



THE TRIANGLE: ICE – ENERGY – FOOD

**A Speech
by
the President of Iceland
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Your Excellencies
Ladies and gentlemen

It is a great honour to be invited to participate in this dialogue associated with the World Food Prize and to present my analysis of the connection between our ice-dependent world, clean energy transformation and global food security.

I have chosen a title which might sound perplexing: “The Triangle: Ice – Energy – Food” to highlight the strong link between these three fundamental challenges of the 21st century and the need to break the deadlock in the debate on climate change.

We have to recognize that every nation now lives in an ice-dependent world, where the melting of the Arctic sea ice causes extreme weather events on faraway continents, destroying crops and urban infrastructures – and that the retreat of the glaciers in Greenland and Antarctica will, through rising sea levels, threaten every coastal city in America, Asia and elsewhere.

In recent decades we have on numerous occasions come together to discuss climate change and its effects on food security and our way of life, on our communities and our cities, indeed the fundamental challenge it poses to the future of humankind.

There have been multitudes of forums and conferences; dialogues and discussions in abundance. The world's diplomats and negotiators have met at jamborees and made proposals and speeches: in Kyoto, Bali, Copenhagen, Cancun and Durban. Presidents have taken office and departed: Clinton, Bush and Obama, now well into his second term; Al Gore was awarded an Oscar and the Nobel Peace Prize; yet we are still far from taking the necessary action.

As the Greenland glaciers and the Arctic sea ice continue to melt faster than ever and NASA issues extreme warnings, some of us ask, a bit bewildered: Why does the political and corporate leadership of most countries honour and respect the Space Agency because it landed a man on the Moon, and recently a robot on Mars, but ignore it altogether when it gives us alarming news about Mother Earth?

The answer is, of course, complicated, but the question highlights the fact that the core problem regarding climate change is one of perception: the absence of a comprehensive and compelling vision. While we see the Moon and Mars as a whole, we have always had a fragmented view of our own planet.

This is especially so with respect to glaciers and the ice-covered regions. In Iceland we have traditionally been preoccupied with our own glaciers, which are, admittedly, the largest in Europe. Though the Arctic has moved higher on the global agenda, the significance of Greenland is not generally understood. It is a glacial ice mass, close to Canada and the United States, half the size of Europe; larger than Germany, France, Italy and Spain combined.

Most maps hanging in classrooms show Antarctica as a narrow line at the bottom while North America dominates the upper-middle to the left and Europe is prominent to the right. Generations have thus been unaware that the Antarctic ice in fact covers a greater area than the United States; to make up the difference, you have to add on a good part of Mexico.

The Himalayas, with their thousands of glaciers, harbour water reservoirs for the great rivers of India and China. This hospitable harmony might soon be threatened and yet the world has not comprehended that horrific prospect, though the Chinese are now using a striking expression, *the Third Pole*, in order to make the Himalayas, as well as the Arctic and Antarctica, central to our concerns.

By the end of this century, the freezing vaults of Ohio State University, so splendidly guarded by the great glaciologist Lonnie Thompson and his colleagues, could be one of few locations where it will

be possible to find ice cores from numerous high-altitude continental glaciers.

We have culturally, historically and politically, in all nations, been brought up with a view of Mother Earth in which the ice is peripheral. We have not acknowledged that in fact we all live in an ice-dependent world.

Our weather, our climate, our crops and our cities are dependent, in one way or another, on what happens to the ice. The glaciers are not divorced from our fate; they are at the core of our future.

The Arctic, the Himalayas and Antarctica are not isolated and separate parts of our global homeland. Their fate and our fate, their future and our future, are closely connected.

Unless we bring them together and to the centre of our joint scientific and political concerns, the discussions and the dialogues on climate change will probably continue to be of little consequence.

We need to link the Arctic, the Himalayas, Antarctica and all the other ice-covered areas of the Earth together in a new vision, making them central to our debate.

Last week in Reykjavik, at the first Assembly of the Arctic Circle, a new venue for international dialogue and cooperation on global ice related issues, attended by about 1,000 participants from over 40 countries, we not only discussed the recent scientific discoveries, the resource utilisation and business cooperation and the opening of new sea routes linking Asia to Europe and America through the North, but also how the nations in the Himalayan region could learn from the success of the Arctic institutions.

That Arctic-Himalayan dimension threw light on the interaction between glaciers and vegetation, water and soil, between people and the ice, on the fate of communities.

Last year, the Polar Research Institute of China sent the icebreaker Snow Dragon from Shanghai along the Northern Sea Route to Iceland and back to Shanghai across the North Pole. Aboard were about sixty young Chinese scientists who had, along the way, carried out research on the transformations taking place in the Arctic.

They studied the relationship between the melting of the ice in the Arctic and weather patterns in middle and low latitudes in China, because data had demonstrated that there was a correlation between the freezing rain in Southern China during the winter of 2007-2008 and the Arctic sea-ice minimum of 2007. Then again, in January and February of this

year, China suffered its worst winter in decades due to the 2012 melting of the Arctic sea ice, destroying fields and food production, freezing almost 200,000 cattle to death out in the pastures. Thus, what happens in my Arctic neighbourhood has within a few months profound effects on the daily lives of people in China.

Leaders in many Asian countries are becoming increasingly aware of how the melting of the ice will affect the fate of their people, causing profound changes in the ecology of their regions, affecting atmospheric circulation, agriculture and hydropower.

Glacial melting contributes up to 45% of the total river flow in the tributaries of the Indus, Ganges and Brahmaputra. Water from these three rivers is crucial for the food security of 500 million people; they are the life-lines of some of Asia's most densely populated areas, from the arid plains of Pakistan to the thirsty metropolises of Northern China 3,000 miles away. Around two billion people in more than a dozen countries – nearly a third of the world's population – depend in one way or another on rivers fed, at least partly, by the snow and the ice of the Himalaya region.

These are the reasons why China, and also India, are now putting funds and enhanced scientific resources into monitoring their ice-dependent world; why Nepal and Bhutan are profoundly concerned.

These are also the reasons why China is actively seeking cooperation on clean energy projects with other countries, a transformation surprising many, but never the less a fundamental shift, strongly felt in China's relations with my own country and its desire to learn from our clean energy system.

In recent decades, Iceland moved away from oil and coal which during my younger years accounted for 80% of our energy usage to now having 100% of our electricity production and 100% of house heating provided by domestic, renewable resources: hydro and geothermal. Along the way, this clean energy transformation has made the economy more diversified, helped to establish strong aluminium and other high-tech industries, dynamic IT companies and growing tourism.

Our clean energy economy allowed the people of Iceland to survive the banking collapse better than other nations, especially 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 it makes Iceland an attractive location for industrial investments; for aluminium smelters, data-storage centres, high-tech industries and other thriving enterprises.

This has indeed been a revolutionary transformation, not only allowing us to build an economy with an 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, our foreign policy and 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 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. Just a few weeks ago, an Icelandic company with American partners reached an agreement to build a 1,000-megawatt geothermal power station in Ethiopia, potentially the largest to be constructed in Africa.

As the climate crisis calls for a global energy revolution, a comprehensive transformation from fossil fuel to green energy resources, there has been a predominant tendency to concentrate primarily on electricity production and 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 the various aspects of a clean energy economy as well as its contribution to bringing a country out of a profound financial crisis within a few years and onto the road to recovery, economy growth and low unemployment.

Let me, therefore, in the short time allowed, list briefly a number of ways in which clean energy has strengthened and broadened the Icelandic economy, making a strong practical case for the vision that clean energy is indeed good for business.

Cheap electricity and heating for households and companies have made our energy bill far lower than in other countries, being also a magnet for foreign investment, industrial, high-tech and IT companies.

Geothermal greenhouse agriculture has diversified the farming sector, enabling us to enjoy the domestic production of tomatoes, cucumbers, peppers and a variety of other vegetables while also fascinating tourists. Indeed, tomato production has been so successful that Iceland could within a few years begin exporting tomatoes to Europe.

Geothermal heat is used in fish farming for adjusting seawater and fresh water temperatures to suit various species. The most recent example of this is the construction of a 2,000-ton Senegal sole farm close to the

famous Blue Lagoon – another application of our geothermal potential which now attracts more than half a million tourists every year; nearly twice as many people as live in Iceland.

There are of course many other economic benefits, but let me close here today by highlighting how our clean energy experience could help nations all over the world to enhance their food security.

Mankind's oldest way of preserving food has been to dry it outdoors in a long process, sometimes taking months. This is a practice found on every continent, in the production of fish, meat, fruit and vegetables.

We also know that in warm and hot countries, all over the developing world, a big part of the food production is spoiled within a few days due to the lack of storage. In India, for example, it is estimated that it could be up to 20% of annual food production.

Therefore the most important contribution to enhance global food security would be to find ways in which nations, communities, villages, farmers and fishermen, could store the food already produced in a cost-effective and practical way for months, or even years, after the time of production.

Here the Icelandic way of using geothermal clean energy to dry fish products, especially fish heads, backbones and other parts which previously were thrown away becomes highly relevant. In the last 30 years this has evolved into a prosperous multi-million dollar export market. Icelandic fish products can be stored in their dried form by local Nigerian street vendors for up to two years without any special facilities. This is a method which I am now advocating at the global level since the drying of fish, meat, fruit and vegetables could be a major contribution to enhancing food security on every continent.

This approach is in fact so simple that most people don't really believe it to be an effective possibility. We prefer to look for complicated high-tech solutions so we forget that simple ways can often be much better and more productive.

Through drying, fish and other food can be preserved for a long time; its bulk and weight is reduced, making transport and storage easier.

The main advantage of clean energy indoor drying, as compared with outdoor drying, is that the process can go on non-stop all year round and the drying time takes only a few days. It offers consistent quality; flies and insects are prevented from contaminating the product and local energy sources are utilized, either geothermal, solar or wind.

Many countries have a tradition of drying food outdoors. In China, for example, there is a big and traditional market for dried funghi and shrimps. In South Africa dried meat has long been a part of the diet, likedried fish in many other countries in Africa and in Asia. The practice of drying food is also known in other parts of the world like the Middle East, here in the United States and in various parts of Europe.

As mankind moves towards the ten billion mark, the challenge will inevitably be how to access food and preserve it. There the priority must be to utilize all the food which is produced. No method other than drying can solve this problem as effectively and with so little infrastructure cost, especially since it can utilize local energy and be adapted to situations in every community and in all nations.

Although we in the western world are used to frozen food, there is no way we will be able to bring refrigeration to the billions of people living in Asia, Africa and Latin America. And even if we succeeded in doing so, it would entail a threat of further climate change in the coming decades.

Therefore the only way forward is to combine the oldest method known to mankind with commercial clean energy expertise such as Iceland can offer, and to extend this approach to all parts of the world.

To facilitate such a transformation I have recently worked towards building an informal coalition of global partners, including the FAO, UNDP, IRENA and others with support from the Secretary General of the United Nations, Ban Ki-moon, and his key officials. Our task will be to execute trial projects, drying different food products – fish, meet, fruit, vegetables – in Asia, Africa and the Americas, using localiz clean energy resources – solar, wind and geothermal – as well as power from existing national and regional grids. The results will then form the basis of a comprehensive global partnership, hopefully making drying a pillar of 21st century food security.

I bring this vision to you here today, that the key challenges we face are interrelated and that our ice-dependent world can be made sustainable by linking clean energy to global food security and thus allowing future generations to enjoy the beauty and the riches of Mother Earth.