FY2022 Business Unit IR Meeting

Challenges for the Decarbonization and Recycling Energy Business

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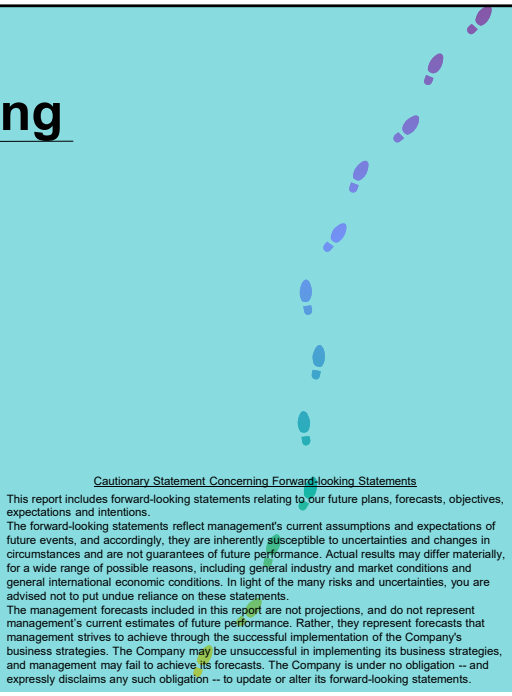
Executive Vice President,
Head of Energy Innovation Initiative (EII)
December 8, 2022



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I explained this Energy Innovation Initiative, or EII for short, at an Investor Day event last June. Last June was just after the launch, as we launched last April. A year and a half have passed since the launch. I would like to explain the progress to date, and its expansion.

Contents

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I would like to give an overview of EII's organization and structure, and then introduce EII's growth strategy for the future, as well as two specific examples.

01

Overview of EII

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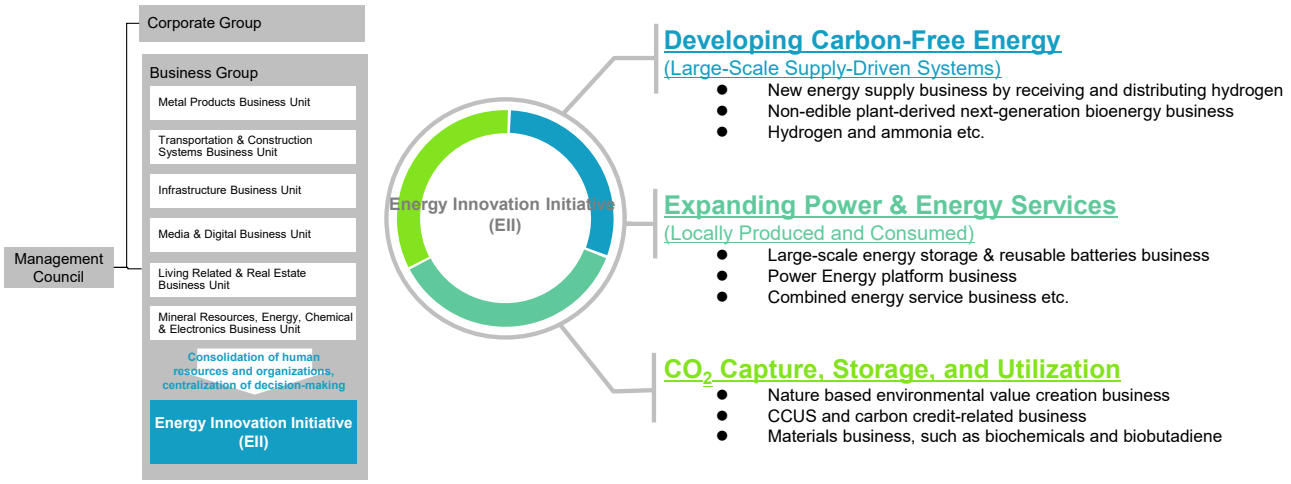
Overview of EII

Establishment of Energy Innovation Initiative (EII)

- EII established in April 2021 as a new business organization to create next-generation businesses that will contribute to carbon-neutral society
- From a bird's-eye view of sustainable energy cycle, aiming to create and expand next-generation energy-related businesses based on the following three focused areas



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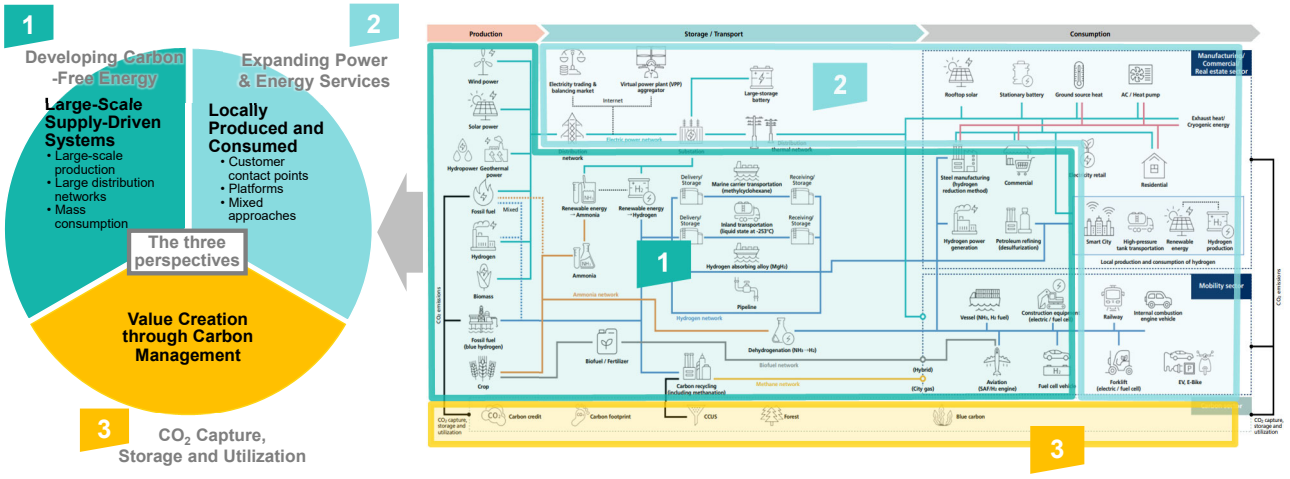
Last April, EII was established as a new business organization to accelerate the Company's optimal efforts toward carbon neutral and next-generation energy. The business organization is a unit that is responsible for its own profitability along with each business unit.

As you can see on the left side of the slide, in addition to the six existing business units, we have the seventh business line, the EII. Rather than being parallel to business, it is more of a cross-functional organization. We have established not a business unit or a working group but an initiative as an organization, the first of its kind in our company, to work together with each business unit to demonstrate our collective strength in the field of carbon neutral and next-generation energy.

Overview of the Decarbonization and Recycling Energy System and Three Focused Areas

- Overview of the decarbonization and recycling energy system that will contribute to carbon-neutral society designed by EII
- From a value chain perspective, classified three focused areas which EII will work for value creation



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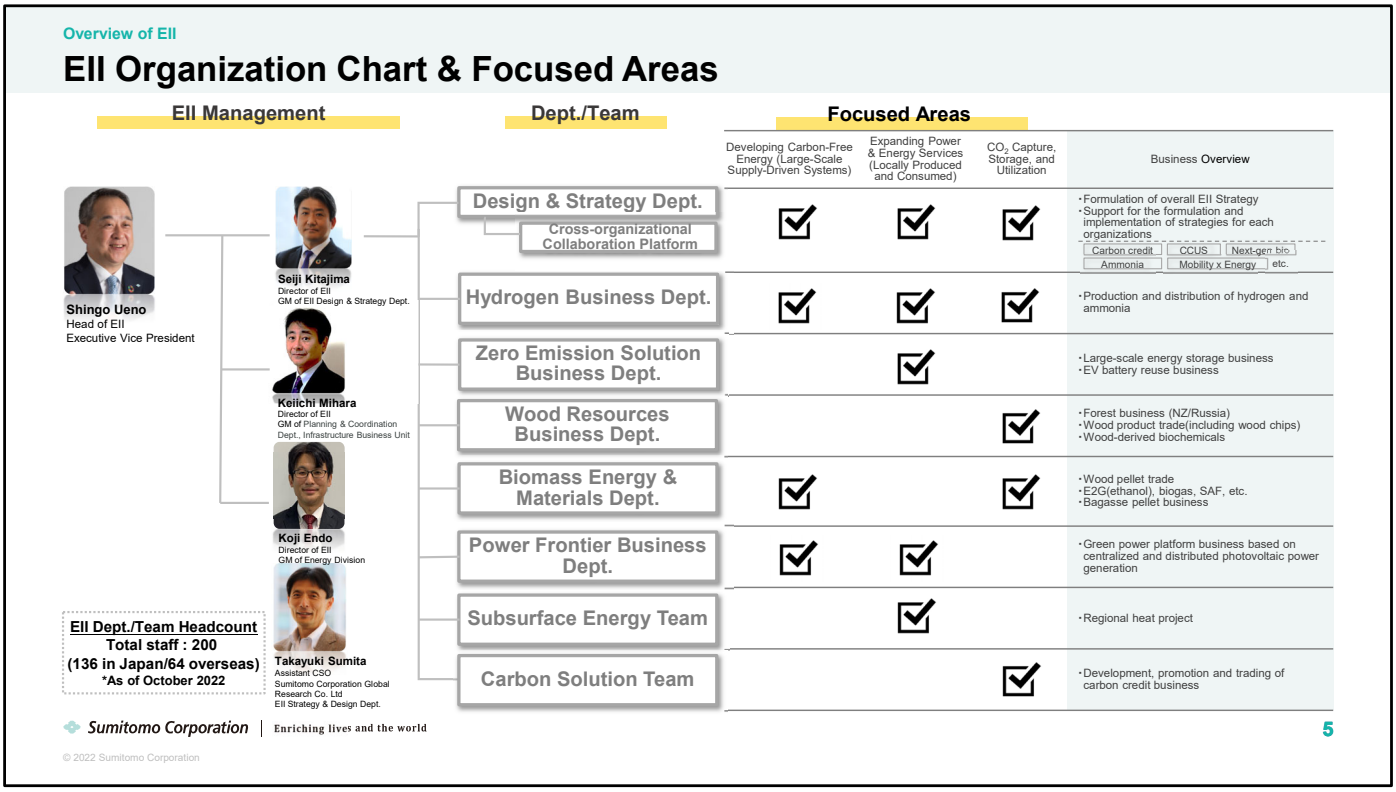
The first thing we did at EII was to take an overview of the energy value chain. With regards to this overview on the right, which you may have seen in the infrastructure sector presentation meaning we are working together, we are going to start with this view and look at the decarbonization and recycling energy system.

Since the energy system is interconnected, we have categorized it into three focused areas and are formulating business strategies and promoting business development.
The three focused areas are: first, the developing carbon-free energy; second, the expanding power & energy services; and third, CO2 capture, storage and utilization.

EII has always taken an overview of the energy system and is leading the creation of next-generation energy businesses that will contribute to the realization of a carbon-neutral society, in cooperation with the six business units.

Through this comprehensive approach to the energy system, we are working to develop businesses and formulate projects which would lead to demonstrating our uniqueness and strengths. I will explain the examples of the projects later.



Here is the organization chart and focused areas.

EII has created an organization in which departments and teams are aligned directly and flatly under the management team, rather than in a pyramid-like hierarchical organization as in conventional business units. This is intended to facilitate project-based business development through rapid decision-making.

In addition, through cross-organizational collaboration, if it is judged necessary to formulate new themes and strategies, and to organize for commercialization, a new organization will be established within this organization in a flexible manner.

The global EII has grown to a scale of 200 staff and has included an overseas organization since April of this year. Each member collaborates with each business unit and with overseas regions and organizations, and takes on the challenge of creating new businesses that are not bound by conventional frameworks, while also combining outside knowledge.

02

EII Growth Strategy

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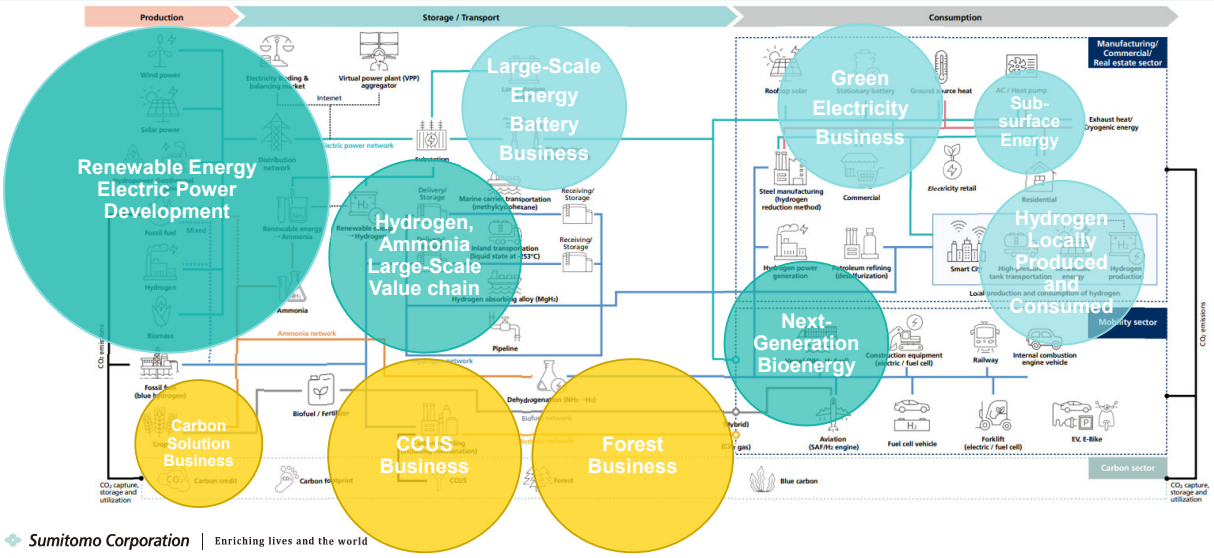
EII Growth Strategy

Image of Invested Capital in the Next-Generation Energy Field

- From a perspective of the entire value chain in the next-generation energy field, build a sustainable revenue base through the creation of businesses that contributes to stakeholders' CO2 reduction
- Aiming to achieve 1.5 trillion yen of invested capital in the next-generation energy field company-wide by 2030



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This is an explanation of EII's growth strategy.

The size of the bubble represents the scale of the invested capital for the future of the various businesses that EII is working on in the overview of the decarbonization and recycling energy value chain shown earlier.

In addition, the infrastructure business unit's renewable energy power generation business is closely related to the EII, so we have also drawn the linkage and combination with the infrastructure business unit's renewable energy power generation business, which is indispensable to the EII, in this overview.

We at EII are always looking at the decarbonization and recycling energy systems from an overview and promoting business development in the three focused areas I mentioned earlier, but our time frames are still different. We would like to allocate resources in a balanced manner over the short, medium, and long timeframes.

For example, one of the three focused areas is the developing carbon-free energy. While promoting business development related to hydrogen and ammonia, in the short-term we would like to accelerate business development in the area of bioenergy and biomass.

In addition, from the perspective of the carbon cycle, there are business opportunities to reduce carbon intensity and utilize subsidy through this, which will lead to monetization, so we will make decisions and invest capital as early as possible.

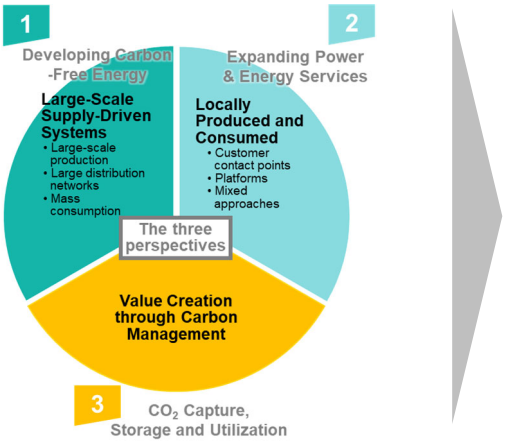
Toward 2030, we plan to invest approximately JPY1.5 trillion in the next-generation energy field for the entire company. We aim to achieve an after-tax profit of over JPY100 billion. In order to achieve this goal, we will take a backcasting approach from 2030, incorporating the strategies and quantitative targets of each business and individual projects that we are currently working on, and monitoring progress as we proceed.

EII Growth Strategy

Business Development Progress in the Next-Generation Energy Field

- Pursuing both “business development in the three focused areas” and “cross-organizational initiatives with other business units” to build the decarbonization and recycling energy business
- Promoting business development at various stages and building foundations globally to create next-generation business that contribute to a carbon-neutral society

Pursuing both “business development in the three focused areas " and “cross-functional collaboration and synergy creation between units"



* Detailed explanations in the following sections

1	Major Milestone for Victoria’s World-First Hydrogen Project with Australian and Japanese public and private sectors
1	Conclusion of a Comprehensive Partnership Agreement for the Large-Scale Utilization of Hydrogen in Chubu
1	Promotion of next-generation bioenergy business development utilizing overseas agricultural residues
2	**Agreement with Rio Tinto for a hydrogen production project in Gladstone, Queensland, Australia***
2	Establishment of a joint venture with Shikoku Electric Power Company, Incorporated and Sunseap Group Pte. Ltd. for solar power generation business
2	**Opening of EV Battery Station in Namie, Fukushima for the construction of a large-scale energy storage system***
2	Decarbonization support partnership with Nissan Motor Co., Ltd., for local governments
1 3	Commencing study on carbon neutrality project in Catchment area of U.K.’s Bacton gas terminal
3	Additional acquisition of forest assets in the Coromandel and Gisborne districts of New Zealand
1	Agreement to jointly start a feasibility study for producing hydrogen by ammonia decomposition using photocatalyst with Lotte Chemical in South Korea
1	Investment in TAE Technologies, a fusion power company in the United States
3	Capital and business alliance with UK CO2 mineralisation start-up Protostar Group Limited (44.01)

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On the right side of the material, these are specific examples of the various areas and stages of business development that EII has been involved in, including collaboration with business units. I will not explain them one by one, but there are many that are not mentioned here. We hope to be able to report back to you at the appropriate time.

From this list, I would like to elaborate on two examples for growth that are unique to our company.

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Introduction of Initiatives Toward Growth

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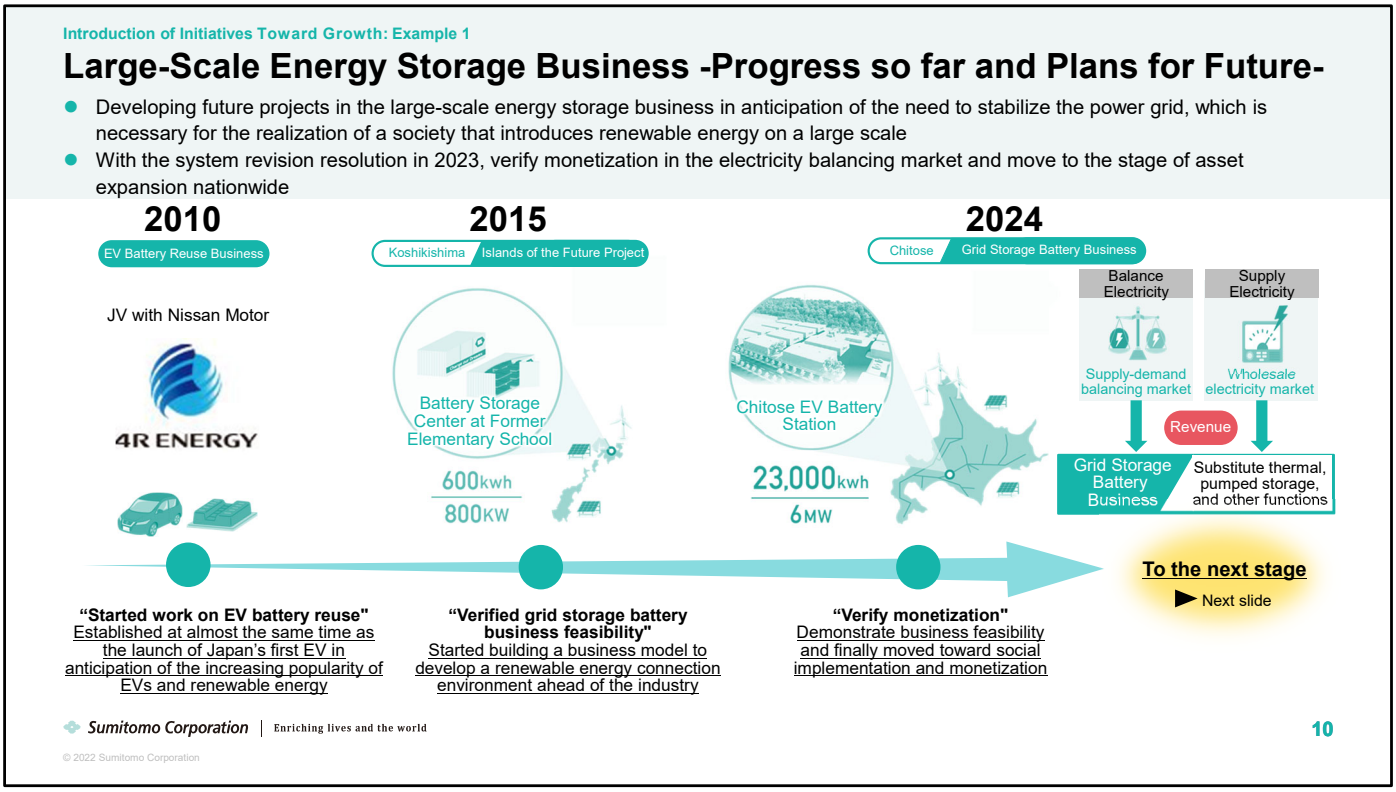


The first is a large-scale energy storage business.

The introduction of renewable energies will further expand, but it is essential “to stabilize the power system”. We are proud to be a pioneer in this industry, having pioneered the market. We will build a business mechanism to store electricity by ourselves, and will work on a large-scale energy storage business, which is indispensable for the realization of the society where mass introduction of renewable energy will come.

Even before electric vehicles were mass-produced and sold, we foresaw the future of electric vehicles, the spread of renewable energy, and a zero-emissions society, and in 2010 we established a company called 4R Energy together with Nissan Motor Co., Ltd. This is the battery reuse business.

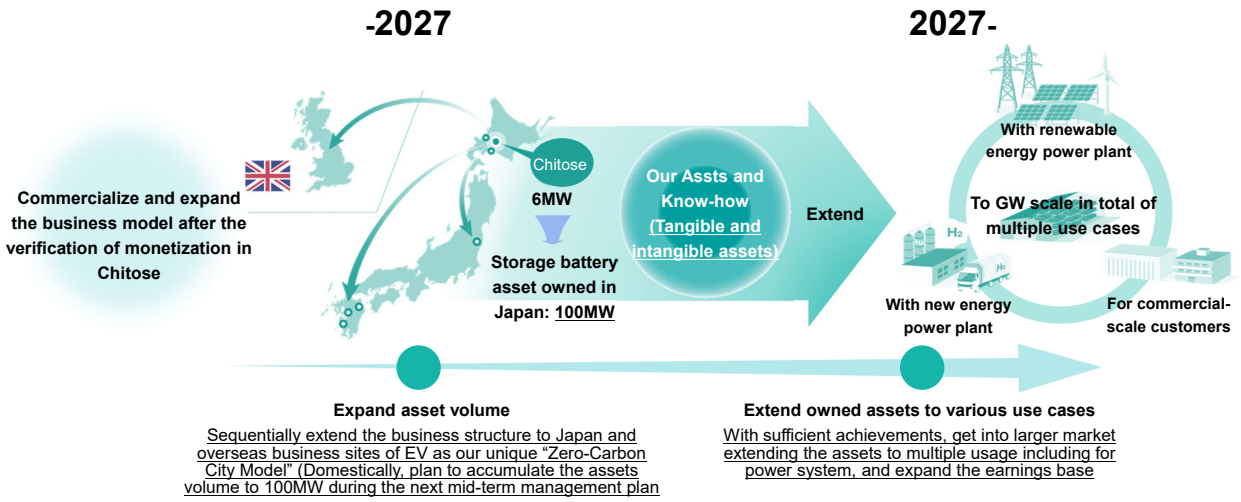
In 2015, we conducted Japan’s first grid storage demonstration project on the remote island of Koshikishima in Satsumasendai City. We have been examining business models to develop a connection environment for renewable energy.

Based on this experience and the results of this project, we are constructing a large-scale energy storage station in Chitose City, Hokkaido this fiscal year. EII is now approaching the stage of verifying its business feasibility, and from FY2024, we will be entering the power adjustment market in earnest and hope to play a role in the local power infrastructure as a grid storage business that substitutes for thermal power generation and other functions.

Introduction of Initiatives Toward Growth: Example 1

Large-Scale Energy Storage Business -Vision-

- Aim to establish and expand business foundation, after verification of business feasibility
- Utilize know-how and experience accumulated through operation of owned assets, and extend them to outside assets



Expand asset volume

Sequentially extend the business structure to Japan and overseas business sites of EV as our unique "Zero-Carbon City Model" (Domestically, plan to accumulate the assets volume to 100MW during the next mid-term management plan

Extend owned assets to various use cases

With sufficient achievements, get into larger market extending the assets to multiple usage including for power system, and expand the earnings base

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The monetization model of earning income from the electricity market carries a certain amount of market risk, but in light of the recent price volatility in the electricity market, we believe that the need for stabilization through energy storage will continue to grow. We believe that we can achieve sufficient business feasibility.

After verifying the monetization of 6 megawatts (MW) in Chitose, we plan to bring our own assets up to 100 MW by FY2026 for the purpose of expanding our business base. We are currently preparing for the structuring and building up of the pipeline.

After FY2027, we will leverage our accumulated know-how and achievements to expand horizontally into multiple-use cases and larger markets, not only for grid adjustment, but also for use in conjunction with renewable energy, or for energy storage in conjunction with hydrogen production.

Introduction of Initiatives Toward Growth: Example 1

Large-Scale Energy Storage Business -Our unique strategy-

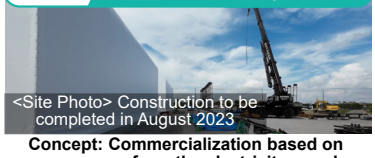
- First to launch a "4R (battery reuse) business," which will be the critical path to connect a decarbonized society, in anticipation of an electrified and renewable energy-based economy and society
- Desire to build a sustainable "ecosystem" by realizing monetization of the "large-scale energy storage business" using 4R batteries

Namie | Namie EV Battery Station

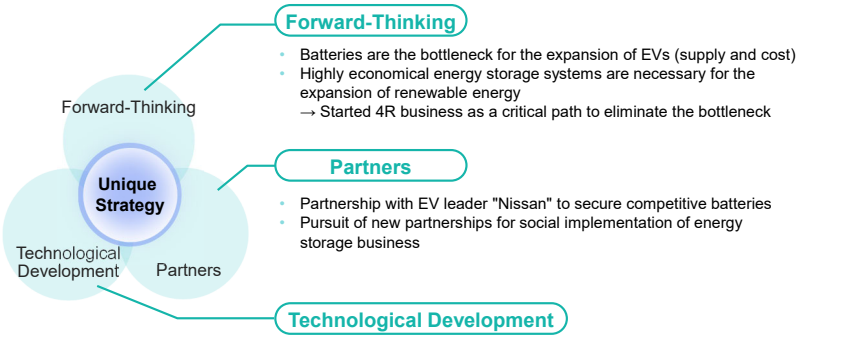
Concept: Realization of 100% renewable energy at 4R Namie Plant

Applying the Namie Model to Chitose

Chitose | Chitose EV Battery Station



Concept: Commercialization based on revenues from the electricity supply-and-demand balancing market, capacity market, and wholesale market



Forward-Thinking

- Batteries are the bottleneck for the expansion of EVs (supply and cost)
- Highly economical energy storage systems are necessary for the expansion of renewable energy
  → Started 4R business as a critical path to eliminate the bottleneck

Partners

- Partnership with EV leader "Nissan" to secure competitive batteries
- Pursuit of new partnerships for social implementation of energy storage business

Technological Development

- Development of proprietary technology to convert "EV-use batteries" into "large-scale energy storage systems"
- Currently developing AI-based EMS to maximize profits in the power marke
  * EMS: Energy Management System

Going Further Beyond…

- Creation of a regional circular economy business model by creating a system to recycle used batteries ("Closed Loop" for rare metals)

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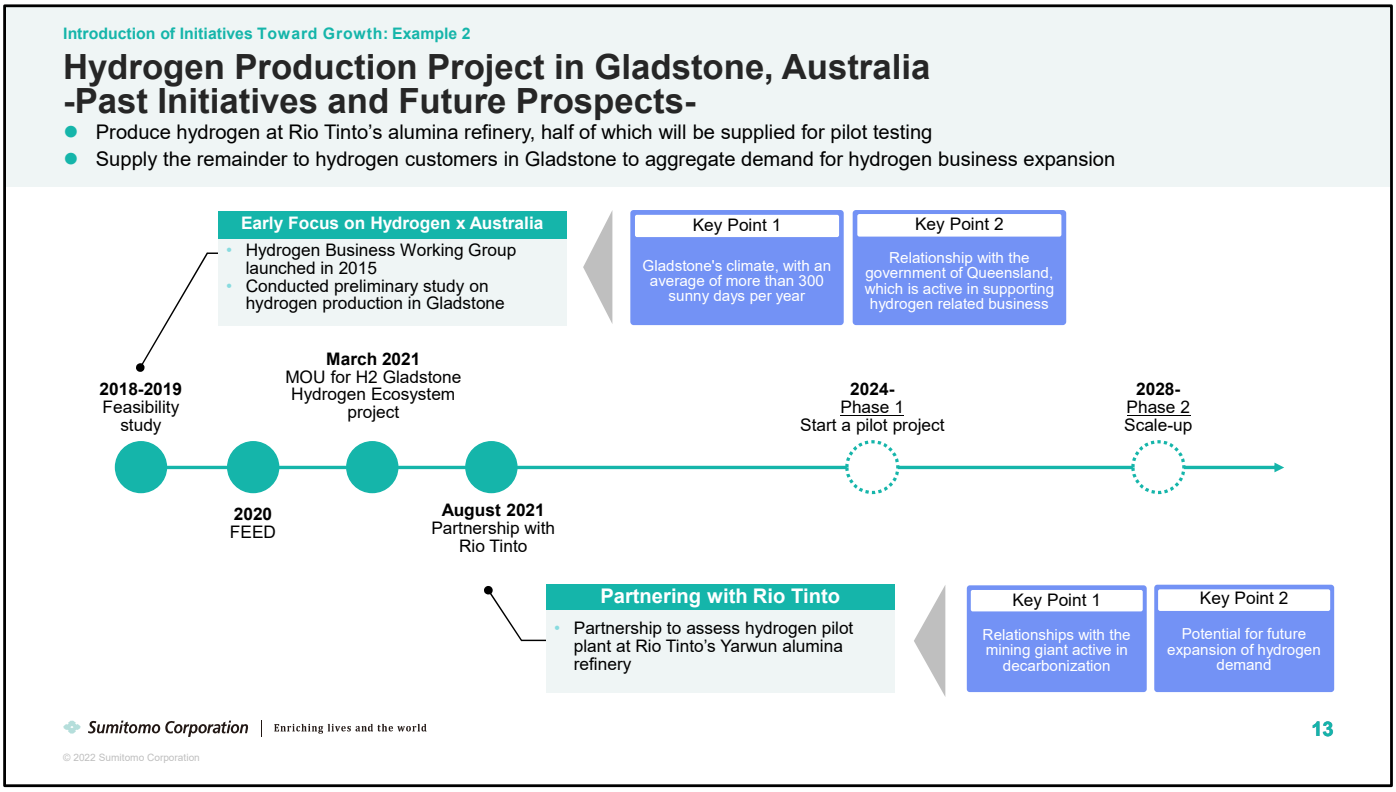
As I mentioned earlier, one of the characteristics of our large-scale energy storage business is that we foresaw the electrification of automobiles and the arrival of a renewable-energy-based economic society.

I would like to explain our unique strategy, which we believe has three components: foresight, partnership, and technological development.
Regarding foresight, the electrification of mobility is advancing rapidly. Demand for batteries is growing rapidly worldwide, and the supply of this new electricity will be very tight. The tighter it gets, the more we expect to see the reused storage batteries from 4R Energy. We believe that this 4R Energy will play a major role in eliminating supply bottlenecks for large-scale energy storage systems, which require economic efficiency.

Second, regarding the partnership, we have formed a joint business partnership with Nissan Motor, a pioneer in the development of electric vehicles. This has led to a competitive supply of used batteries. In addition, we intend to expand new partnerships for the social implementation of large-scale energy storage business.

Regarding the third point of technological development, we have jointly developed with 4R Energy a proprietary technology for converting storage batteries for electric vehicles into large-scale energy storage systems. Furthermore, to maximize revenues in the electric power market, we are also developing an AI-based energy management system, which is being developed within our own group at SCSK, by combining the knowledge gained from our demonstration tests.

In addition to expanding the large-scale energy storage business, our medium- to long-term strategy is to create a system for recycling storage batteries after use together in the community, a circular economy system. This is to realize what is known as the Closed Loop for rare metals, and we are looking to build a sustainable ecosystem together with the community.



Second, this example is in Australia. This is a hydrogen production project in the region of Gladstone, Australia.

We focused on hydrogen as an energy source from early on, and when I was the general manager of the energy division, we launched a hydrogen business working group in 2015 to promote the development of the hydrogen business.

Among other things, why Gladstone for the hydrogen production? Gladstone is an export city, mainly for fossil fuels and coal, but this city has an average of more than 300 sunny days per year. This means that the climate is suitable for the production of renewable energy.

Also, there is a strong desire by the Queensland government to change the background of this area into a sustainable city in the future. On that desire, active policy support is available for hydrogen-related projects. This is the second reason why we chose Gladstone.

In March 2018, we started the preliminary study and basic plan, and in March 2021, we also began joint discussions on the establishment of a hydrogen community in Gladstone with the city government and local organizations, including a study of hydrogen production and a wide range of hydrogen applications.

Rio Tinto, which has a local alumina refinery, showed great interest in our efforts to establish a hydrogen community in cooperation with the local community, and in August of the same year, we entered into a partnership for a hydrogen production project for Rio Tinto's alumina refinery in Gladstone.

Rio Tinto, as you know, is a company that produces a wide variety of mineral resources, and their goal is to reduce greenhouse gas emissions by 50% by 2030, with a net zero emissions goal by 2050. Two-thirds of the Company's greenhouse gas emissions are from aluminum-related operations. This is why the decarbonization of their alumina refining business in Gladstone was an urgent priority.

Sumitomo Corporation and Rio Tinto are planning to launch a Phase 1 pilot project in 2024, which will serve as a stepping stone for the Company's future alumina refining process, and to capture the huge demand for hydrogen that will be essential for decarbonization. Phase 2 and beyond will be about scaling up.

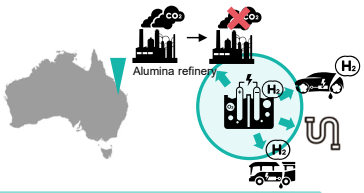
Introduction of Initiatives Toward Growth: Example 2

Hydrogen Production Project in Gladstone, Australia -Steps for Commercialization and Vision-

- Step by step approach for commercialization of hydrogen production business
- Scale up hydrogen production business by aggregating demand, and ensure business feasibility by realizing cost reductions
- Aim to contribute to the decarbonization not only Gladstone but also Japan and other countries

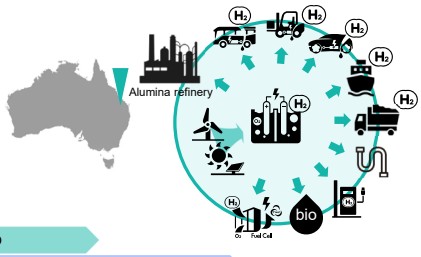
Phase1 2024-
Local production and consumption at Gladstone

Pilot project with Rio Tinto:
Hydrogen production and utilization in Gladstone
Expected hydrogen volume: Several hundred tons



Phase2 2028-
Expansion of local production and consumption at Gladstone

Scaling up the local production and consumption hydrogen business to decarbonize Gladstone
Expected hydrogen volume: 200,000 tons



Phase3
Expand globally

Export hydrogen outside of Gladstone
Expected hydrogen volume: 500,000 tons

Acquire hydrogen production business know-how
Aggregate demand for scale-up
Feasibility study for scale-up
Scale-up local production and consumption business
Feasibility study for hydrogen exports
Commencement of hydrogen export

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Through the pilot project with Rio Tinto, we will acquire know-how on the hydrogen business, and we will promote the optimal design of renewable energy. At the same time, we will develop demand for scale-up. This is Phase 1.

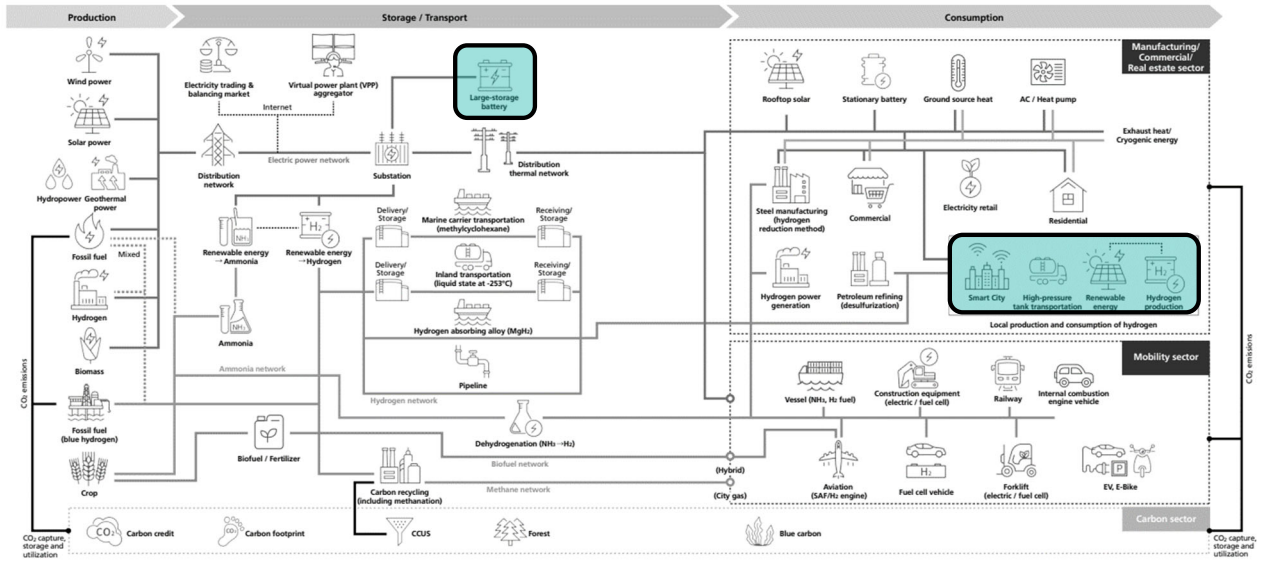
In Phase 2, we will consider scaling up the hydrogen production business by suppling hydrogen to meet the hydrogen demand in the Gladstone area, including Rio Tinto, as well as delivering hydrogen outside the region.

And for Phase 3, we would like to establish a hydrogen export and supply chain centered in Gladstone.

First, we aim to contribute to the decarbonization of the Gladstone region by securing and creating a hydrogen business, scaling up hydrogen production business, reducing costs, and securing business feasibility. In the future, we aim to contribute to the decarbonization of neighboring countries, including Japan, through hydrogen exports.

Closing

EII aims to develop **the decarbonization and recycling** energy system



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As you can see, the large-scale energy storage business and the hydrogen production project in Gladstone are the two projects that are highlighted in blue in the overview presented by EII.

As I mentioned at the beginning, EII has always been aware of what part of this energy system our efforts are positioned in, what role they play in the value chain, and what kind of business opportunities will be created by involving the surrounding areas in the process. We believe that such awareness is the basis for creating a new energy system.

As I mentioned earlier, we are currently working on many projects, and we will continue to leverage our existing partnerships and alliances, as well as attract business partners, as we seek to build our positioning in the industry.

We hope you will look forward to hearing about the progress of these efforts at various opportunities in the future.

[END]