Crossing the Finish Line: Ending the Civilian Use of Highly Enriched Uranium

Winning global support to phase out the civilian use of highly enriched uranium (HEU) has been one of the seminal achievements of the Nuclear Security Summit (NSS) process that President Barack Obama started four years ago.

For decades, the United States has sought to secure and minimize the worldwide use of this dangerous material. Important US-led efforts such as the Global Threat Reduction Initiative have successfully eliminated civilian HEU in more than two dozen countries, removing enough material to build 200 nuclear weapons. However, broader international efforts have been too often hampered by a lack of multilateral support.

Together We Stand, We Build

Vulnerable crops, uncertain water supplies, and inadequate access to cancer care are some of the issues African nations are addressing in AFRA.

The African Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA) has 39 participating countries, and its activities include the peaceful application of nuclear
techniques to achieve national and regional development objectives.

“AFRA breaks the silo mentality we often have in Africa. It brings together Member States that have more or less the same challenges; challenges that we can tackle together at the regional level,” says Shaukat Abdulrazak, Chair of AFRA’s Programme Management Committee.

The AFRA leaders met from 31 March to 4 April 2014 to review the performance and effectiveness of on-going projects and to design new ones that will be implemented over the next two years.

The projects being implemented by the 24-year-old body relate to food and agriculture, human health, water resources management, industrial applications, radiation safety, nuclear security, and self-reliance and sustainability.

Many-sided Problems

“With the introduction of nuclear technology we add value to existing processes and industries, and solve problems that conventional techniques can’t,” says Edward Akaho, Chair of the AFRA High-Level Steering Committee on Human Resource Development.

“A good example is cancer, where we use nuclear technology for treatment and pain relief. In agriculture, we use nuclear techniques to create more resilient crop varieties. We also use nuclear science for water resource management. Nuclear science is able to address some of the most critical issues our countries face. So Africa must depend on the use of nuclear techniques, in addition to conventional techniques, to solve the many-sided problems of the continent,” says Akaho.

The group’s education initiatives are the most central. With IAEA funding, scholarships have been awarded to African scientists to study on the continent, and occasionally,
The flagship fellowship programme, a two-year Masters in Nuclear Science and Technology administered by the Ghana Atomic Energy Commission and the University of Ghana, has produced 19 graduates since it began in 2010. Some of these graduates have now been published in international journals, while others have been promoted to new positions in their home countries’ radiation protection sectors.

“So as we continue to produce students, we will be able to establish effective radiation protection infrastructure across the continent, we’ll have more people available to teach, and more scientists undertaking research and development in nuclear science,” says Akaho, who is also Professor Emeritus of Nuclear Engineering at the University of Ghana’s School of Nuclear and Allied Sciences.

Fellows from the AFRA programme also go to centres in Morocco and Algeria to be trained in radiation protection. So far there have been more than 80 graduates from that programme.

“The cooperation AFRA fosters between otherwise isolated countries plays a pivotal role in ensuring that we can work together as a family to address common challenges and improve the socio-economic development of the continent,” says Abdulrazak, who is also Chief Executive of Kenya’s National Commission for Science, Technology and Innovation.

Director General of Tanzania’s Atomic Energy Commission, and current AFRA Chair, Iddi S. N. Mkilaha, says that as the group aims to “enhance the benefit of nuclear science in Africa, much will depend on Africans themselves. For this reason, we are focusing on collaboration between countries and institutions so that the available resources – that often sit idle because there aren’t enough people in one location to utilize them properly – can be shared, used effectively, and turn a monetary or educational profit.”
Ghost Flights and the Case of MH370

The apparent erratic conduct of flight MH370 and the disabling of some communication equipment could be explained either by impaired pilot judgment typical of hypoxia (oxygen starvation) triggered by a slow cabin decompression, or because of the intervention of someone onboard with limited flight piloting experience who may have tried to replace the hypoxia incapacitated crew. The slow decompression could be due to an operational error, as was the case for Helios Flight 522, or because of structural failure.