

Advancing corporate transformation toward Net-Zero CO₂

Taking up the Challenge of Net-Zero CO₂

The novel coronavirus pandemic has shaken the world in an unprecedented way, and has threatened the security and safety that we took for granted. These circumstances have made us, as a major energy business operator, even more aware of our mandate, namely to “never ever stop the energy supply.” We have made every effort to ensure a stable supply of gas and electricity. At this time of a national crisis, Tokyo Gas has served its customers as faithfully and reliably as in the past.

The world is steadily moving toward a more sustainable society, despite being shaken by the COVID-19 pandemic. In particular, the trend toward decarbonization is accelerating, and since Prime Minister Suga declared in October 2020 that Japan aims at becoming carbon neutral, widespread efforts to achieve decarbonization have begun and are gaining momentum. This

trend can be said to be a paradigm shift that will significantly change the economy and society. It is incumbent on Tokyo Gas to be alert to this and act accordingly.

In November 2019, Tokyo Gas announced in its statement of its future management vision, Compass2030, a goal of “taking leadership in the effort to achieve Net-Zero CO₂ emissions” as one of the company’s management issues and has started to take up this challenge.

Reducing CO₂ emissions during transition to Net-Zero CO₂

We foresee several stages before reaching Net-Zero CO₂. We are now in a transition period toward full energy transition and decarbonization, during which an emphasis is assigned to the reduction of CO₂ emissions. This is just a beginning; we know it will be a long haul on the road to decarbonization. That journey will require innovation and large-scale investment extending across diverse areas and over a long

Representative Corporate Executive Officer,
President and CEO

UCHIDA Takashi

time. In the near term, our emphasis is on reduction of CO₂ emissions, and of the amount of CO₂ stored in the atmosphere. Tokyo Gas considers the transition period to last to around 2030, and is working on the following initiatives.

The first is the advanced use of natural gas. For example, we anticipate use of energy in urban redevelopment areas and industrial parks will be advanced by adopting smart energy network technology. We also introduce high-efficiency gas equipment, such as our residential-use fuel cell ENE-FARM and promote replacement of industrial fuels from heavy oil and coal with natural gas. By doing so, our customers will be able to significantly reduce CO₂ emissions.

The second initiative is the separation and recovery of CO₂. Carbon dioxide capture and storage (CCS) and carbon dioxide capture, utilization and storage (CCUS), which separate, collect, and bury deep in the ground or reuse emitted CO₂, can effectively reduce CO₂ emissions without them being directly dispersed in the air.

The third is the expanded use of carbon neutral LNG (CNL). Inevitably, the process from the extraction of natural gas to its burning generates greenhouse gases, but they will be offset by CO₂ emissions reduction through support of reforestation and other renewable projects. In March 2021, the Tokyo Gas Group established the Carbon Neutral LNG Buyers Alliance with 14 other companies with the aim of advancing toward a sustainable society by this third initiative. Specifically, Tokyo Gas will procure and supply CNL and the Alliance companies will purchase and use it as fuel for office buildings and factories, with the aim of spreading the use of CNL and increasing its utility value.

What I want to tell you

- By positioning a period to around 2030 a transition period, we are promoting (1) advanced use of natural gas, (2) separation and recovery of CO₂, and (3) expanded use of carbon neutral LNG (CNL).
- We are also developing the production of hydrogen at an affordable cost by using electricity generated from renewables as well as energy methanation technology for producing synthetic methane by reacting hydrogen with CO₂. Synthetic methane may potentially help us economically achieve decarbonization through supply using our existing facilities.
- Acquisition of overseas large-scale photovoltaic power generation projects and domestic biomass power generation projects has resulted in increasing our volume of renewable energy power transaction volume to approximately 1.4 million kW. Offshore wind power generation is another area we seek to promote.
- We have moved to a “Company with a Nominating Committee, etc.” and will establish a holding company-type group structure in order to achieve Group growth even in an uncertain environment.
- We are determined to adequately respond to market changes, achieve the Medium-Term Management Plan, and realize our greater vision.
- I would like us to become a corporate group that continues to actively contribute to society by supporting individual growth while emphasizing diversity. While respecting our founder Shibusawa Eiichi’s book, Rongo to Soroban, we aim at becoming a new type of a public utility business.

Strengthening the development of hydrogen technology

The ultimate decarbonization of city gas is zero CO₂ emission when city gas is burned. Hydrogen has our attention as it can be used as an industrial fuel, as a power generation fuel, or as a transportation fuel. However, its use is limited at present due to high production cost and the fact that its production generates CO₂. As such, we are developing a device that produces hydrogen by electrolysis of water, using electricity generated by sunlight and renewable energy. This is a way we can apply fuel cell technology — that we have developed and applied for years — and

has the prospect of substantially reducing hydrogen prices by manufacturing the cell stack, which is central to the electrolysis process, at an affordable cost. Based on the assumption that electricity generated by renewable energy will be sufficiently inexpensive, we are currently working on the development of such a hydrogen-producing device in an alliance with SCREEN Holdings, Co. We are hoping this will help achieve the government’s 2030 hydrogen price target by the mid-2020’s.

We are also developing methanation technology for producing synthetic methane by reacting hydrogen with CO₂. The synthetic methane emits CO₂ when burned, but because it takes in a similar

amount of CO₂ during manufacturing, this carbon recycling results in Net-Zero CO₂.

The main component of LNG is methane. This means that feasible synthetic methane produced by using inexpensive renewable energy power sources overseas can potentially be conveyed, stored, and provided to customers by using our existing equipment such as LNG liquefaction facilities, shipping facilities, LNG tankers, receiving facilities and pipelines. While huge investment is said to be required for decarbonization, we can foresee that decarbonization may potentially be economically achieved by replacing some city gas with synthetic methane.

CEO's message

We established a Hydrogen & Carbon Management Technology Strategy Dept. in April 2021 to accelerate the development of hydrogen and methanation technologies.

Expanding the use of renewable energy

Expansion of renewable energy supply is another area of high concern to us. As an electric power company, we own high-efficiency combined cycle natural gas-fired power stations. We plan to expand our renewable energy supply to 5 million kW in sum of Japan and overseas. In 2020, we acquired full ownership of the Aktina Solar Project in Texas, U.S.A. which will have a maximum output of 630,000 kW when development is completed. The Tokyo Gas Group will manage the project from construction to commercial operation. In Japan, we acquired biomass power generation projects in Takaoka City, Toyama Prefecture, and Ichihara City, Chiba Prefecture. These efforts have resulted in increasing our volume of renewable energy power supply handled to approximately 1.4 million kW.

We will also promote offshore wind power generation with a particular focus on the floating type of installation. This focus was decided upon because the floating type system can be located even in deep water and have high potential in Japan, where there are few shallow areas in littoral locations. In 2020, we invested in Principal Power, Inc. in the U.S.A. and began acquiring its technology. We intend to use that company's technology to develop floating-type

offshore wind power generation projects in both domestic and foreign sea areas.

Augmented promotion of ESG management

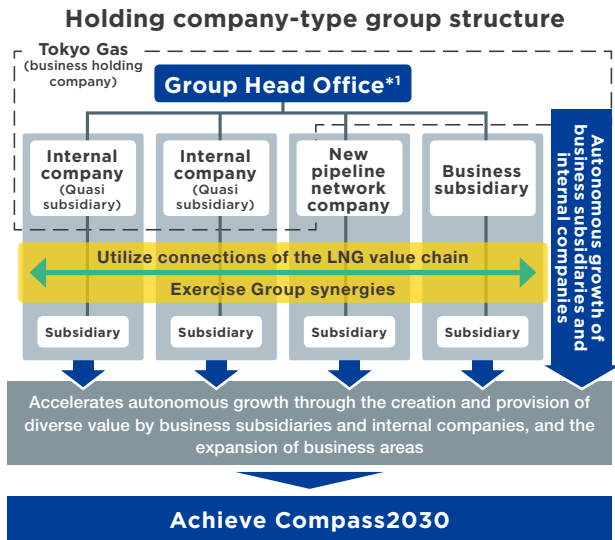
Our initiative on decarbonization is one of the "Three Challenges" of our management vision Compass2030: "Leadership in the effort to achieve Net-Zero CO₂," "Establishment of a value co-creation ecosystem," and "Transformation of the LNG value chain." It is also identified as one of the key components of ESG management. Acceleration of Net-Zero CO₂ efforts is a priority area for solving not only environment [E] but

also social [S] problems, such as by improving resilience. The "Establishment of a value co-creation ecosystem" is also an effort to create social value together with our stakeholders. Further, from the governance [G] perspective, we will carry out group formation reforms in order to achieve group growth even in an uncertain environment. By doing so, we intend to make the "Transformation of the LNG value chain" effective and ensure the steady growth of the Tokyo Gas Group.

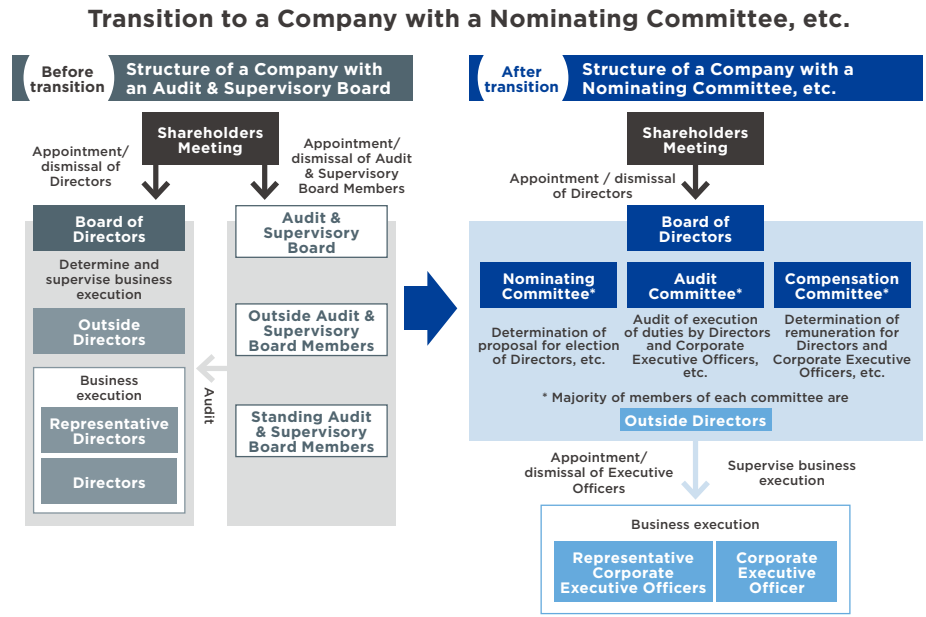
Specifically, all functions, from acceptance of LNG to its transportation and sales, are positioned as profit centers. At the same time

engineering and real estate businesses are being given attention so that they can grow better and at a faster rate. Also important is that we have decided to significantly expand the range of delegation power of the execution, to expedite decision-making, and to reinforce the supervisory function of the Board of Directors. In other words, these changes mean the establishment of a holding company-type group structure and the transition to a "Company with a Nominating Committee, etc."

We believe that this will intensify management and provide a governance system that is easy to understand for international investors.



*1 The group governance system will be developed by clarifying the roles (formulating Group's management strategies, allocating managerial resources, managing risks, etc.) of the Group Head Office
 *2 Complies with conduct control of the Gas Business Act



Seeking growth by incorporating a paradigm shift toward decarbonization into our business

The business results for fiscal 2020 – the first year of the fiscal 2020-22 Medium-Term Management Plan, were quite disappointing with a year-on-year decrease in ordinary profit. A

decrease in sales volume due to COVID-19 effects, a significant fluctuation in LNG prices in the spot market, and a surge in prices in the wholesale power trading market during the winter were main culprits. Since volatility in domestic and overseas markets is expected to stay high, we are determined to adequately respond to market changes, achieve our Medium-

Term Management Plan, and realize our greater vision.

Some of our shareholders may ask us “Can you achieve Net-Zero CO₂ and grow at the same time?” Indeed, various players have entered the energy business in connection with decarbonization, and competition in the renewable energy business is becoming severer every day. As I said at the beginning, a paradigm shift toward decarbonization is currently under way, and I believe that only companies that are able to incorporate this paradigm shift into their businesses can grow as energy providers. In order to become one of them, it is necessary to increase investment aimed for Net-Zero CO₂ while maintaining financial soundness. In November 2020, we announced that we are considering a review of our shareholder return policy from the viewpoint of raising source funds through all means available to us. Please give us a little more time to make our decision on this matter.

Aiming to become a new utility business

In our management vision Compass2030 we make “Three Promises” to our current and future colleagues who are and will be working on the “Three Challenges”. The promises are (1) to “produce work that will have a major impact on society,” (2) to “create a venue for encounters with diversity and friendly competition,” and (3) to “emphasize the self-fulfillment of each person.” I believe the delivery of these promises would lead to steady implementation of the vision.

The Tokyo Gas Group is indeed in a period of reforms. It is up to each and every member of the

Group to overcome the challenges of this period of dramatic changes and open the way to the future. I would like us to become a corporate group that continues to actively contribute to society by supporting individual growth while emphasizing diversity. To that end, we will also work to restructure our corporate philosophy. While respecting our founder Shibusawa Eiichi's book, Rongo to Soroban (The Analects and the Abacus), Tokyo Gas is determined to make a leap forward, toward becoming a new type of a public utility business.

We are ahead of other companies in declaring our position on Net-Zero CO₂ and have begun efforts for decarbonization. We will continue to contribute to the future of the Earth and the future of energy, and will do what is necessary to ensure the company's sustainable growth. I hope that our stakeholders will look forward to the future development of the Tokyo Gas Group and continue to support us for years to come.