

Question 1.

What are the key factors to consider with the expansion of peaceful nuclear energy in the continent of Africa, including security and nonproliferation?

Energy demand in Africa is projected to grow by 80% by 2040. That is, at 3.5% per year faster than the global average of 1.3%. As such, a number of African countries have expressed interest in nuclear power (NP).

As the demand for energy in developing countries rises, nuclear power would provide one partial solution to the global climate crisis.

Developed countries such as Russia and China are both investing in NP and positioning themselves to export technology and expertise.

Currently only South Africa has a functioning NPP in Africa. However, a number of African countries have substantial amounts of uranium deposits. For example, Namibia provides about 7% of the world's uranium reserves. Sadly African access to electricity is the lowest in the world according to the World Bank, and infrastructure in many parts of the continent is scarce.

But whether Africa should incorporate nuclear energy depends on a range of factors such as:

- Local energy demand
- Availability of other energy sources
- Effective regulatory infrastructure
- How competitive nuclear will be with other energy sources
- Sufficient technological, industrial and political stability to develop a tradition of quality assurance engineering
- Availability of qualified human resources
- Funding (state investment)
- Burden on the national grid

There may also be potential challenges:

- Ensuring safety and security of nuclear power plants

Countries are worried about NPP accident. Release of radioactive materials will harm the environment and lives. Although few fatalities were recorded at the Fukushima accident, tens of thousands were evacuated due to the release of radioactive materials.

- Preventing nuclear proliferation
- Managing nuclear waste

Question 2

What role will the IAEA play in nuclear energy expansion in Africa?

The IAEA does not influence the decision for a country to go nuclear; whether to add NP to its energy mix.

The agency provides technical expertise and other pertinent information about safe, secure and sustainable use to countries who opt for nuclear energy and upon the request of the Member State. .

The IAEA provides integrated nuclear infrastructure review (INIR) missions to Member States. These reviews are part of the comprehensive package of assistance which the agency provides to ensure that even the most challenging issues to introducing NP can be successfully resolved.

INIR missions have been conducted in Ghana, Kenya, Egypt, Nigeria, Niger, Morocco, Sudan, and South Africa.

IAEA also brings together countries with the most advanced NP programmes and newcomer countries interested in NP to share knowledge and experience and avoid mistakes from the past.

The agency also develop relevant standards and guides for Member States and helps to promote universalization of treaties such as CPPNM/A and NPT

Question Q 3

Should African countries think regionally and/or cooperatively about nuclear energy and non-nuclear energy peaceful applications programs to help with cost sharing, leveraging available resources, and enhancing nonproliferation goals in the continent?

I feel Africa should consider regional or sub-regional approach about nuclear energy. This will improve security of energy supply. It is also a way of integrating energy market and promoting energy trade in the region.

Burden on the electrical grid system of countries

For NP to be connected to a national electrical grid, the installed capacity of the country should be about 10 times the capacity of the NPP. Hence the grids need to be enhanced, or alternatively a country could use small modular reactors (SMRs). But these SMRs have not been in operation for long and Africa may not want to invest in the first of its kind. Joining a regional grid is another option, and this require regional dialogue and arrangement. Historically, this has been possible, e.g. the West African Power Pool (WAPP) integrates national power systems in the ECOWAS into a unified regional electricity market.

Question 4

What steps can be taken to strengthen cooperation on the many different aspects of the peaceful uses of nuclear energy?

1. In-depth discussion and best practice exchanges on how to construct a more systematic and rigorous approach to embarking on nuclear and non-nuclear power programmes.
2. Discussion on best practices on how to deal with emerging threat of terrorism in the region.
3. Use of existing cooperation
 - Forum for Nuclear Regulatory Body in Africa FNRBA
 - African Commission on Nuclear Energy (AFCONE)
 - African Network for Education in Nuclear Science and Technology (AFRA-NEST)
 - Africa Nuclear Business Platform (AFNBP)

Question 5

How can NPT RevCon contribute to nuclear energy introduction and non-nuclear energy peaceful applications program in Africa?

The review should consider moving towards a greater multilateralization of the nuclear fuel cycle, and government-industry cooperation on non-proliferation resistance technologies and other measures designed to reduce any risk associated with the expansion of civil nuclear energy.

Again, promotion of regional and international cooperation on nuclear energy infrastructure to raise awareness in the region of the importance of the safety, security and safeguards and assist African countries concerned in developing relevant measures.

The RevCon should be able to support the IAEA effort to broaden the peaceful uses of nuclear energy and development of multilateral approaches to the nuclear fuel cycle such as assurances of fuel supply and fuel services.

The RevCon participants should affirm their support to enhance nuclear security as it is essential for the sustainable development of peaceful uses of nuclear energy as well as for prevention of nuclear terrorism.

Encourage more countries to ratify the CPNM/A, help to accelerate its implementation of concrete threat reduction and associated programs designed to secure vulnerable nuclear or radiological materials and technology, and achieve greater commitment to international capacity building and information sharing.

Increased resources should be provided through IAEA's TC programme to assist African countries in taking full advantage of the peaceful use of nuclear energy for human development and better industrialization.

Question 6

What can be done to strengthen IAEA safeguards implementation and universalize adherence to the IAEA Additional Protocol? How can the NPT RevCon contribute?

- Strengthen national and regional regulatory frameworks
- Use existing regional authority to create awareness for countries to sign the Additional Protocol.