Initiatives to Achieve Carbon Neutrality

OEPC aims to achieve 2050 net-zero CO^2 emissions

As social demands for global warming countermeasures continue to increase, in December 2020, we established the long-term policy “Zero Emission Initiatives of OEPC”. To achieve net-zero CO^2 emissions by 2050, we have presented a roadmap for measures based on the directions of “make renewable energy a mainstay” and “reduce CO^2 emissions from thermal power”, and are promoting initiatives as the OEPC Group.

2050 おきでん ZERO CHALLENGE

Just Transition in the Okinawa area

The government calls on the power industry to play a major role in decarbonization the power industry in its “Green Growth Strategy Through Achieving Carbon Neutrality in 2050” and set an ambitious target for FY2030 to “Reduce greenhouse gas emissions by 46% in FY2030 from its FY2013 levels while continuing strenuous efforts in its challenge to meet the lofty goal of cutting its emission by 50%”.

The government’s goal of reducing greenhouse gas emissions by 46% **is equivalent to a reduction rate of 28%** in the case of the Okinawa area (refer to Table 1), where zero-emission power sources are limited. A reduction rate of 28% is a tough target for the Okinawa area.

A reduction rate of 28% is an estimate of the reduction rate in the Okinawa area, where zero-emission power is limited, as indicated in the 6th Strategic Energy Plan, as it is difficult to develop nuclear power plants and large-scale hydroelectric power plants due to geographical, topographical, and grid-scale constraints. For example the installation of large-scale wind turbines is not possible due to extreme wind speeds. Hydropower, wind power, geothermal power, and nuclear power, which are difficult to install in this area, are calculated by replacing them with existing thermal power.

For this reason, in FY2030, it is necessary to move towards carbon neutrality through a unique path that does not have a significant impact on the local economy, that is, **“Just Transition in the Okinawa area”** based on regional characteristics, rather than the uniform national target value.

Taking into account the features of the Okinawa area, we will continue to cooperate with the government’s goals and further speedup the initiatives towards carbon neutrality, which are based on the condition of a stable supply of electricity.

Table 1 Zero-emission power supply that can be introduced in the Okinawa area

The 6th Straregic Energy Plan Power supply configuration			Applicable zero-emission power supply	
			Japan	Okinawa area
Renewable energy		About 36-38%		
	Hydro power	About 11%	○	×
	Wind power	About 5%	○	×
	Solar power	About 14-16%	○	○
	Geothermal power	About 1%	○	×
	Biomass	About 5%	○	○
Nuclear power		About 20-22%	○	×
Hydrogen		About 1%	○	○
Ammonia			○	○
Thermal power		About 41%		
	LNG	About 20%		
	Coal	About 19%		
	Heavy oil	About 2%		
Total		100%	About 57-61%	About 20-22%

* Zero-emission power supply: Power sources such as renewable energy and nuclear power which do not emit CO_2 during power generation.
* For wind power generation facilities of 500 kW or more, it is assumed that the facilities will withstand calculated extreme wind speeds of approximately 90 m/s or more. After a review of the examination of the construction plan notification form, windmills that can withstand extreme wind speeds and large-scale wind turbines have not been introduced for more than 6 years.
* Since the land surface area is small, there are limitations to development of solar power

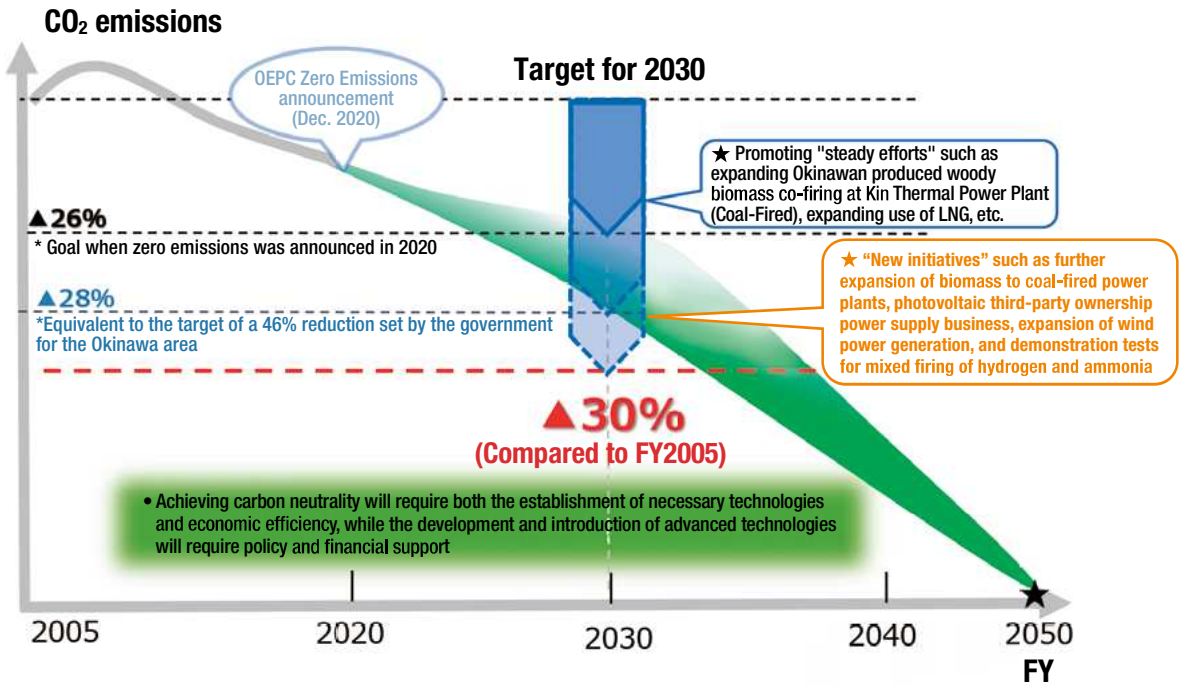
More ambitious goal for FY2030

OEPC has decided to go further than the 28% reduction, which is equivalent to the government's target to achieve **a reduction of 30% in FY2030 (* compared to FY2005)** as an ambitious goal in the "Just Transition in the Okinawa Area". We will do our utmost to speed up the various carbon neutral measures indicated in the roadmap.

In addition, to achieve both an inclusive decarbonized society and economic society in the Okinawa area, it is essential that at least the following business environment be developed with sufficient policy and financial support from the government.

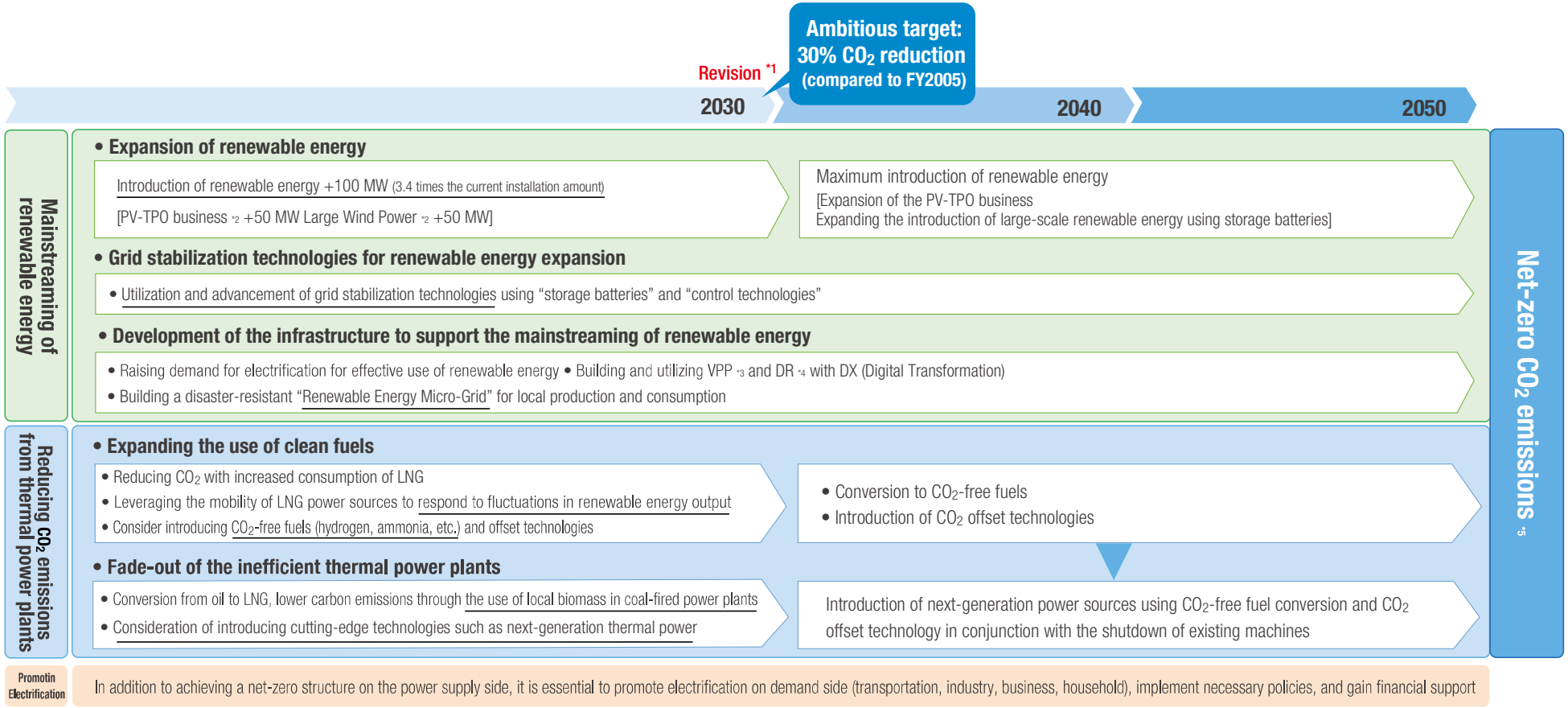
- Technological development that satisfies the installation standards for largescale wind power generation based on the extreme wind speeds in the Okinawa area, and a business environment that allows for commercial implementation.
- To achieve a balance between securing the capacity of thermal power plants, which is necessary for stable supply in the Okinawa area, and reducing CO_2 emissions, a business environment that allows Just Transition to low and decarbonized thermal power generation has been established through sufficient support for efforts to reduce and decarbonize existing thermal power plants through measures such as co-firing CO_2-free fuels.
- To maximize the use of renewable energy, we will establish a good relationship with the local community by reducing the burden on the public through rational environmental regulations and securing suitable sites in a symbiotic manner with the local community.
- To secure the stable supply of necessary resources and fuels, the cost of supplying decarbonized fuels and technologies has been sufficiently reduced by building hydrogen and ammonia fuel supply chains in cooperation with relevant countries, and by promoting integrated initiatives to secure suitable sites for CCS.

Fig. 1 Initiatives to Achieve Carbon Neutrality: Illustration of Achievement



* Since the government's previous target of a 26% reduction compared to FY2013 (25.4% reduction compared to FY2005) also included the FY2005 standard target, we set a target of a 26% reduction compared to FY2005, which is higher than the government target, and have been working to achieve the target. Started biomass mixed firing at Gushikawa Thermal Power Plant in 2010 as a countermeasure against global warming, and introduced Yoshinoura thermal power (LNG) in 2012, which became a pillar of the countermeasure, and we continue to use FY2005 as the base year as this will allow us to properly evaluate our initiatives.

2050 Net-Zero CO_2 Emissions Roadmap Ver. 1 (2022.10)



*1 The government's goal of reducing greenhouse gas emissions by 46% is equivalent to a reduction rate of 28% in the case of the Okinawa area, where zero-emission power sources are limited and it is a tough target for the Okinawa area. We have taken a step further by setting a new target of a 30% reduction.
The government's previous target included a target for the standard of FY2005, and as a countermeasure against global warming, we started with biomass mixed firing at Gushikawa Thermal Power Plant in 2010 and introduced Yoshinoura thermal power (LNG) as a pillar of the countermeasure in 2012. We decided to use FY2005 as the base year to clearly evaluate our initiatives.

*2 Service in which PV and storage batteries are installed free of charge and the electricity generated is sold to customers. Both PV-TPO and large-scale wind power are scheduled to be built and managed by our affiliated companies.

*3 Virtual Power Plant (VPP) refers to the collective control and management of a number of small-scale renewable power plants, etc., to make them function as a similar power plant.

*4 Demand Response (DR), according to the Ministry of Economy, is defined as "an act of changing the consumption pattern of electricity for consumers to curb their use of electricity in response to the setting of electricity prices or the payment of incentives when wholesale market prices or when grid reliability declines."

*5 We are aiming for net-zero CO_2 emissions by combining renewable energy power sources with thermal power sources that incorporate CO_2-free fuels and CO_2 offset technologies.

* This requires the establishment of necessary technologies along with economic feasibility. We will earnestly work to achieve these conditions. Further, policy and financial support are necessary for the development and introduction of advanced technologies.