

SPEECH AT THE CLOSING CEREMONY OF THE 36TH ANNUAL SESSION OF THE UNU GEOTHERMAL TRAINING PROGRAMME.

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The United Nations University was established in 1975, as an international community of scholars and to serve as a think-tank for the UN system as well as a bridge between the UN and the international academic community. The Icelandic government soon realised that this could be an excellent venue for its multilateral development aid. The four United Nations University programmes in Iceland are today the most important part in Iceland's contribution to developing countries in the sustainable use of their natural resources and capacity building based on gender equality. The Geothermal Training Programme is the oldest in the family having been established at the end of 1978, so we have now a fairly long history. I can inform you that a new agreement is now almost ready for signing, ensuring the cooperation between UNU, the Government of Iceland and Orkustofnun in capacity building for geothermal for the next 5 years.

The capacity building tasks of the UNU programmes in Iceland are very important for UNU. However, under the new rector since one year back, Mr. David Malone, and with the support of Ban-Ki Moon General Secretary, the UNU has been given a stronger mandate than before to fulfil its think-tank aim for the United Nations operations. Here the UNU programmes in Iceland have to become more active, besides their customary role in capacity building for the developing countries in their specific fields.

During the 36 year history of the UNU-GTP, we have been able to record an almost continuous growth, where the last few years have been the busiest ever, and this is despite the economic crisis that Iceland has gone through since 2008. Here it must be stated, that we have had very good support from the Icelandic Government which has been protective in ensuring the strength of the UNU programmes despite the difficult economic climate. We did though suffer a setback in December last year, when the budget of the UNU programmes was cut down about 15%, making this a quite difficult financial year for all programmes. At the UNU programmes we choose to look at this as a temporary set-back and hope to see improvements here soon and in longer term, with the enormous need for this kind of capacity building in the developing part of the world. On the positive side, for UNU-GTP this enormous need has materialized in increasing requests for international geothermal capacity building associated with available external funds to sponsor it. Together this has helped us to keep our flag flying as high as ever.

At the UNU-GTP, the year 2014 was certainly one of our busiest ever. In all four main pillars of our operations, *the 6-Month Training, the Academic Studies, the UN Millennium Short Courses and the Customer-Designed Courses* we have experienced strength, and even growth in some of them. This year 30 UNU Fellows were invited for the 6-month training in Iceland. Due to personal problems at home, one of them had to leave us mid-way through without completing her training, so there are 29 UNU Fellows graduating here today. Six out of nine study lines were operated, with the 2-7 participants attending the different study lines. The highest number, quite unusually, was in Chemistry of Thermal Fluids, 7. The UNU Fellows in Iceland come from 14 countries on 6 continents, and this is the first time that all inhabited continents are represented here at the same time. For the first time we had UNU Fellows from S-America, represented both through Bolivia and Ecuador, and had in addition three other new countries San Vincent in the Caribbean, Sudan in Africa and Portugal, which sent 2 Fellows from the Azores sponsored through the *EES Grants System*. The biggest number from a single country, 11, comes from Kenya, where geothermal development is now in a fast-tracking phase not often witnessed before

in the world. Most of the Kenyan UNU Fellowships have been financed by Kenya or by institutions supporting Kenya.

If we summarize, then during 1979-2014, 583 scientists and engineers from 58 developing countries have completed the 6-month training at UNU-GTP. If we add the numbers for all UNU programmes in Iceland, almost 1000, or to be precise 967 UNU Fellows, from 97 countries have been trained through a UNU Fellowship in Iceland. It is therefore foreseeable that we will see the 1000th UNU Fellow in Iceland during next year, perhaps also the 100th cooperation country. Another milestone for us at UNU-GTP is that Kenya now has not only overtaken China with the highest number of UNU Fellows, but is the first country to reach the magical number 100 UNU Fellows compared to 83 from China.

Gender equality is important to the Geothermal Training Programme but here we have to face the reality that in many developing countries energy business and research is not an appealing working place for women, or they are just not given fair opportunities in this branch. With 118 female participants, in total, and 1/3 of the UNU Fellowships given to women, this year, we have reached a 20% female share in the 6-month Fellowships. We will certainly be continuing this trend in the coming years, and expecting at least a third of the participants in the next few years to be women, and hopefully more if possible.

We are proud to acknowledge that in many countries UNU-GTP graduates are in key positions in geothermal research and energy development. And that close to 80% of all the trainees have continued working in the geothermal sector for many years after training, and the majority have made geothermal their career.

During 2014, 17 former UNU Fellows have been doing MSc studies in Iceland, 16 of them under the cooperation agreement between UNU-GTP and the University of Iceland, and the first one under our recent cooperation agreement between UNU-GTP and the University of Reykjavik. Of these three graduated in April-May, two from Kenya and one from Nicaragua, and two Kenyans are graduating now in the autumn. In August/September this year, 7 have started their studies. In all, 39 UNU Fellows have now graduated with an MSc degree from UI under a UNU MSc Fellowship, with the 40th due within the next few weeks.

Under the same agreement with UI, two former UNU Fellows are doing their PhD studies, both of whom we expect to finish their studies in 2015. We expect 1-2 new PhD Fellows to start their studies in 2015.

The Short Course Series in Kenya for East Africa and in El Salvador for Latin America, usually referred to as the UN Millennium Development Goals Series, have also continued to grow in status with increasing number of participants and new countries being added every year. The past year has seen a record number of 70 participants in the African series, and more than 60 participants in the El Salvador. We have now reached a total number of more than 900 participants in all UN Millennium events. New countries in Africa include Cameroon and Niger, while Zimbabwe is expected for the scheduled November event, which will be the 10th in Africa. In Latin America, the small island state of Montserrat was the addition for this year's course.

Both in El Salvador and Kenya, we are now seeing our ideas on regional geothermal centres being developed through some cooperation with the UNU-GTP. In El Salvador through the Diploma Courses on Geothermal given at the University of El Salvador, with the support of NDF and IDB, and in Kenya through the Center of Excellence scheduled to be built by the Geothermal Development Company - GDC with the support of NDF and ICEIDA.

We have seen continuation of the strong demand for customer-designed courses and training, where we have been working in close co-operation with ISOR – Iceland GeoSurvey, which has provided most of the teachers and supervisors for this. This year, two courses were given for KenGen in Kenya: *Training in TFT measurements of Two-Phase Flow*, and *Advanced Training in Structural Geology*. At the end of May the two day *Workshop for Geothermal*

Development Donors was given in Iceland through the support of ICEIDA and the African Union. The training in Rwanda supported by ICEIDA and ongoing since Mid-2013, was completed in March this year. Sadly, the results of the exploration drillings at Karisimbi in Rwanda did not give positive results. In September a 2-week *Workshop and Short Course on Geological Exploration* was given in the Azores, and another 2-week *Short Course in Geothermal Utilization and Power Plants* is scheduled in late November. These short courses are financed through the EEA-Grants system and are the first two in a series of 6-7 Short Courses.

Our annual UNU Visiting Lecturer this year was Dr. Malcolm Grant, the well-known reservoir engineer from New Zealand, and one of the world's foremost geothermal expert in this field. He gave a series of lectures on reservoir engineering aspects of geothermal development, which were well received.

As seen from this account we have certainly had a busy year at the UNU Geothermal Training Programme.

I would like to thank the many teachers, trainers and supervisors that we have been able to call upon during this year. Here, the experts of ISOR – Iceland GeoSurvey have carried the biggest burden with about 55% share, the Universities 15%, and specialists from other institutions, energy utilities and consulting engineering offices about 30%. In all, between 60 and 70 teachers have contributed to the teaching, training and supervision this year. Thank you - without you the Geothermal Training Programme could not exist.

I would also like to give my deepest thanks to the permanent staff of the UNU-GTP, Ingimar Haraldsson, María Guðjónsdóttir, Markús Wilde, Málfríður Ómarsdóttir and Þórhildur Ísberg. Your selfless endeavour in work is the key to the success of the Geothermal Training Programme.

The 6-month training at the UNU-GTP has now been running for 36 years, and its continued success is a proof of the good work when the foundation was laid and the continuous support and sometimes modifications through its history, when these were due. During the last few months a committee of 7 persons under the leadership of María Guðjónsdóttir has been reviewing the programme, and we have now a proposal on modifications which has been discussed at the Studies Board and received very well. The two main innovations seen in this proposal, are that a new study line on Geothermal Project Management and Financing should be established, with some simplifications in existing study lines. And we want to add group work into the 6-month training – covering about 2 weeks in the early part of the training. These plans have not yet been finalized, but should be soon and we hope to be able to implement them in 2015.

The year 2015 is the year of the quinquennial World Geothermal Congress, which will be held in Melbourne in April. More than 250 abstracts were sent in by UNU Fellows and most of these have been followed up with papers for presentation. We will be hoping to see as many UNU Fellows as possible in Melbourne and the UNU-GTP will give support for this as possible, even though we cannot commit as much to this as we would like due to the present budgetary status. And mentioning WGC, I expect that all present here are aware of the good news from Board of the International Geothermal Association - IGA that Iceland has been given task to be responsible for the 2020 event. This is a great recognition for the Icelandic geothermal family and it will also be a great opportunity for former UNU Fellows to renew their relationship with Iceland.

Turning my attention to the current UNU Fellows. This year we have had a very good class in the six-month programme. You were always ready to put in hard work to reach your goals but you also remembered that there is live outside the class. I hope that through your training and project work you have realised that geothermal development is a fascinating science which can be very important for your home country. This also means that you have now been

given the important task to assist in developing this energy source in your home country, not only to increase the power supplies of your country but also at the same time make sure it is done in an environmentally friendly way. You were selected to come to Iceland, because you impressed us through your interviews and background, giving us believe that you could play an important role in geothermal development. Now it is your task to show that this faith was justified.

Dear UNU Fellows, you will now be returning to your home. You have been a long time away and made sacrifices in not being close to your families and friends. But we hope that you have enjoyed your six months in Iceland and that you will benefit from your studies and experience here, both professionally and in your private lives. We the staff members will remember you.

An English phrase says that

Water is the Essence of Life

Through your studies in Iceland, you have certainly learned much about water, not only the benefits of geothermal water for producing green energy, both for electricity and direct use, and for good health through swimming pools and spas. But you have also learned that it rains a lot in Iceland, actually more this summer than ever since weather measurements started in Reykjavík. You are actually the second class in a row that never experienced the wonderful Icelandic summer, which we Icelanders had grown accustomed to during the early 2000s. We can tailor-make most things here in Iceland to your needs and will, but the weather is though beyond our control, you have to accept that.

When you return home, please remember to keep in touch with us and your fellow students. We live in the “age of information and connection” and none of us can have an excuse for not being able to be in touch. Also, you are now members of new families. The UNU Geothermal Family which keeps on growing every year, but the same applies to the Big Geothermal Family, with development of geothermal resources all over the world as its common goal and burning ambition. As with other family ties, this means both duties and pleasures. We will be following you from distance and support you in your work as possible.

I wish all of you a very good and safe journey home, and look forward to see you soon again. THANK YOU.