

Nuclear powers up in Turkey

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After decades of trying Turkey's nuclear power programme is finally getting underway. As the country prepares for a new era of greater energy self-sufficiency, key legislation still needs to be put in place

Turkey's efforts to establish a nuclear energy programme dates back to the 1960s. However, it was not until May 2010 that the country took its most concrete step towards realising its nuclear ambitions, signing an agreement with Russia for the construction of its first plant. This was followed by an agreement signed with Japan in May 2013 for the construction of a second nuclear power plant.

Today, with ground broken for its first Russian-built nuclear power plant at Akkuyu as well as the recent ratification of the intergovernmental agreement with Japan for the second plant at Sinop, the Turkish government is also looking at the construction of a third plant.

Turkey is in the process of developing its own legal framework governing the nuclear power plants and making administrative changes to better regulate its new nuclear power market. The preparations to establish a "Nuclear Energy General Directorate" are seen as part of this process.

Legislative endeavours

Turkey's first move towards developing its own nuclear power came with the establishment of The Turkish Atomic Energy Institution (TAET) in 1956. Some 20 years later, research led to Akkuyu being determined as the most appropriate location for Turkey's first nuclear plant.

Many legislative efforts have been made since then. However, the legal framework which was created in the 1980's to regulate nuclear power plants remained ineffective as Turkey's nuclear plans did not come into fruition until 2010. Some relevant legislation is still in force, but this is somewhat obsolete for today's market and expectations.

For example, Turkey's Nuclear Energy Law sets forth the procedure by which a company can become an operator, however

this procedure has yet to be applied in full. Indeed, the Government chose to deviate from the procedure set forth under the Nuclear Energy Law signing instead international agreements with Russia – giving the right of establishing a power plant in Mersin, Akkuyu, to the Russian Atomic Corporation, Rosatom, and Japan – giving the right of establishing a power plant to a consortium consisting of Japan's Mitsubishi Heavy Industries and Itochu Corp. and France's GDF Suez (JapCo). As international agreements are above internal laws according to the Turkish Constitution, execution of such international agreements have created a shortcut to determine operators of nuclear power plants.

The Paris Convention

The 1982 revised version of the Paris Convention on Third Party Liability in the Field of Nuclear Energy (Paris Convention) is in effect in Turkey. The Paris Convention establishes general principles regarding civil liability in case of nuclear accidents which can be directly applied by the Contracting States but leaves room for internal laws to regulate specific issues. In fact the Convention requires the Contracting States, in certain cases, to issue internal laws to regulate those issues. However, Turkey has not issued any such internal law. It is apparent that Turkey will need to enact an internal law detailing the civil liability issues in case of nuclear accidents.

Current nuclear plans

The Akkuyu and Sinop Agreements are two of the most important agreements that Turkey has signed. Not only because each agreement envisages a project worth around US\$20 billion but also because they mark a cornerstone in Turkey's history with nuclear power.

The Akkuyu Agreement establishes a joint stock company in Turkey, which will be the operator and imposes a condition for Rosatom and its affiliated companies to hold at least 51% shareholding in the company. Rosatom

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established Akkuyu NGS Elektrik Uretim AS (NGS) and currently holds 100% of the shares together with its affiliated companies. The 4.8 GWe nuclear power plant will consist of four units each with its own generation capacity. NGS is bound to complete the construction within seven years as of the date it obtains all of the permits for construction. Each of the remaining units shall be constructed within one-year intervals of the construction of the first unit. The permits have not been obtained in full yet, therefore the seven-year period has not started. The Akkuyu Agreement provides a sales guarantee for NGS. Through Article 10, NGS and Turkish Electricity Trading and Contracting Co (TETAS) shall conclude a power purchase agreement within 30 days of the date of obtaining the electricity generation license by NGS from the EMRA. On the basis of this agreement, TETAS shall purchase from NGS a fixed amount of electricity produced in all units of the nuclear power plant for 15 years. TETAS shall purchase 70% of the electricity produced by Unit 1 and Unit 2, and 30% of the electricity produced by Units 3 and 4 of the nuclear power plant at a price of US\$12.35 per kWh. Additionally, NGS will also be able to offer the remaining electricity it generates to the market by itself or through an energy retail supplier. ▶

Planned and Proposed Nuclear Power Reactors

	TYPE	GWE GROSS	START CONSTRUCTION	START OPERATION
Akkuyu 1	VVER-1200	1.2	late 2016	2023
Akkuyu 2	VVER-1200	1.2	2017	2024
Akkuyu 3	VVER-1200	1.2	2018	2025
Akkuyu 4	VVER-1200	1.2	2019	2026
Sinop 1	Atmea1	1.15	2017	2023
Sinop 2	Atmea1	1.15	2018	2024
Sinop 3	Atmea1	1.15		?
Sinop 4	Atmea1	1.15		?
Third site, Kırklareli province?	AP1000 x 2 CAP1400 x 2	2x1.25 2x1.4		

Source: World Nuclear Association

The Akkuyu Agreement also requires NGS to train Turkish students in the nuclear field and also to use essentially Turkish companies for procurement, service and construction.

The Sinop Agreement is a more detailed and complex agreement than the Akkuyu Agreement. In fact it is a set of two international agreements annexed to which is an agreement between Ministry of Energy and Natural Resources and the project company to be established by the JapCo. The Sinop Agreement requires JapCo and the State Electricity Production Company (EUAS) to jointly establish a project company (SinopCo) which will become the operator of the nuclear power plant to be established in Sinop. The shareholding percentage of EUAS will be 49% in the SinopCo. With this move, Turkey plans to gain experience in the operation of a nuclear power plant which should pave the way for Turkey to operate a nuclear power plant independently in the future.

The nuclear power plant will consist of four units each with its own generation capacity. Unit 1 will become operative in 2023, Unit 2 in 2024 with Units 3 and 4 to follow. The Sinop Agreement provides a sales guarantee for SinopCo as well. SinopCo and TETAS will conclude a power purchase agreement where TETAS shall purchase electricity from the SinopCo for 20 years as of the date each unit becomes operative and at a price of US\$0.11 per kWh.

Unlike the Akkuyu Agreement, the Sinop Agreement also foresees a technology transfer to be made to Turkey and training of human resources in the nuclear field. The Sinop Agreement provides provisions

regarding civil liability and refers to the Paris Convention and the Nuclear Civil Liability Law which should be enacted by the Turkish Parliament for civil liability issues.

Third nuclear power plant?

On 24 November 2014, China's State Nuclear Power Technology Corp. (SNPTC) and EUAS announced an agreement to enter into exclusive negotiation to develop and construct a four-unit nuclear power plant site in Turkey. If the negotiations are successful, another international agreement between Turkey, China and/or USA for the third nuclear power plant is expected. The fact that the negotiations have already started shows that the third nuclear power plant will be commissioned through an international agreement rather than the procedure set forth under the Nuclear Energy Law.

New legislation

Turkey is aware that its legislation needs to be updated and Draft law has been submitted to the Turkish Parliament. The Draft Law will bring a new Nuclear Energy General Directorate under the Ministry of Energy. In addition to its other duties, the directorate will ensure that local capacity is developed in terms of technology, human resources and infrastructure.

A law on civil liability in case of nuclear accidents is expected to follow. Currently, Turkey does not have any such law; the only applicable legislation in this regard is the Paris Convention.

The Sinop Agreement also implies that a Nuclear Liability Law will be enacted by Turkey. This law should set forth detailed provisions regarding liability, clearly

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state how the damaged parties would be compensated when the total damage exceeds the capped amount in the Paris Convention, how the compensations would be distributed among the damaged parties, the insurance policies to be undertaken by the operators along with other issues.

Need to act

Turkey is closer than it has ever been to having its first nuclear power plants. Nuclear power is important for Turkey to achieve its economic growth goals and this makes it more important for the Government to act quickly.

Considering the risks involved and the complexity of establishing and operating a nuclear power plant, Turkey needs to adopt a modern legislative framework which is clear, has integrity and responds to the needs of both society and stakeholders. Once the new directorate starts its operations, more activities in terms of administration may then be envisaged.

Turkey also has clear intentions to nurture its own nuclear technology as the technology transfer clause in the Sinop Agreement and the Draft Law make evidence to that. It is an ambitious goal but one that has to be pursued. ■

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