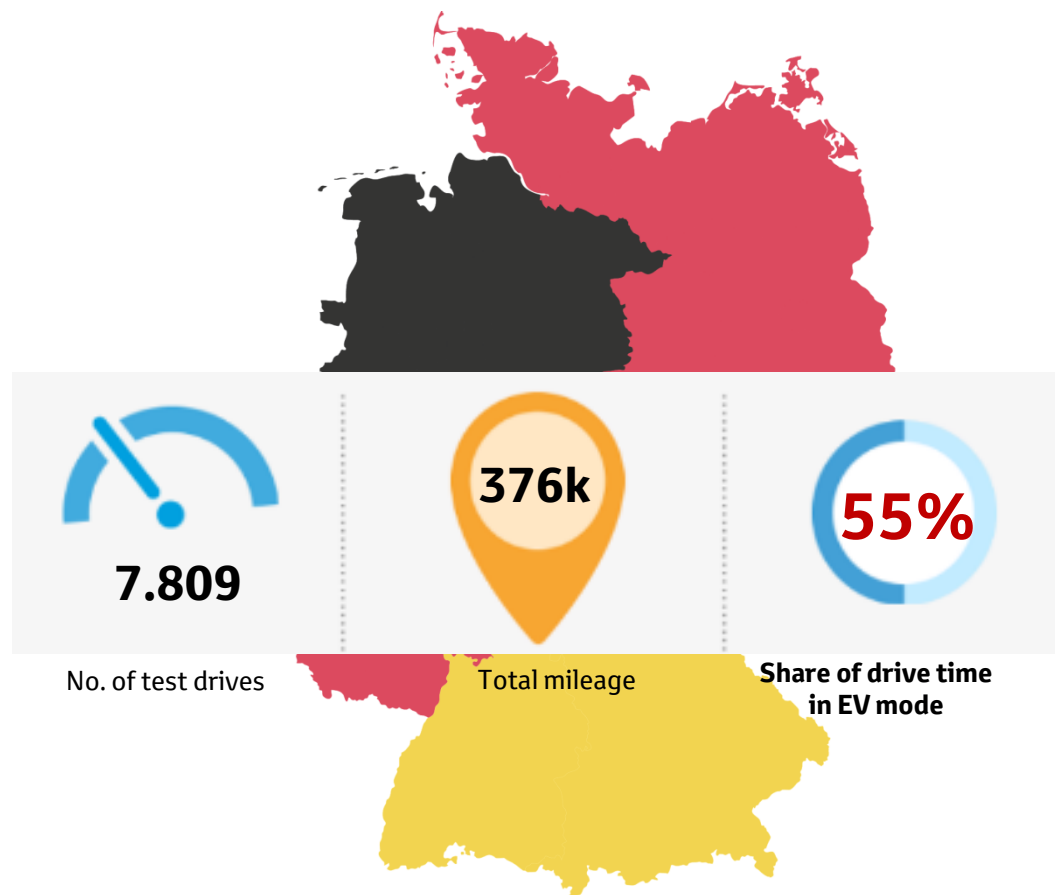
2016

l/100km : NEDC Mode
(km/l: Japan JC08 Mode)

TOYOTA

EV Mode Challenge Unplugged

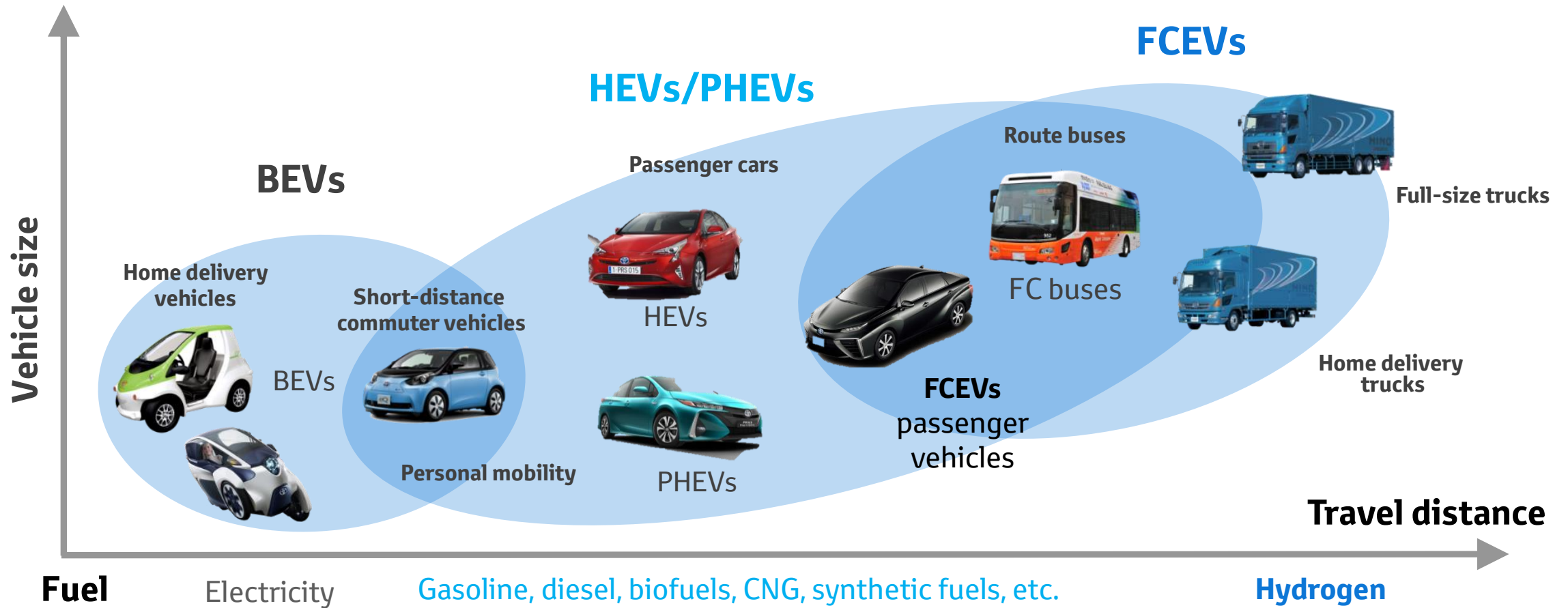
“E-Test Drives” @ Dealer
(unexperienced HEV driver)



E-Taxi Challenge Berlin vs Munich
(experienced HEV driver)



Toyota's Sustainable Mobility Roadmap



BEVs: short-range; HEVs & PHEVs: general use; FCEVs: medium- to long-range

TOYOTA

Advantages of Hydrogen

Can be obtained
from a variety of
primary energy
sources

Zero CO₂
emissions

High energy
density

Important as
storage for
fluctuating
energy

H₂

Mirai - Fuel Cell Electric Vehicle (FCEV)



Mirai – as easy as a conventional car

Zero CO₂
emissions

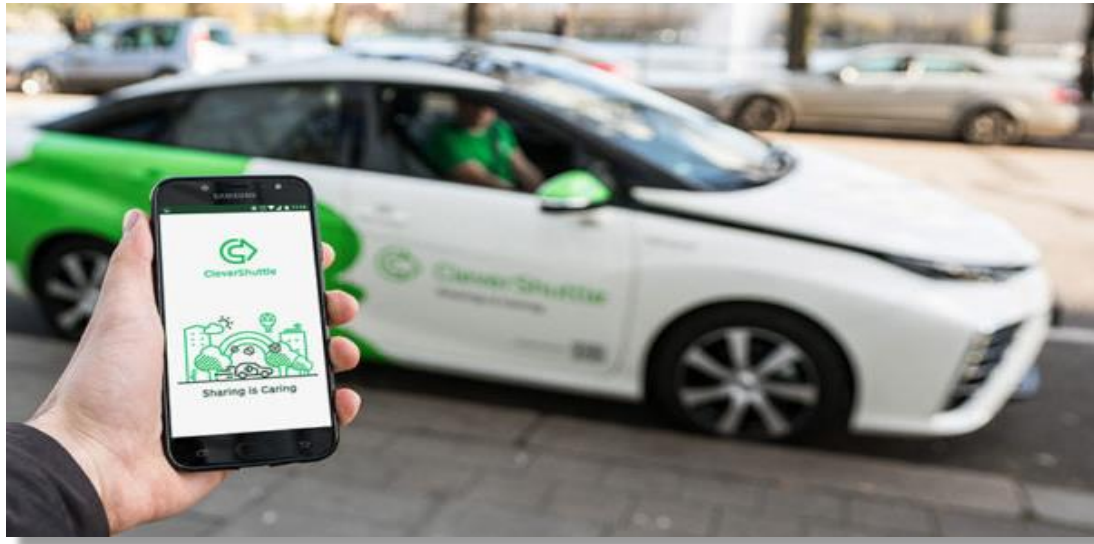
3-5 min refueling
500km* range

Smooth, quiet driving
(Electric motor)

*Depending on driving style

TOYOTA

Mirai @ Clever Shuttle Ride Sharing



- **Mirai @ CleverShuttle** ride sharing fleet in **Hamburg, Munich, Berlin, Stuttgart**
- More than **60.000 guests** transported in MIRAI by end of March 2018
- - **27,27t CO₂** since start of cooperation in October 2017



H₂ Society – TOYOTA Mirai



- Increase of Mirai Production up to 30,000/pa (2020)
- Broad usage of Hydrogen Technology within Toyota Group

TOYOTA
FC Bus



TOYOTA – Project Portal
FC Truck @ LA Port



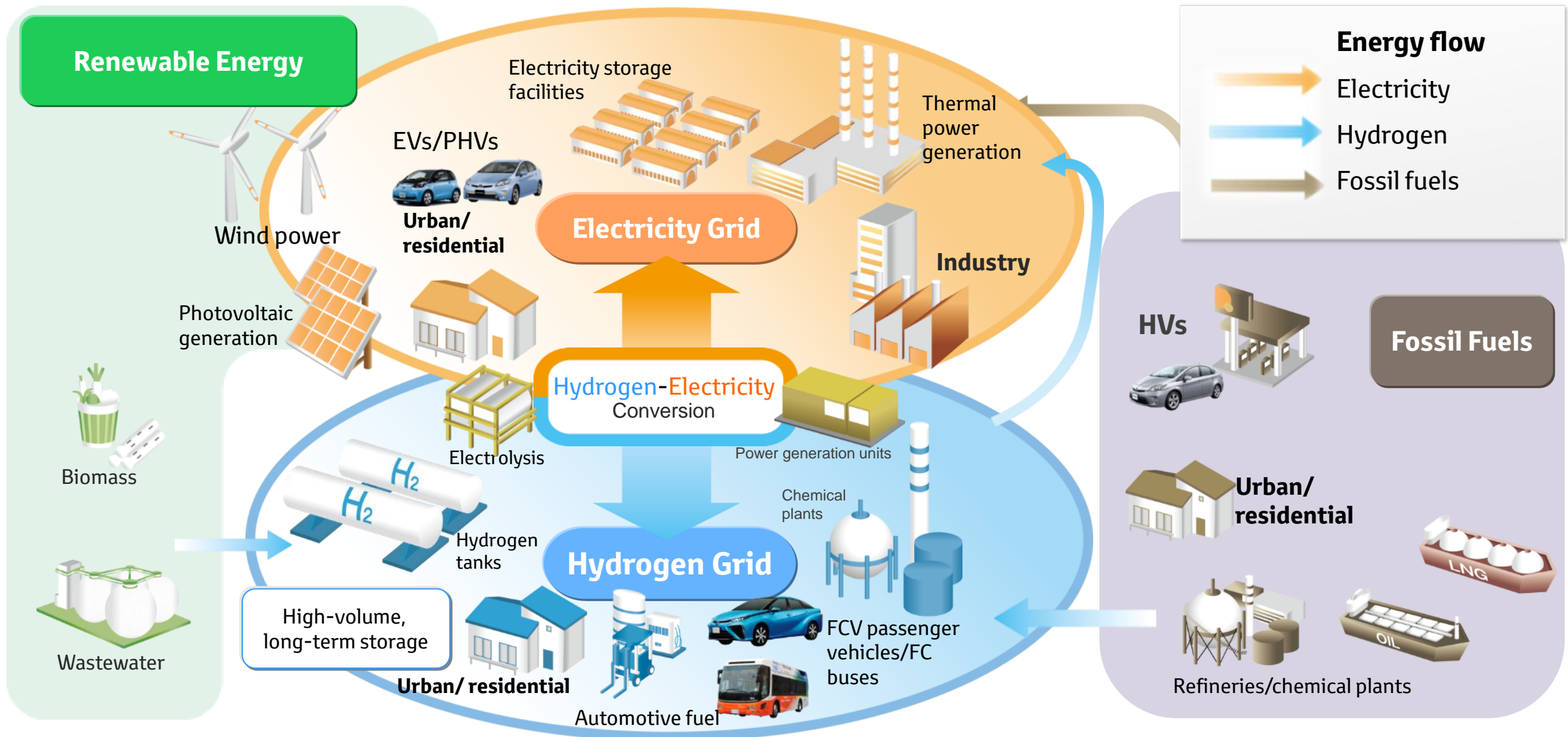
Toyota Material Handling
FC Forklifts



Aisin Seiki
Household FC-System



Hydrogen Society

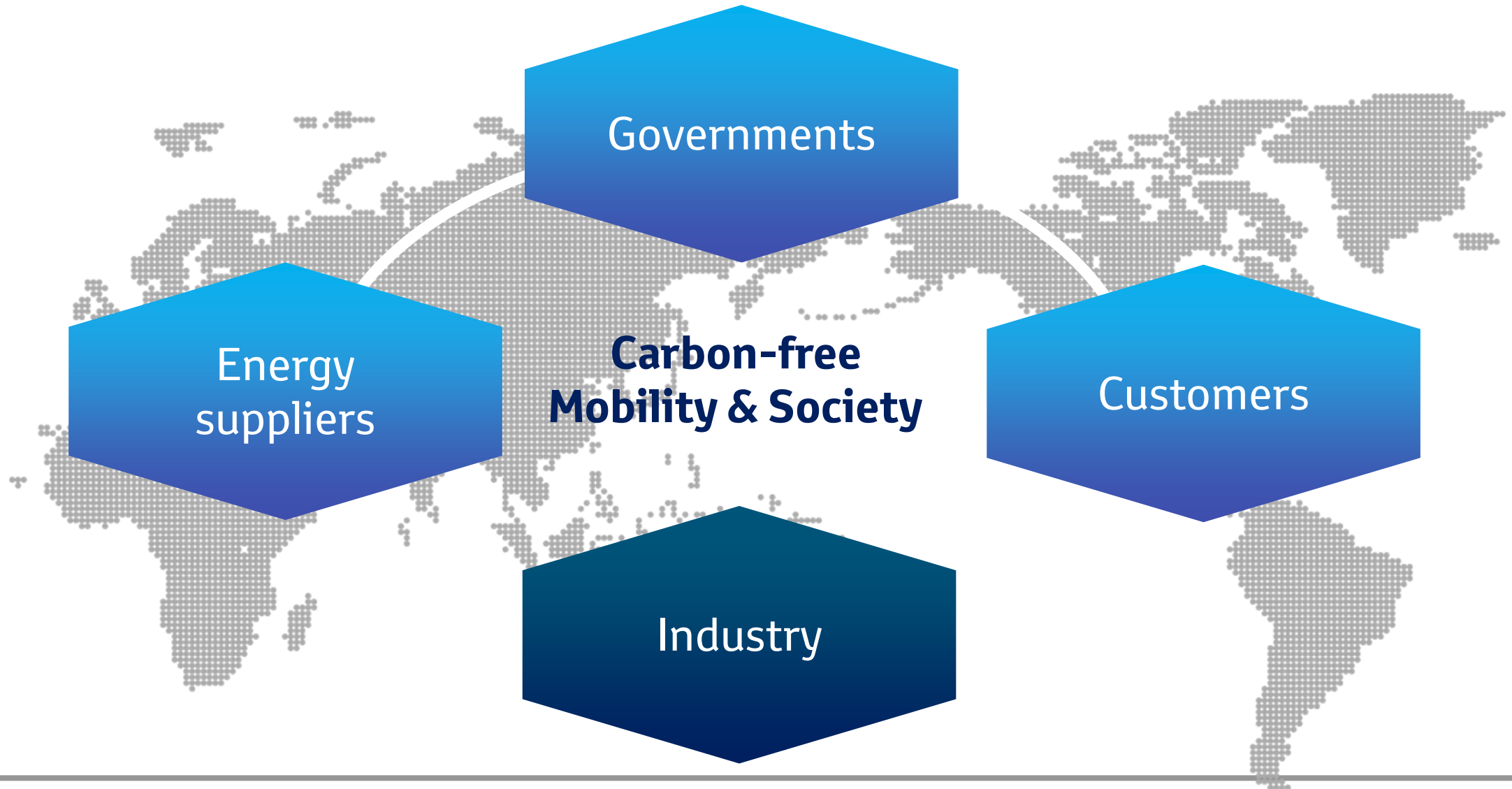


Hydrogen Council – Industry Cooperation



TOYOTA

Progress through Collaboration



Vielen Dank

ご清聴ありがとうございました

