



**HOW TO CREATE
A CLEAN ENERGY ECONOMY:
LESSONS FROM ICELAND**

**A Speech
by
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at the Masdar Institute of Technology**

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Distinguished professors,
scientists, students
Dear friends

It was with profound pleasure that I accepted the invitation to speak to you here today, to visit Masdar Institute of Technology and witness your extraordinary progress, to sense the dynamic spirit of innovation and commitment.

I remember vividly how my good friend Dr. Sultan Al Jaber described to me during his visit to Iceland in March 2006 how Abu Dhabi was planning to build a centre of clean-energy research and development; how, in the desert, people from all over the world would see that a clean energy future was indeed possible and, in fact, an attractive and attainable goal.

We sat at the 400-year-old oak table in my library; a young visionary from the Emirates and an older activist, now President, from the north of Europe, and found that we shared dreams of a sustainable future.

Since then I have been privileged to follow the evolution of Masdar, to be present at the opening ceremony of the campus and the Institute, to attend the annual World Future Energy Summits and, in recent years, to chair the jury of the Zayed Future Energy Prize; furthermore, to help in building international support for hosting the headquarters of IRENA in Abu Dhabi.

For Abu Dhabi, for Masdar, for all of you at the Institute – professors, scientists, researchers, students – all this is an extraordinary record; an achievement without parallel anywhere in the world.

I hope that you sense how privileged you are to be a part of this significant journey towards a more sustainable future and that you are pioneers in a field of extreme importance to all of human kind.

The world faces monumental challenges from the growing threat of irreversible climate change; a transformation brought home to us by the increasingly frequent news of extreme weather events. As I said in my speech at the Zayed Future Energy Prize ceremony last January:

“Disasters, droughts and floods; on every continent the news was in abundance; beginning during the early weeks in China, where the destruction was unparalleled, and ending in the festive season, when an Arctic experience was brought to New York and other snow-covered American cities.

In Australia and in Europe – from Finland in the north to Portugal in the south; in Asia – from Bangladesh to the Philippines; everywhere, television reports brought us startling stories, showing that we have entered a new era and suggesting that Planet Earth may be out of control. Science, in the findings of multiple studies, brings the responsibility home to ourselves, to our actions and our economies.”

I come from a country where we witness climate change at first hand. Iceland has the largest glaciers in Europe. They are receding faster than ever, and the ice sheet in our closest neighbour, Greenland, almost equal in area to Western Europe, is melting at an accelerating rate.

Neither we in Iceland nor our neighbours in Greenland need to go to international conferences to be convinced that climate change is really happening; to understand the threats that the melting of the ice brings to every nation in the world.

It is generally recognised that our only defence against this monumental threat lies in the transformation of our energy systems. That is why your work, your research and discoveries, are so important. You are playing a role in the most important mission, the noble endeavour of saving the world – and at the same time helping to build successful and profitable enterprises, prosperous economies.

My fundamental message here today is that a clean-energy transformation is not only environmentally important. It is also extraordinarily good business, a basis for economic progress; even a formidable defence when a country is hit by a disruptive financial crisis.

The dialogue about energy transformation, both globally and nationally, has focused too much on different forms of energy, on technologies and specific projects; comparing solar, wind, hydro, geothermal energy to oil, gas, coal or other forms.

Of course such discussions are necessary in certain contexts, but our main focus, I believe, should be on the clean-energy *economy*; with emphasis on the word *economy*; to analyse and show how clean energy can bring about a prosperous economy, create good and sustainable businesses and be of advantage for ordinary people, homes, and communities.

For decades, and in all countries, debates on energy, policy-making and the legislative processes have been dominated by grand projects, big-scale solutions, governmental strategies – schemes that are overwhelming in size, complexity, and scale.

The notion has prevailed that reforms have to be initiated at the top, enacted by central government or big corporations; that the process must be a top-down transformation.

However, the case of Iceland offers an alternative model. It demonstrates how initiatives taken by local communities, even small villages, by individual entrepreneurs and experts can, over time, combine to produce a comprehensive transformation of the entire national system, showing that the bottom-up approach offers a multitude of business opportunities.

It demonstrates that in the debate about energy, anywhere in the world, we should shift the emphasis away from discussing almost exclusively different forms of energy and make the transformation of the economy the centre of our concerns; to write the word *economy* in capital letters in the title of our global energy mission.

The strength of my argument can best be illustrated by presenting concrete lessons and examples from the energy evolution of my country; how in my lifetime Iceland has moved from being almost exclusively dependent on imported oil and coal to having now, for decades, been among the top clean-energy countries in the world.

When you visit Iceland today, it is hard to understand that up to the 1970s it was classified by the UNDP as a developing country, a nation still dominated by fishing and sheep farming, having for centuries been among the poorest in Europe and still primarily dependent on fossil fuel for its energy requirements.

In the decades that followed, we radically transformed our energy system so now 100% of our electricity production and 100% of house heating is provided by domestic, renewable resources: hydro and geothermal. Along the way, the economy has become more diversified, aided by this clean-energy transformation, with productive aluminium smelters and other high-tech industries, dynamic IT companies, growing tourism, combined with creative cultural activities and design and a deep-rooted welfare society, with universal health care and education for all, maintained even throughout the recent financial crisis.

Our clean-energy economy helped the people of Iceland to survive the banking collapse in 2008, not least because the cost of heating and electricity for ordinary families, homes and business companies is very low compared to what it is in other European countries, but also because this makes Iceland an attractive location for industrial investments; for aluminium smelters, data-storage centres high-tech industries and other thriving enterprises.

Thus, the first global investment decision taken by Rio Tinto, after an interval following the fall of Lehman Brothers in 2008, was to modernize its aluminium smelter in Iceland, and Century Aluminium is now discussing whether to build its second smelter in our country. These decisions reflect the fact that aluminium produced by clean energy maintains a strong long-term market position. Similarly, the establishment of new data-storage centres is helped and inspired by the supply of clean energy.

It is also worth noting that the scale of our national savings resulting from geothermal house heating alone is demonstrated by the fact that every twenty years, Iceland saves what amounts to one year's GNP by not having to import oil and coal to heat its buildings.

This has indeed been a revolutionary transformation, not only allowing us to build an economy with inherent long-term strength but

also to make significant contributions to the rest of the world. The geothermal sector has now become one of the major pillars of Iceland's global position, of our foreign policy and of our diplomatic efforts.

The United Nations Geothermal Training Programme, founded three decades ago in Iceland, has strengthened the capabilities of more than 40 developing countries and in recent years Icelandic energy companies and engineering firms have participated in geothermal projects in China and India, in East Africa and Central America, in Western and Eastern Europe, in the Middle East, Russia and the United States.

It has been an important task of my Presidency to promote such cooperation, especially since the threat of irreversible climate change makes it our moral duty to help others to move towards a more sustainable future.

As I said before, in the global debate on climate change, sustainability and energy transformation, there has been a predominant tendency to concentrate primarily on electricity production and to overlook the multiple economic advantages and business opportunities derived from a clean-energy economy.

In this respect Iceland can be of great service, inviting visitors to witness for themselves in a matter of one or two days the various aspects of a clean-energy economy as well as its contribution to bringing a country within a few years out of a profound financial crisis onto the road to recovery, economic growth and low unemployment.

Let me, therefore, in the time remaining, list briefly a number of ways in which clean energy has strengthened and broadened the Icelandic economy and make a strong case for pursuing sustainability: namely, that it is good for business.

First. Cheap electricity and heating for households and companies makes the energy bill far lower than in other countries, increasing the resources available for other expenditures and investments.

Second. Long-term access to clean energy has proved itself to be a magnet for foreign investment, e.g. aluminium producers and other industrial companies.

Third. Because access to clean energy opens the way to a smaller carbon footprint, it is especially attractive to the emerging and dynamic high-tech and IT sectors since the combination of advanced technology and clean energy appeals increasingly to enlightened customers all over the world.

Fourth. Greenhouse cultivation expands the product range of the agricultural sector and enables us to enjoy domestically-produced tomatoes, cucumbers, peppers and a variety of other vegetables. It also fascinates the tourists. Indeed, tomato growing has been so successful that Iceland could within a few years begin exporting tomatoes to Europe.

Fifth. Fish farming, in which geothermal heat is used to adjust the sea and fresh water temperatures according to the needs of the various species. The most recent example of this is the construction of a 2,000-ton Senegal sole fish farm within the Reykjanes Geothermal Power Park.

Sixth. Tourism has benefited greatly in recent decades from the construction of various spas, of which the Blue Lagoon is the most famous example, and from outdoor swimming pools and other lifestyle by-products of the clean-energy transformation. Now more than half a million tourists visit the Blue Lagoon every year; soon the figure will be twice the total population of the country.

Seventh. Health and cosmetics. The chemicals precipitated from the geothermal water used in power production have turned out to be suitable as the basis of modern cosmetic and health products.

Eighth. Over the past 30 years, the drying of fish products, especially fish heads, bones and other parts which previously were thrown away, has evolved into a prosperous multi-million dollar export industry. Drying enables Nigerian street vendors to store Icelandic fish products for up to two years without any special equipment or facilities. I am now advocating the drying of fish, meat, fruit and vegetables at the global level because it could make a major contribution to enhancing food security on every continent, especially since a large part of the food already produced in the developing world is spoiled within a week due to the lack of proper storage methods and facilities

Ninth. The potential of zero-emission urban traffic by introducing, in the coming years, electric and hydrogen-powered vehicles using the clean-energy grid already established by our utility companies.

Tenth. Clean-energy projects have strengthened the capacities of our universities and formed the core of viable enterprises in the engineering and technical sectors. These were stimulated by various clean-energy ventures in the last decades of the twentieth century and are now increasingly engaged in projects in other countries, adding science and research to our modern exports.

Eleventh. Our clean-energy achievements and our multi-dimensional clean-energy economy have, especially in this new century, become an

ever-more-important pillar of our foreign relations and our diplomatic, political and economic cooperation with countries in Asia, Africa, Europe and the Americas. Our clean-energy record is the main reason why global leaders like China and India engage with my small nation and why dozens of other countries have recently opened their doors to constructive cooperation with Iceland.

There is also an emerging twelfth element, illustrated by recent discussion and analysis on the feasibility of connecting Iceland to the United Kingdom via a submarine cable and thus opening up the possibility of selling electricity into the British and European markets; using the hydropower resources in Iceland together with the geothermal and the wind-power potentials to help these countries to stabilise their energy systems and meet excessive demands at certain peak periods.

The growing number of submarine cables from northern European countries to the continent illustrates not only that there are new opportunities in the European energy market, but also that countries like Norway and Iceland can look forward to a new era when energy will be exported in a highly profitable way across the ocean.

All of this shows in numerous ways how the transformation towards clean energy has strengthened the Icelandic economy and been one of the factors in our successful recovery after the financial crisis five years ago.

Thus it can truly be said, based on our experience, that the development of a clean-energy economy is a good insurance policy against long-term difficulties which inevitably will continue to plague all financial markets.

Iceland's modern history shows how a clean-energy transformation can become a major pillar in a successful economy, allowing a nation which half a century ago was among the poorest in Europe to reach the highest level of progress and economic well-being and delivering its people a good standard of living, sophisticated health care and educational opportunities open to all.

My country highlights the strength of the argument that a global transformation towards clean and renewable energy sources is not only of the utmost importance for the stability of the Earth's climate, but can also open nations the way towards a prosperous future and help them to create strong, balanced, and dynamic economies.