Initiatives for the Achievement of Carbon Neutral Society

- Initiatives for FY2030 and Roadmap for the Achievement of Carbon Neutrality by 2050 -

DOWA HOLDINGS CO., LTD.

May 25, 2023

Contents

1. The Group's policy for carbon neutrality

Climate change is a serious social challenge facing all industries and people around the world. In light of the current situation of global warming, the DOWA Group established, in August 2021, its Climate Change Policy to further accelerate its current efforts, and announced its goal of achieving carbon neutrality by 2050.

● Climate Change Policy

DOWA Group positions the measures against climate change as an important management issue and will work to reduce greenhouse gas emissions. It will also contribute to the realization of a carbon-free society through various businesses, leading to continued growth of the group.

Climate Change Policy: https://www.dowa-csr.jp/en/about/climate-change

Under the Midterm Plan 2024, which started in FY2022, we have identified addressing climate change as one of the key issues (materiality) and have established a company-wide promotion system to advance activities aimed at achieving carbon neutrality by 2050.

In February 2022, we reaffirmed our stance on climate change both within and outside the Group by endorsing the TCFD recommendations. To deepen our stakeholders' understanding of our Group's activities and to work together to face the major common challenge of climate change issues, we published the TCFD Report and disclosed information in line with the framework of the TCFD recommendations in May 2022.

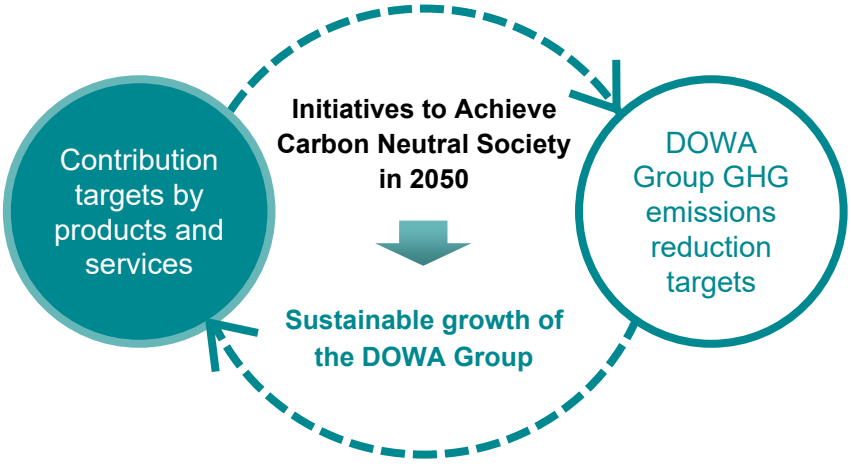
In this report, we present the status of our Group's climate change activities and our new goals, taking into account the changes in the situation surrounding climate change since the issuance of the TCFD report.

TCFD Report: https://www.dowa-csr.jp/content/files/DOWA_TCFD_report_2205_en.pdf

2. Two intermediate targets for FY2030

The DOWA Group has been committed to the development of materials, products and services helpful for solving issues concerning resources and the environment, based on the technologies and experience in mining and smelting it has accumulated since its founding in 1884. In this way, the Group has contributed to the development of a sustainable society. Non-ferrous metals used in EVs, renewable energy facilities, and other applications are indispensable materials for a decarbonized society. The Group is responsible for the stable supply of these metals. In addition, as an important social infrastructure that contributes to environmental preservation and public health, its waste treatment business is committed to ensuring the fulfillment of its responsibilities and to reducing its GHG emissions.

Consequently, the Group's response to climate change is driven by both the reduction of its own GHG emissions and the creation and expansion of products and services that contribute to society's efforts to tackle climate change. To link these efforts in realizing a carbon neutral society in 2050 to the sustainable growth of the Group, we have set new contribution targets through products and services, in addition to the Group's intermediate GHG emission reduction targets for FY2030.

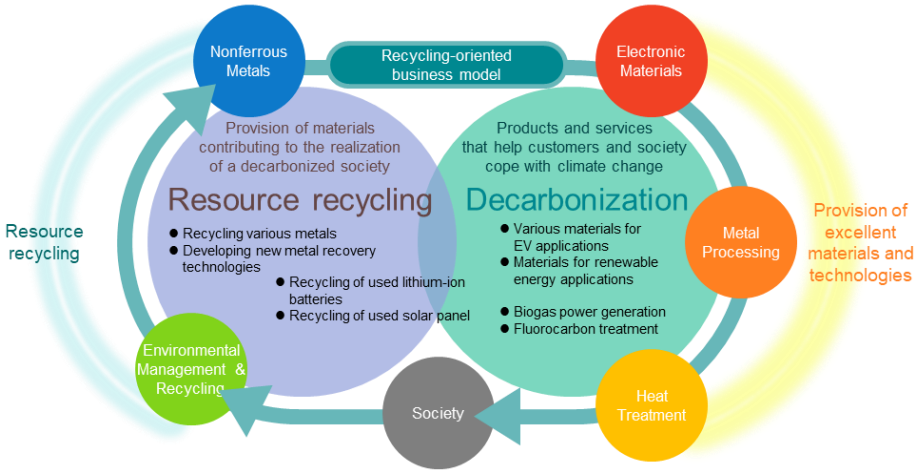


(1) New contribution targets by products and services

The DOWA Group provides a wide range of products and services that contribute to society's efforts to tackle climate change. We offer many products and services to contribute to reduction in GHG emissions through a supply chain, such as silver powder used for solar panels which is indispensable for renewable energy and metal materials for fuel cells and EVs and the recycling of lithium-ion batteries and solar panels. We also provide society with non-ferrous metals, which are indispensable for the future decarbonized society, through circular business models that incorporate sustainable resource circulation processes, including recycling. We have named DOWA Group's unique contribution DOWA Green Action (DGA) and have set new targets for FY2030 to promote our efforts.

Business areas covered by DOWA Green Action

Non-ferrous metals are essential materials for decarbonization technologies. We aim to achieve carbon neutrality through the transition to a circular economy by reducing our GHG emissions and providing society with a lower carbon resource recycling process. We set two target areas for DGA: "Provision of materials contributing to the realization of a decarbonized society" and "Products and services that help customers and society cope with climate change". As such, we identified applicable products and services.



DOWA Green Action Targets for FY2030

By striving to expand the supply of DGA products and services, develop technologies, and create new businesses, we will contribute to reducing GHG emissions throughout society and work toward the realization of a carbon neutral society. We set a sales target of DGA products and services as an indicator of these growth targets.

FY2022 Sales result

Approx. 360 billion yen

FY2030 Sales target

1.6 times higher (compared to FY2022)

* Calculated based on exchange rates, metal prices, etc. in the Midterm Plan 2024.

Going forward, we will annually aggregate sales results of DGA products and services and manage progress. To achieve the targets, we will steadily invest in growth in each of our businesses, as defined in the Midterm Plan 2024. We will also utilize 20 billion yen in the ESG Investment Framework to conduct research and technological development to expand new DGA products and services.

Although it is difficult to calculate the amount of contribution to the reductions in GHG emissions from the finished products because many of our Group's products are materials and components, we will make calculations to the extent possible and continue to collect and verify information on quantifying the amount of contribution.

Examples of DOWA Green Action Initiatives

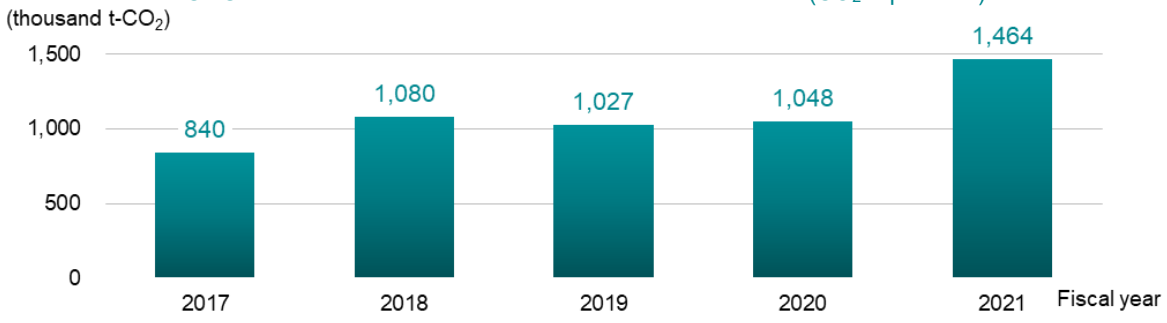
Area of Contribution	DOWA Green Action	Application/ Effect
Resource recycling	Recycling of new metals	In addition to the conventional recycling of base, precious and other metals, we are newly working on the recycling of resources, such as ruthenium, iridium, and scandium. These metals are indispensable for energy saving and the improvement of functionality in automobiles, information and communication terminals, electronic devices, and other products for decarbonization.
Resource recycling Decarbonization	Recycling of used lithium-ion batteries	Lithium-ion batteries use rare metals, such as cobalt, nickel, and lithium, which can generate heat or catch fire if damaged or deformed. By appropriately processing used lithium-ion batteries, the number of which are increasing in line with growing demand, in a safe manner and recovering scarce metal resources, we provide the resources necessary for the widespread use of batteries and contribute to decarbonization and resource recycling.
Decarbonization	Fuel cell materials	It is a material for fuel cells (SOFC: solid oxide fuel cells), which generate electricity by reacting hydrogen and oxygen, and contributes to the spread of clean energy as a power source for homes and factories.
Decarbonization	Plated copper alloy for high-voltage terminals for EV applications	Plated copper alloy for high-voltage terminals for EV applications will contribute to the spread and expansion of EVs by enabling rapid charging of EVs with their excellent electrical conductivity and wear resistance.
Decarbonization	Zero CO_2 reactor "Z-TKM" (Carburizing and quenching furnace)	The next-generation carburizing and quenching furnace "Z-TKM" minimizes gas and CO_2 emissions used in the heat treatment process of automotive parts and other products. In addition, the combined use of renewable energy and hydrogen and ammonia burners enables operations that emit almost no CO_2 in the heat treatment process, thereby contributing to GHG emissions reduction in the supply chain, including automobile production.

Contribution to GHG emission reduction through DOWA Group products and services—Fluorocarbon treatment

CFC, HCFC, HFC and other fluorocarbons are used in refrigerants for freezer refrigerators and air-conditioners, etc.. The fluorocarbons must be treated properly as they exert greenhouse effects that are hundreds to more than 10,000 times greater than those of CO_2. We have cooperated with the Ministry of the Environment's "Fluorocarbon Destruction Model Project" and have contributed to the establishment of fluorocarbons-related legislation and the strengthening of regulations by conducting demonstration experiments, etc. together with the national and local governments.

Currently, the Group's contribution reduces GHG emissions by more than 1 million tons (CO_2 equivalent) per year, including fluorocarbons recovered and recycled from home appliances, etc. and those destroyed by thermal decomposition. In the destruction process, we do not use new energy but use waste heat from incineration to perform thermal decomposition, thereby reducing our GHG emissions and helping to prevent global warming.

GHG emissions reduction from our fluorocarbon treatment (CO_2 equivalent)



* CO_2 equivalent emissions are calculated by multiplying the received amount of processed fluorocarbons by the GWP (global warming potential) value.

Currently, we are expanding our fluorocarbon treatment even in Thailand and other overseas countries. Also, in the Joint Crediting Mechanism supported by the Japanese government, we expect our contribution to reduce GHG emissions in excess of 10,000 tons per year (CO_2 equivalent).

(2) DOWA Group GHG emissions reduction targets

The DOWA Group aims to be carbon neutral by 2050, as well as set intermediate targets by FY2030 as a passing point to reduce its Scope 1 and 2[*1] GHG emissions (compared to the FY2013 levels) in Japan as shown in the following table: Note that these targets are set in accordance with the targets for each category in the Japanese government's Plan for Global Warming Countermeasures[*2], which was formulated to reduce GHG emissions, 46% from FY2013 levels, in FY2030. We will consider incorporating the Scope 3[*1] GHG emissions into our targets after we have a better understanding of the Scope 3's actual situation.

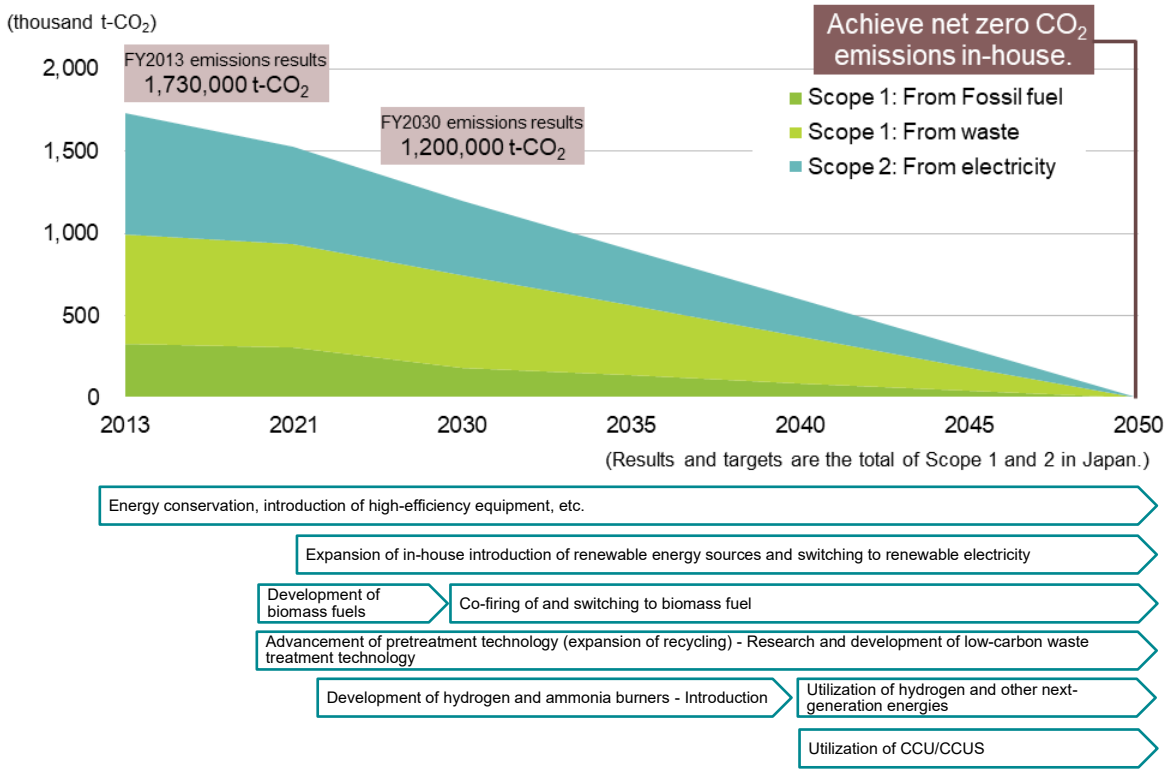
Scope 1	CO_2 from fossil fuels used in manufacturing sites	At least 38% reduction (from the FY2013 level)
	CO_2 from fossil fuels used in offices, etc.	At least 51% reduction (from the FY2013 level)
	CO_2 from waste	At least 15% reduction (from the FY2013 level)
Scope 2	CO_2 from electricity used at manufacturing sites	At least 38% reduction (from the FY2013 level)
	CO_2 from electricity used in offices, etc.	At least 51% reduction (from the FY2013 level)

[*1] Scopes 1, 2 and 3 are the concepts from the corporate GHG emissions accounting and reporting standard stipulated in the GHG Protocol. Each scope is defined as follows:
Scope 1 Direct emissions by the Company
Scope 2 Indirect emissions associated with the use of electric power, heat, and other energy supplied by other companies
Scope 3 Indirect emissions other than Scopes 1 and 2 (emissions by other companies associated with the activities of the Company)

[*2] Japanese government's comprehensive plan based on the Act on Promotion of Global Warming Countermeasures (Cabinet decision on October 22, 2021)

Initiatives to reduce GHG emissions

Based on the above reduction targets, the DOWA Group has set an emissions target of 1,200,000 t-CO_2 for FY2030. We will continue to monitor changes in social trends, technological innovation, and other factors, and work toward further reductions from a medium- to long-term perspective.



3. Approach to achieving targets

In FY2021, the DOWA Group conducted a scenario analysis utilizing the TCFD framework. Since future projections are highly uncertain and difficult to analyze, we referred to multiple scenarios and assumed business environments under the 1.5°C, 2°C, and 4°C scenarios.

To enhance the specificity of our efforts for the preparation of the roadmap, we reviewed the current status of the social environment and our business, and considered measures to improve the accuracy of the forecast to 2030, based on the TCFD scenario analysis.

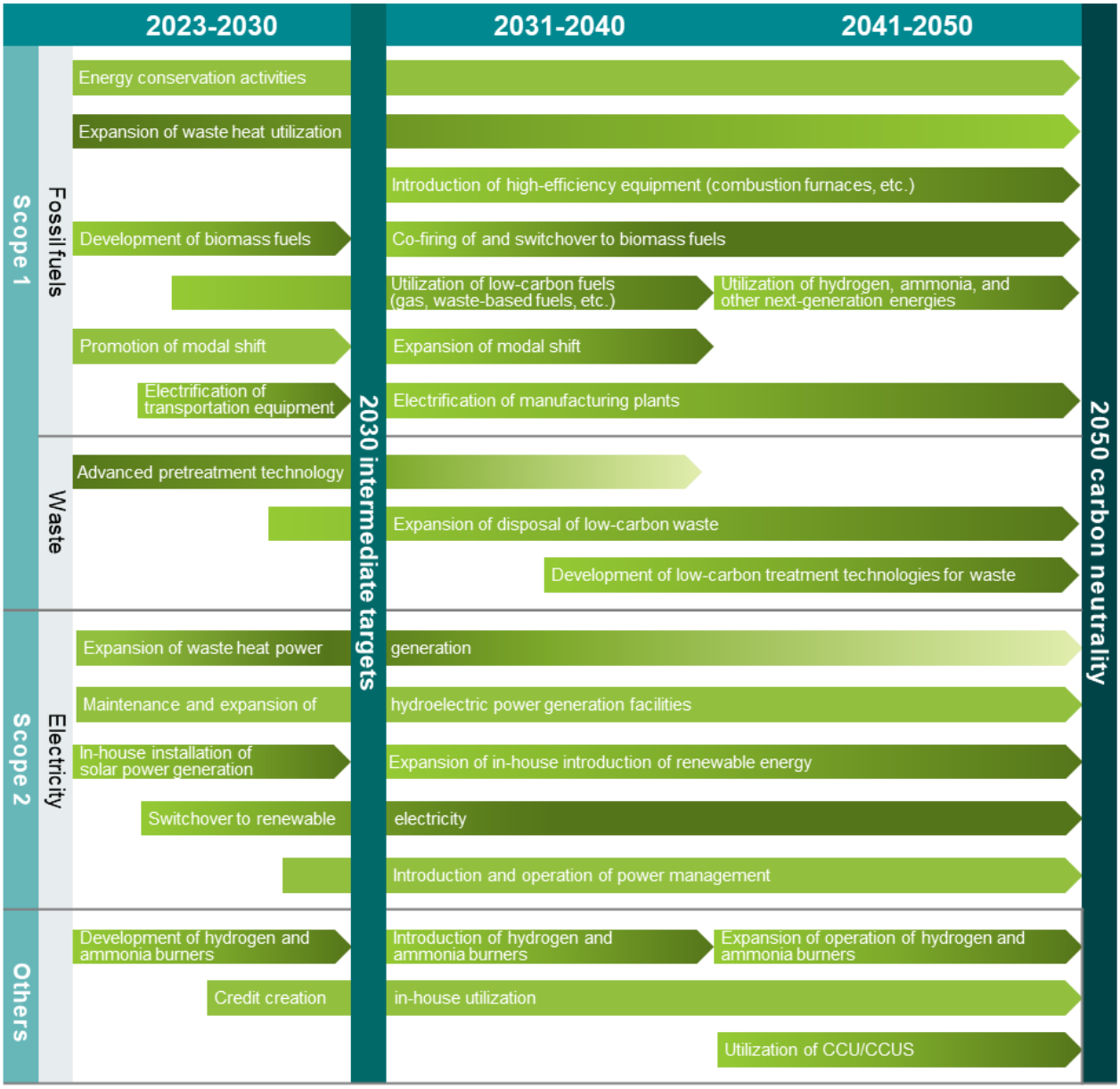
Current situation as of 2023

- Under the circumstance where it is becoming increasingly difficult to achieve the 1.5°C target (IPCC AR6 Synthesis Report), policy inputs and regulations will be further strengthened to realize a carbon neutral society.
- The shift to EVs will further accelerate in response to successive announcements by automakers of capital investment in EVs and moves to support the development of recharging infrastructure.
- Amid rising geopolitical risks, momentum is building for the introduction of renewable energy from the perspective of stable energy supply.
- Procurement of fossil fuels is unstable due to price hikes, supply shortages, etc. during the transition phase to a decarbonized society.
- From an economic security perspective, supply chain management of critical minerals essential to promote decarbonization becomes stricter.

Social and market environment toward 2030	Current situation of the Company	Direction of efforts
As the spread of electrification and renewable energy, including EVs, accelerates, the need for more low-carbon components and products will increase.	● We have strong ties to the automotive and information and electronics industries, providing a wide range of materials for EVs and renewable energy. ● Our smelting and metal processing facilities consume a lot of energy, using coke and coal.	● Provide low-carbon materials and components through in-house renewable energy use and renewable energy procurement ● Develop biomass fuels in-house and aim to co-fire them with coke and coal during the transition phase, and replace them in the future
Expanding customers' Scope 3 management and a growing need for waste treatment with low GHG emissions.	● Incineration is conducted, which is a safe method of waste disposal that contributes to environmental protection and public health. ● Incineration waste heat is effectively utilized to generate electricity. ● We recognize that volume reduction by incineration is also necessary as a means for prolonging the life of final disposal sites, which are facing tight conditions.	● Expand the waste treatment procedures to increase recycling and avoid increasing the volume of incinerated waste ● Promote low-carbon waste treatment using biofuels and renewable energy sources
Discussions for the introduction of a carbon pricing system will be progress. (full-scale emissions trading, introduction of carbon tax, etc.)	● We have already been directly and indirectly affected by the energy price hikes, which could lead to further cost increases.	● Accelerate the electrification of manufacturing processes and switch to renewable energy and biomass fuels. ● Consider the use of credit and other means in cases where it is difficult to reduce GHG emissions, or in light of user needs for offset products, etc.

4. Roadmap for the achievement of carbon neutrality in 2050

To achieve carbon neutrality by 2050, we will make maximum use of existing technologies and systematically introduce new technologies. In addition to energy conservation, renewable energy, fuel conversion, electrification, and other means, we will actively pursue the in-house development of biomass fuel, ammonia burners, etc. Going forward, we will promote climate change countermeasures with multiple options, such as considering the use of negative emission technologies that capture and store CO_2.



Reference

● Sustainability data in DOWA Group (Climate Change)

https://www.dowa-csr.jp/en/esg/environment/climate-change

● TCFD Report

https://www.dowa-csr.jp/content/files/DOWA_TCFD_report_2205_en.pdf