Address
by
the President of Iceland
Ólafur Ragnar Grímsson
at a meeting of representatives of
The African Development Bank,
The African Development Fund and
officials from countries in East Africa
Reykjavík
14 January 2011

It is a great pleasure to welcome you all to Iceland and participate in your dialogue on the geothermal potential in Africa, how Iceland's experience can provide inspiration and practical lessons, knowhow and technologies, thus helping to further successful development and a clean energy future.

To give you a perspective on how the Icelandic geothermal saga could benefit Africa, it is worth emphasising that in my youth, over 80% of Iceland's energy needs came from fossil fuel in the form of imported coal and oil. We were then still a poor nation, primarily of farmers and fishermen, and Iceland was classified by the UNDP as a developing country right down to the 1970s. Now, despite the effects of the present financial crisis, we are among the most prosperous nations in the world, largely due to the transformation which made our electricity production and space heating based 100% on clean energy.

There is probably no other country in the world where, in a single day, you can witness at first hand the entire spectrum of geothermal usage: electricity power plants, vast urban heating systems, green-house cultivation, food processing, aquaculture, spas, recreation centres, swimming pools, cosmetic production, snow melting in winter and various other purposes.

Our geothermal development began more than fifty years ago when pipes were laid beneath gravel streets in a few small towns, bringing hot water to homes. Since then, step by step, major power projects have been

developed that now provide electricity for aluminium smelters, data storage centres and other high technology and IT-based industries.

Between the World Wars, and especially in the second half of the 20th century, new technologies and engineering endeavours enabled Iceland first to replace coal and oil with geothermal space heating, and then to power turbines and ultimately sell geothermally-generated electricity to high-tech companies. Thanks also to hydropower, Iceland became the paramount clean-energy country in the world. The geothermal sector has also been the foundation of extensive greenhouse cultivation and fish farming, of world-famous tourist locations like the Blue Lagoon, of spas and healthier life styles.

The scale of the national savings resulting from geothermal space heating alone is demonstrated by the fact that every ten years, Iceland saves to the equivalent of one year's entire GNP by not having to import oil and coal to heat its houses.

The abundance of clean energy is the main reason why Iceland is now an attractive investment location for foreign companies. An ever-growing number are willing to go anywhere in the world if they can have permanent and secure access to clean energy, thus becoming well positioned when a global carbon tax, in one form or another, is introduced. This aspect of clean energy production is an especially important attraction for 21st century IT investments, for software and information-based companies.

The United Nations' Geothermal Training Programme, a part of the UN University, is located in Iceland. In recent decades it has trained nearly 400 students from over 30 developing countries. They have benefited from cooperation with a core of the best scientists, engineers and technicians in the world, and witnessed at first hand what can be done. Thus, the South already has a community of advanced geothermal experts, trained here in Iceland, waiting to be given an even greater role in the energy transformation of their respective countries.

About 30% of UNU-GTP graduates have come from twelve African countries and almost a half of the MSc graduates are from five counties in Africa. In addition, workshops have been held for decision-makers, including those in East African countries, and special short courses have been organised in Africa each year. Participants in the workshops and the short courses from 2005 to 2009 have come from Kenya, Ethiopia, Eritrea, Egypt, Djibouti, Congo, Burundi, Algeria, Ruanda, Tanzania, Uganda and a few other countries.

Thus the United Nations Geothermal Training Programme, based in and run from Iceland, has played a major role in building up a geothermal knowhow in African countries in recent decades and thus strengthened the African continent's geothermal potential.

In recent years, Icelandic power companies and engineering firms have participated in geothermal projects, not only in East-Africa but also in China and India, Central America, in Western and Eastern Europe, in the Middle East, Russia and the United States.

It has become an important part 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.

The beauty of geothermal energy for economic and social development is that it is not just an energy resource. It can be used for greenhouse cultivation and other types of productive farming, helping rural areas, as Kenya has discovered, to grow products for high-priced markets in developed countries. Geothermal heat can also be used to dry food products, e.g. meat, fish, vegetables and fruit and so preserve their quality both for domestic consumption and for export, as we have done in Iceland with cod heads, which we export to Africa. Geothermal resources can also provide warm water, and clay for spas and other tourist locations and for urban and rural recreational and health centres, so bringing lifestyle benefits to the local population. Recently, the geothermal water has also been found to be rich in chemicals needed in pharmaceutical production.

All of this provides developing countries with new openings for successful economic strategies. In addition, the recent financial crisis has shown how a green energy transformation can serve as a defence against serious economic impacts in turbulent times.

It is a fascinating paradox that the green energy achievements made in recent decades, principally in the Western World, could, within the right policy framework, be of great benefit to the developing countries, to Africa, Asia and Latin America.

The climate crisis is primarily a call for a fundamental energy revolution, a comprehensive transformation from fossil fuel to green energy sources such as solar, wind, geothermal, hydro and biomass.

In all of these categories, the nations of the South enjoy a richer potential than those of the North. Thus, a green energy era could be a time of renaissance, a progressive century for the developing world.

Bright sunlight and strong prevailing winds characterise conditions in the South. What is less well-known is the abundance of available geothermal resources, which in many ways are the golden secret of the global energy debate.

With modern drilling and engineering technologies, it is now possible to harness the geothermal heat for the benefit of economic and social development, rural and urban electricity production, the creation of industrial regions and organic agriculture, for aluminium smelters and greenhouses, for spas and data-storage centres.

The great advantage of geothermal, solar and wind energy sources is that the scale of investments can be tailored to the need. The excess capacity and huge initial investment costs inherent in big coal and nuclear power plants are absent from the equation, because the tapping of solar, wind and geothermal sources can be adjusted to the needs of a few households, a small village, a growing town or emerging industrial projects. It can then be scaled upwards with each stage of successful development.

A few decades ago, this important energy dimension was entirely absent from the formulation of economic strategies, simply because the technological development of green energy was still in its early stages. Now, however, developing countries can base their prosperity on proven green energy technologies which can be tailored to every stage of development, to the needs of different regions, and these technologies will become more and more viable and available as time goes on.

With respect to their geothermal potential, most countries in Africa, Asia and Latin America are still in the early stages of this process. China has recently discovered how coal plants can be replaced by geothermal sources for urban space heating. Indonesia and the Philippines are planning increased electricity generation from geothermal sources. In East Africa, countries are looking at this resource in a fresh way, as are countries in Central and South America.

In fact there are about 100 countries that have a considerable geothermal potential, most of them in the developing world. For them, the example of my country can provide both an inspiration and concrete practical lessons.

Although in previous years we have seen significant technological progress, I firmly believe that we are still in the early stages of geothermal know-how and that together we can aim in the coming years to achieve wide-ranging technological breakthroughs in the following fields:

- Deep-drilling technology, aimed at tapping supercritical temperatures close to magma chambers, as illustrated by the international Icelandic Deep Drilling Project, going down 5-6 kilometres, examining how to harness temperatures of 400 – 600°C.
- The development of smaller turbines, furthering small-scale geothermal harnessing by adding one container system to another at the level of 2-5 MW each.
- Increasing the efficiency of existing geothermal technology, advancing higher energy recovery, longer field times, well-drilling technologies, casing, data management and reservoir simulation.
- The examination of the sea floor, of continental shelves, for submarine geothermal generation, particularly where high-temperature fluids can be found in fracture zones along mid-ocean ridges; examining whether, and if so, how, these could become a significant part of our energy future.
- Enhanced Geothermal Systems and their contribution to a new energy era.
- Employing geothermal boreholes in basalt regions for carbon recycling and storage, as is now being tested in a collaborative venture by Reykjavík Energy and universities in the US and Europe.
- Promotion all over the world of space-heating systems to replace coal and oil, thus meeting a large proportion of the energy demand in both developed and developing countries.
- Air-conditioning and cooling systems for use in warmer countries. Reykjavík Geothermal has led the foundation for such a system in Abu Dhabi, creating a potential game changer in the Middle East and other hot regions.

These technologies and their potential show that the geothermal sector is fast becoming a crucial part of the global energy future. It is therefore of utmost importance for countries in Africa to position themselves in such a way that they will be able to benefit in coming years from this technological progress.

The core message is, however, that we already have technologies and production methods tested and partly developed here in Iceland in the last fifty years, and especially in the last twenty to thirty years, which are ready to be applied in African countries, enabling that beautiful continent to have a clean energy economy, strengthening the foundations for successful development and a prosperous future.