MINISTERIAL STATEMENT

NUCLEAR SCIENCE AND TECHNOLOGY PROGRAMME IN ZAMBIA

The Minister of Higher Education (Prof. Luo)

Mr Speaker, let me take this opportunity to thank you most sincerely for according me this opportunity to report to this august House the status of the Nuclear Science and Technology Programme in Zambia.

Sir, you will agree with me that the word 'nuclear' generally arouses negative reactions and feelings in many people. Surprisingly, even the most enlightened of people in Zambia view nuclear science and technology as something 'dangerous' and usually associate with atrocities and environmental disasters. When asked about their feelings on nuclear science, many Zambians respond in the negative, as most of them only associate nuclear science to the catastrophic effects of 'Fukushima, Hiroshima and Nagasaki'.

Mr Speaker, these prejudices and negative sentiments are, in most cases, based on unsubstantiated perceptions, lack of knowledge, and in some cases, deliberate political sectional and economic interests. These sentiments associated with the safety of nuclear science and technology are almost always not supported by any empirical knowledge or data.

Although empirical data shows that nuclear energy is the safest, most reliable and one of the cleanest energy sources in the world, most people still view it as something inherently dangerous. For this reason, Mr Speaker, it is critical for the nuclear science and technology programme in Zambia to address and allay the negative perceptions of nuclear science and technology in the country.

Mr Speaker, the Patriotic Front (PF) Government in its party manifesto, on page 61, states as follows:

> " … in the next five years, the PF Government shall promote investments in alternative energy sources such as thermal, electricity generation from coal as well as nuclear reactors."

Sir, it is in this context that His Excellency the President of this Republic of Zambia, Mr Edgar Chagwa Lungu, during his Inaugural Address to this august House, announced that Zambia would pursue nuclear technology and its application as part of a diversified and sustainable energy mix to power her economy.

Mr Speaker, in keeping with the patriotic Front (PF) Manifesto, the basis upon which the Government was ushered into office, the Government is embarking on a nuclear science and technology programme.

Sir, allow me to take advantage of this opportunity given to me to address the House and, through it the nation, to just highlight some of the benefits of nuclear science. Zambia and many other countries in the sub-region recently suffered critical and painful power deficits arising from low water levels in our natural water bodies caused by the el-Niño. The power deficit arose because of the lack of investment and alternative energy sources as well lack of foresight to prevent future crises.

Mr Speaker, in order to avert future energy crisis, Zambia needs to actively move away from reliance on natural phenomena to assure sustainable economic development. Whilst Zambia must invest in other sources of energy, generations such as solar, geothermal, wind and coal nuclear energy must as a matter of priority, be included in energy mix to ensure sustainable and reliable off the grid energy.

Sir, nuclear power has many advantages as compared to the conventional hydro or coal power plants. For instance, although initial capital injection into nuclear power plant is relatively high, the operational costs are sufficiently low. On average, a nuclear plant has a life span of five to eight years implying a longer cost recovery period and making it possible to have cheap electricity at approximately US$4 cents per kilowatt. Further, nuclear power plants can produce

electricity consistently even in cases of variation in weather patterns and drought. Thus, coupled with the abundant reserves of uranium in Zambia, this means there is a security and sustainability of nuclear fuel.

Mr Speaker, in addition, nuclear science and technology also supports a large number of high paying jobs thereby, contributing greatly to the tax base of this country. Most importantly, nuclear energy is environmentally friendly because there is virtually no green house gas emission.

Sir, it is worth noting that apart from the eventual electricity generation, nuclear technology offers Zambia a unique and exciting opportunity to begin to actualise the 'Smart Zambia' mantra by using nuclear science and technology in the non-power sectors in areas such as medicine, agriculture and the industry.

Mr Speaker, through this august House, I would like to inform the nation that nuclear science has also enabled the health sector to save many lives at the Cancer Disease Hospital. Through the science, national food security is assured through enhanced self-life for agricultural products. However, all this has been achieved through the importation of isotopes nuclear materials. Therefore, Zambia stands to gain by having its own nuclear science programme as it will not have to wait for imported isotopes to treat a cancer patient at University Teaching Hospital (UTH), who has been long waiting for chemotherapy treatment for months. It will also not have power outages as a result of insufficient water levels in its water bodies. Furthermore, the country can avoid food shortages through the promotion of high yielding and drought resistant varieties as well as an improvement in the self-life of the agro-products.

Mr Speaker, studies have reviewed that with the current rate of economic growth and the national rate of population growth, the demand for electricity is estimated to rise by 4.5 per cent per annum. On the supply side, it is estimated that the growth is around 3.9 per cent annum. It is, therefore, estimated that demand for electricity will sharply outstrip production by 2030 thereby posing a threat to sustainable economic growth.

Mr Speaker, in order to sustain economic growth and the industrialisation agenda, there is a need for a long-term plan to establish a viable environment-friendly and efficient source of energy in Zambia. Therefore, the nuclear option does not only offer the ideal source of power, but also provides other industrial and medical appliances, which will support the ambitious and well co-ordinated industrialisation and economic diversification agenda of the PF Government.

Mr Speaker, because of these of these reasons, Zambia is moving in the direction of developing its capacity to eventually operate a nuclear power plant of, at least, 2,000 Mw within the next five years. The capacity building process for the nuclear power plant also ensures that the capacity in other nuclear science-related fields, such as health and agriculture, are also built. The Nuclear, Science and Technology Programme is envisaged to be undertaken over a time horizon between ten to fifteen years. This programme is not about populist, rhetoric nor is it about scoring political points. It is meant to cater for the needs of the future. The Nuclear Science and Technology Programme is aimed at creating synergies, capacity as well as ensuring that Zambia benefits from the peaceful uses of nuclear science and technology in the future.

Mr Speaker, the Nuclear Science and Technology Project in Zambia is, therefore, a clear demonstration of the foresight of the PF Government, as it aims at securing Zambia's economic development by putting science, technology and innovation at the centre of its future economy. This project is progressing and will place the country ahead of its neighbours in the region and also enable the country to realise its vision 2030 through a clean and sustainable energy regime.

Mr Speaker, allow me to mention that the decision to pursue nuclear power and its application came after consultation and research regarding the benefits, safety and security of nuclear technology for both power generation and associated industrial applications. This Nuclear Science and Technology Programme will be undertaken in two main phases. The phased-approached is appropriate because nuclear technology requires a well-developed human resource and regulatory base to ensure safety and security. This approach is also in line with the International Atomic Energy Agency (IAEA) recommendations. The IAEA is a United Nations agency tasked with co-ordinating and overseeing the safe and peaceful use of nuclear science and Zambia is working closely with it.

Sir, to underscore the importance of this programme to the agency and for the country, the Director-General of the IAEA visited Zambia last month both as a show of support of the agency for our programme, but also to ensure that we are in compliance with all regulations and prerequisites to commence the programme.

Mr Speaker, under Phase I, the Russian Government will support Zambia to adequately prepare for management and utilisation of the nuclear facilities by embarking on the following:

(a) Training and Skills Development in the Field of Nuclear Energy

The Russian Government will assist Zambia to develop an integrated human resource plan for personnel;

(b) Development of a Nuclear Policy

A secretariat has been established to drive the nuclear science and technology under the Ministry of Higher Education. The Secretariat has since developed a draft policy, which will soon be subjected to scrutiny by stakeholders;

(c) Enhance Capacity at the Radiation Protection Authority

This will be important because the current regulatory regime of the Radiation Protection Authority (RPA) is not adequate for the heightened nuclear and radiation activities to come.

Heightened Public Awareness of Nuclear Applications in the Country

Mr Speaker, to ensure that all key stakeholders and the country at large understand and buy into the project, the first phase will involve enhanced public awareness. Many of our people may have read in the newspapers on the sensitisation meeting held by the nuclear secretariat in Chongwe, Lusaka Province. I wish to report to this august House that this was part of the programme conducted by the secretariat to sensitise people about the nuclear programme. This programme is targeted firstly at the hon. Ministers in Government and then it will progressively move to other stakeholders such as hon. Members of Parliament, civil society and the general population.

Mr Speaker, the first phase will culminate into Zambia constructing a centre for nuclear science and technology to facilitate the development of local regulations and management capacity. The choice of the location has been necessitated by the fact that the National Institute for Scientific and Industrial Research (NISIR) has been undertaking nuclear research for many years. Furthermore, this site is appropriate because of the supporting infrastructure needed such as proximity to the airport and University of Zambia (UNZA) and availability of the cancer hospital for utilisation of the isotopes from the nuclear centre.

Mr Speaker, the establishment of the centre for nuclear science and technology will be useful for training of personnel for nuclear programmes. It is also important to note that there will be other resultant benefits such as increased foreign exchange earnings, creation of employment opportunities, gaining access to international markets for Zambia's agricultural products and increased competitiveness and viability of Zambian industries. The centre will be able to conduct the following industrial applications:

(a) isotope production for cancer diagnosis and treatment;

(b) trace element analysis for determination of mineral contents in ores such as copper that will support the mining industry;

(c) distillation column scanning to stop shut downs at the Indeni Refinery and stabilised fuel supply and subsequent fuel prices;

(d) material coloration of gemstones such as emeralds;

(e) processing of medical products like needles, surgical implants and theatre kits sterilisation; and

(f) reduction on post harvest losses by increasing the shelf life of agricultural products.

Mr Speaker, it is envisaged that the first phase of Zambia's nuclear science and technology will set the stage for the eventual operationalisation of the second stage, which will involve establishment of the first ever nuclear plant in Zambia. During the second phase of the nuclear science and technology programme, Zambia intends to build a nuclear power plant to produce at least 2,000 MW of electricity. The power plant will be critical to ensuring supply of sufficient electricity to power the economy for over five decades.

Mr Speaker, no country in the world has ever achieved real and sustainable development without putting science and technology research and development at the core of its development agenda. In this regard, the establishment of the institutional framework for nuclear science and technology to guide the implementation of the nuclear programme in Zambia is an equivocal effort and expression of Zambia's desire, foresight and seriousness to put science, technology, research and development at the centre of analysis and the country's development agenda for decades to come.

Mr Speaker, I thank you.