

GREEN, GREEN ICELAND



Ir. Chin Mee Poon

Ir. Chin Mee Poon is a retired civil engineer who derives a great deal of joy and satisfaction from travelling to different parts of the globe, capturing fascinating insights of the places and people he encounters and sharing his experiences with others through his photographs and writing.



Green, Green Iceland

Often dubbed "Land of Fire and Ice", Iceland can hardly be described as green since verdant jungles are almost completely absent in its landscape. But this island, situated just south of the Arctic Circle with a land mass (103,000 sq. km.), a little short of 1/3 that of our country, but a population (326,000) that's only about 1% of ours, stands out as a world leader in the use of renewable energy. In fact, almost 100% of the electricity needed is generated from renewable sources, including hydropower, geothermal power and wind power. In this respect, Iceland is very, very green indeed.

With extraordinarily extensive geothermal activities throughout the island, it is easy to understand why geothermal energy accounts for about 65% of the total primary energy utilised in Iceland, but the bulk of this energy, in the form of hot water, is used to heat up almost 90% of all the buildings in the country as well as swimming pools, fish farms and greenhouses, via networks of insulated pipes between the sources and the urban areas.

As a result, only about 27% of the electricity produced comes from geothermal energy; the rest comes from hydropower, with wind power playing a relatively insignificant role. Fossil fuel, mainly used in the transportation industry, accounts for only about 15% of all primary energy used.

During a 38-day exploration of this island state undertaken by my wife and I, together with my younger brother and his wife, in a rented vehicle in the middle of last year, we came across many outdoor hot spring pools that are free for use by just anybody. Some of the pools are

right in the centre of towns and villages. Those away from urban centres are also conveniently located near roads and all are equipped with changing rooms and bathrooms. We had a great time in the free spas.

We also came across several geothermal power stations and hydropower stations. In North Iceland, after spending much time at the otherworldly Mývatn Lake, we went in a north-east direction and passed right through Krafla Geothermal Power Station. Looking back from an elevated vantage point, all that we saw of the power station were pipelines running in all directions between some buildings of different shapes and sizes on both sides of the road.

With a rated output of only 60 MW, Krafla is the second smallest of Iceland's 5 geothermal power stations. Construction work started in 1974 but the station was only completed in 1977 because of intervening seismic and volcanic activities at the site.

Like coal-fired and fuel oil-fired thermal plants, geothermal plants also use steam turbines coupled with generators to produce electricity. Depending on how the heat in the geothermal reservoir is harnessed to produce steam to turn the turbines, these plants can be divided into 3 main types: Dry steam, flash steam and binary cycle.

Iceland's pristine nature and clean environment are due mainly to its small population, lack of heavy industries and high use of geothermal and hydroelectric power.

Its abundant supply of renewable primary energy and relative low cost of electricity production, however, have attracted some energy intensive industries from overseas. Alcoa, an American aluminium-smelting company, for example, built a large factory near the fjord-side town of Reyðarfjörður. To meet its energy requirements, the Kárahnjúkar hydroelectric station was constructed 80km away in east Iceland in 2009, involving a network of dams and tunnels, a vast reservoir, a power station and kilometres of power lines. This caused substantial damage to the landscape and environment, although it also created some jobs for the local people.

The Icelanders have to strike a delicate balance between their desire to reap maximum benefits from the natural bounties available and the need to preserve the fragile nature of the land. ■