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# A green lesson from Iceland

Since the 1970s, Iceland has gone from relying on imported coal for 75 percent of its energy to getting more than 82 percent of its energy from geothermal and hydro power.

By [Jonas Moody](#) | Contributor/ November 2, 2008 edition

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Bob Strong/Reuters

The Blue Lagoon hot spring in Grindavik is filled with runoff water from the Svartsengi geothermal power plant.

Both US presidential candidates have called for an end to America's dependence on foreign oil and more investment in renewable resources, but even Democratic candidate Sen. Barack Obama said his plan to stop using Middle Eastern oil might sound like "pie in the sky" talk.

Calls for greater energy independence date back to President Richard Nixon. Yet since then, the amount of foreign oil imported by the US has more than doubled.

But since the 1970s, Iceland, just 3,000 miles off the US East Coast, has gone from relying on imported coal for 75 percent of its energy to, as of 2007, getting more than 82 percent of its energy from geothermal and hydropower. Oil accounts for only 16 percent of its energy needs and is used only to

power cars and its fishing fleet.

“It’s our goal to be a carbon-free and oil-free country by 2050,” says Össur Skarphéðinsson, Iceland’s minister of industry and energy.

These days in Iceland, little is certain. In just the past few months, the economy has imploded, the currency bottomed out, and job security is nil. Despite all of the economic turmoil, Iceland can rely on its energy.

As the rest of the world struggles amid the economic meltdown, Iceland may offer lessons about the value and attainability of energy independence.

Located on the mid-Atlantic Ridge where the North American plate and the Eurasian plate are furiously pulling apart, the island is home to 320,000 imperturbable souls who put up with arguably the most rambunctious 40,000 square miles of ground on the face of the Earth.

Frequently jostled by tectonic movements – like May’s earthquake, which measured a magnitude of 6.3 – Icelanders grin and bear it, knowing that with the curse of tremors comes the blessing of intense geothermic activity: over 200 volcanoes, 600 hot springs, and 20 high-temperature steam fields.

With no coal, no petroleum reserves, and not even trees, the practical islanders have been warming themselves with geothermal heat for centuries.

### **A long history of green power**

Texts from as early as the 12th century mention chieftains meeting and making important decisions from the comfort of their natural hot tubs.

But it wasn’t until the oil crisis of the 1970s, when Iceland found itself dependent on imported coal for 75 percent of its energy, that the pragmatist nation decided to shift their energy focus to harnessing the island’s steaming soil and raging rivers to generate the majority of its power.

Now there’s such a surplus of cheap, renewable energy in the country that entire streets and parking lots are heated in the winter just to keep them de-iced.

### **The smell of green energy**

From the amount of exhaust billowing out of the Svartsengi power plant on the Reykjanes Peninsula, one might expect the air to be soured with noxious fumes. But even up close there is only the slightest tinge of sulfur in the air. This is the smell of green energy. The stacks only churn out clouds of water vapor.

Abutting the geothermal power plant is one of Iceland’s most popular tourist attractions: the Blue Lagoon.

Although the site’s engineers have tried to obscure the plant from the bathers’ line of sight, one can just make out the tallest of the silvery exhaust stacks from the pool.

What most of the lagoon bathers don’t realize is that they’re swimming in the plant’s runoff water, rich with minerals and a surreal shade of milky blue.

### **Marketing green energy**

Along with its power station’s tourist attractions, Iceland has placed itself at the forefront of renewable

energy technology, commodifying its green know-how and exporting it to countries around the world from China and the Philippines, to Canada and Germany.

An Icelandic geothermal developer, Geysir Green Energy, operates a district heating system for the Chinese city of Xianyang, heating a million square miles of housing. The new system has allowed China to demolish two obsolete, coal-fired heating stations.

While the private sector has begun exporting its geothermal expertise abroad, Iceland still must confront its continued use of fossil fuel before it can attain complete zero emissions status.

But the commitment to making this change is palpable. “We see Iceland as the world’s laboratory for a decarbonized future,” Ingibjörg Sólrún Gísladóttir, Iceland’s foreign minister, said last year.

### **Transportation: The final challenge**

The fly in Iceland’s fossil-fuel-free ointment remains its transportation system. Cars, buses, and the country’s sizable fleet of fishing ships all depend on imported oil and gas.

Well, almost all of them. In the middle of Reykjavík’s car dealership neighborhood, Höfði, motorists can find the world’s first commercial hydrogen fueling station, which opened in 2003.

The station was originally installed as part of a pilot program for three, monstrous Daimler-Benz Citaro buses with Ballard fuel cells that silently cruised Reykjavík’s streets and belched out nothing but steam. While the buses left at the end of the pilot program, the station remains. Hertz in Iceland now rents out three of 10 Priuses retrofitted to run off hydrogen fuel. Even one of the city’s whale-watching boats has been customized to burn hydrogen.

But instead of waiting for the mass production of hydrogen engines, the country has teamed up with its fellow island nation on the other side of world, Japan, to make Iceland the first European nation to drive Mitsubishi’s i-MiEV electric cars.

Singing the praises of Iceland’s preexisting energy infrastructure to fuel a nation of electric cars, Minister Skarphéðinsson has also announced plans for a network of “multifuel” stations around the island, which will offer, apart from conventional fuels, hydrogen and methane fuels as well as recharging facilities for electric cars.

“We are participating in the great idea of Governor Arnold Schwarzenegger ... who talks about a hydrogen highway from the Arctic to the Antarctic,” says Skarphéðinsson.

### **Economic meltdown**

When asked whether the nation’s recent financial meltdown will have a detrimental effect on Iceland’s plans for decarbonization, Skarphéðinsson says, “If you look at the very short term we’re already reducing emissions, we’re driving less because no one has the money to buy gas!”

However, if the nation’s lofty plans for a decarbonized society pan out, Icelanders may never have to worry about buying gas again.

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## **Comments**

## 1. [Mike Higgins](#) | 11.02.08

This article illustrates the absurdity of the man-made global warming theory. On one hand, alarmists claim that increasing emissions of a minor greenhouse gas (CO<sub>2</sub>), which makes up less than 2% of all greenhouse gases in the atmosphere, will cause catastrophic global warming, yet increasing emissions of a major greenhouse gas (water vapor), which makes up more than 95% of all greenhouse gases in the atmosphere, is a shining example of being green. It is clear that their arguments are not reasoned arguments, and reasonable people should ignore them.

Best selling author Michael Crichton has written a very thoughtful and reasoned essay about the subject of environmentalism that is well worth reading at the link below.

<http://www.michaelcrichton.net/speech-environmentalism-as-religion.html>

## 2. [Jayson](#) | 11.03.08

Their success in creating a greener country is amazing. Hopefully, the world will learn from their success and begin lobbying for greener standards across the board.

## 3. [Robert Babiak](#) | 11.03.08

I am a Canadian living in Iceland, I plan to be one of the first to buy the i-MiEV electric cars.

You are right the Icelandic people have a heart like no others. They have the will and the drive that matches the Viking legends. Even though the economy has imploded the people are optimistic. The fishing stocks are managed to remain sustaining, and they believe the green energy is the way of the future.

And the heated sidewalks, and the heated lake down town are something to marvel at. The lake is heated so hot that the birds will stay all winter, the hot water is always there. This does lead to the odd (from my point of view) case that can happen. You get into the shower and there is no cold water...

In summery a nice article about one of the rare gems on the planet. I never thought of my self as green. I drove a big car in Canada and didn't think of it. But since moving here I have become much more conscious of the impact that my life style had. I am kind of proud that just by moving to this beautiful country i have reduced my carbon footprint. And I think that if I move away I will be much more likely to, as they say "go green".

Again nice article.

## 4. [Ian Hanna](#) | 11.03.08

Imagine - a decarbonized society and not one Industrial Wind Turbine in sight to scar an otherwise spectacular landscape.

No citizens fighting the horrendous health hazards of the 1.5 and 2.0 mega phony towers.

No subsidies of Billions of Icelandic Krona, from the public purse being handed over to Wind Turbine developers in return for little useable energy production!

How refreshing and sensible it all seems!!

### **5. [Debbie Brown](#) | 11.03.08**

BRAVO!! I have long believed that the world revolves around the easy solutions, which have not necessarily been the best solutions. This is proof that we should have (and need to now) move ahead aggressively like Iceland to change a lot of things about our world, esp. our use of fossil fuels versus hydro-electric, wind-driven, solar power, and so many other sources of power. We're all in this together and we need to use regionally what is at hand like Iceland has.

### **6. [keith miller](#) | 11.03.08**

I was just reading on friday about buanol fuel from co2. Seeing as Iceland has natural energy sources in the form of geothermal, the co2 to butanol conversion could be lots more green for them.

### **7. [Kudzu Fire](#) | 11.03.08**

we don't have the geothermal cushion that Iceland does. There is some magical thinking about that fact sometimes in the US. While we wait for the new power sources to come online our dependency upon foreign energy will go up unless someone can point out what the stop gap, cross over energy will be. Natural gas perhaps?

### **8. [Tryggvi Emilsson](#) | 11.05.08**

Historical correction.

Iceland started exploring the use of geothermal energy for house heating before WWII. Reykjavik's hot water company ("Hitaveita Reykjavíkur") was incorporated in 1946, and by the mid 50s the use of coal was pretty much history. (NOT "since the 70s"). I was a teenager in Reykjavík in the 60s, and my grandmother used to tell me about the pall of smoke that blackened the snow in years past. I never saw any of it.

### **9. [Tom O'Neill](#) | 11.07.08**

MIT did a study this year on geothermal power: "Heat Mining in U.S." that concluded that every state in the union has geothermal potential- with Nevada having the best- enough to power the whole state with plenty for neighboring states. Per wikipedia site on "greenhouse gasses", c02 represents between 9 to 26% of global warming gasses, depending. Also, as wikipedia notes, global warming from greenhouse gasses makes for warmer air -holding more water vapor- which makes warming worse. Water vapor is "naturally formed" so you can take that out of the warming equation- it is what is is. As Roger Revelle (Gore's mentor) alerted the world to (starting in 1957) co2 is the prime global warming factor gas, by far.

### **10. [Clifford Peterson](#) | 11.10.08**

"An Icelandic geothermal developer, Geysir Green Energy, operates a district heating system for the Chinese city of Xianyang, heating a million square miles of housing."

Surely the heating system is not for "a million square miles"!

### **11. [Dave](#) | 11.11.08**

All of China is 3.7 Million sq mi.

### 12.Börkur | 11.19.08

This must be a typo. It's actually a million square METERS not square MILES, according to the website for Geysir Green's Shaanxi Energy project:

"Since its establishment in late 2006 Shaanxi Green Energy has already set up a district heating network providing heating to 1.2 million sqm. of housing."

Source:

[http://www.sxlydr.com/en\\_about.asp](http://www.sxlydr.com/en_about.asp)

### 13.InventorNC | 12.04.08

Just let's wait until some wag wants Iceland to turn off the heat because it is increasing global warming.

While we are at it, let's have the pessimistic greens figure out the cause of the previous warming spells thousands of years ago, and explain it to the rest of us.

Nice thought: Carbon dioxide is now converted to oxygen by plants. We are storing CO2 underground where plants do not live. What happens to the earth's atmospheric temperature if we have a giant burp and a huge inventory of CO2 is vented to the atmosphere?

### 14.donn cavnar | 01.12.09

i have a request, can you put me in touch with someone that has knowledge on the constuction hydogen fuel that's in your article,i have been developing H2 and would like to tweek it to a higher performance. thanks donn

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