

7. Environmental Performance

7.1. Environmental Governance

HK Electric is committed to protecting the environment and supporting sustainable development. We have set up an Environment Committee to ensure that our operations adhere to the Company's Environmental Policy and comply with all applicable laws and regulations.

With continuous improvement in mind, HK Electric's comprehensive environmental and energy management systems follow the latest version of international standards ISO 14001 and ISO 50001.

7.2. Cleaner Fuels

Coal and natural gas are practically the exclusive fuels used at LPS. A small amount of oil is also used, mainly for starting and flame stabilisation of coal-fired units.

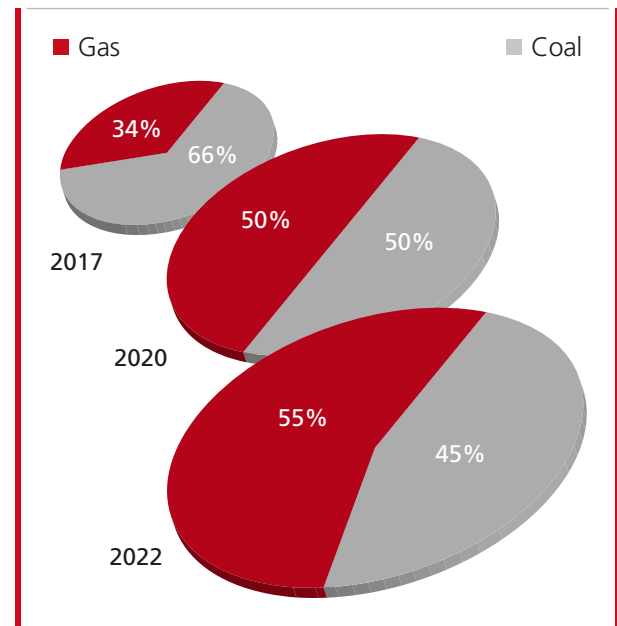
To reduce emissions, we have progressively increased the use of natural gas to generate electricity and reduced coal consumption. Since 2010, gas-fired generation has accounted for about one-third of our total electricity output.



Currently, we are building two new gas-fired combined-cycle generating units (L10 and L11) at LPS. The two units will feature advanced efficiency-enhancing technology, and are anticipated to produce about 50% fewer carbon emissions than the existing coal-fired units. They will also be equipped with Selective Catalytic Reduction Systems that can reduce emissions of nitrogen oxides by about 90%. After the commissioning of these units in 2020 and 2022, the

electricity we produce through gas-fired generation will increase to about 50% and 55% respectively, in support of the Government's carbon intensity reduction target.

Fuel Mix (2017-2022)



(Based on GWh sent out)

Meanwhile, successful modifications made to the coal-fired generating units have enabled us to handle a wider range of coal types. In recent years, low-sulphur coal (sulphur content less than 0.15% and less ash content) has been used to help reduce sulphur dioxide and particulates emissions. In 2017, about 28% of our coal-purchasing portfolio is low-sulphur coal.



7.3. Emissions Reduction

With the use of cleaner fuels and state-of-the-art technology, HK Electric has drastically reduced the emissions from its electricity generation process. Significant reductions in sulphur dioxide, nitrogen oxides and respirable suspended particulates emissions – by 40-90% in 2017 as compared to 2008 – have been recorded (Figure 6). The carbon emission per unit of electricity sold in 2017 stood at 0.79 kg (Figure 7).



Figure 6 – Significant Emissions Reduction (2008-2017)

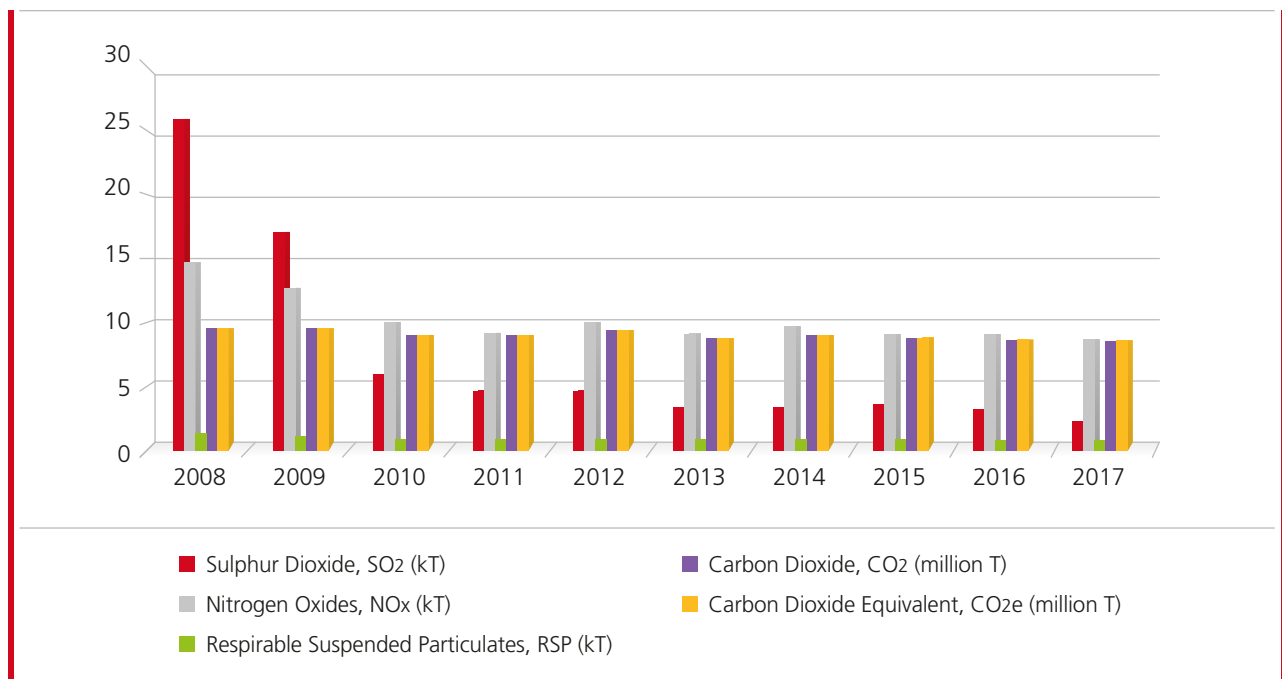
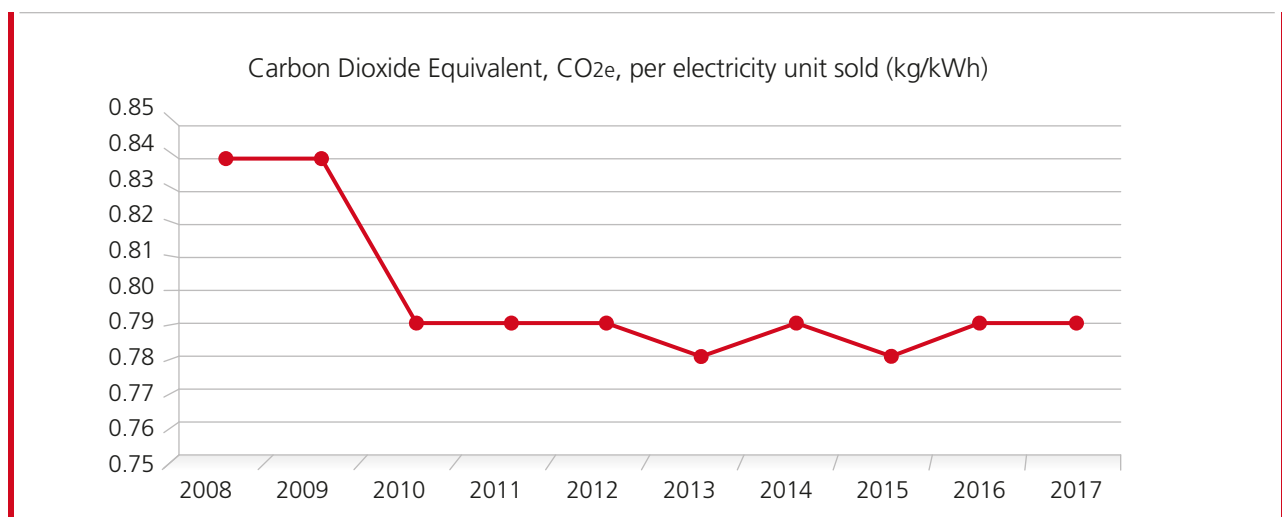


Figure 7 – Carbon Emission Per Unit Sold (2008-2017)



7.4. 4R and In-house Green Initiatives

As part of our Environmental Policy, we follow “4R” practices – Reduce, Reuse, Recover and Recycle – to minimise the consumption of valuable resources, such as energy, water and paper, as well as to reduce waste. At LPS, our “rain water and plant effluent collection system” collects more than 100,000 m³ of water every year and helps cut down the amount of raw water consumption and wastewater discharge.

Lamma Power Station Water Consumption / Discharge

	2015	2016	2017
Marine water withdrawal & discharge (million m ³)	2,023	2,160	1,926
Town water consumption (thousand m ³)	2,257	2,397	2,375
Wastewater discharge (thousand m ³)	185	138	160

We also collect ash and gypsum, which are by-products of our electricity generation process, for industrial use and recycle waste oil as far as possible through licensed contractors.

Ash / Gypsum Collected for Industrial Uses (kT)

	2015	2016	2017
Ash produced	211	237	229
Ash collected for industrial uses	208	238	235
Gypsum produced / collected for industrial uses	64	66	61

We work closely with our stakeholders to minimise the impact of our operations on the environment. An example is the provision of an on-shore power supply to contractors' ash barges at LPS so that less-efficient barge engines can be turned off when collecting ash, reducing both emissions and energy consumption.

We also incentivise our customers to switch to e-bills to reduce paper consumption.

To reduce food waste, a booking system for meals is in place at our canteens. We donate surplus food to the needy through Food Angel, an NGO in Hong Kong. For any remaining food waste, we encourage waste separation and use food-waste eliminators to minimise the disposal volume.

To enhance employees' awareness of reducing and recycling waste, we implement a “centralised rubbish station” scheme in our office buildings, under which rubbish bins at individual workstations are replaced with a centralised rubbish station equipped with recycling bins on each floor. We also have platforms for information exchange among our employees to promote reuse and recycling of unwanted items.

Apart from the 4R practices, we also encourage staff and their families to adopt green initiatives through supporting the United Nations World Environment Day. Colleagues are invited to make low-carbon pledges in their daily lives. In 2017, about 800 colleagues took part in various activities in support of this green appeal, including an upcycling workshop demonstrating how old rubbish bins collected could be put to better use like flower pots, laundry baskets and storage bins.

