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LaGeo S.A. de C.V.

INTRODUCTION TO THE SHORT COURSE ON GEOHERMAL DEVELOPMENT IN CENTRAL AMERICA

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1. INTRODUCTION

Energy issues have been headline news in most countries since the latter part of 2006. This has mainly been in connection with the correlation between global warming and gas emissions mainly from fossil fuels. This was discussed at the Workshop for Decision Makers on Geothermal Projects in Central America which the United Nations University Geothermal Training Programme (UNU-GTP) and LaGeo S.A. de CV co-hosted in El Salvador 26 November to 2 December 2006. But probably none of us who participated in the Workshop would at that time have expected that this would become such a hot issue in the national and international debate and in the media, as we have experienced.

As an introduction to the Short Course on Geothermal Development in Central America focusing on Resource Assessment and Environmental Management, which the UNU-GTP and LaGeo are co-hosting in El Salvador in 2007, I will try to summarize some of the international debate that has taken place during the last few months, in particular in connection with the World Energy Congress which was held in Rome 11-15 November 2007. The summary is based press releases from the Congress and my own notes. Information on the World Energy Congress and the publications of the World Energy Council (WEC) can be found on www.worldenergy.org. Information on the new WEC books mentioned in the present text can be found on the website. Another important source of energy statistics and forecasts is the website of the International Energy Agency (www.iea.org).

The world energy situation and the Millennium Development Goals of the United Nations form the framework for the annual Workshops/Short Courses which the UNU-GTP has co-hosted with KenGen in Kenya since 2005 for the countries of East Africa, and co-hosted with LaGeo in El Salvador since 2006 for the countries of Central America. The first annual Workshop for the Asian countries is planned to be held in Tianjin in China in May 2008. Many of the lecturers of the Workshops/Short Courses are graduates of the UNU-GTP from the host countries and the respective regions. The courses may in the near future develop into sustainable regional geothermal training centres. Further information on the UNU-GTP and the Workshops/Short Courses can be found on www.unugtp.is.

These Workshops/Short Courses would not be possible without the great hospitality, generous assistance and professional support of the local hosts, but the cost of the foreign participants and the international lecturers is covered by the Government of Iceland as a contribution towards the Millennium Development Goals of the United Nations.

2. ENERGY AND CLIMATE CHANGE

The Intergovernmental Panel on Climate Change (IPCC) has recently confirmed that the evidence for global warming is unequivocal. Furthermore, the Stern Report has argued that early action to combat climate change makes economic sense. However, existing efforts are clearly insufficient – most countries with targets under the Kyoto Protocol are not on track to meet their targets, and many countries do not have Kyoto targets. As a result, greenhouse gas emissions are still rising and are expected to do so for decades to come.

The problem is not the lack of policies – some thousands of policies have been introduced, both by countries within the Kyoto system and those outside, and the effort is under way to develop a successor to the Kyoto Protocol. An important United Nations Climate Change Conference will be held in Bali in December 2007, and a following one in Copenhagen in 2009. It is hoped that this process will lead to a new Protocol taking over when the Kyoto Protocol expires in 2012. Hopefully, China, India, Brazil, Australia and USA will become signatories of the new Protocol along with the many countries which have signed the Kyoto Protocol.

These were among the many issues discussed during the 20th World Energy Congress held in Rome 2007. The World Energy Council (WEC) has undertaken a study to understand better why the measures taken until now are failing, and to suggest measures that are more effective in reducing emissions, particularly from the energy sector, which accounts for two thirds of the total greenhouse gas emissions. The recently published “WEC Study of Energy and Climate Change” draws on the collective experience and resources of professionals worldwide. It has looked in detail at the impact of existing climate change measures and how effective they have been in promoting sustainable development.

It is important to remember, that sustainable development is not only about the environment. Policies which fail to contribute to economic and social development will themselves prove unsustainable.

The “WEC Study of Energy and Climate Change” is not optimistic about the practical role of renewables in the near future. It states: “Renewables certainly help but there are still enormous practical problems of cost, availability etc., which can prove particularly difficult for developing countries. Renewables can make a useful (and growing) contribution to emissions reduction but in practice, **apart from those countries with substantial hydro (or geothermal) resources**, it is unlikely that they will deliver a significant overall decarbonisation of electricity quickly enough to meet the climate change. The environmental impacts of some renewables, like biomass, are complex and need to be assessed carefully”.

In a discussion session at the WEC Congress in Rome in November 2007, the present author drew a special attention to the fact that Central America makes more use of renewable energy sources than most regions of the world. The Central American countries have a long tradition in operating both hydropower plants and geothermal plants, and the region is one of the world’s richest in geothermal resources. At present, geothermal power stations provide about 12% of the total electricity generation of the four countries, Costa Rica, El Salvador, Guatemala and Nicaragua. Only a small portion of the geothermal resources of the region have been harnessed so far. With the large untapped geothermal resources and the significant experiences in geothermal development in the region, Central America may become an international example of how to reduce overall emissions of greenhouse gases in a large region. In the WEC discussion, it was furthermore pointed out, that among the five countries in the world obtaining over 15% of their national electricity production from geothermal, two are in Central America, namely Costa Rica (15%) and El Salvador (at the top of the list with 22%). The other three are the Philippines, Iceland and Kenya.

3. ENERGY SCENARIOS AND VIEWS OF POLITICIANS

To meet the energy demand of all households worldwide, energy supplies must double by 2050. This is the most important finding of “WEC’s Energy Policy Scenarios to 2050”, a new book which was introduced at the Rome Congress. The second most important finding (according to the authors) is that while fossil fuels will continue to account for the largest proportion of primary energy requirements through the next four decades, we cannot only double the world energy supplies but must also effectively manage greenhouse gas emissions and address climate change. It is a myth that the task of meeting the world’s energy needs while addressing climate change is simply too expensive and too discouraging. With greater cooperation, greater investment, and clear rules for energy trade, together we can build a sustainable energy future. The WEC Energy Scenarios demonstrate that the energy supplies can be doubled to meet world energy demand and to build a sustainable future.

WEC targets the following:

- 1) Halve the number of people without access to a minimum level of commercial energy to one billion by 2035, and halve again to 500 million by 2050.
- 2) Develop commercial and physical energy systems that are 99% reliable in the USA, Europe and parts of Asia by 2035, and in most of Asia, Africa and Central America by 2050.
- 3) Stabilize greenhouse emissions by 2035, and reduce man-made emissions by 2050, decoupling emissions growth from economic growth.

The President of the European Commissions (José Manuel Barroso) said at the WEC Congress that the problematic relationship between energy consumption and the environment is “the greatest challenge of our generation”. And he added: “If I am asked today what is the most important issue for global security and development, the issue with the highest potential for solutions but also for serious problems if we do not act in the right way, it is energy and climate change. History will judge us on our ability to manage this challenge and mitigate the worst effects of climate change”. If the Bali Conference is “successful, it will only mark the start of a process, not its culmination. For the European Union, it is vital that the world’s leaders use Bali to launch serious negotiations on a comprehensive, international, post-2012 agreement on fighting climate change. If negotiations are launched with a view to reaching agreement by 2009 in Copenhagen, this will leave enough time for the new agreement to be ratified and in force before the end of 2012. A tight, but a very necessary timetable”. Barroso recalled the key elements on which any agreements should be based: “Consensus on a shared vision to limit global warming to 2 °C above pre-industrial levels, which requires global emissions to be reduced to at least 50% below 1990 levels by 2050. That means a 30% reduction for developed countries by 2020”.

He also addressed “appropriate adaptation measures to deal with the effects of climate change. Least developed countries, that are most vulnerable to climate change, need our support in coping with the effects of climate change. But ultimately, all countries need to adapt to unavoidable climate change... We do not expect countries like India and China to take the same commitments as we do. But we do expect them to decouple energy consumption and growth, in line with our common but different responsibilities. We do want to cooperate with developing countries to strengthen their contribution to the global reduction effort. By taking bold action now, they can enjoy a win-win situation, because sensible policies to fight climate change also have real non-climate benefits”.

A message from the President of Italy to the WEC Congress included the following: “In a world which will see a significant increase in energy needs and a progressive reduction in the supplies traditionally available, discovering sources of alternative and renewable energy has become a serious priority if we are to ensure the planet has a fair chance of progress. The role of research is therefore essential if we are to meet the challenge of sustainable energy use and to safeguard the global environment and the eco-system”. This is an appropriate note to start the Short Course on Geothermal Development in Central America which deals specifically with Resource Assessment and Environmental Management.