

**“ATOMS FOR PEACE” WITHOUT ATOMS: WHY NON-NUCLEAR
STATES JOIN THE IAEA**

Annotation. With the projected growing demand for electricity all over the world, nuclear energy will remain one of the primary sources of clean energy. At the same time, the atomic industry is associated with multiple risks as it is vulnerable to the hostile actions of rogue states or non-state actors aiming at obtaining nuclear and radiological materials for military purposes. The International Atomic Energy Agency (IAEA) was established with the aim of curbing the aforementioned possibilities while promoting cooperation in nuclear energy production, research, and development for peaceful purposes. The first main assumption of this article is that the non-nuclear actors expressing interest in developing nuclear power join the IAEA for gaining economic and security benefits from peaceful nuclear assistance. The second is that the states not declaring intentions to develop nuclear energy production become members of the Agency to show their modernity and identity. The findings propose that the organization is attractive to such states for various reasons: the interest in developing nuclear power; the purpose of enhancing security of radioactive sources; the avoidance of international condemnation; the aspiration to become an acknowledged member of international community; the intention to acquire nuclear weapons. However, further universalization of the IAEA as an international mechanism should be achieved through the provision of an overarching understanding that the membership in it is beneficial in all three terms: security, economy, and status.

* PhD Student, Odessa Mechnikov National University.

Keywords: IAEA, nuclear energy, international institutions, state motivation.

Анотація. З огляду на прогнозоване зростання попиту на електроенергію в усьому світі, атомна енергія залишиться одним з основних джерел чистої енергії. У той же час, атомна галузь пов'язана з численними ризиками, оскільки вона вразлива для ворожих дій держав-ізоїв або недержавних суб'єктів, спрямованих на отримання ядерних і радіологічних матеріалів для військових цілей. Міжнародне агентство з атомної енергії (МАГАТЕ) було створено з метою обмеження вищезазначених можливостей і для сприяння співробітництву в області виробництва, дослідження і розвитку ядерної енергії в мирних цілях. Перше основне припущення цієї статті полягає в тому, що неядерні суб'єкти, що проявляють інтерес до розвитку ядерної енергетики, приєднуються до МАГАТЕ для отримання економічних вигод і вигод безпеки від мирної ядерної допомоги. По-друге, держави, які не заявляють про наміри розвивати виробництво ядерної енергії, стають членами Агентства, щоб показати свою сучасність і самоідентифікацію. Отримані дані свідчать про те, що організація приваблива для таких держав з різних причин: зацікавленість у розвитку ядерної енергетики; підвищення рівня безпеки радіоактивних джерел; уникнення міжнародного осуду; прагнення стати визнаним членом міжнародної спільноти; намір надбати ядерну зброю. Однак подальша універсалізація МАГАТЕ як міжнародного механізму повинна бути досягнута шляхом забезпечення всеосяжного розуміння того, що членство в ньому вигідно у всіх трьох відносинах: безпековому, економічному і статусному.

Ключові слова: МАГАТЕ, ядерна енергетика, міжнародні інституції, державна мотивація.

Аннотация. Учитывая прогнозируемый рост спроса на электроэнергию во всем мире, атомная энергия останется одним из основных источников чистой

энергии. В то же время, атомная отрасль сопряжена с многочисленными рисками, поскольку она уязвима для враждебных действий государств-изгоев или негосударственных субъектов, направленных на получение ядерных и радиологических материалов для военных целей. Международное агентство по атомной энергии (МАГАТЭ) было создано с целью ограничения вышеупомянутых возможностей и для содействия сотрудничеству в области производства, исследования и развития ядерной энергии в мирных целях. Первое основное предположение этой статьи состоит в том, что неядерные субъекты, проявляющие интерес к развитию ядерной энергетики, присоединяются к МАГАТЭ для получения экономических выгод и выгод безопасности от мирной ядерной помощи. Во-вторых, государства, не заявляющие о намерениях развивать производство ядерной энергии, становятся членами Агентства, чтобы показать свою современность и самоидентификацию. Полученные данные свидетельствуют о том, что организация привлекательна для таких государств по разным причинам: заинтересованность в развитии ядерной энергетики; повышение уровня безопасности радиоактивных источников; избежание международного осуждения; стремление стать признанным членом международного сообщества; намерение приобрести ядерное оружие. Однако дальнейшая универсализация МАГАТЭ как международного механизма должна быть достигнута путем обеспечения всеобъемлющего понимания того, что членство в нем выгодно во всех трех отношениях: безопасностном, экономическом и статусном.

Ключевые слова: МАГАТЭ, атомная энергетика, международные институты, государственная мотивация.

Introduction. According to the World Energy Outlook factsheet produced by International Energy Agency, the demand for electricity will grow by 70% by 2040 while maintaining the emphasis on environmental friendliness of its production [1]. In

this case, it is obvious that nuclear energy will remain one of the most important sources of generation. It gives incomparably huge amount of power bringing less harm to the environment. At the same time, nuclear fuel cycle introduces a great threat as it is vulnerable to the hostile actions of rogue states or non-state actors aiming at obtaining nuclear and radiological materials for military purposes. The International Atomic Energy Agency (IAEA) was established with the aim of curbing the aforementioned possibilities while promoting cooperation in nuclear energy production, research, and development for peaceful purposes.

This study's aim is to determine primary motivations of the states not owning nuclear power production facilities to become the members of the IAEA.

Literature review. The literature overview revealed that no particular research addressed current paper's concerns. Although there are works that discuss the so-called "nuclear newcomers" issue and their motives to develop nuclear energy production, none of them focuses exactly on their motivations to join the Agency. In addition, no literature covered the topic of the IAEA's non-nuclear members who have not identified their aspirations to launch nuclear power generation.

Jessica Jewell [2] explains different capabilities and levels of readiness to develop nuclear power, while focusing on general overall cause – the need for power generation. James Acton, Wyn Bowen and Josh Schollmeyer [3] tighten their analysis to Gulf Cooperation Countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates), Egypt, and Turkey's capabilities in establishing atomic energy production facilities. The article also emphasizes the role of the strong increase in electricity demand in the decision on starting atomic power production. The role of the IAEA in these cases ranges from determining necessary infrastructure and training appropriate personnel, to developing regulative authorities and safety standards.

To overview the possible motives for countries to join it is important to understand what the institution can propose. This information can be found first and foremost in the organization's Statute [4]. The initial Eisenhower's "Atoms for peace"

program based on an assumption that peaceful nuclear assistance would prevent proliferation of nuclear weapons because of the obligation that the recipients took on: all technologies and facilities would be used exclusively for peaceful purposes. At the same time, suppliers could make newcomers dependent on external help and thus take control over them. Otherwise, states would be encouraged to develop their own nuclear cycles and it would be hard to observe if they overcame the boundaries of pursuing peaceful development [5, p.7]. In other words, the main anticipated motive of countries to become the International Atomic Energy Agency members was the search for nuclear energy production. Apart from the apparent advantages as an energy source, the highly sophisticated atomic technology is a symbol of prestige.

The official IAEA publication on Nuclear Energy General Objectives [6] divides these goals in groups, such as “objectives for economy,” “objectives for infrastructure,” etc., which gives an understanding of what benefits countries gain from establishing nuclear energy in cooperation with the Agency. There is also a technical guidance on building a state’s position for new nuclear program [7].

The overall descriptions of the Agency’s activities, especially in developing countries, are presented in a book on the IAEA history by David Fisher [8]. The Agency’s first programs and interests are covered by Scheinman [9]. Both identify the first tries to attract resources to help under-developed areas. They also describe the expansion of the scope of IAEA’s concerns. It began to promote legislation on radiation protection and food security. Scheinman also raises the issue of the IAEA’s organizational structure changes. Despite all the work done by now, there is a room for improvement.

It is worth noting that there are also statements on the negative role of the access to nuclear power production technologies. Fuhrman [5] insists that “Atoms for Peace” turned into “Atoms for War,” because the program gave incentives to peaceful nuclear cooperation, which often lead to violations within the regime. Basically, his

suggestion is that the motive for states to join the IAEA is the access to technology that makes them “nuclearly pregnant” and closer to development of nuclear weapons.

Research design. This article is based on the theory that the states are driven by three main motives in international relations: security, economy, and status, or any combination of them. The primary importance of each of these motivations differs from state to state (some of them put more emphasis on security; some – on economic aspects; the others – on the will to emphasize their own respectful place on the international arena).

Currently the IAEA is the most influential and practical organization in the sphere of nuclear nonproliferation, counting 171 members (of 196 world states) as of February 2019 [10]. Among them three groups of countries are present:

- both nuclear weapons and nuclear power states;
- states simply having nuclear power production;
- countries having neither nuclear weapons nor nuclear power production facilities.

Article 3 of the NPT refers to the undertaking by its States Parties of the obligation not to provide source or special fissionable material, equipment or technology to any non-nuclear weapons states (NNWS), unless they are subject to the IAEA safeguards. Consequently, it also requires all the states to conclude safeguards agreements with the Agency [11].

If we pay attention to the above paragraphs, we may clearly see two main aspects of the IAEA’s performance: providing security and providing economic benefits for the states in need of energy through assistance in establishing and maintaining nuclear facilities.

The first main assumption of this article is that the non-nuclear actors expressing interest in developing nuclear power join the IAEA for gaining economic and security benefits from peaceful nuclear assistance. The second is that the states not having nuclear power plants and not declaring intentions to develop nuclear

energy production become members of the Agency to show their modernity and identity.

The relevance of this work is in serving several important purposes:

1. Outlining the reasons for joining the IAEA will promote the understanding of the states' behavioral motives in acceding to international institutions in the sphere of nuclear nonproliferation. It will also contribute to mapping states' models of interaction with international institutions in general.

2. Furthermore, such analysis will help in outlining the reasons for other non-nuclear actors to remain outside the regime. This, in turn, can help to achieve full universalization of the IAEA as an institution through addressing the identified obstacles. The universalization is important as none of the world states will remain immune in case of a nuclear or radiological danger, whereas any may become intentionally or inadvertently involved in illicit activities (such as unauthorized trade and smuggling). Moreover, under current conditions of the rapidly growing demand for energy around the globe, there is a probability that any of the 25 IAEA outsiders decides to start a nuclear power program. In this case, keeping them bound by obligations, which will also allow the Agency to control and inspect, is much better for the world security.

3. The analysis reveals and emphasizes the IAEA's practical impact through helping states to establish nuclear facilities. It is an important contribution to the assessment of how efficiently the organization serves its goals. It also opens the way for further improvements of the weakest areas.

Despite some of these purposes may appear to be post-hoc theorizing, it is rather a retrospective view. This is a way to understand the patterns of joining international mechanisms and institutions in the sphere of nuclear nonproliferation.

The independent variables in current research are:

the interest in developing nuclear power;

the purpose of enhancing security of radioactive sources;

the avoidance of international condemnation;
the aspiration to become an acknowledged member of international community;
the intention to acquire nuclear weapons.

The dependent variable is the fact of accession to the IAEA by countries that do not possess nuclear power production.

The interest in developing nuclear power is the most obvious motivation concerning the nature of the Agency. It can be measured simply by the expression of a will to do so by a state and the existence of ongoing activities in the sphere. This information can be found in Country nuclear power profiles [12] prepared by the International Atomic Energy Agency. However, not all the countries willing to develop atomic energy production are listed. Such countries as Malaysia, Bahrain, Oman, Qatar, and Saudi Arabia are not present in the profiles. Meanwhile, they are already cooperating with the Agency. The IAEA provides assistance and projections on examining the possibilities for the development of nuclear power production facilities and reviewing possible secure sites for them.

The purpose of protection of radioactive sources can be identified by the existence of such materials and equipment on the territory of a given country. It should also be conditional upon the fact that the state is a party to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. The information on the participation in the Joint Convention may be found in the Fact Sheets Country List [13]. The Division of Nuclear Fuel Cycle and Waste Technology of the Agency compiles the International Catalogue of Sealed Radioactive Sources and Devices (ICSRS). It enables identifying those hosting radioactive sources for medical or industrial uses or corresponding radioactive waste.

If a state shows little to no activities relevant to the IAEA mandate after becoming a member, we may infer either of the two following options. First, a state may have joined the Agency to avoid condemnation for not being a member of the

most powerful organization in the sphere (i.e. for not supporting nuclear nonproliferation regime). Second, the motive may be the ability to influence world nuclear policy through participating in decision-making by the Agency. Apart from such judgements, the author suggests further research to focus on clarifying which one of these motives is present/dominant. However, it requires conducting onsite interviews with country representatives to the International Atomic Energy Agency including a direct question of “What was your country’s motivation to join the IAEA?” with an open-ended answer. In addition, the survey should ask questions like: “What do you actually find advantageous for your country in being a member of the IAEA?” Depending on the answers provided, it is possible to judge on the dominant reason. Of course, diplomats are known for their evasive replies. However, the most important information is whether their state wants to have influence on nuclear possessors through participation in negotiations and by voting. It is not something that states tend to conceal. On top of that, interviews help to collect relevant metadata. To avoid harming internal validity of answers by testing effects the interview should exclude any “yes or no” questions giving hints about the researcher’s understanding or guesses on the possible motives. Otherwise, the diplomats may give affirmative answers to some questions that they did not even consider before. For individual countries, it is also useful to analyze the diplomatic statements concerning their accession (if applicable) for the reason that they can directly or indirectly identify motivations.

The intention to acquire nuclear weapons is the hardest to measure and predict. Unlike the intent to project power and influence in negotiations, the desire to become a nuclear weapons possessor will never be disclosed. There exists a robust system of nonproliferation and export control that lets the world punish violators legitimately by, for example, sanctioning them. Any actor suspected or convicted in unlawful creation of WMDs would immediately face international isolation. There is a slight alleviation in the process of identifying this group: the potential proliferators are only

present among those who plan to start nuclear power production. As discussed by Fuhrman [5], atomic assistance makes this path easier. The establishment of peaceful nuclear industry means the existence of a group of people that possess the relevant understanding of technology. Starting from the specified point will make the process of creation of military arsenals easier and more quickly. Fuhrman's retrospective view justifies the suggestion about the existence of such a motive in joining the IAEA. At the same time, the harder task is to predict whether a new member wants to acquire nuclear weapons. Fuhrman also gives a cursory view on why states proliferate. He suggests that it mostly takes place for security reasons with the existence of disputes and conflicts. There exist various reasons, though.

Scott Sagan [14] identified three main motivations for countries to seek nuclear weapons: security, domestic, and status concerns. States usually proliferate when they face military threats and want to deter those, or when they seek coercive tools for changing the status quo (e.g. Pakistan, South Africa). They also acquire nuclear weapons when the acquisition serves their national interests and when it can rally public opinion around a certain group in power (e.g. India). In addition, countries look for nuclear weapons when they can elevate their international status (e.g. France). The book "Forecasting Nuclear Proliferation in the 21st century" [15] gives quantitative evidence for the security model, domestic model, and normative model respectively. Additionally, it suggests that the overall industrial level and increases in GDP per capita (as the signs of development) are associated with higher proliferation risk. The combination of the aforementioned conditions should make international community suspicious of the state's plans. It also would make the world consider such a state a potential regime violator. At the same time, the list of precise criteria is yet to be created. It should be designed to provide the ability to judge exactly on the level of probability of proliferation. However, this goes far beyond the scope of the present analysis.

Conclusions and recommendations. The distribution on the basis of potential motivation to join the International Atomic Energy Agency identified five groups of states that do not have nuclear power production facilities depending on their motives:

1. Energy seekers: those having a desire and need to develop nuclear power production (economy and security);
2. Radioactive source possessors: states hosting industrial or medical radioactive substances and corresponding facilities as well as radioactive waste (security);
3. “Introverts:” countries that actually do nothing to implement the principles of the organization, inactive; at the same time, they do not want to be rebuked of the disruption of and the disrespect to the nuclear nonproliferation regime (status);
4. Seeking influence: active members that want to partake in proposing, negotiating, and voting for policies, influencing nuclear powers (status);
5. Nuclear weapons cheaters: those who join the IAEA to get easier access to the nuclear knowledge and technologies with a greater covert aim of developing military nuclear potential (security and status).

The findings propose that the organization is attractive for states for various reasons. Further universalization of the IAEA as an international mechanism should be achieved through the provision of an overarching understanding that the membership in it is beneficial in all three terms: security, economy, and status.

References

1. World Energy Outlook 2015 Factsheet: Global Energy Trends To 2040. – Paris, 2015: International Energy Agency. – Retrieved from: https://www.qualenergia.it/sites/default/files/articolo-doc/151110_WEO_Factsheet_GlobalEnergyTrends.pdf

2. Jewell, J. (2011). "Ready for nuclear energy? An assessment of capacities and motivations for launching new national nuclear power programs." *Energy Policy*. 39(3), 1041-1055.
3. Acton, J., Bowen, W., Schollmeyer, J. (2008). "Nurturing nuclear neophytes." *Bulletin of the Atomic Scientists*. 64(4), 27-33. doi:10.2968/064004007
4. The statute of the IAEA. (2019). Retrieved from: <https://www.iaea.org/about/statute#a1-11>
5. Atomic assistance: How "Atoms for peace" programs cause nuclear insecurity / Fuhrmann, M. – Ithaca: Cornell University Press, 2012. – 541 p.
6. Nuclear energy general objectives / Vienna, Austria: IAEA, 2011. – 26 p.
7. Building a national position for a new nuclear power programme / Vienna, Austria: IAEA, 2016. – 19 p.
8. History of the international atomic energy agency: The first forty years / Fisher, D. – Vienna, Austria: IAEA, 1997. – 560 p.
9. The International Atomic Energy Agency and world nuclear order / Scheinman, L. – Washington, DC: Resources for Future, 1987. – 320 p.
10. Member states of the IAEA. (2019). Retrieved from: <https://www.iaea.org/about/governance/list-of-member-states>
11. INFCIRC140/NPT / Vienna, Austria: The IAEA, 1970.
12. Country nuclear power profiles. (2019). Retrieved from: <https://cnpp.iaea.org/pages/index.htm>
13. IAEA fact sheets country list. (2019). Retrieved from: <https://ola.iaea.org/ola/FactSheets/>
14. Sagan, S. (1996). "Why do states build nuclear weapons? Three models in search of a bomb." *International Security*. 21(3), 54-86.
15. Forecasting nuclear proliferation in the 21st century / Potter, W., Mukhatzhanova, G. – Stanford, CA: Stanford University Press, 2010. – 488 p.