



CLIMATE TAKE BACK CASE STUDY

YAKUSHIMA

Living on 100% renewable electricity in one of the world's most beautiful locations

WHAT IS IT?

Yakushima is Japan's fifth-largest island and world-famous for its natural beauty. It's a World Heritage Site with around 13,000 residents and 300,000 annual visitors. The island consumes about 7500m kWh of electricity per year, which it supplies entirely from renewable sources.

The vast majority of this comes from hydroelectric sources, but the island also uses wind, PV, solar thermal, biomass and waste energy sources as a supplement.

HOW DID IT DEVELOP?

Yakushima receives approximately twice the annual rainfall as the rest of Japan – at least 4,500 mm per year,

and often much more. This, combined with its tall mountains and powerful waterfalls, makes the island ideal for hydroelectric generation.

The first waterfall hydropower plant – Chihiro – was completed in 1953. Since then, another two have been added. All electricity on the island is produced by Denko Company and the business has therefore been responsible for much of the shift to 100% sustainable generation.

In more recent history, the island made a commitment to become carbon-free. This means replacing any fossil fuels (the island imports LPG, kerosene, gasoline, diesel oil and heavy oil) with hydrogen produced through electrolysis of water. The plan is also based on the development of a sustainable fleet of vehicles (either electrical or hydrogen-powered).

HOW DOES IT WORK?

The island's electricity system is split into three parts: generation, distribution and supply. Denko is responsible for 100% of generation; the Yakushima municipality owns the power grid; and three local cooperatives supply customers.

As well as the three hydropower stations mentioned above, the island has auxiliary thermal generators. These are used as the main backups in case of low rainfall (which doesn't occur often!) and during any maintenance.

The island's biggest consumer of electricity is actually Denko, which uses around 16% to power their production of silicon carbide – a widely-used abrasive.

HOW EFFECTIVE IS IT?

Astonishingly, and with huge potential to become even more so. The island already produces 100% of its electricity from renewable generation and – if plans go ahead – all fossil fuel use on the island will be replaced with power created directly or indirectly from renewable electricity.

Thanks to Yakushima's natural abundance of rainfall and wind, the island already produces more electricity than it can consume, with potential to quickly and easily produce lots more. There are some challenges over how to store this, but solutions are in the pipeline. For example, the President of Denko Company believes his company can use renewable electricity to heat homes, facilitate the adoption of hydrogen fuel-cell vehicles (such as Honda's FCX - Fuel Cell eXperimental) and power the island's tourist buses and sizeable fishing fleet.

WHAT ARE THE END PRODUCTS?

This is one of the world's most successful examples of a shift to 100% renewable generation. Yes, the conditions are favourable, but this doesn't make the achievement any less inspiring. The island also provides a willing test bed for hydrogen power and sustainable societies. Local government is working with Nissan and Mitsubishi to develop vehicles completely powered by renewables.

Another side product of this island's dedication to sustainability at scale is the way it connects to the people who live there. Citizens 'walk the talk' through their own approach to energy saving, which is enforced through campaigns, competitions, school programs and public seminars.

WHO BENEFITS?

In a theoretical sense, we all do. This island paradise provides a realistic, tangible vision of a fully sustainable society. More practically, Honda and Nissan are also beneficiaries, with the opportunity to test their innovative sustainable solutions in a challenging and photogenic location.

More than anyone though, it is Yakushima's community that benefits from being 100% renewable, with a commitment to becoming completely carbon-free. Their motivation is intimately linked with their day-to-day experience of often-extreme weather conditions. In the face of regular typhoons and flooding, renewable power provides a relevant, robust and safe energy future for the islanders.

HOW CREDIBLE IS THIS?

It's there for everyone to see!

As mentioned, the island's successful approach to renewables – hydroelectricity in particular – has attracted widespread attention and investment from major international brands like Honda and Nissan.

What's more, Yakushima is regarded by many as a forerunner of what's to come. As a result, the island is a trendsetter with a long list of localities and cities across Japan making similar commitments to 100% renewable power.

WHY WE LOVE THIS

In 2015, Greenpeace published 'Energy Revolution', which set out how the world can achieve 100% renewable energy by 2050. Yakushima is a great example of that strategy coming to life.

Not only do the island's achievements and ongoing commitments provide an inspiring vision, they're also proof that sustainability makes economic sense. Leaders are increasingly aware that as well as reducing the effects of climate change, development of renewables brings with it employment and economic growth.

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CLIMATE TAKE BACK

At Interface, we're convinced a fundamental change needs to happen in our global response to climate change. We need to stop thinking about how to merely limit the damage caused by climate change – and start thinking about how to create a climate fit for life.

Our new mission is called Climate Take Back – and we invite you to join us.

Find out more at our website [here](#)

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