Role of battery storage in the next generation energy system

Dr. YOSHINO Akira
AIST Fellow
Director, Global Zero Emission Research Center (GZR)
Department of Energy and Environment
Profile

• Dr. Eng. 2005 from Osaka University
• Honorary Fellow at Asahi Kasei Corporation
• President at Lithium Ion Battery Technology and Evaluation Center
• Professor at Meijyo University
• Visiting Professor at Kyushu University
• AIST Fellow, Director at Global Zero Emission Research Center, AIST
• 2019 Nobel Laureate in Chemistry
Brief History of the Lithium-ion Battery (LIB) and social change
Development history of LIB and IT revolution

Number of patent applications/year

- Environment & Energy Technology
- Information Technology

- LIB research began
- Completion of present LIB principle
- IT revolution
- Market growth
- Commercialization

Timeline:
- 1980: LIB research began
- 2000: IT revolution
- 2010: Market growth
- 2011: Commercialization
Two reasons for 2019 Nobel Prize in Chemistry

1. LIB made the mobile IT society possible.
2. LIB is expected to contribute to sustainable society
Capacity-based Market Scale in Each LIB Market Category (2010-2018)

Source: B3 Corp. report
LIB market forecast (-2025)

Source: B3 Corp. report
Trilemma

- Economy
- Environment
- Convenience
Trilemma

- Economy
- Environment
- Convenience
Trilemma

Economy

Environment

Convenience
Harmony between Environment, Economy, and Convenience
Two buzzwords to predict the future automobile society

CASE
(Connected-Autonomous-Shared-Electric)

MaaS
(Mobility as a Service)

AIEV
(Artificial Intelligence Electric Vehicle)
My vision

Innovation all around will enable a sustainable society to be achieved very soon
The battery will play a central role

• Linkage of LIB technology with new technologies like AI, IoT, and 5G
• CASE and MaaS enabling automobile-dependent society to be sustainable
• The Environment, Economy, and Convenience balanced in harmony
Thank you very much for your attention