



E-Paper

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# **Should Nuclear Power Have a Future in Thailand?**

**By Tipakson Manpati**

 **HEINRICH BÖLL STIFTUNG**  
**SOUTHEAST ASIA**

Thailand is one of the top ten countries most affected by climate change. Pressing decisions about energy generation need to be taken. While nuclear power is in decline, the Southeast Asian country has long been debating about its usefulness. When Thailand removed plans for nuclear power in 2018 from its Power Development Plan (PDP), the questions as to how to generate and how to diversify energy sources remain far from being answered. But the plan has never been totally abandoned. Nuclear advocates still call for the government's continued support for the nuclear power.

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Published by: Heinrich Böll Stiftung Southeast Asia Regional Office in June 2021

Suggested Citation: Manpati, Tipakson (2021), "Should Nuclear Power Have a Future in Thailand?", Bangkok: Heinrich Böll Stiftung Southeast Asia Regional Office.



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## Should Nuclear Power Have a Future in Thailand?

### Introduction

Thailand envisions nuclear power for electricity generation as it made several attempts to pursue this source of power, despite the fact that none of those plans have materialized yet. The first attempt to construct a nuclear power plant of 600 MW Boiling Water Reactor (BWR) was in 1966 in Aow Pai, Chonburi Province<sup>1</sup>, but the project was scrapped due to public opposition<sup>2</sup>, concerns over the financial cost<sup>3</sup> and the discovery of natural gas in the Gulf of Thailand in 1970s<sup>4</sup> that gave the country an alternative source of energy in 1970-1980. The agenda for nuclear power resurfaced in the 2000s.

It was the first time that 2,000 MW of nuclear power plant projects were included in the country Power Development Plan 2007 (PDP 2007). In May 2009, this plan was updated, indicating a "need for nuclear power plants in Thailand".<sup>5</sup>

PDPs are expected to change every three to four years. The PDP 2010 (2010-2030) also included the plan to start the construction of the first two nuclear power plants in 2020-2021, as government official source stated:

"Thailand's National Energy Policy Council commissioned a feasibility study for a nuclear power plant in the country and approved in 2007 a Power Development Plan for 2007-2021 including the construction of 4000 MWe of nuclear generating capacity starting in 2020-21. The new Power Development Plan 2010-2030, approved in 2010, envisages five 1000 MWe units starting in 2020-2028."<sup>6</sup>

All PDPs since 2007 covered plans for nuclear power plants. But they were removed from the latest PDP 2018 (Revision 1: 2018-2017).

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<sup>1</sup> Knowledge Politics in National Nuclear Energy Planning in Thailand (2007-2017) with a Case Study of Ubon Ratchathani Province by Tipakson Manpati, 2017. Copyright of Chulalongkorn University. See page 37.

<sup>2</sup> โรงไฟฟ้านิวเคลียร์ “ความหวัง” หรือ “หายนะ”? by iLaw. (18 May 2016). Retrieved from <https://ilaw.or.th/node/4123>. (Last accessed, 27 May 2021)

<sup>3</sup> Ibid. See page 37.

<sup>4</sup> Ibid. See page 17.

<sup>5</sup> Ibid. See page 37.

<sup>6</sup> Ibid. See page 39

Timeline of Thailand's nuclear power plant plans<sup>7</sup>

1966	<ul style="list-style-type: none"> <li>Thailand's first nuclear power plant project proposed by EGAT</li> </ul>
1974	<ul style="list-style-type: none"> <li>Proposal of nuclear power plant project of 350-500 MW approved in Aow Pai, Chonburi province</li> <li>The project shelved as natural gas costs drop</li> </ul>
1977	<ul style="list-style-type: none"> <li>The project repropoed by EGAT and approved by the government</li> <li>The project pressured by global and public opposition and later canceled</li> </ul>
1993	<ul style="list-style-type: none"> <li>Nuclear research reactor (5-10 MW) in Ongkharak District, Nakhon Nayok province, proposed by Office of Atom for Peace (OAEP)</li> </ul>
1993-2003	<ul style="list-style-type: none"> <li>Ongkharak plans halted multiple times due to safety and environmental problems.</li> <li>The US-based General Atomics, contracted to build, threatening legal action for stall in plans</li> </ul>
2007	<ul style="list-style-type: none"> <li>The 2007 National Power Development Plan (PDP 2007-2021) call for nuclear energy by 2020.</li> <li>EGAT to invest six billion dollars to build 4,000 MW nuclear power plant</li> <li>The revision of nuclear power plant to 2,000 MW in 2020 and 2021 (PDP 2007 revision 2)</li> </ul>
2010	<ul style="list-style-type: none"> <li>PDP 2010 (2010-2030) covering 5,000 MW for nuclear power plant in its plan</li> </ul>
2011	<ul style="list-style-type: none"> <li>On 11 March 2011, Fukushima nuclear accident raising global public concerned about nuclear safety issue.</li> <li>In May 2011, the Thai cabinet approving PDP 2010 revision 2</li> <li>The revision of nuclear power plant to 4,000 MW in 2023-2024 and 2027-2028</li> <li>On 19 June 2012, the Thai cabinet approving PDP 2010 revision 3</li> <li>Nuclear power plant revised to 2,000 MW in 2026 and 2017</li> </ul>
2015	<ul style="list-style-type: none"> <li>PDP 2015 (2015-2036) covering 2,000 MW of nuclear power plant in 2035 and 2036</li> </ul>
2016	<ul style="list-style-type: none"> <li>Nuclear Energy for Peace Act B.E. 2559 (A.D. 2016) approved by National Council for Peace and Order (NCPO)</li> </ul>
2018	<ul style="list-style-type: none"> <li>PDP 2018 (2018-2017) covering 2,000 MW of nuclear power plant in 2035 and 2036</li> <li>PDP 2018: Revision 1 (2018-2017) approved by the cabinet on 20 October 2020</li> <li>The removal of nuclear power plant plans for the latest PDP</li> </ul>

Source: Combined data from websites<sup>8, 9, 10</sup>

<sup>7</sup> Ibid. See page 39

<sup>8</sup> เกาะเตี๋ย เปิดโรงไฟฟ้านิวเคลียร์:ทางออกของพลังงานทางเลือกจริงหรือ? by Chuenchom Sangarasri Greacen. (29 January 2009). Retrieved from <https://palangthai.files.wordpress.com/2013/04/nuclear-komolseminar-tu22-2-09.pdf>. (Last accessed, 27 May 2021)

<sup>9</sup> Thailand Country Report: The 15th FNCA Ministerial Level Meeting. (19 November 2014). Retrieved from [https://www.fnca.mext.go.jp/mini/report/15/Country%20Report\\_Thailand.pdf](https://www.fnca.mext.go.jp/mini/report/15/Country%20Report_Thailand.pdf). (p.4). (Last accessed, 27 May 2021)

<sup>10</sup> โรงไฟฟ้านิวเคลียร์ “ความหวัง” หรือ “หายนะ”? by iLaw (18 May 2016). (Ibid.)

## Development of nuclear power in Thailand

Removal of nuclear power reflects the dynamic politics of formulating the PDP in Thailand. The plans to include nuclear power could be revived at any time in the future. The relevant agencies continue to work on the development of nuclear power in the country, especially to gain public acceptance and to create human resources specializing in nuclear technology.

According to *INIR Mission* (Integrated Nuclear Infrastructure Review in December 2010), Thailand can make a knowledgeable decision on the introduction of nuclear power.<sup>11</sup>

During 2008-2011, Thailand conducted preparation works to “go nuclear” including a pre-project phase and a feasibility study for the selection of preferred sites.<sup>12</sup> According to the feasibility study of the U.S. consulting company *Burns and Roe Asia Ltd*, there were 14 nuclear power plant sites in six provinces.<sup>13</sup> The \$38 million fund for hiring the company to conduct the feasibility study was drawn from of the *Energy Conservation Fund of Thailand* and *EGAT*.<sup>14</sup> This did not include the full cycle of nuclear power plant set up, from preparation, construction, decommission and post-decommission that required the appropriate budget to ensure safety in the long term.

For example, Olkiluoto 3 reactor in Finland has been delayed many times and was only finalized more than 12 years behind schedule. It caused massive cost overruns. The total cost estimation for building Olkiluoto 3 is at least 8.5 billion euro, which has been described as the second-most expensive building in human history, behind a hotel complex in Mecca.<sup>15</sup>

But the removal of plans for nuclear power caused disappointment among pro-nuclear groups. In a short paper on *Analysis of Power Development Plan 2018 which Removes Nuclear Power* by Ampika Apichaibukkol, Expert in Atomic Energy Management System Development, Office of Atoms for Peace (OAP) wrote that:

“In the past, PDP 2007-2015 specified nuclear power plant as one of alternative energy sources that can be base load which overall will create a continuation of cooperation of this technology development. Such as, regulation development, international cooperation, participation in important international treaties and conventions and human resource development. Thus, as there is no nuclear power plant plan in the PDP, it is contradicted

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<sup>11</sup> Nuclear Power Project Development in Thailand by Nateekool Kriangchaiporn, Head of Nuclear Reactor Section, Electricity Generating Authority of Thailand (EGAT). (22 March 2018). Retrieved from <http://www.nst.or.th/JICC-EGAT-NST/Nuclear%20Power%20Development%20in%20Thailand.pdf>. (Last accessed, 27 May 2021)

<sup>12</sup> Knowledge Politics in National Nuclear Energy Planning in Thailand (2007-2017) with a Case Study of Ubon Ratchathani Province. (Ibid.). See page 38.

<sup>13</sup> โรงไฟฟ้านิวเคลียร์ “ความหวัง” หรือ “หายนะ”? By iLaw. (18 May 2016). (Ibid.)

<sup>14</sup> Knowledge Politics in National Nuclear Energy Planning in Thailand (2007-2017) with a Case Study of Ubon Ratchathani Province. (Ibid.). See page 42.

<sup>15</sup> Olkiluoto 3 reactor delayed yet again, now 12 years behind schedule. (23 December 2019). Retrieved from [https://yle.fi/uutiset/osasto/news/olkiluoto\\_3\\_reactor\\_delayed\\_yet\\_again\\_now\\_12\\_years\\_behind\\_schedule/11128489](https://yle.fi/uutiset/osasto/news/olkiluoto_3_reactor_delayed_yet_again_now_12_years_behind_schedule/11128489). (Last accessed, 27 May 2021)

to the policy to reduce greenhouse gas and lower Thailand's role and potential in nuclear technology development."<sup>16</sup>

The paper also reiterates that:

"Development of nuclear power plant for electricity in the present takes at least 10-15 years. Thus, if the policy is not continuing, it might cause the country to lose the opportunity in using alternative energy for base load including human resource development and knowledge on nuclear technology."<sup>17</sup>

The above complaint suggests that nuclear power in Thailand is needed in the PDP to ensure the country's materialization of electricity generation. Using the word "alternative energy" to describe nuclear power makes it sound more hopeful and optimistic regardless of the long-term environmental consequences it might have.

### Local resistance against plan for research reactor at Ongkharak

Thailand has its first and only research reactor of 2 MW at Bang Khen in Bangkok. It has started its operation in 1962.<sup>18</sup> As this reactor is 59-year-old and reaching its end of life in the coming years, the proposal for the research reactor of 20 MW at Ongkharak district of Nakhon Nayok province which was shelved over 10 years ago<sup>19</sup> was dusted off by the *Thailand Institute of Nuclear Technology* (TINT)<sup>20</sup> – a public organization under the government.<sup>21</sup> The Institute claims that this larger research reactor will benefit the medical sector, as stated below:

"The justification for the new reactor is that it will help the country save money, which would otherwise be spent importing radioactive products for cancer treatment."<sup>22</sup>

However, a lawsuit filed by the then-Office of *Atomic Energy for Peace* (OAEP) against *General Atomics* (GA) has created a transparency problem with the Ongkharak research reactor.

Until now the lawsuit has not been resolved.<sup>23</sup> In addition, the site for the research reactor itself is located in residential and agricultural areas and just 600 meters away from the Nakhon Nayok

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<sup>16</sup> การวิเคราะห์แผนพัฒนาพลังงานไฟฟ้าของประเทศไทย PDP 2018 กับ การลดไฟฟ้าพลังนิวเคลียร์, อัมพิกา อภิชัยบุคล, ผู้เชี่ยวชาญด้านพัฒนาระบบบริหารจัดการด้านพลังงานปรมาณู, สำนักงานปรมาณูเพื่อสันติ. (No date). (Translated by the author). Retrieved from <https://bit.ly/3c3J3jq>. (Last accessed, 12 May 2021)

<sup>17</sup> การวิเคราะห์แผนพัฒนาพลังงานไฟฟ้าของประเทศไทย PDP 2018 กับ การลดไฟฟ้าพลังนิวเคลียร์, อัมพิกา อภิชัยบุคล, ผู้เชี่ยวชาญด้านพัฒนาระบบบริหารจัดการด้านพลังงานปรมาณู, สำนักงานปรมาณูเพื่อสันติ. (Ibid.)

<sup>18</sup> Nuclear reactor saga rumbles on by Apinya Wipatayotin. (6 July 2020). Retrieved from <https://www.bangkokpost.com/thailand/general/1946404/nuclear-reactor-saga-rumbles-on>. (Last accessed, 27 May 2021)

<sup>19</sup> Nuclear reactor saga rumbles on by Apinya Wipatayotin. (6 July 2020). (Ibid.)

<sup>20</sup> Govt defends plan for nuclear reactor by Apinya Wipatayotin. (11 August 2019). Retrieved from <https://www.bangkokpost.com/thailand/general/1728255/govt-defends-plan-for-nuclear-reactor>. (Last accessed, 27 May 2021)

<sup>21</sup> Nuclear reactor saga rumbles on by Apinya Wipatayotin. (6 July 2020). (Ibid.)

<sup>22</sup> Nuclear reactor saga rumbles on by Apinya Wipatayotin. (6 July 2020). (Ibid.)

<sup>23</sup> A saga of half-lives and half-truths by Supara Janchitfah. (26 September 2020). Retrieved from <https://www.bangkokpost.com/opinion/opinion/1991979/a-saga-of-half-lives-and-half-truths?>. (Last accessed, 27 May 2021)

River.<sup>24</sup> There are also questions about management of radioactive waste and public participation regarding this project.

Suthee Rattanamongkolgul, a lecturer on community medicine at Faculty of Medicine, *Srinakharinwirot University in Ongkharak* campus, said that there have been three attempts to construct a research reactor at Ongkharak. The first attempt was in 1999 but the project was shelved due to corruption involved and opposition from villagers. The second attempt occurred around 2012 and faded out due to discontinuity of relevant ministries. The project was revived again in 2018 with the first public hearing conducted in December in the same year.

“Now we have the 2 MW research reactor but we don’t have enough places to store radioactive waste. The question is, if the new reactor is 10 times larger, how much space it would require to keep the radioactive waste in safety?,” said Suthee.

Prasong Pansri, a member of *Nakhon Nayok Conservation and Natural Heritage Network*, said that before any project is implemented, there must be cost-benefit assessment. This assessment for the research reactor at Ongkharak was based on outdated data from 2010, not considering the changing demographics or population density surrounding the project site. New assessments in 2017 and 2020 were confidential processes without public participation. Long-term cost-benefit analysis needs to be done as well. If the location of radioactive waste is not considered; there is no permanent repository.

“All of those three cost-benefit assessments are: the first outdated information and the other two were not open for public access. So, the project should not go ahead,” says Prasong.

Santi Chokchaichamnankit of *Energy Watch*, who has been monitoring nuclear power issues in Thailand for 20 years, said that the pro-nuclear group does not stop human resource development on nuclear technology. For example in 2008 there was a specific unit on nuclear set-up called the *Nuclear Power Program Development Office* (NPPDO). But it was discontinued.

The nuclear research reactor at Bang Khen which is almost 60-year-old will stop its operation in the near future. But the reactor cannot be removed as it is radioactive contaminated. Thus, there is a plan to build a new research reactor of 20 MW at Ongkharak in Nakhon Nayok pushing by TINT. If it is successful, the site will be a place for human resource development on nuclear. However, this project has been opposed by local people.

## Research reactors produce nuclear waste as well

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<sup>24</sup> ไม่โปร่งใส ไม่คุ้มค่า เสี่ยงก่อปัญหาจริงสิว่าไหล: เปิดเหตุผล คนนครนายกไม่เอาเตานิวเคลียร์. (16 August 2020). Retrieved from <https://greennews.agency/?p=21636>. (Last accessed, 27 May 2021)



It is commonly known that research on reactor requires uranium in its operation, similar to that in a nuclear power plant. Hence, safety and radioactive waste disposal continue to be a major concern for the local residents and the general public, who will suffer the burden of any disaster. Another issue is that the clean-up of nuclear waste will require time, complex technical processes and a large amount of money depending on the scale of the disaster. The clean-up of the Fukushima disaster, for example, is estimated at \$200 billion and takes at least 30–40 years, let alone compensation, decontamination of surrounding areas and medium-term storage facilities.<sup>25</sup> Despite all concerns and better options available, the Japanese government recently decided to dump 1.23 million tons of radioactive waste water into the Pacific Ocean.<sup>26</sup> This clearly shows the government's unaccountability in treating highly hazardous nuclear waste that can contaminate the food chain of the earth's ecosystem.

The present radioactive waste produced by the research reactor at Bang Khen is kept at the site close to Kasetsart University, only 8 kilometers away from Don Muang International airport. The location is not compliant to international safety standards according to which a reactor must be at least 16 kilometers away from the airport.<sup>27</sup> Another radioactive waste storage is at Klong 5 in Pathum Thani. But these radioactive waste storage sites have limited space. In addition, the radioactive waste has been transported to store at TINT building in Ongkarak district without public knowledge.<sup>28</sup> This was revealed after the local anti-nuclear group in Nakohn Nayok had set a camp in front of TINT for 2 days (from 4-5 October 2019) insisting on the investigation of the radioactive storage.<sup>29</sup>

Before the Fukushima disaster, Thailand was keen to build nuclear power plants. However, the necessary information on the source of uranium and spent nuclear fuel, including where it will come from and where it will be disposed of, is yet to be determined. Three options were mentioned in the paper "Poster Session" of the *International Atomic Energy Agency* (IAEA): (1) onsite storage in wet pool and dry cask, (2) centralized interim storage, and (3) final repository.<sup>30</sup>

However, it is also concerning because even a small amount for research shows issues with nuclear waste management and protection. In the country where "safety culture" is still debatable, the

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<sup>25</sup> Japan revises Fukushima cleanup plan, delays key steps. (27 December 2019). Retrieved from [https://apnews.com/article/d1b8322355f3f31109dd925900dff200#:~:text=The%20government%20says%20Fukushima's%20decommissioning, trillion%20yen%20\(%24200%20billion\)](https://apnews.com/article/d1b8322355f3f31109dd925900dff200#:~:text=The%20government%20says%20Fukushima's%20decommissioning, trillion%20yen%20(%24200%20billion)). (Last accessed, 27 May 2021)

<sup>26</sup> The Japanese government's decision to discharge Fukushima contaminated water ignores human rights and international maritime law. (13 April 2021). Retrieved from <https://www.greenpeace.org/international/press-release/47207/the-japanese-governments-decision-to-discharge-fukushima-contaminated-water-ignores-human-rights-and-international-maritime-law/>. (Last accessed, 27 May 2021)

<sup>27</sup> สิ่งนี้กำลังมา...เครื่องปฏิกรณ์นิวเคลียร์เครื่องจักรภัย ตามแผนยุทธศาสตร์ชาติ 20 ปี. (18 July 2020). Retrieved from <https://waymagazine.org/nuclear-reactor/>. (Last accessed, 27 May 2021)

<sup>28</sup> ศรีสุวรรณ นำขบวนคนรักท้อง ป.ป.ช. สอบ 2 หน่วยงานปมย้ายสถานที่เก็บกากนิวเคลียร์. (2 December 2019). Retrieved from [https://www.matichon.co.th/region/news\\_1779008](https://www.matichon.co.th/region/news_1779008). (Last accessed, 27 May 2021).

<sup>29</sup> สิ่งนี้กำลังมา...เครื่องปฏิกรณ์นิวเคลียร์เครื่องจักรภัย ตามแผนยุทธศาสตร์ชาติ 20 ปี. (Ibid.)

<sup>30</sup> Thai Strategic Plan for Spent Fuel Management. (No date). Retrieved from [https://www-pub.iaea.org/MTCD/Publications/PDF/SupplementaryMaterials/PI661CD/Poster\\_Session.pdf](https://www-pub.iaea.org/MTCD/Publications/PDF/SupplementaryMaterials/PI661CD/Poster_Session.pdf). See page 53. (Last accessed, 27 May 2021)

capacity of nuclear power plant management is a key concern, as researcher at CSIRO Ecosystem Science, Canberra, Australia, Tira Foran puts:

“Meanwhile, Thailand’s turn to nuclear power has been justified as “green” response to limiting greenhouse gas emissions. We need a better understanding of the risks and opportunities of nuclear power expansion in capacity-limited countries such as Thailand.”<sup>31</sup>

Therefore, if Thailand chooses to generate energy by nuclear means, the scale of nuclear waste disposal will be immense, necessitating stringent safety protocols. But it is doubtful as to whether the country can accommodate such advanced technologies.

### Building public acceptance and human resources for nuclear power

Nuclear power in Thailand has been facing public opposition despite “safety culture” being promoted by relevant agencies. In order to build nuclear power plants, education and training from inside and outside the country, has been supported by pro-nuclear institutions. *Chulalongkorn University* is one of first academic institutions providing a study program at the Faculty of Engineering. The program was created in collaboration with EGAT and OAEP in 1968 to support EGAT's engineers with a modern knowledge and for further education abroad, specifically on nuclear technology.<sup>32</sup>

According to *Nikkei's* news article, a source from Energy Ministry reported that they sent personnel abroad to acquire knowledge about nuclear technology, including the issue of public acceptance in Japan and other countries as follows:<sup>33</sup>

"We have been sending our personnel to receive trainings from the countries which have nuclear technology and consider making investment in Thailand. They give us the opportunity to join their seminars and trainings on many issues regarding nuclear," he said, referring to China and parts of Europe," said Anantaporn Kanjanarat, former Thailand's minister of energy.<sup>34</sup>

Thailand signed and ratified the Treaty on the Prohibition of Nuclear Weapons on 20 September 2017, which became effective on 22 January 2021.<sup>35</sup> One might argue that building nuclear power plants in Thailand for the country's future is legitimate, given that the country has pledged to use this technology for peace only. Furthermore, Thailand was one of the founding members of *ASEANTOM* (ASEAN Network of Regulatory Bodies on Atomic Energy), which drew upon the

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<sup>31</sup> Knowledge Politics in National Nuclear Energy Planning in Thailand (2007-2017) with a Case Study of Ubon Ratchathani Province. (Ibid.). See page 67.

<sup>32</sup> Knowledge Politics in National Nuclear Energy Planning in Thailand (2007-2017) with a Case Study of Ubon Ratchathani Province. (Ibid.). See page 42.

<sup>33</sup> Thailand ponders nuclear power with China. (4 July 2016). Retrieved from <https://asia.nikkei.com/Economy/Thailand-ponders-nuclear-power-with-China>. (Last accessed, 27 May 2021)

<sup>34</sup> Thailand ponders nuclear power with China. (4 July 2016). (Ibid.)

<sup>35</sup> Nuclear-weapon-free states. (No date). Retrieved from <https://www.icanw.org/thailand>. (Last accessed, 27 May 2021)

1971 Treaty on Southeast Asia Nuclear Weapon-Free Zone (SEANWFZ). The SEANWFZ emphasizes the peaceful use of nuclear materials and facilities without prejudice, as stated in Article 4 of its charter that "the right of States Parties to use nuclear energy in particular for their economic development and social progress."<sup>36</sup>

As one of ASEANTOM members, Thailand has engaged in relevant training courses to promote safety, security and safeguarding measures with focus on the security of radioactive materials and emergency preparedness and response.<sup>37</sup>

The Thai cabinet had issued a resolution which approved the draft Policy and Strategic Plan on Nuclear Power Development of Thailand 2017 – 2026.<sup>38</sup> The source from OAP revealed the importance of this Plan as follows:

"This Policy and Strategic Plan on Nuclear Power Development of Thailand is to build trust with international communities on using nuclear power in Thailand. This plan is important for security in utilizing nuclear power both in normal and nuclear emergency and radiation situations. It is also to strengthen production system, human resource development, science and technology infrastructure that would broaden knowledge in Thai society and gain trust for safety of utilizing nuclear power with four main strategies: (1) cooperation on nuclear power, (2) regulation and safety from nuclear power, (3) production and development of human resource and nuclear power infrastructure, and (4) nuclear power for the country development," said Dr. Atchara Wongsangchan, Office of Atom for Peace.<sup>39</sup>

From the pro-nuclear perspective, the above statement suggests that nuclear power is particularly crucial for the country's development. But anti-nuclear groups view that this source of energy is the opposite of the global trend in which renewable energy is on the rise.

## Does nuclear power have a future in Thailand?

Germany set a timeline to phase out all nuclear power plants by 2022, making a transition to renewable energy. In fact, the movement to defuse the German nuclear power has taken place decades before Chancellor Angela Merkel's administration decided to call off the nuclear program,

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<sup>36</sup> Treaty on the Southeast Asia Nuclear Weapon-Free Zone. (No date). Retrieved from [https://asean.org/?static\\_post=treaty-on-the-southeast-asia-nuclear-weapon-free-zone](https://asean.org/?static_post=treaty-on-the-southeast-asia-nuclear-weapon-free-zone) cited in Knowledge Politics in National Nuclear Energy Planning in Thailand (2007-2017) with a Case Study of Ubon Ratchathani Province. (Ibid.). See page 61.

<sup>37</sup> About us. (No date). Retrieved from <http://www.oap.go.th/en/about-us/about-us>. (Last accessed, 27 May 2021)

<sup>38</sup> ปส. แผนพัฒนาพลังงานนิวเคลียร์ ปี 60- 69 เพื่อคนไทย ชีตนโยบายรัฐ ไทยแลนด์ 4.0 – ประชาธิปไตย. (1 June 2017). (Translated by the author). Retrieved from <https://www.oap.go.th/component/content/article/98-thai/information/news/584-60-69-4-0?Itemid=528>. (Last accessed, 27 May 2021)

<sup>39</sup> ปส. แผนพัฒนาพลังงานนิวเคลียร์ ปี 60- 69 เพื่อคนไทย ชีตนโยบายรัฐ ไทยแลนด์ 4.0 – ประชาธิปไตย. (1 June 2017). (Ibid.)

which was prompted by the Fukushima disaster in Japan.<sup>40</sup> Belgium and Switzerland also plan to phase out the nuclear power.<sup>41</sup>

While the pro-nuclear advocates continue to see nuclear power as low-carbon source of electricity, energy security and climate change mitigation, nuclear power usage is in fact on the decline. The IAEA report says that “overall, the new projections suggest that nuclear power may struggle to maintain its current place in the world’s energy mix.”<sup>42</sup> The World Nuclear Industry Status Report 2020 also pointed out such declining trend of nuclear power, while renewable energy becomes gradually popular:

“Renewable energy deployment and generation has better resisted the impacts of the COVID-19 pandemic than the nuclear power sector. In the first quarter of 2020, renewables increased output by an estimated 3 percent and its relative share in global generation rose by 1.5 percentage points, while nuclear output fell by about 3 percent.”<sup>43</sup>

According to Santi Chokchaichamnankit of *Energy Watch*, there is no pressing need for nuclear in Thailand at present and it is unlikely to return to the national agenda in the coming years. There are several reasons for this. Firstly, the government does not pay much attention to nuclear technology because they prioritize other projects such as dams in Laos to diversify energy sources. In addition, in the past 4-5 years, Thailand has had a great supply of reserve energy – almost reaching 60% which means that it will be in use for the next 10 years. This is the undeniable fact that the Thai government has to accept that it will be a waste of time and efforts to prioritize in increasing national reserve energy which is already over supply.

In addition, according to *Energy News Center*, the economic growth of Thailand fails to live up to its forecast due to the Covid-19 pandemic, thereby causing its reserve margin to sharply increase to over 50% from the standard of 15%. With the huge oversupply of the national reserves, its citizens are shouldering the electricity bill and this would be a burden of extra cost for the household.<sup>44</sup>

Secondly, there is lack of public support for nuclear power. The budget and risks are not considered to be worth it. Also, in the context of political climate in Thailand, the government is

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<sup>40</sup> Germany's nuclear phaseout explained by Rebecca Staudenmaier. (15 June 2017). Retrieved from <https://www.dw.com/en/germanys-nuclear-phaseout-explained/a-39171204>. (Last accessed, 27 May 2021)

<sup>41</sup> Phasing Out Nuclear Power in Europe by Rolf Golombek, Finn Roar Aune and Hilde Hallre Le Tissier. Working Paper 05/2015. Retrieved from [https://webcache.googleusercontent.com/search?q=cache:3q5gY4IPLjUJ:https://www.cree.uio.no/publications/CREE\\_working\\_papers/pdf\\_2015/aune\\_golombek\\_tissier\\_phasing\\_out\\_cree\\_wp05\\_2015.pdf+&cd=15&hl=en&ct=clnk&gl=th](https://webcache.googleusercontent.com/search?q=cache:3q5gY4IPLjUJ:https://www.cree.uio.no/publications/CREE_working_papers/pdf_2015/aune_golombek_tissier_phasing_out_cree_wp05_2015.pdf+&cd=15&hl=en&ct=clnk&gl=th). (Last accessed, 27 May 2021)

<sup>42</sup> New IAEA Energy Projections See Possible Shrinking Role for Nuclear Power. (10 September 2018). Retrieved from <https://www.iaea.org/newscenter/pressreleases/new-iaea-energy-projections-see-possible-shrinking-role-for-nuclear-power>. (Last accessed, 27 May 2021)

<sup>43</sup> The World Nuclear Industry Status Report 2020 by Mycle Schneider et al. Retrieved from [https://www.worldnuclearreport.org/IMG/pdf/wnsr2020-v2\\_lr.pdf](https://www.worldnuclearreport.org/IMG/pdf/wnsr2020-v2_lr.pdf). See page 32. (Last accessed, 27 May 2021)

<sup>44</sup> ไขสไลด์พลังงาน 2020. (29 December 2020). Retrieved from <https://bit.ly/3mCoL5u>. (Last accessed, 27 May 2021)

creating an energy monopoly through pushing for private Independent Power Producers (IPPs) that are liquid natural gas (LNG) power plants. Thus, it does not pay attention on nuclear power nor care about over reserve margin. Only focusing on LNG power plants to commit in the power system meaning that imported LNG will rise. Santi Chokchaichamnankit says:

“Currently, nuclear power plants are not a worldwide practice. It is energy from the past, not the energy for the future. However, the government is still pushing nuclear research reactor while nuclear power plant got a setback. The government is now focusing on LNG which is now the main source of energy in the world during transitioning to fossil fuel to renewable energy.”

Tara Buakamsri, from *Greenpeace Thailand*, said that looking at the global trend on nuclear power, there are debates as to whether it is a solution for energy security. Pro-nuclear groups say that nuclear power could mitigate climate change because it does not emit greenhouse gas. But this point is controversial and needs further debate under scenarios such as global warming. Can the at least 10 years of construction time of nuclear power plants be fast enough to mitigate climate change?

Buakamsri adds that as historically Thailand has an oversupply of reserve margin at all time, nuclear power is not really the answer for both energy supply to the grid system and climate crisis mitigation. One should bear in mind that nuclear power comes with risks that may not happen in our generation but the next, such as management of nuclear waste and its safety.

“I think, even when they calculate perfectly or there is a new nuclear technology – it is about how citizens and the community trust the government. We have already seen what happened in Fukushima, which is in the country that is perceived to have a high level of safety culture and discipline, and yet [the disaster] occurred. Someone said that because Japan is located on the tectonic plate. [Thailand] will not be like Fukushima. It is too easy to say that. I think [nuclear power plant] has no place in Thailand’s sustainable energy future.”

However, Suthee Rattanamongkolgul, a lecturer on community medicine at Faculty of Medicine, *Srinakharinwirot University* in Ongkhroak campus, says that relevant agencies continue advocating for the building of a research reactor to serve the *Eastern Economic Corridor* (EEC). In addition, if they can build the new research reactor, it will be a place for human resource development on nuclear technology.

Santi Chokchaichamnankit also points out that there has been an attempt to promote clean energy among Thai policy-makers. But the real problem is the monopoly of power production that needs to be solved; otherwise, problems related to electricity cost and environment would remain. Furthermore, renewable energy still relies on government subsidies. Investing in renewable energy does not necessarily mean that those who invest would be aware of environmental issues. In

addition, in terms of energy consumption, even though it is from a cleaner energy source, it is useless without efficient energy management. Therefore, the monopoly in the energy sector should be addressed prior to any focus on energy efficiency.

Tara Buakamsri adds that, although renewable energy has taken some roots in Thailand, its operations mostly depends on giant private companies that have the investing capacity. However, renewable energy is the path that Thailand should pursue. It is not about choosing only one technology, but it has to be an integrated and decentralized clean renewable energy system. That is to say, the government or the companies should invest more into smart grid to facilitate selling electricity into the system, or to support solar rooftop and co-generation system in order to promote sustainable energy sources.

He goes on to say that nuclear power not only takes a long time to construct, but also risks cost overruns. This means that as the investment is postponed, the cost will rise.

“Then, one day, we will realize, one day, that the nuclear power plant will be obsolete in 10-20 years. At the moment, the advancement of nuclear power technologies is almost halting. Only a few new nuclear power plants have been built in Europe and America, with a few more on the way in the Middle East. A nuclear power plant takes decades to build. It is unable to compete with renewable energy, which is causing havoc in the energy market, including nuclear power plants.”

## Conclusion

In conclusion, nuclear power is not only expensive, but requires complex infrastructure that take a long time to construct due to safety and security concerns. Besides, it carries unimaginable risks, with nuclear waste being unresolvable for the countries that use it.

In search for better energy sources other than nuclear power, Thailand must prioritize the de-monopolization of the power production structure and the promotion of energy conservation. The choice for clean energy and the decentralization of power structures, such as renewable energy, are more critical than ever before in combating the climate crisis and making it more effective and affordable for people in places not covered by the grid system.

Nuclear is presented as a super alternative, with mature technologies, productive base load plants and a solution to climate crisis. However, this is not an accurate representation of the whole picture. The cost of investment and consequences after the plant construction would be very high. Nuclear waste disposal will be unthinkable if incidents like Chernobyl, Three Mile Island, and Fukushima occurred. Nuclear power will only benefit a handful of people. The repercussions in case of a nuclear catastrophe would hit future generations and will impact the environment for hundreds of thousands of years by dangerous and toxic radioactive waste emitted at every stage,

including uranium mining and reprocessing of spent reactor fuel.<sup>45</sup> The claim that nuclear power would help solve the climate crisis is not appropriate.

Thus, despite nuclear power being recently withdrawn from the Power Development Plan, it is important to keep an eye on the situation in Thailand and on a new potential momentum for nuclear power.

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<sup>45</sup> Nuclear Power. (No date). Retrieved from <https://www.greenpeace.org.uk/challenges/nuclear-power/>. (Last accessed, 27 May 2020)

## Author's Profile



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