

Why Should Indonesia Develop Nuclear Power?

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Received: July 16, 2020 / Accepted: August 18, 2020 / Published: November 25, 2020

“When the facts change, I change my mind”

Economist Lord Keynes

Abstract: Energy policy in Indonesia has relatively not supported the efforts to cope with climate change. The amount of carbon-dioxide (CO₂) increased by the use of coal, oil and natural gases. Indonesia with population more than 260 million needs much amount of electricity supply. While most of the energy source is from fossil fuels sources such as coal, oil, and gas, the need for energy increases gradually. However, the reliability of the electricity supply is questionable with many protests due to rolling blackouts. One of the most promising alternatives to cope with energy demands and greenhouse gas emission is by developing nuclear power plants. Ironically, although Indonesia has planned to develop nuclear power since 1950s, it has not been really developed till nowadays for some reasons. This research by using a qualitative approach and based on data taken from books, e-books, journal articles, and governments’ documents aims to analyze the need for building nuclear energy in Indonesia. This research has four findings and suggestions: (1) nuclear power is the best option for Indonesia because it is safe, can meet energy demands, and economical; (2) nuclear power is the best option to mitigate and adapt global warming as suggested by Giddens and eco-modernists since it is environmentally friendly; (3) while the fear of lay people towards nuclear power development is the true fear because of unknowingness, the educated opponents and political elites are “playing the politics of fear” to bring pessimistic and despair; and (4) the Government of Indonesia should not hesitate to make policy to develop nuclear power because it has been widely supported by Indonesian public.

Key words: nuclear power, climate change, eco-modernist, politics of fear

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1. Introduction

Energy policy in Indonesia is still not in line with what is being argued for by the global community today: the efforts to cope with climate change by declining greenhouse gas emissions. During past decades, the amount of carbon-dioxide (CO₂) in the atmosphere has increased significantly due to the more people using coal, oil and natural gases. It increased from 315 parts per million (ppm) in the 1960s to around 400 ppm in 2015 (Richard 2017), and 406 ppm in October 2018 (McGee, 2018). Indonesia as a big country with the population of more than 260 million needs a great amount of electricity supply. While most of the energy source is from fossil fuels sources such as coal, oil, and gas, the need for energy increases gradually. By June 2017, electricity supply reached around 92 per cent of Indonesian's territories, remaining about 8 per cent (Agustinus, 2018). However, the reliability of the electricity supply is questionable with many protests due to rolling blackouts. The President of the Republic of Indonesia, Joko Widodo (Jokowi), admitted that there have been many complaints from the public about the frequency of power failure (Ariyanti, 2017).

One of the most promising alternatives to cope with energy demands and greenhouse gas emission is by developing nuclear power plants (Asafu-Adjaye, Blomquist et al. 2015, p. 23). It is "the key low emission source for electricity generation through to mid-century" (Manning and Graetz 2016, p. 28). Nuclear power has been developed globally, and there are 450 nuclear reactors in operation in some 30 countries around the world (Statista, 2018). Regrettably, Indonesia has not taken serious actions, as if following the global trend i.e. the controversy between proponents and opponents. On the one hand, it can be a blessing to generate a great amount of clean energy (Asafu-Adjaye, Blomquist et al. 2015, p. 24) while on the other hand, it is considered one of the most feared technology which may cause a disaster such as what occurred in Fukushima in 2011.

In Indonesia, nuclear power has been planned to develop since 1950s (Sulfikar 2010, p. 103). The basic law for its peaceful purposes was the Decree No. 31/1964 on the regulation related to atomic energy (Soentono 1997, p. 54). The first President of Indonesia, Sukarno, initiated the plan and once ever planned to build nuclear weapons which was encouraged by a political reason of nuclear weapon rivalry issue (Sulfikar 2010, pp. 108-109). The dependency of Indonesia on oil and gas, which accounts for about 85 per cent of the total energy need while the source is limited, is another reason the urgency to build nuclear power plants (Soentono 1997, p. 51). Moreover, those fossil fuels sources contribute negatively to greenhouse gas emissions. During 1980 to 2004, for example, about 56 per cent of annual CO₂ emissions in Indonesia were caused by oil, 25 per cent by coal and 18.5 per cent by natural gas (International Energy Agency, cited in PEACE 2007, p. 20).

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To date, there has been no significant progress except three small scale research projects in Yogyakarta (100KW), Bandung (250-KW), and Serpong (30-MW) (Prakoso, 2015, Sulfikar 2010, p. 103). Both proponents and opponents such as scientists, political elites, government officials, religious leaders (*‘ulamas*), and lay people have argued for many reasons. Proponents have been trying to convince the public and the government that nuclear power is a must rather than just a need to meet the demands of energy supply in Indonesia. They argue that Indonesia will be far behind its neighbouring countries without building nuclear power plants. Some opponents base their argument on the “fear” reason that Indonesia is on the Ring of Fire which is prone to disasters such as earthquake and tsunami. These potential disasters may threaten the nuclear power plants. Some others claim that Indonesia has many other alternative sources of energy such as renewables. These two reasons influence political leaders including the president to become hesitant in making critical political decisions to develop nuclear power, even putting it as the last alternative in accordance with the Law No. 79/2014.

Through this paper I argue that Indonesia should develop nuclear power for some reasons: first, nuclear power is the best option for Indonesia because it is safe, can meet energy demands, and economical. Second, nuclear power is the best option to mitigate and adapt global warming as suggested by Giddens and eco-modernists since it is environmentally friendly. I also argue that while the fear of lay people towards nuclear power development is the true fear because of unknowingness, the educated opponents including political elites are “playing the politics of fear” to bring pessimistic and despair, not hope. This might be due to the fear of losing popularity. This paper suggests that the government should not hesitate to make decision to develop nuclear power because surveys show the majority of Indonesian population support nuclear power including those with qualified knowledge on this matter. The President would not lose popularity since the majority of the public will tend to see the results, not the process. Introduction, conceptual framework, the safety of nuclear power, its potential to meet energy demand, nuclear power and climate change mitigation and adaptation, nuclear power, fear and the politic of fear, and conclusion will be the sequence of this essay.

2. Materials and Methods

Conceptual Framework

The politics of Climate Change: Anthony Giddens

Greenhouse gas emissions generated from the modern industry have been warming up the Earth. The data shows that for the past 650,000 years CO₂ content of the air has never been as high as it is today

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(Giddens 2009, p. 12). Ironically, most people are doing very little to cope with the emissions (Giddens 2009, p. 1). There have been much talk rather than real actions on this matter (Giddens 2009, p. 9). Therefore, Giddens suggests that the issue of global warming or climate change should be brought onto political agenda and embedded it in our institutions and it should be the daily concern of the citizens (Giddens 2009, p. 3).

Giddens (2009) provides some terms on how to analyse and promote any policy relevant to climate change in the political institution contexts. First, *political convergence* which refers to the condition in which some policies related to limiting climate change goes beyond positively with different public policy areas. Energy security and energy planning are among the most significant areas of this matter. Of all, the largest and the most promising convergence is between climate change policy and welfare beyond Gross Domestic Product (GDP). For instance, to reduce CO₂ emissions, reducing congestion can be done by upgrading public transport and other measures (Giddens 2009, p. 72). Second, *climate change positives* which refers to the impossibility to overcome global warming effectively merely on the basis of the avoidance of future dangerous – relatively in negative way. There should be some positive objectives. Any policy related to climate change should involve thinking for a long term purpose with an emphasis on the “durable” rather than ephemeral (Giddens 2009, p. 73). Third, *the percentage principle* which can be defined as a recognition that “no course of action (or inaction) is without risks, and there is always a balance of risks and opportunities to be considered in any policy context” (Giddens 2009, p. 74). Fourth, *proactive adaptation*. Realizing that climate change is a certainty no matter what we do now or later, a politics of adaptation should be taken alongside with climate change mitigation. We have to take pre-emptive action by making policies following scientific information shifts and matures (Giddens 2009, p. 74). Giddens classifies two types of adaptation: adaptation after the event and adaptation oriented to possible futures in which he tends to suggest the latter (Giddens 2009, p. 164).

Eco-Modernism

Eco-modernism or eco-pragmatism is the rebuttal of what is called the Environmentalism. Environmentalists claim that growth in economic brings adverse effects in the environment (Brown 1998, pp. 1-2, Dryzek 2013). They believe that the increase in the number of humans followed by the growing in the amount of consumed per human will result in negative ecology (Dryzek 2013, p. 28). On the contrary, eco-modernists argue that the environmentalists frequently overlook ‘thinking ecologically depends on prospering economically’ (Nordhaus and Shellenberger 2007, p. 6). Proponents of eco-modernism believe that ‘humans are made from the Earth, and the Earth is remade by human hands’ (Asafu-Adjaye, Blomquist et al. 2015, p. 6). According eco-modernists, the environmentalists are “playing the politics of fear in

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relation to climate change” (Nordhaus and Shellenberger 2007). They bring threats, pessimistic, despair; not hope and real actions. Therefore, eco-pragmatists are optimistic about a good Anthropocene that human involvement in the environment should be seen in a positive meaning that it may bring hope by using the technological power to stabilize climate and protect the natural world (Nordhaus and Shellenberger 2007, Asafu-Adjaye, Blomquist et al. 2015, Mark Lynas 2015). Human civilization, according to eco-modernists can flourish for centuries and millennia on energy delivered from a closed uranium or thorium fusion (Asafu-Adjaye, Blomquist et al. 2015, p. 10).

Methodology

This study uses secondary data collected from books, e-books and related journal articles. The use of secondary data was chosen due to its availability and accessibility. This research used qualitative methodology, that is, a literature study. Pros and cons literature were collected and elaborated to reach fair points.

3. Results and Discussion

Nuclear power is safe

Some claim that nuclear power is unsafe. The claims have been concerning nuclear accidents (Davis 2012, pp. 49-50). The incidents in Three Mile Island [1979], Chernobyl [1986], and Fukushima Daichi [2011] (Kessides 2010; Sovacool 2011) are three examples that the opponents often quote as the evidence that nuclear power is dangerous. Spenser et al. (2016), although admitting nuclear power is getting safer, claim that the nuclear accident risk has changed from “more frequent-less costly to less frequent-more costly events” (Spenser et al. 2016, p. 99). In other words, the accidents decrease in quantity but increase in ‘quality’. The argument is supported by estimation that among 388 operated reactors until 2016, there is fifty per cent chance of similar accident occurs like in Fukushima in every 60 to 150 years (Spenser et al. 2016, p. 96).

In Indonesia, opponents of nuclear power claim nuclear power plant is unsafe mainly because Indonesia is located on the Ring of Fire. Natural disasters such as earthquake and tsunami and some other seismic activities are prone to occur on this location (Sulfikar 2010, Sundaryani, 2017, and Deny, 2018). One opponent, Sulfikar, claims that Indonesia is not ready to develop nuclear power because this country has not a strong institutional system. He gives an example of the accident in Fukushima, Japan, in which one reason of the accident was because of the human factor. A developed country with good discipline

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such as Japan had a bad experience, what about Indonesia with low-discipline people? (Sulfikar, cited in BATAN 2015).

However, the incidents in those three locations were believed mostly because of natural disasters such as earthquakes and tsunami. Accident in Fukushima, for example, was perceived to have no difference from other accidents caused by great earthquake and tsunami (Siegrist and Visschers 2013, p. 112). Moreover, although the probability of a nuclear catastrophe is extremely low, the consequence is often perceived to be extremely high. It means that the much risk calculation is not as much as the real consequence. It is an excessive fear. In America, nuclear power has been built since 1960s. Each nuclear plant endures about 30 years or about 3,000 reactor years of operating experience. The fact, there have been no fatalities to any member of the public due to the operation of a commercial nuclear power plant in this country (the Conversation, 2015).

The world has been feared with the three nuclear power generation accidents. In fact, Three Mile Island resulted in no health consequences to the public. In Chernobyl, although United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) has identified 66 deaths from trauma and acute radiation poisoning, the long-term health consequences of that reactor accident is small. In Fukushima, no deaths have been attributed to radiation release, but an estimated 1,600 people died as a result of evacuation. Compared to fossil-fired plants, the consequence of nuclear power accidents for the long-term health is far smaller. In 2012, for example, seven million people globally died from health complications due to air pollution and an estimated 13,000 US deaths were directly attributable to fossil-fired plants (Barry et al. 2014, the Conversation, 2015). Barry et al. (2014) argue that the misconception that nuclear power is dangerous is commonly inspired by media coverage. In fact, nuclear energy is one of the safest energy technologies in terms of its effects to health and fatalities. The number of death caused by the accidents such as in Chernobyl was far smaller to the number of annual fatalities in the other industries such as coal, oil, and gas. The World Health Organisation (WHO) calculating the mortality rate per billion kWh due to all causes of energy industries puts nuclear power at the lowest rate with only 0.04. It is much different from coal and oil with 100 and 36 mortality rate, respectively (Barry et al. 2014, p.11).

As to Indonesia, concerns about the position of Indonesia on the Ring of Fire should not be an argumentation to oppose nuclear power. It should be noted that not all parts of Indonesia are on the Ring of Fire. National Nuclear Energy Agency of Indonesia/BATAN identified areas that are safer for nuclear power plants e.g. Bangka, Muria Peninsula, Banten, West Kalimantan, and Riau Islands (BATAN, cited in Jakarta Post, 2017c). As to discipline, the availability of a lot of professional scientists and technicians in Indonesia should support nuclear power development. Indonesian Association of Geologist (IAGI), for example, argues

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that technologically, BATAN with its nuclear experts has been ready. It is just about the courage to decide 'Yes' or 'No' (Iagi.or.id, 2016).

Nuclear power can meet energy demands

Some doubt the possibility of nuclear energy to meet energy demand of Indonesia. Nuclear power cost is considered higher than other sources of energy (see e.g. Davis 2012). Even some sceptics claim that nuclear power is expensive and it might not be economical (Kessides 2010, p. 3849-3850).

However, the claims have insignificant evidence. Kessides (2010) argues that nuclear power is the most effective solution to meet energy demand. Nuclear power has performed very well. It is estimated that global electricity demand will be over 30,000 terawatt hours (TWh) annually by 2030. Nuclear power, supported by an application of advanced technologies, economic, and safety, could produce electricity needs for a couple of centuries. Another reason is developing nuclear power shows resource efficiency where uranium is found at abundance in the earth's crust. The most important of all which covers global interest is nuclear power as the climate change threat mitigation. Nuclear energy is a well-established technology for electricity without carbon or other emissions (Kessides 2010, p. 3849). Barry et al. (2014) point out that for a long term purpose, nuclear power is the only alternative capable to produce the enormous quantities of energy for modern industrial societies. It is safe, economical, reliable, and sustainable (Barry et al. 2014, p. 9). They contend that the renewables such as wind and solar are difficult to meet energy demands since they are inherently intermittent, which depend on backup power. Eco-modernists argue that "transitioning to a world powered by zero-carbon energy sources will require energy technologies that are power dense and capable of scaling to many tens of terawatts to power a growing human economy (Asafu-Adjaye, Blomquist et al. 2015, p. 22). Nuclear power looks the only one that can meet the requirements (Asafu-Adjaye, Blomquist et al. 2015, p. 23). In the Indonesian context, although Indonesia has a great amount of renewable energy sources, it is still insufficient to meet the energy supply needed by the large numbers of the population (Jakarta Post, 2017a).

Nuclear power is economical

Some opponents claim that nuclear energy is expensive. The main point of their argument is to build nuclear plants needs high-cost (Davis 2012, pp. 49-50). Mark (2010) compares the economics of nuclear energy to some renewables. He claims that the costs of nuclear energy has been increased very significantly since 2002. He predicts that the cost of renewables will be lower and competitive with nuclear energy in 2020. Deputy Energy and Mineral Resources Minister of Indonesia, Arcandra Tahir, claims that nuclear energy is the most expensive of all energy type. "I have not received any data proving that commercially nuclear energy is cheaper. It is only a discourse", he claims (Jakarta Post, 2017b). Even, President Jokowi in

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2016 once said that nuclear power is not urgent since Indonesia still has a large amount of renewables (Putro, 2016).

However, although it might be true that developing nuclear power needs high-cost, it needs to note that nuclear power is built for a long-term purpose with a great amount of energy productions. Socolow and Glaser (2009) point out that nuclear power is *time-tested*. Commercial nuclear power has lasted for about 50 years and found in 30 countries nowadays. Nuclear power is also '*large, centralized plants with fixed output*' meaning that it can cover large and extensive electricity grids that may contribute to energy supply for long time and distances (Socolow and Glaser 2009, p. 35). Therefore it is reasonable if the cost to build nuclear power is high.

As to the efficiency of renewables compared to nuclear power is also debatable. Davis (2012), for example, argues that nuclear power would be cost-effective compared to some other sources of electricity generation. Even, evidence shows that batteries for renewables such as solar and wind power are too expensive. Good standard batteries to clean up the grid such as used in California, for example, currently cost \$2.5 trillion. Relying on batteries for massive amounts of storage rather than turning to low-carbon sources like nuclear with carbon capture technology may lead to a dangerously unaffordable path (James, 2018).

In the context of Indonesia, wind power, for example, is found much more expensive than nuclear power with 15 to 40 per cent difference and cost-saving up to 80 per cent (RISTEK 2014). The statement of the Deputy Minister that nuclear energy is the most expensive of all energy type where there is no data proving commercially nuclear energy is cheaper (Jakarta Post, 2017b), is less convincing, if not wrong. In France, for example, the unit price of electricity supplied about 75 per cent by nuclear power is one of the lowest prices in the world (Barry et al 2014). Therefore, Yes it is true that we have much amount of renewables, but they are not only expensive but also cannot generate a large amount of energy such as nuclear power, so nuclear power likely remains the best alternative.

Nuclear power policy and climate change mitigation and adaptation

Giddens (2009) argues that some policy related to limiting climate change should go beyond positively with different public policy areas. Energy security and energy planning are among the most significant of those policy areas. Giddens names this as *political convergence* (Giddens 2009, p. 72). Choosing nuclear power to guarantee energy security seems to be the best policy option to minimize global warming. While some other sources of energy emit large amount of emissions, nuclear power results in very small or zero emissions. Some findings show that nuclear power generates an insignificant amount of emissions (e.g. Margarit 2004, Bishop 2006, Socolow and Glaser 2009), and some others consider it without

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emission (e.g. Kessides 2010, Davis 2012, Asafu-Adjaye, Blomquist et al. 2015). Davis (2012), for example, finds that every year nuclear power is able to save about 600 tons of carbon on emissions. Nuclear power has up to 100 times lower greenhouse gas emission than other sources such as coal (Davis 2012). One pound of uranium can produce electricity as much as 16,000 pounds of coal can do, burning 16,000 pounds of coal generates thousands of pounds of CO₂, sulphur dioxide and Nitrogen, while nuclear power is free from emissions (Davis 2012, p. 63).

Furthermore, nuclear power is found not only the least polluting, but also the lowest environmental impact. Nuclear power neither produce air pollution, nor emit CO₂. It is calculated that annually, operating 435 nuclear power plants may prevent more than 2 billion tons of CO₂ emission. On the contrary, 30 billion tons of CO₂ worldwide are emitted every year from coal-fired stations. These emissions, through polluted air and dispersion of pollutants including mercury, cause health effects and premature death (Barry et al. 2014). In a precise word, Margarit (2004) predicates nuclear power as a mature technology which has environmental advantages. Margarit points out that the world without nuclear power is the world with a risky long-term global ecosystem. It is because nuclear power promises a significant contribution to the world energy balance with low gas emission causing climate change (Margarit 2004, p. 490, Van Leeuwen & Smith 2005). Thus, the more nuclear power the more CO₂ cuts (Rhodes 2017).

Concerns about the risk of nuclear power is like concerns about the risk of other energy sources. The fear of making policy to build nuclear power is not considering what Giddens calls *the percentage principle* that “no course of action (or inaction) is without risks”. There is always a balance between risks and opportunities (Giddens 2009, p. 74). Nuclear power, despite of its potentials to generate a great amount of energy, like other methods, has also potentials to be a disaster which evidence shows it rarely occurs. Giddens’ argument is similar to Margarit’s (2004) argument that ‘no method of generating electricity exists that is without risk or without any adverse environmental effects’ (Margarit 2004, p.489). If someone is scared of developing nuclear power, he should also be scared of developing renewables, and or other energy source alternatives. A policy to build nuclear power is not only the way to meet human’s need of energy, but also the way to save all living things living on the Earth from threats of global warming. Human-beings as part of web of life have an obligation to preserve the Earth (McIntyre-Mills 2017, p. xxxiv) by making policy that, according to eco-modernists, remakes the Earth (Asafu-Adjaye, Blomquist et al. 2015, p. 6).

Kessides’ arguments (2010), and Barry and his colleagues’ notes (2014) are in line with the Giddens’ *climate change positives*. That the policy related to climate change should involve a long-term purpose thinking (Giddens 2009, p. 73). Policy to build nuclear power plants covers a long-term thinking. It

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is both to produce a large amount of energy for a long-term period and to cope with climate change where generating energy through nuclear power plants is free of emissions. Nuclear power development is promising for the good future of the world. Moreover, Kessides' argument that nuclear power is supported by an application of an advanced and well-established technology for electricity without carbon emissions (Kessides 2010, p. 3849) is similar to one of the arguments of eco-modernism. Eco-modernism argues that human should be seen positively as a good Anthropocene that their involvement in the environment by utilizing technology (nuclear power technology) may bring positive hope to stabilize global warming (see Nordhaus and Shellenberger 2007, Asafu-Adjaye, Blomquist et al. 2015, Mark Lynas 2015). Scientific findings that nuclear power development has no CO₂ emission should encourage the Government of Indonesia to do *proactive adaptation* and mitigation suggested by Giddens (2009, pp. 74, 164) through making and executing nuclear power policy.

Nuclear power, fear, and the politics of fear

One day in early September 2007, the Minister of Research and Technology at that time, Kusmayadi Kadiman, attended a dialogue between two groups of the pros and cons of the Government's plan to build nuclear power plants in Muria Peninsula, Central Java. The meeting was held by the Islamic leaders (*ulamas*) of the Jepara district branch of *Nahdlatul Ulama*, Indonesia's largest Islamic social organisation. On the way to the meeting place, about three thousand Balong Village dwellers protested and wanted the Minister to sign a petition that there would be no nuclear power plants in Muria. The Minister rejected the petition due to not of his authority to decide. Other than that, at the meeting, regardless some proponents among them, the *ulamas* who were not nuclear engineers reached a shocking conclusion that "Nuclear is *haram* [prohibited]!" (Sulfikar 2010, p. 102).

The story above tells us that one of some reasons of nuclear power rejections in Indonesia is fear because of unknowing, not unwillingness. They are lay people in the context of unknowingness about nuclear power. Therefore, a finding that lay people tend to judge nuclear energy as a risky energy (Siegrist and Visschers 2013, p. 112) is convincing.

However, the opponents come not only from lay people, but also from educated people relevant to the field of energy. Sudirman Said, the former Minister of Energy and Mineral Resources, opposes nuclear power. He claims that it is not the time to build nuclear power since Indonesia still has some other alternatives. Another reason of his objection is to avoid controversies. He gives an example of a plan to build larger-scale plants on Muria Peninsula and in Bangka Belitung. Local inhabitants resisted the plan due to fear of leaks on the scale of disaster in equally earthquake-prone Japan (Prakoso, 2015). Another opponent is Purnomo Yusgiantoro, a former Minister of Energy and Mineral Resources (2004-2009). Almost similar to

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Sudirman, Purnomo claims that developing nuclear power plants (PLTN) should consider many aspects, not only technique but also social. Again, rejections to build nuclear power plants in Muria is as his example (Deny, 2018). Not only individual, an agency related to energy also shows an objection to the nuclear power plant. Saleh Abdurrahman, the General Secretary of National Energy Agency (DEN), said that Indonesia would not build nuclear power until 2050 (Deny, 2018).

It seems that, they, as educated people were influenced by the fear of some lay people. They should understand that Indonesia really needs to build nuclear power, not only for Indonesia but also for the Earth. But actually, if the lay people are really scared due to unknowingness, they, like the environmentalists, “are playing the politics of fear” (Nordhaus and Shellenberger 2007). As the top (former) leaders, they bring threats and pessimistic, not hope and real actions. They might not want to lose their position or influence by taking or suggesting unpopular policy. They are likely afraid of being published by media if taking such ‘taboo’ policy. Their perception is like what Barry et al. (2014) point out, “inspired by media coverage”. Legislator Tjatur Sapto Edy said that those who opposed nuclear power plant were following “the wind blown by the media to appeal to their Constituents” (Sulfikar 2010, p. 124). Some examples they give such as nuclear accidents in Fukushima have been ‘expired’. The technology of nuclear power used today is much more advanced than that of used a couple of years ago. Ferguson (2011) explains that the designs of contemporary nuclear power plants (Generation III) have better safety features than those designed in 1970s (Generation II) such as erected in Fukushima.

The “politics of fear” of the environmentalists should be phased out. The head of BATAN, Djarot argues that there need to educate people to change their perception that nuclear power is friendly instead of scary. Djarot statement was supported by Coordinating Political, Legal and Security Affairs Minister Wiranto asking to change that false perception before erecting nuclear power plants (Jakarta Post, 2017c).

By not totally ignoring some constructive critiques, I would suggest to listen much to proponents of nuclear power development. They are also credible and qualified. Satya Yudha, a legislator, encourages the government to make nuclear energy a viable option, instead of a last resort referring to Law No. 79/2014. Singapore, Vietnam and Thailand, he mentioned, have jumped on the nuclear bandwagon in their energy plans. Another legislator, Kurtubi, graduated from Mineral Economic, Colorado School of Mines (CSM) USA, said that the energy source (nuclear power) gives assurance of a large scale power supply and providing energy without carbon emissions (Sundaryani, 2017). Even, a scientist and the former President of Indonesia, Prof Habibie, supports the development of nuclear power in Indonesia. Nuclear power, according

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to Habibie “is the proper choice for electricity, there have been many developed countries that have been developing nuclear power and there is no problem so far” (Syahril, 2015).

Good news to hear President Jokowi Widodo asking the National Economic and Industry Committee (KEIN) to prepare for nuclear energy (Satrianegara, 2018). It means that Indonesia will be one step ahead in nuclear power thought. It seems that the President is following two former presidents of Indonesia who supported nuclear power plants, both are engineers, Sukarno and Habibie. In regards to losing popularity, those who oppose nuclear power are only of small percentage of Indonesian citizens. The latest survey conducted by BATAN (Dody, 2017) finds that 77.5 per cent of Indonesian people support nuclear power plants. The problem that in many places in Indonesia many people protest because of power failures should be addressed. When Indonesia builds nuclear power plants, the problem of quantity and or quality of electricity would be solved. When citizens see the fact, it would be like a famous statement from an Economist Lord Keynes, “When the facts change, I change my mind”.

4. Conclusion

Given the long history of the nuclear power development planning, Indonesia should have developed nuclear power. Debates between pros and cons should be ended. Making and executing policy on nuclear power will benefit not only Indonesian people but also the world community in general. It can meet energy demands for Indonesian people and also contribute to limiting greenhouse gas emission. Legislator Tjatur Sapto Eddie argues that without having nuclear power, Indonesia will be a great loss country: “While we end up with nothing just because we are too scared, the whole people will feel embarrassed while suffering from an energy crisis, I am determined that Indonesia must develop nuclear energy. If we do not have a vision in that direction, Indonesia will be in jeopardy” (Sulfikar 2010, p. 123). Contributing to global community, by developing nuclear power, Indonesia would not be a part of what Giddens calls “The Giddens’ paradox” that since the dangers of global warming are not immediate or obvious, they are ignored: but by the time they are obvious enough to induce action it will be too late.

The fear to build nuclear power should become our past. It is safe, like what Mohamed ElBaradei says, “As safe as travel”. “Plane crashes do occur, but highly effective safety systems ensure that they are extremely rare – so rare that most of us board airplanes without worrying that we might not reach our destination. The same is true of nuclear power, although there are always concerns that a severe accident could have major human and environmental consequences” (ElBaradei, 2009). The President would not lose his popularity since nuclear power has been widely accepted by Indonesian public. Rejections from one area

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or some people, both lay people and those with sufficient knowledge should not discourage the president for the sake of his people and all human beings and living things on Earth.

Acknowledgments

This paper was my research paper during my study at Flinders University, Australia, in one topic called “The Politics of Climate Change” with the Topic Coordinator Associate Professor Haydon Manning, at Flinders University. Therefore, I am really grateful to him. I would also like to acknowledge with gratitude the support and love of my family – my wife, Deska; my daughter, Khansa; and my mother (*Inak*) for her prayers.

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