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Bloomberg's Report Is Insubstantial and Iraq Doesn't Need Nuclear Power. By Humam Miscone *

A recent Bloomberg news report entitled **Iraq Aims to Go Nuclear to Resolve Crippling Power Shortages**¹ revealed that Iraq is planning to build 8 nuclear reactors to generate electricity to close an expected electricity supply gap of 50% by 2030. The news report quoted Dr. Kamal Hussain Latif, Chairman of the Iraqi Radioactive Sources Regulatory Authority (IRSRA) saying that the 8 reactors will have combined capacity of 11 gigawatts, that the plan will cost US\$ 40 billion and that Iraq is seeking funding for this plan from prospective partners, particularly Russia and South Korea. According to Dr. Latif, without nuclear power by 2030, Iraq will be in serious trouble”.

Furthermore, the news report claims that the plan will face significant challenges in raising financing and geopolitical concerns regarding the safety of atomic energy. Yet, the news report didn't discuss the issues of the Government of Iraq limited technical and management capacities in planning, negotiating, procuring and implementing the plan. There is also the issue of the safety and security as well as regulation, monitoring and oversight of the nuclear activities.

The Beginnings

¹ Khalid Al Ansary and Anthony Di Paolo, Iraq Aims to Go Nuclear to Resolve Crippling Power Shortages, Bloomberg, June 8, 2021. <https://www.bloomberg.com/news/articles/2021-06-08/iraq-plans-to-go-nuclear-to-resolve-crippling-power-shortages>

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Planning for nuclear power plant to generate electricity isn't new in Iraq. In the late 1980s, Iraq had a plan to build a nuclear power plant to generate 2,000-3,000 MW of electricity, then called the Nuclear Power Plant Project (NPPP), coded Project 999. Iraq's Atomic Energy Organization and Iraq's Geological Survey, in collaboration with several GoI parties, identified 7 candidate sites in 1986, but selecting the most adequate site consumed almost 3 years. Numerous factors have been considered in the site selection process, including, but not limited to, geological setting, seismic activity, atmospheric and meteorological conditions, hydrology and hydrogeology, environmental and ecological considerations, natural resources, extant and anticipated land use, security and defendability, emergency planning, social impact, etc. In late 1989, the Geological Survey started detailed and extensive investigations in the selected site, Abu Dalaf, located about 20 kms north of Samarra, Salahaddin Governorate. However, with the UN sanctions imposed on Iraq in August 1990 and the pursuant Gulf War I in January 1991, all the works were stopped and the project was abandoned. Then, all the activities of site selection and site investigation were performed in accordance with IAEA guidelines and standard procedures, with IAEA's technical assistance and under the strict IAEA's supervision.

Renewed Interest

In early September 2020, the GoI sent signs of renewed interest in resuming nuclear activities. PM Mustafa al Kadhimi expressed interest in resuming peaceful nuclear activities². On September 24, 2020, Al Kadhimi decided to form a committee to plan for nuclear research reactors³. For this purpose, the GoI started negotiations with the French Government to build 10 MW nuclear research reactor that will be used to produce medical isotopes as well as several pharmaceutical, agricultural and industrial applications⁴. In

² Moa'yyad Al Turfi, Iraq Hopes to Own Nuclear Reactor. The Independent Arabia, October 03, 2020. [العراق يعيد آماله](#) [اندبندنت عربية | بامتلاك مفاعل نووي](#) ([independentarabia.com](#)) (in Arabic).

³ Opt. Cit.

⁴ Adil Fakhir, Thinking of Building Nuclear Reactor in Iraq, SciDevNet, September 28, 2020. [تفكير في بناء مفاعل نووي](#) [بالعراق - الشرق الأوسط وشمال أفريقيا](#) ([scidev.net](#)) (in Arabic).

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October 2020, the White Paper⁵, under Axis 3 “Improving the Key Infrastructure which Contributes to the Advancement of Future Sectors - (d) Renewable (Alternative) Energy”, called for “adopting nuclear energy project as a future option, within the public safety controls”.

Suboptimal Planning and Preparation

Apart from the financing challenge and the geopolitical concerns regarding the safety of atomic energy that⁶ Bloomberg report raised, there are other concerns and challenges that need to be clarified.

Except for the White Paper (2020), none of the GoI’s relevant strategic documents since 2003, including the Integrated National Energy Strategy (INES) (2012) and the National Development Plans 2010-2014, 2013-2017 and 2018-2022, ever mentioned nuclear power as an option to generate electricity. Actually, the interest in resuming the nuclear activities and restoring to nuclear power to generate electricity came up all of a sudden in September 2020, while the GoI made no move to put the Law of the Iraqi Nuclear Energy Commission No. 43 (2016)⁶ into effect to lead on this plan. Also, the Ministry of Electricity has been silent about this plan, which is supposed to solve part of Iraq’s electrical power supply gap.

Moreover, there is in indication that the GoI conducted cost-benefit analysis of nuclear power compared to other options (gas, solar power) apart from other nuclear power-related parameters (technical, environmental, safety and security, etc.).

⁵ Emergency Cell for Financial Reforms (of Iraq), The White Paper., October 2020, <http://iraqueconomists.net/en/wp-content/uploads/sites/3/2020/10/Iraq-White-Paper-Complete-En.pdf>

⁶ Republic of Iraq, Law of the Iraqi Nuclear Energy Commission No. 43 (2016), Al Waqay’ie Al Iraquiya, No. 4431, January 16, 2017, pp. 33-14, [<443A5CC7DED3C7E320C7E1E4D9C7E35CE4D9C7E320C7E1CCD2C120C7E1CEC7E3D320E1D3E4C920323031312D323031375CC7E1C7D8E1C7DA20DAE1EC20C7E1C7DACFC7CF5C70666320365C446174615C35395C6436385C2E2E2E2E656678> \(moj.gov.iq\) \(in Arabic\).](http://www.moj.gov.iq/4431-16-2017-33-14-443A5CC7DED3C7E320C7E1E4D9C7E35CE4D9C7E320C7E1CCD2C120C7E1CEC7E3D320E1D3E4C920323031312D323031375CC7E1C7D8E1C7DA20DAE1EC20C7E1C7DACFC7CF5C70666320365C446174615C35395C6436385C2E2E2E2E656678)



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According to Bloomberg report the GoI “has picked 20 potential sites for the reactors”, but again, there is no indication who and how these sites were selected, whether the planned reactors will be built in one or several sites and whether the selection was done by the IRSRA, with or without collaboration of other GoI parties and IAEA or by an independent party.

Estimated Cost, Timeframe and Technical Challenges

The estimated cost of US\$ 11 billion seems unrealistic. For instance, El Dabaa Nuclear Power Plant with 4 Russian VVER-1200 nuclear reactors (total capacity 4.8 gigawatt) would cost about US\$ 28.75 billion, out of which Russia will provide US\$ 25 billion in concessional loan while Egypt will cover the remaining US\$ 3.75 billion. Using this 2015 project as example, the cost of Iraq’s plan would be US\$ 60-70 billion not the claimed US\$ 40 billion. This is apart of the so-called “Iraq Cost” estimated at 35-45%⁷, based on the experience with major infrastructure projects in Iraq, which will increase the realistic cost estimate to US\$ 80-100 billion.

The proposed timeframe for building the 8 nuclear reactors is unrealistic as well. Bloomberg’s report quoted Dr. Latif suggesting that “the first contracts could be signed in the next year” and that nuclear power, which would allegedly supply the national grid with about 25% of the demand in 2030 estimated at 42 GW, i.e., in about 10 years. Assuming that the identification of the 20 candidate sites was done properly, selecting the site(s) to build the nuclear reactor(s) may take up to 5 years. For instance, in Iraq, selecting Abu Dalaf site out of the 7 candidate sites in the late 1980s required the mobilization of substantial human, technical and financial resources, optimal collaboration within the GoI and with the IAEA and over 3 years of strenuous work. Another recent example is El Dabaa Nuclear Power Plant of Egypt, with the financing agreement signed with

⁷ Mudhir Mohammad Salih, Argument for the Infrastructure of Iraq: Financing and Securities, Iraqi Economists Network, January 17, 2012, <http://iraqieconomists.net/ar/2013/01/17/%D8%AC%D8%AF%D9%84%D9%8A%D8%A9-%D8%A7%D9%84%D8%A8%D9%86%D9%8A%D8%A9-%D8%A7%D9%84%D8%AA%D8%AD%D8%AA%D9%8A%D8%A9-%D9%81%D9%8A-%D8%A7%D9%84%D8%B9%D8%B1%D8%A7%D9%82-%D8%A7%D9%84%D8%AA%D9%85%D9%88%D9%8A/>



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Russia in November 2015, Egypt's Nuclear and Radiological Regulatory Authority (ENRRA) is expected to issue the permit to build in July 2022 is expected to issue the permit to build in July 2022⁸. Selected site(s) investigations may, under optimal conditions, require 2-3 years. This makes the total estimated period for site(s) selection and site(s) investigation 5-6 years, which is in line with the case of El Dabaa Nuclear Power Plant, where the permission to build will take about 7 years. Construction, installation and commissioning may take another 5 years at least, that in the case of smooth and uninterrupted implementation, both unusual in Iraq nowadays, and in case the financing is secured. Accordingly, the envisaged 10-year period to put the nuclear reactors into operation seems too optimistic in Iraq's context. To compare, the preliminary contracts for the construction of El Dabaa Nuclear Power Plant⁹ were signed in December 2017, actual construction will start in late 2022 and commissioning is expected in 2026. Note that El Dabaa Plant will have 4 reactors only compared to Iraq's suggested plan of 8 reactors.

Yet, the most critical challenges that shall encounter the suggested plan would be the human resources and the technical capacity. Operating, maintaining, monitoring and ensuring the safety and security of the suggested nuclear power plant(s) would practically need an "army" of qualified and experienced managers, engineers, technicians, nuclear safety experts, competent site and perimeter security personnel, well-trained and -equipped land and air defense force, all Iraq don't have and will need about 10 - 15 years to build. In particular, Iraq doesn't have a small research nuclear reactor similar to Egypt's Experimental Training Research Reactor II (ETTR-2)¹⁰ that became operational in 1998 and used since then to train the manpower that will undertake the operation and maintenance of El Dabaa Plant.

⁸ Egypt Today, Permit to Build Dabaa Nuclear Power Plant May Be Issued July 2022, May 14, 2021, <https://www.egypttoday.com/Article/1/103882/Permit-to-build-Dabaa-Nuclear-Power-Plant-may-be-issued>.

⁹ Wikipedia, El Dabaa Nuclear Power Plant, https://en.wikipedia.org/wiki/El_Dabaa_Nuclear_Power_Plant.

¹⁰ Alternatively called Egypt's Test and Research Reactor II

Inadequate Governance System

The role of the IRSRA in Iraq's nuclear power plan raises concerns. Coalition Provisional Authority Order No. 72 (2004)¹¹ [Order No. 72 \(2004\)](#), established the Iraqi Radioactive Sources Regulatory Authority (IRSRA) with very limited mandate. Section 7 "Authority and Functions" determines that the IRSRA shall regulate and monitor the activities associated with radioactive sources, including utilization, protection, waste disposal and safety and to assist in radiological emergencies with the exception of **"long-term radiological environmental monitoring and cleanup or remediation of the environment"**. This specific stipulation implies that the IRSRA has no authority to regulate and monitor the construction, installation, operation and maintenance of nuclear power plants. Moreover, a regulatory authority, in common international understanding and practice, and despite being part of the executive branch of a government, should be independent and have the functions of regulating, monitoring, setting and enforcing standards, and imposing supervision or oversight on an activity, but never directly or indirectly involved in that activity. Yet, according to the statements of Dr. Latif, the IRSRA "had discussed cooperation with Russian and South Korean officials", "has also spoken with French and U.S. officials about the plan" and "has picked 20 potential sites for the reactors, suggesting that "the first contracts could be signed in the next year". These acts indicate that the IRSRA is involved in the planning, initial negotiations, procurement, contracting and, probably, implementation itself. And this is serious violation to the independence and mandate of the IRSRA and an evident case of conflict of interest, with the IRSRA being the regulator and monitor on one side, and involved in the nuclear power plan on the other side.

¹¹ Coalition Provisional Authority Order No. 7, "Iraqi Radioactive Source Regulatory Authority, June 10, 2004, https://govinfo.library.unt.edu/cpa-iraq/regulations/20040615_CPAORD_72_Iraqi_Radioactive_Source_Regulatory_Authority.pdf



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However, this sort of conflict of interest and violation of mandate and authority isn't unusual within the GoI.

On the other hand, the GoI took no action to establish the Iraqi Nuclear Energy Commission (INEC) pursuant to Law No. 43 (2016), which entered into effect in January 2017. Article 2-Second dictates that the INEC shall achieve its mandate via... (c) building, operating and managing the nuclear facilities and utilities for peaceful use, including research and studies reactors, and building power reactors to produce electricity and desalinate water in coordination with the competent parties; (d) restricting the responsibility of managing and operating the nuclear utilities with the INEC established pursuant to this Law... So, the IRSRA is assuming the role of the "to be established" INEC while violating its own mandate, duties and responsibilities as regulatory and monitoring authority. In contrast, Egypt has Nuclear Power Plants Authority (NPPA) affiliated to the Ministry of Electricity and Renewable in charge of planning, implementation and operation and maintenance and a Nuclear and Radiological Regulatory Authority (ENRRA) apparently with similar mandate and functions that exceeds Iraq's IRSRA. So, in the case of Egypt, there is strict separation between the implementation and operation authority and the independent regulatory and monitoring authority.

Common Sense Recommendations

- Reconsider the viability of using nuclear reactors to generate electricity.
- Go solar rather than nuclear. Solar power is cheaper in capital cost, much cheaper in operation and maintenance cost, produce no emissions and pose no risk at all compared to the financial, technical and safety and security challenges that nuclear power poses.
- Utilize rather than flare the associated gas to generate electricity. The cost would be much less than the suggested nuclear power plan, the

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risk would be much less while the human and financial resources are, at least, partially available.

- Expedite the process of the proposed 10 MW research reactor to be the pilot research and training facility for future peaceful nuclear programme.
- Consider, only if ultimately necessary, building a combined nuclear power / desalination plant in extreme Southern Iraq to solve the chronic problem of drinking water shortage and deteriorating quality, particularly in Al Basra and Al Muthanna Governorates.
- Establish the INEC as soon as possible to lead on Iraq's nuclear activities and ensure the strict separation between the planning, management, operation and maintenance functions of the INEC and the regulatory and monitoring functions of the IRSRA.
- Make public all the data and information related to the suggested nuclear power plan, including the 20 candidate sites and cost-benefit analysis of the alternatives (solar, gas and nuclear) to generate electricity and ensure public awareness and education on options and decisions.

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