# OUTLOOK TO NUCLEAR ACTIVITIES IN TURKEY

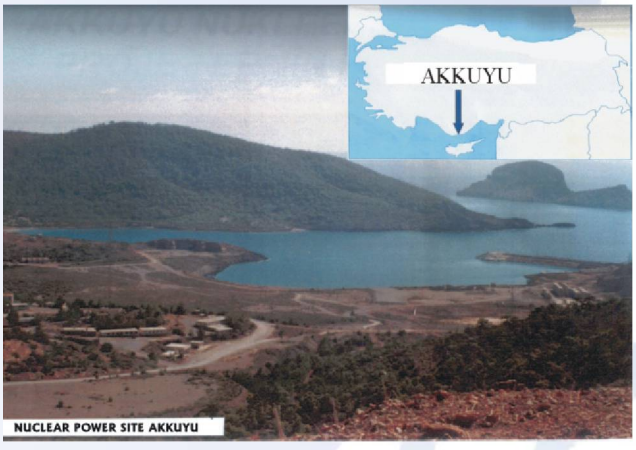
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Turkey initiated the activities for peaceful uses of nuclear energy in 1956 after the establishment of the General Secretariat of Turkish Atomic Energy Commission and became member of the IAEA as its established in 1957 and also of the OECD/NEA.

In Turkey, several organizations are involved in the activities related to the peaceful uses of nuclear energy. Universities give training in nuclear science and its applications (Undergraduate and Graduate). Electricity Production General Directorate (EÜAŞ) is responsible for construction and operation of Nuclear and Conventional Power Plants. A site selection for a nuclear power plant commenced in 1974 and a number of sites have been examined and few were selected for detailed investigation. The detailed studies of these sites were carried out in accordance with International Atomic Energy Agency (IAEA) and Nuclear Regulatory Commission of United State (NRC) standards and guidelines. Finally, the Akkuyu site was selected and a site license was issued in 1976. The bidding for a nuclear power plant construction was executed, but later postponed for financial reasons.

General Directorate of Mineral Research and Exploration (MTA) carries out uranium exploration and ore processing activities. ETIBANK (now, called Eti Holding A.S.) is responsible for the production of uranium from the ore. First uranium exploration was started in 1957 by MTA. As a result of aerial and ground surveys, uranium deposits were discovered.




Further exploration were carried out in 1974 under a program sponsored by UNDP. The laboratory and pilot plant tests were performed at MTA laboratories and at a site in Köprübaşı pilot plant facilities. The uranium ore explored in Turkey up to now is 9129 TonU. The preliminary and detailed feasibility analyses have been made by experts from MTA, Etibank, UNDP and IAEA at different stages of the development of the deposits. The Köprübasi uranium deposits were found suitable for open pit mining and are suitable low cost heap leaching and a small central processing facility with an 80 tpa production capacity can be operational in ten years. This study was supported by IAEA under the Technical Assistance project called "Exploitation of Uranium Resources of Turkey-TUR / 3 / 006".

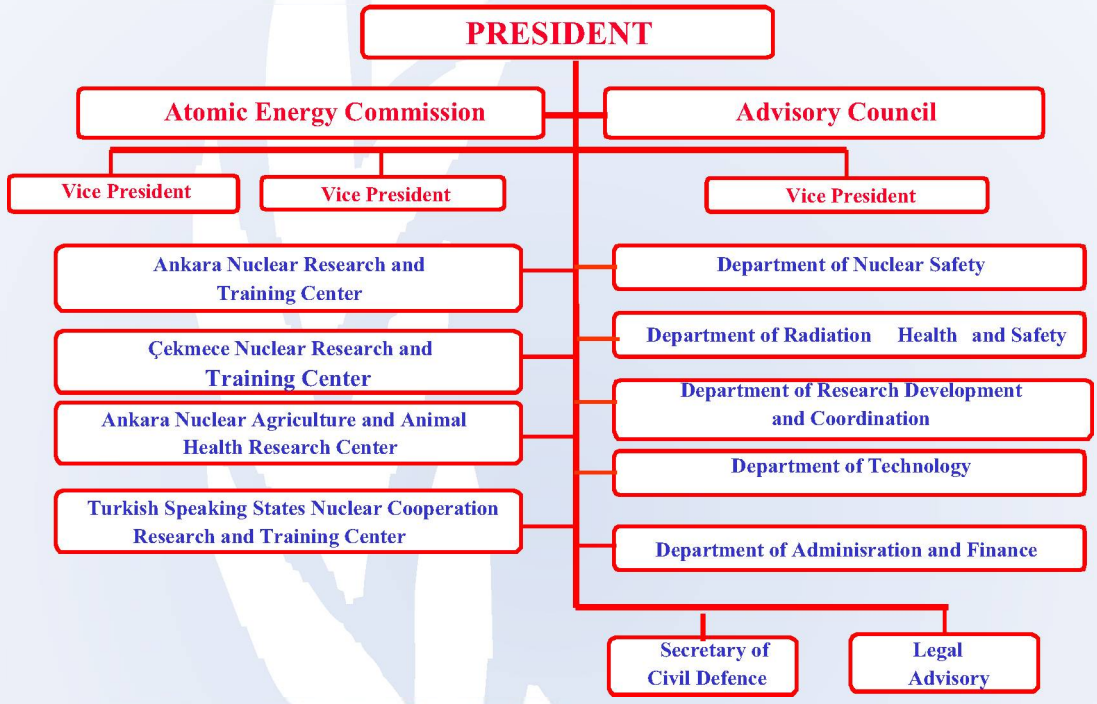
**Turkish Atomic Energy Authority (TAEK)** was created in 1956, as General Secretariat of Atomic Energy Commission under the direct Supervision of the Prime Minister and restructured in 1982 as Turkish Atomic Energy Authority. The tasks of TAEK are as follows;

- Act as a Nuclear Regulatory Body,
- Define Safety Measures and Licensing of all nuclear activities (Nuclear Reactors and Fuel Cycle facilities, Medical and Industrial facilities using radioactive resources),
- Develop and implement regulations for Physical Protection, Safeguard and Illicit Trafficking of nuclear materials,

- Carry out research and development in nuclear field,
- Support, promote and coordinate all nuclear activities in Turkey,
- Establish cooperation with other countries and international organizations

TAEK as described in the organization chart given below, has 5 Departments: Nuclear Safety Department, Radiation Health and Safety Department, Research Development and Coordination Department, Technology Department, Administration and Finance Department and 4 affiliated Research Centers.

**Organization Chart of Turkish Atomic Energy Authority**




**Çekmece Nuclear Research and Training Center (ÇNAEM):** Çekmece Nuclear Research and Training Center was established in 1962 on the coast of Küçükçekmece lake in Istanbul and covers an area of 3200 acres.

ÇNAEM is mainly involved in various aspects of nuclear research, development and applications as well as training activities and also offers expertise and analysis services. The first Turkish Research Reactor, TR-1 (1 MW) was built and operated at ÇNAEM in 1962. The TR-1 reactor was replaced by 5 MW TR-2 reactor in 1984 in order to meet the increasing demand for radioisotopes. The reactor is used for research and training purposes, for the production of radioisotopes for medicine, industry and agriculture and for the irradiation of samples for neutron activation analysis.**Ankara Nuclear Research and Training Center (ANAEM):** Ankara Nuclear Research and Training Center was founded in Ankara in 1961. The goal of this Center is to carry out research in basic and applied fields using nuclear techniques and provide training in nuclear field.

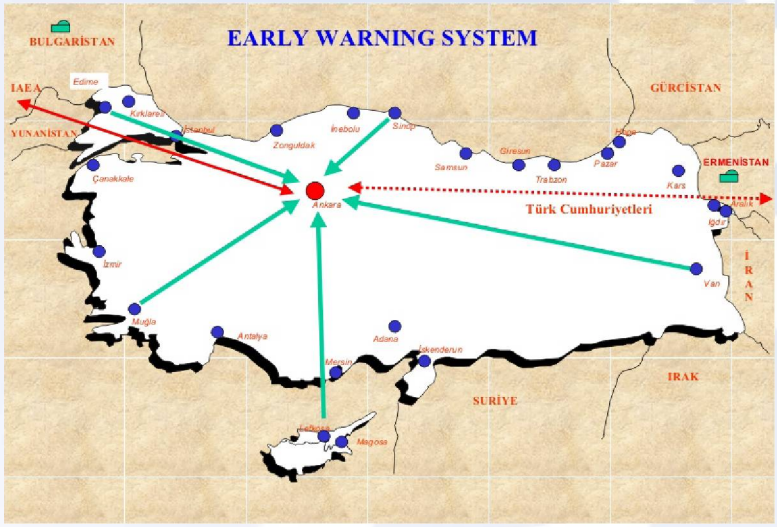
**Ankara Nuclear Agriculture and Animal Research Center (ANTHAM):** Lalahan Animal Health Nuclear Research Institute was founded in Ankara in 1981. This Institute was combined with ANAEM Agriculture Section and restructured as Ankara Nuclear Agriculture and Animal Research Center in 1999. The goal of this Center is to carry out

research in fields of agriculture, animal science, food preservation and sterilization using nuclear and related techniques and train the researchers working in other relevant institutes in Turkey.

**Turkish Speaking States Nuclear Cooperation, Research And Training Center (TÜDNAEM):** TAEK, besides the cooperations with various countries, has involved in cooperating with nuclear institutes in Turkish Speaking countries and signed with them protocols for cooperation in peaceful uses of nuclear energy in the late 1990's. As a result, a new Research and Training Center was founded in Ankara (TÜDNAEM) for organizing the Nuclear Cooperation among Turkish Speaking Countries in 1999.

The important International Agreements and Treaties signed by Turkey ;

- Convention on Third Party Liability in the Field of Nuclear Energy (29.07.1960)
- The International Convention on the Physical Protection of Nuclear Material (18.02.1987)
- The International Convention on the Emergency Assistance in the Case of a Nuclear Accident or a Radiological Emergency (08.06.1990)
- The International Convention on the Early Notification in the Case of a Nuclear Accident or a Radiological Emergency (08.06.1990)
- Convention on Nuclear Safety (15.12.1994)
- Treaty on the Non-Proliferation of Nuclear Weapons-NPT (24.09.1979)




- Agreement between the Government of Turkey and The IAEA for the Application of Safeguard in Connection with the Treaty on the NPT (20.08.1981)
- Comprehensive Test Ban Treaty CTBT ( Signed 24.09.1996, Retified 16.02.2000)

TAEK has involved in 11 Technical Cooperation (TC) projects and 21 Regional Europe (RER) projects supported by IAEA, besides a number of projects supported by domestic sources. After the Chernobyl nuclear accident, Turkey initiated its own Environmental Radiation Monitoring System for early warning. To date, over 50 radiation monitoring stations have been installed at various locations in Turkey, by taking topographic and climatic characteristics as well as distances from other Chernobyl type reactors which are still in operation in the region.