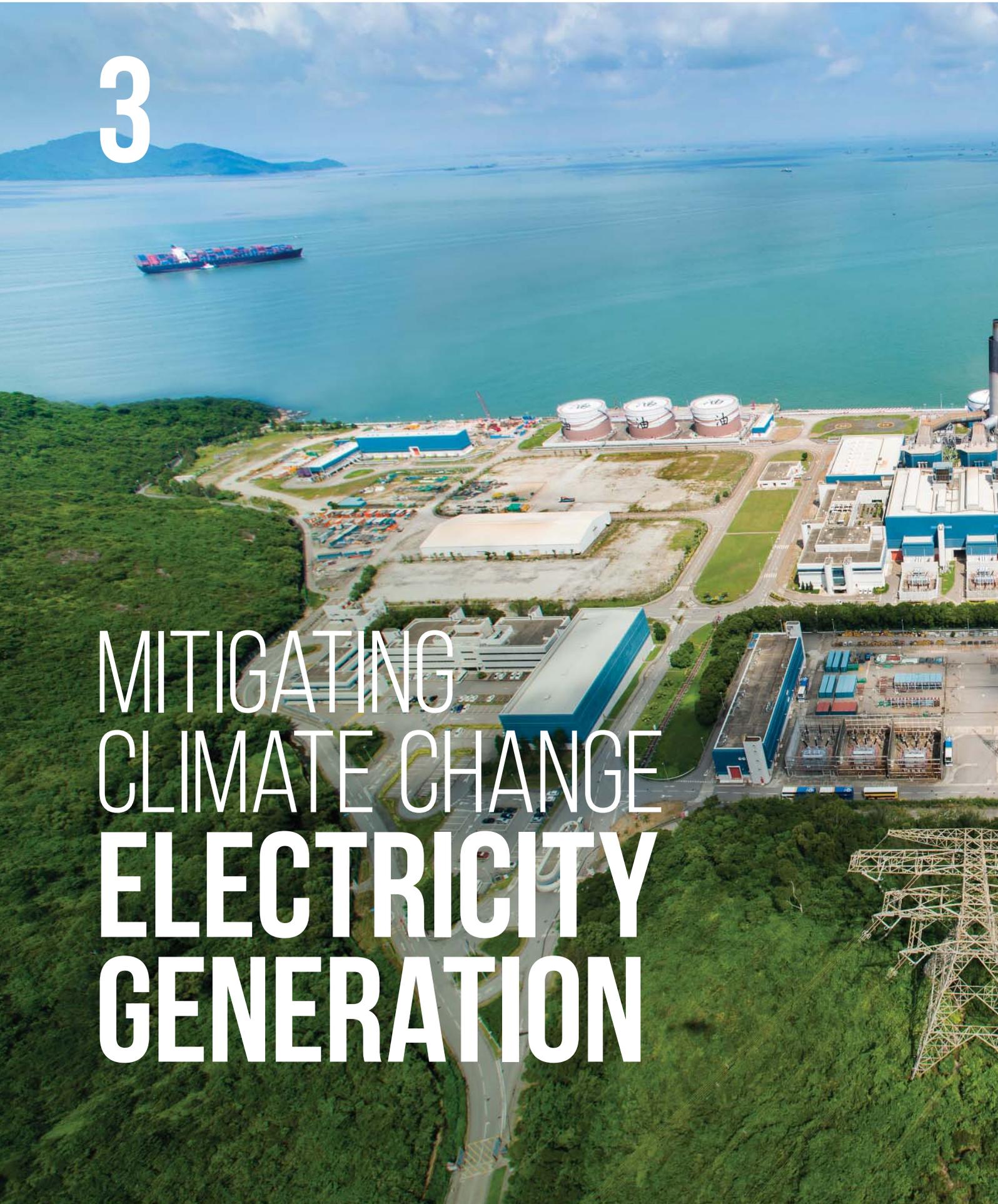


3

MITIGATING CLIMATE CHANGE ELECTRICITY GENERATION



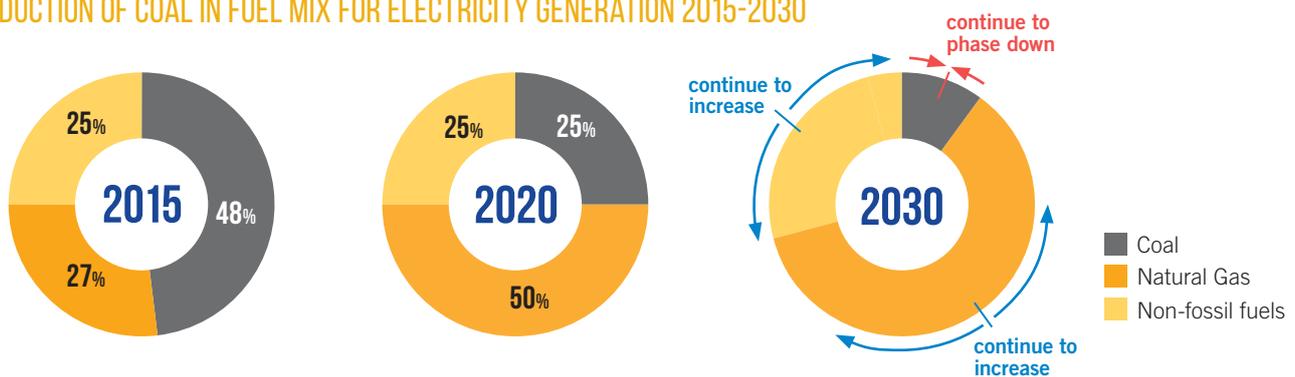


Our carbon reduction plan includes phasing down coal for electricity generation and replacing it with natural gas by 2030

Hong Kong will continue to phase down coal for electricity generation and use more natural gas and increase non-fossil fuel sources, which will enable Hong Kong to reduce carbon emissions significantly in the medium term, representing a very major commitment.

FIGURE 5

REDUCTION OF COAL IN FUEL MIX FOR ELECTRICITY GENERATION 2015-2030



Hong Kong's lack of indigenous primary energy resources means we must import energy and convert it into secondary energy to create electricity for final consumption.

Electricity accounts for about 55% of Hong Kong's total annual energy-end-use. Our extreme high density, high-rise living and world-class business, financial, trading and logistics activities require highly reliable electricity that is safe, clean and affordable. Our carbon emissions reduction path must take into account Hong Kong's specific conditions to ensure strong functionality while achieving environmental sustainability.

Hong Kong began to import nuclear electricity from the Mainland in 1994, which resulted in air quality and carbon emissions improvements. Our current agreement to import nuclear electricity runs up until 2034. Thus, we will continue to have around 25% of our electricity coming from a carbon free source for the medium term.

This chapter deals with the supply-side of mitigating climate change with respect to local power generation by the two power companies, which represents the largest source of direct carbon emissions in Hong Kong.

Phase down coal by 2030

Currently, about 70% of Hong Kong's carbon emissions still come from electricity generation despite the decision in 1997 not to build new coal-fired electricity generating plants. The most appropriate and available large-scale replacement technology for Hong Kong is natural gas-fired electricity generation. The first gas-fired electricity generating plant was built in 1996, and today there are 10 such plants in Hong Kong providing 27% of electricity requirement in 2015. By around 2020, natural gas will generate about half of our electricity while coal will drop to about 25%. This will help us to achieve the target of 50% to 60% reduction in carbon intensity using 2005 as the base, equivalent to about 20% of absolute carbon emissions reduction as noted in Figure 4.

To meet our new carbon intensity reduction target of 65% to 70% by 2030, Hong Kong will phase down coal-fired electricity generation since coal is the most carbon-intensive fuel in our fuel mix. This means we will continue to phase down Hong Kong's remaining coal plants as they reach their normal retirement life in the next decade and replace them with natural gas and non-fossil fuel sources as per Figure 5.

This is a very major commitment. While there is a significant financial cost of investing in a new fleet of gas plants and to promote renewable energy (RE), there are also significant air quality and public health benefits, as well as climate change benefits. We plan on the basis that Hong Kong can afford to cover the cost and so reap the benefits. It is vital that we have the support of the community as it will result in higher electricity tariffs. We will also need to work closely with the two power companies to transit away from coal.

Secure supply-side sufficiency

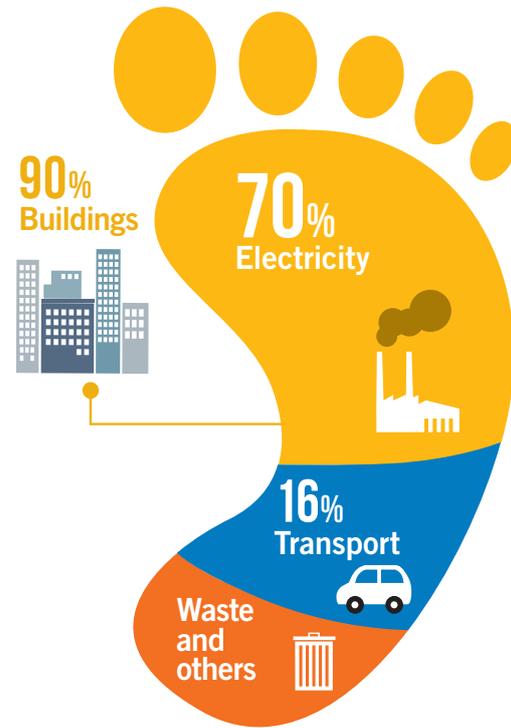
We have to work with the two power companies to ensure they can secure adequate supplies of natural gas and have the infrastructure needed in the coming decade to handle very much larger quantities of natural gas. The power companies are exploring the feasibility of using an offshore liquefied natural gas (LNG) terminal to bring LNG to Hong Kong for regasification by a floating unit.

Achieve supply-side efficiency

We also want the new gas plants to be as energy efficient as possible. While our existing gas plants can achieve an efficiency of about 45%, the latest technology can achieve around 60% thermal efficiency. Our current coal plants have a thermal

FIGURE 6

ELECTRICITY GENERATION – LARGEST SOURCE OF LOCAL CARBON EMISSIONS



efficiency of about 37% on average. Thus, the new gas plants Hong Kong plans to build will be much more efficient.

Achieving high efficiency is not only a function of the latest generation technology but also good management on a day-to-day basis for all the plants. Thus, we encourage the two power companies to continue to invest in human resource training to ensure all the plants are functioning at optimal levels of efficiency.

While the power companies as public utilities should strive to be energy efficient, it is always useful to emphasise the overall importance of not wasting energy for the benefit of the present and future generations and protecting the earth.