National and International Thorium Programmes (Sessions 1, 2)

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National and International Programmes

Well friends, I think you will agree with me that we had a very good and lively conference. It is important for us to recognize that today nearly 1/6th of the global electricity comes from nuclear power. This, however, has reached a plateau on account of a number of issues that we all are aware of. Thorium, which is a larger resource compared with uranium, seems to have the potential to resolve many of the issues that impede the rapid growth of nuclear power. Even so, we can't imagine thorium replacing uranium any time soon. I think we need to position thorium in the context of some special niche areas that truly belong to thorium. There are several issues that have remained unresolved during the pursuit of the uranium cycle. I think for us success would lie in exploring at least some of those issues, if not all, that can be resolved through the use of thorium and not project thorium as a replacement for uranium, at least to start with.

I believe that in most of the existing commercial power reactors there are opportunities to introduce thorium with a view to getting a larger energy value from natural uranium. We should explore opportunities where this is likely to be commercially more attractive. Secondly, we need to recognize the fact that we need energy in forms other than electricity. Nuclear energy playing a major role in replacing fossil hydrocarbons, for example, would be very important for climate change considerations. Producing nuclear energy at higher temperatures is important in this context. Thorium has a unique opportunity here in becoming a major source in the primary energy supply. Molten salt reactors and accelerator-driven subcritical reactor systems have been discussed in depth in this meeting and so we are all very clear about the opportunities with thorium there.

I have been asked to make some remarks or suggestions in terms of what co-operation one could think of. Ideally, if everyone can converge on an agreed system configuration

for a thorium reactor, that could be the theme for international cooperation. That, however, is a very difficult convergence to achieve. There are several core technologies that are important for a number of reactor types relevant to thorium. Molten salt systems, high-power proton accelerators, and high-temperature systems are examples of such core technologies. It is perhaps easier to reach convergence on the identification of such core technologies, on which one can set up cooperations. One can think of looking at some of them or all of them. The simplest thing to begin the cooperation, however, would be to explore opportunities for thorium utilization in existing systems and to work on nuclear as well as thermo physical data for different aspects of thorium use. We did talk about nuclear data, but I think thermo physical property data sets are equally important, particularly, when we are trying to deal with different sets of materials.

Now, to make a cooperation program work, you need a structure to drive it and I get a sense that the international Thorium Energy Committee (iThEC) does have that interest or the ambition. We also need willing participants and I am sure the Committee would ask or invite people to participate and we hope that the participation will grow. We also need an agreed program. Given below are some ideas, in increasing order of challenge, based on what I have said earlier.

- (1) Studies in agreed areas of common interest.
- (2) Development of core technologies that are of common interest.
- (3) International project on a thorium reactor.

Apart from building consensus on areas of cooperation, one would need to negotiate financing arrangements and that is another problem I hope the organizers would be able to tie this up.

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