

AN INDUSTRY VIEW

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Back in 2005, we were starting to hear clear concerns from several Governments and the AEA about issues arising because new countries were discussing their wish to go ahead with nuclear power programmes and, specifically, Iran and North Korea were stating that they did not trust the Western suppliers and therefore had to set up their own uranium enrichment, fuel fabrication and even reprocessing facilities.

There were statements from both George Bush and The Director General of the IAEA, who were looking towards a moratorium on any new uranium enrichment facilities, and even plans for a ban on anyone that didn't already have such a plant from developing their own technology.

Within the Industry, I remember a meeting in Washington around this time when several of us from a range of countries started talking for the first time about the need to get an Industry voice heard before politicians or others who really didn't understand the Industry, or the way the fuel market worked, set up rules that were going to prevent us from going about our normal business.

At a simplistic level, our view from the Industry was "if it aint broke, don't fix it" in other words, the world market in uranium enrichment and fuel fabrication works, so let's not do anything to disturb this. On the other hand, this felt a bit like the "haves" in a very nice business club, trying to prevent the "have nots" from being allowed to join, so we got together through the WNA and established a working group, the title of which was "Ensuring security of supply in the International Nuclear Fuel Cycle" which I was asked to chair in 2006.

The WNA Group covered the whole fuel cycle - enrichment through to reprocessing, but as it is the most sensitive, I'll concentrate mainly on the enrichment side today.

One part of the study was look from the customers' point of view, and our sub-group reviewed this with a number of customers. How secure is the supply of enrichment services and fuel, what was working well today, and what should we do to add to this security for new and emerging customers. Well, the conclusion was, again, that the existing arrangements were more than adequate - at no time in the past had a disruption of supply led to a loss of electricity generation, even though there had been several instances of discontinuities from flooded mines and shut downs of conversion plants, but the market had responded and found solutions.

The Customer Group was, of course, biased, as all the members were existing customers of the market and their experience was reassuring. We tried to discuss this with potential newcomers, but found it hard to find a new player who was able to give a clear view.

We took this on ourselves and tried to put ourselves in the position of new players, and looked to where we could strengthen the security of supply feeling.

Of course, we had a firm starting point - we could only deal with a customer who met all the international safeguards requirements and were deemed to be acceptable as a civil nuclear power customer by the IAEA. But, given this, we came to the conclusion that there could be an approach that would give more assurances, and this is represented by the Three Layer approach.

The first level is the existing world market.

If there happened to be a disruption for political reasons, whereby one enrichment supplier was prevented from delivering to its customer, say, the British Government breaks off all relationships with a country over human rights issues, and refuses Urenco UK an export permit to deliver, even though the country is fully compliant with International Safeguards considerations, then the Industry has agreed to activate the second level. The four current enrichers will offer a mutual guarantee whereby the remaining three would act as a back-up and automatically take over the contract at pre-determined contractual terms.

In the unlikely event that this was not sufficient, then the third level would be activated. Under this, the proposed range of Government stockpiles, either real as in that proposed by the USA and Russia, or virtual, as proposed by the UK, would be used.

Now, there are problems with this, as it will only work if governments give up some of their existing rights to an international agency, and here we see the IAEA as appropriate. Some form of agreement that export controls can be handed over to the Agency will be needed, or the system is no more assuring than we have today, and this will not be agreed lightly. We feel, however, that an emerging customer, with small but growing demands, will find with this and the economic reality, that the existing market will be much cheaper than developing and building their own enrichment plant for small quantities, clearly the best way forward.

But the question remains, "Is this enough?"

You can ask why Urenco started up in the 1970s, or why Urenco and AREVA are building enrichment plants in the USA, when they could just expand their European plants - this would be easier and cheaper to expand an existing facility rather than start again on a green field level - well the answer is clearly strategic as well as economic.

As Alan said, the early WNA thinking was that for emerging nuclear customers to take advantage of this three layer security of supply system, they should be expected to make a clear commitment to forego having any enrichment facility of their own, but this is not now part of the thinking - too much haves and have nots again.

Clearly, it doesn't make economic sense to build a plant of your own when your demand is small - the existing world market will be clearly the most economic way forward - but as the local or regional demand increases, it starts to make sense to want and to have a local or regional plant. Again, this mirrors the way Urenco started in the 1970s and the reason for the new plants being built in the USA. If you're wondering about the what level of demand would make sense, we, as the WNA, decided not to try to specify this, but I am prepared to give a personal view that a demand of around 1000 tes of separative work - say enough to serve 10 to 15 reactors - would be the size that would warrant consideration of a local or regional plant.

So, the Industry view is that when the demand is appropriate, it makes sense to look for a local facility, and that a multi-lateral approach could be the way forward.

Then the question is, how to do this without a major increase in the proliferation risk?

We have to face facts, because of Khan and his supply networks, the technology for enrichment by gas centrifuge is known. If a country wants to develop their own centrifuge technology, they will be able to do this with time and a competent team of engineers. But the use of the black-box concept ought to remove this and bring greater control.

We are already using this concept in my Company with our two customers. Even though Urenco and AREVA are our owners and shareholders, as customers, they only get a licence to operate the technology, not access to the technology itself.

On this basis, a supplier of black-box centrifuge technology will only give access to information needed by the operator to run the plant safely and economically. The operator need never receive details of how to build centrifuges.

The plant operator and the local nuclear regulator will need information on safety matters, and these can be shared on a need-to-know basis, but, again, would not reveal the information needed to manufacture ones own centrifuges.

This concept could, and would, be applied by any provider of enrichment technology - this is an industry view on a possible way forward in the future for regional enrichment centres, not an advert from my Company to build all future regional enrichment centres. The same process would apply for plants built by the Russian Industry or US Industry.

But I can't leave it there without saying that this concept still has risks.

Once you have an operating plant you could, with a reasonably engineering knowledge, modify it to run as a high enrichment cascade. To achieve this, you don't need to know what is inside the centrifuge, just that it works. To do this, however, you would have to run the plant down, to carry out modifications and, clearly, any international team, be it operators or IAEA inspectors, would have to be thrown out, so it would be obvious that something was going on. This would take months to do, so there would have to be a well thought-out response from Governments and the IAEA, and I mean months, rather than years. On the whole, this is a long way from the concern that countries might have a clandestine programme going on some place secret.

So, to try to draw some conclusions, the Industry view is that, in the short term, the existing market works, and will continue to work, with the two additional levels of guarantee, the second level of mutual guarantees and, in the event that even this is unavailable, the ultimate back-up of Government stockpiles, all under some form of supervision by and international body, which we can assume would be the IAEA, is the right way forward, and gives adequate security of supply for new customers to the market; however, this will only bring a long-term solution if there is also an agreement that, as demand grows, a regional enrichment centre would be acceptable, and with some form of black-box approach, this will be possible, without unacceptable proliferation risks.

For other front end areas - fuel fabrication - this layered concept is more difficult, because each fuel design is different. Mutual guarantees and/or stockpiles are not so easy to establish, but this is not impossible. In any event, the proliferation risks from fuel fabrication plants are not in the same league as enrichment. The WNA group also took the same view on reprocessing - for the moment, the existing market works and there is enough capacity to accept new customers if require, but that in the longer term, we did not rule out the establishment of regional centres.

I have to say, I am re-assured that all the proposals now coming forward have some elements of the Industry thinking in them - we are now working together to find solutions, rather than concerned that there will be some Governmental decisions that fix a market that aint broke.

Thank you.