

## **National Nuclear Policy, 2064 (2007)**

### **1. Background**

The world community has been involved in the study and research of nuclear science as the entire world is familiar with the fact that the level of nuclear science is an indicator of inherent power and symbol of prosperity of a nation. Moreover, the fact is obvious that some international organizations such as International Atomic Energy Agency (IAEA) are working to accelerate and extend the contribution of atomic energy for improving human health and raising the living standard of the people significantly through the peaceful use of nuclear technology. In the context of making maximum use of nuclear science in basic research in sector of food and agriculture, health, energy, industry, geo- science, geo-chemistry, geo- physics and pollution measurement, it is useful for Nepal, too, to achieve better results on the above by utilizing nuclear technology for peaceful purposes.

Importance of nuclear technology has increased since it is environmentally friendly and may be useful in different disciplines of medicines. As well as it would be a better alternative to minimize the short supply of mineral fuels and to reduce severe environmental impact caused by large scale hydroelectric power projects.

Nepal being surrounded by several nuclear power plants in its neighbor and in the context of their number being continuously increased, Nepal can not remain untouched from any kinds of nuclear accidents that may occur in its neighborhood and therefore, it is urgent to make necessary measurements on the present status of radiation level and there should be regular monitoring and evaluation and proper safety measures in this regard should be taken. Moreover, there is an urgent need to well inform the general public regarding the benefits and consequences of nuclear science.

Nepal as a peace loving country has already signed Nuclear-Non-Proliferation Treaty (NPT) and Comprehensive Test Ban Treaty (CTBT) with the commitment of using nuclear energy in improving human health, world peace, and prosperity and not for military activities. In this context, it is urgent for the country like Nepal to adopt timely, dynamic and appropriate policy in the field of nuclear science.

## **2. Vision**

Realizing the importance of peaceful use of nuclear energy and the outcomes achieved so far from its study and research, it shall be used for the economic and social prosperity.

## **3. Mission**

To make proper use of nuclear energy by its development, research and necessary control only for peaceful utilization.

## **4. Objective**

- 4.1 To enhance overall national welfare through peaceful use of nuclear science undertaking its research and development for the economic and social prosperity of the country.
- 4.2 To regulate, control and monitor the use of nuclear energy as per IAEA guidelines.
- 4.3 To enhance national capacity by developing, expanding and promoting human resources and physical infrastructures related with nuclear science.
- 4.4 To take sufficient safety measures for the development and use of nuclear energy and to enhance public awareness about benefits and consequences of it.

## **5. Policy**

- 5.1 To adopt policy and programs for peaceful use of nuclear energy as per its nature and pervasiveness and maintain coordination and balance between mutual effects of its program and policy in economic, social, educational, cultural, industrial, foreign and agricultural policy.
- 5.2 To develop, promote and encourage research and development activities on nuclear energy, taking into consideration its pursuable aspect, fundamental, applied and educational aspects in an appropriate way through suitable, available and all possible measures.
- 5.3 To pay due attention to the goal oriented nuclear energy research activities that can play vital role for social and economic development.
- 5.4 To give due emphasis in the programs such as proper development of food, agriculture, medicine, industry and water resources, study in geo- science, geo- chemistry, geo- physics disciplines, measurements of environment pollution level and radiation level and proper monitoring and identification of mineral ores for bringing them in use.
- 5.5 In order to extend academic study, research and knowledge in the field of nuclear energy, to make aim achieving efforts effective by making involved the academic institutions including universities and other institutions working in this field.
- 5.6 To develop proper legal and institutional mechanism for the development and peaceful use of nuclear energy. On doing this, pay due attention on matters of safety aspects of export, import, purchase, sale, storage, transport, utilization and radiation of uranium and other radioactive materials.
- 5.7 To enhance bilateral and multilateral mutual relation and cooperation in the management of residual material of

radioactive elements after their utilization in atomic energy development for peaceful purpose in regional and international field.

- 5.8 To set national standard having fixed quantitative measurement of radiation level in food materials.
- 5.9 To follow internationally accepted safety measures in the development and use of nuclear energy. To improve the condition of natural habitats maintaining environmental balance by keeping harmony with nature
- 5.10 To develop high level human resources in the field of nuclear science and give due emphasis in the development of capable manpower for the fulfillment of immediate need.
- 5.11 To utilize human resources available in governmental and non-governmental sectors, universities and research laboratories of the country in an integrated and multidimensional basis and to conclude necessary agreements to collaborate with concerned international organizations and institutions.
- 5.12 To develop capability that can select, accept, adjust, use, maintain and mobilize technology relating to nuclear energy.
- 5.13 To use all possible measures for raising awareness among the general public concerning Nuclear Energy.
- 5.14 To establish national level information system for collection, storage and dissemination of information in the field of nuclear science.

## **6. Sectoral Work Policy**

### **6.1 Research and Development**

- 6.1.1 Farmers shall be encouraged towards professional farming techniques to produce seeds of higher breeds by creating genetic diversity in food crops with the help of ionizing radiation.

- 6.1.2 Nuclear technology shall be properly utilized in pest control and production of chemical fertilizer.
- 6.1.3 For fostering research and development program in the field of nuclear science, proper research and development, management, substantial investment and suitable institutional structure shall be put in order.
- 6.1.4 Laboratories, research institutions and research units shall be established for making research and development more effective in the prioritized sectors.
- 6.1.5 Emphasis shall be given for the treatment and development aspects of nuclear medicines using radioisotopes.
- 6.1.6 Emphasis shall be given in the research of irradiation of food materials.
- 6.1.7 Infrastructures shall be developed gradually for the establishment of research reactor.
- 6.1.8 Research works shall be conducted in mutual collaboration of academic sectors to enhance production of industrial sector with the use of nuclear technology.
- 6.1.9 Research works on basic and technical knowledge of computer interfacing mechanism applied to nuclear instrumentation shall be carried out.
- 6.1.10 Emphasis shall be given in conducting nuclear science related research on curative aspects of animal and fish diseases, as well as their reproduction and feedstock aspects.
- 6.1.11 Necessary arrangement shall be made to preserve rare seeds and animals from being disappeared.

## **6.2 Human Resources Development**

- 6.2.1 Mutual coordination shall be made effective by maintaining balance with nuclear policy and other policies.
- 6.2.2 Nuclear study and research shall be made an integral part of higher studies in science and technology. Suitable curriculum shall be developed to fulfill the need of nuclear science study.
- 6.2.3 Due consideration shall be given in the preparation of curriculum of nuclear studies to generate human resources of special qualification and efficiency on nuclear physics, nuclear chemistry, radiobiology, nuclear medicine, radiotherapy and radiation security.
- 6.2.4 An arrangement for special training and education shall be made for the production of highly qualified and capable workers, managers, scientists and technicians as peaceful use of nuclear energy requires high level professional qualification, capability and overall skill in this aspect.
- 6.2.5 Research work shall be promoted by tying up the prioritized areas at different levels of study and teaching with the subjects of comparative benefit of the country.

## **6.3 Promotion and Extension**

Existing means of communication shall be used pervasively to well inform the general public for creating positive attitude towards peaceful use of nuclear energy, its status, consequences and the areas of benefits.

## **6.4 Data and Information System**

- 6.4.1 Periodic survey on the possibilities of further development of nuclear energy shall be carried out and information thereof shall be updated.

- 6.4.2 Database shall be established for effective operation of collection of data and scientific information relating to nuclear energy and their dissemination.

## **6.5 Radiation Study and Monitoring**

- 6.5.1 Radiation map shall be prepared by actually measuring and studying background radiation level of different parts of the country.
- 6.5.2 Radiation measuring units shall be established gradually at different places of the country for the monitoring and collecting data of radiation level.
- 6.5.3 On the basis of radiation map, excavation of mineral ore deposits following survey and exploration work shall be carried out for the development of nuclear science.

## **6.6 International Relation and Mutual Cooperation**

Bilateral and multilateral mutual cooperation related to nuclear science shall be promoted at the international level to exchange information and experiences in nuclear sector, to gain expertise, to make the country move with the development stream of international community.

## **6.7 Human Safety and Health**

- 6.7.1 Basic safety measures of international standards shall be adopted in carrying out works related to nuclear energy mobilization and transportation of radioactive materials, use of ionizing radiation in any form and management of radioactive materials after their use. While doing this, the system that has least impact in the environment and human health shall be adopted.
- 6.7.2 International standard and convention of radio safety measures shall be adopted while carrying out improvement in health status of common people. Moreover, appropriate methodology for curing disease,

utilizing nuclear medicine, radio-immunology, radio therapy, radio pharmaceutical and technology for preparing nuclear medicines shall be developed.

- 6.7.3 Necessary standards for the safe utilization of radioactive materials shall be developed and implemented.

## **6.8 Industrial Use**

6.8.1 Nuclear energy contained in the form of radioactive materials and radiation shall be used for enhancing the capacity and quality of different industrial materials.

6.8.2 Radioactive materials shall be used for various purposes in the form of radioactive tracer element.

## **6.9 Use of Radio Isotopes**

6.9.1 Electronic instrumentation facilities for utilizing radioisotopes in nuclear medicine shall be developed in the medical sector.

6.9.2 Research level reactor shall be established for the production of radio isotopes to be used in medical sector.

6.9.3 Radio isotopes shall be used in increasing animal population and in improving their health.

## **6.10 Radiation in Food Materials**

6.10.1 Coordination amongst concerned sectors shall be established for data collection, study and research for setting national standard of nuclear radiation in food materials

6.10.2 Samples of imported food materials shall be tested and controlled on a regular basis.



6.10.3 Irradiation technology shall be used for the storage of food materials to make them free of germs and also for lengthening storage period.

## 7. Institutional Structure

In the Ministry of Environment, Science and Technology, there shall be "Nuclear Steering Committee" for providing necessary directives and guidance regarding the implementation of National Nuclear Policy for long term basis. The committee can form technical committees including experts as required. Nuclear steering committee will be formed as follows:

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|---|------------|
| Hon. Minister/State Minister, Ministry of Environment, Science and Technology | - Chairman |
| Hon. Member, National Planning Commission (Concerned sector)                  | - Member   |
| Secretary, Ministry of Environment, Science and Technology                    | - Member   |
| Secretary, Ministry of Home Affairs   | - Member   |
| Secretary, Ministry of Defense  | - Member   |
| Secretary, Ministry of Foreign Affairs  | - Member   |
| Secretary, Ministry of Industry, Commerce and Supplies                        | - Member   |
| Secretary, Ministry of Agriculture and Cooperatives                           | - Member   |
| Secretary, Nepal Academy of Science and Technology                            | - Member   |
| Chief, Bhaktapur Cancer Hospital, Bhaktapur                                   | - Member   |
| Chief, B.P. Koirala Cancer Hospital, Bharatpur                                | - Member   |

Head of central department of physics, Tribhuvan University, Physics Central Department - Member

Two experts nominated by the Government of Nepal from the Atomic Sector -Member

Scientific Advisor, Ministry of Environment, Science and Technology -Member

Joint Secretary, Ministry of Environment, Science and Technology - Member-Secretary

Ministry of Environment, Science and Technology shall have the role of promoter, regulator and facilitator in implementation of this policy.

