

# Steam Electricity Power Plant (PLTU): The Politics of Energy in Indonesia

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**Abstract:** The present research aims to reveal the interests of developmentalism actors, both foreign investors and government behind the developmental of Steam Electricity Power Plant (Indonesian abbreviation as PLTU) projects in some areas in Indonesia. PLTU is a power plant that makes use of the combustion of coal in order to generate electricity. This project is a proponent of coal sector that has been in financial global crisis due to coal power plants which were left behind in some developed countries. This is because coal produces toxic substances which cause environmental damages and global climate change. Conversely, the construction of coal power plants is becoming more massive in Indonesia, assisted by foreign investors to get involved in project funding. The results of the research show that the construction of PLTUs in Indonesia becomes a promising business because it makes industrial sectors bigger and adds more income for investors. The politics of energy behind the construction of PLTUs features interest to use of nature as object of exploitation to make profits. The consequence of this project causes global climate change. However, the mission of equalization of electrical energy from PLTU project has not been met in some remote areas. By using qualitative approach with literature studies method, this paper explains the findings based on sources of data from reading materials including books, research reports, printed and electronic media focused on the study related to the development of PLTU in Indonesia.

## 1 INTRODUCTION

Indonesia as a developing country has many opportunities to develop its abundant natural resources in various sectors of life. The opportunities to manage natural resources are done through development of the country. The consequence of these massive developments in Indonesia is inequality of development. It makes natural resource management in some areas become less maximal, so that it leads to limitation. NTT and Papua are the examples of areas in Indonesia that still have limitation issue, particularly in provision of electrical energy. The limitation is perceived by more than one thousand villages, both in NTT and Papua (iesr.or.id, 2017). This issue is very ironic considering that both of the areas have abundant natural resources. For example, NTT has a number of natural potentials including wind, sun, water, geothermal, and ocean currents that have not been used (merdeka.com, 2018).

In order to increase economic growth and overcome the energy limitation issue, the government

through State Electricity Company (PLN) in cooperation with the private sector conducted a number of renewable innovations, one of them is by developing Steam Electricity Power Plant (PLTU) project. Through 35.000 MW electricity program initiated by Joko Widodo in 2014, PLTU has dominated a number of power plant capacities in Indonesia than other types of power plant (bumn.go.id, 2011). The emergence of PLTU as an economic alternative energy and its easy way to be operated by using various fuels (solid, liquid or gas) make the government to be more active in constructing PLTUs in some areas in Indonesia. There were 35 PLTU projects that 22 of them were constructed and spread in some areas in Indonesia such as Java, outside of Java and Bali (Tirto.id, 2017). The massive PLTU construction projects in Indonesia motivated some researchers and one of them was research team of Harvard University to do a research on the impacts of the constructions. This was because coal as the source of energy in PLTU was left by developed countries, included Europe.

The results of a research by research team of Harvard University show that coal produced toxic pollutants such as mercury, lead, arsenic, cadmium, and toxic fine particles that damaged environment and were harmful for human health (Koplitz, Jacob, Sulprizio, & Reid, 2017). The results were published and could be downloaded for free on google.com since 2015, when the construction of PLTUs was started in various areas in Indonesia. However, it seemed that the research did not stop the construction of PLTUs in Indonesia. Currently, developed countries have initiated a number of renewable technologies to substitute coal to generate electricity. This fact is inversely proportional to Indonesia that still develops PLTU as a renewable energy, and even it voluntarily involves developmentalism actors such as foreign investors to help the funding of the project. It seems to be significant that Indonesia ignores the impacts on environment or health issues to undergo some questionable development practices including for whom the benefits are and who the authority of its stakeholders is. On the one hand, the construction of PLTUs is able to overcome the energy limitation in Indonesia, but on the other hand it has positioned living environment or nature as the object and tool of development to reinforce a series of interests including capital accumulation for capital owners. Based on the explanation, this paper aims to reveal a series of interests of developmentalism actors, either foreign investors or government behind the construction of PLTUs through politicization of natural resources and environment that have ecological impacts.

## 2 METHOD

This paper used qualitative approach with literature studies method in which the data were collected from literature collections including books, journals, documents, magazines, encyclopaedias, dictionaries, etc. Literature studies allow the researcher to collect relevant information without doing field research (Harahap, 2014). The data used in this research were the results of researches, in the form of journals and various reading materials from electronic media and online official sites. Various data collected from the results of researches and electronic media about the information that explained the development or impacts of coal power plant, both countries in Asia and Indonesia and also developmentalism actors of PLTU project in Indonesia. The data were reduced to get relevant results related to the focus of the study on PLTU project in Indonesia.

## 3 RESULT

Electrification in Indonesia has been developed since the late 19th century, when Dutch built power plants. The management of Dutch Electricity Company was taken over by Japan in between 1942-1945. The electricity company finally fell into the Indonesia's hand after Japan surrendered to the allies in the end of World War II in August 1945. After the event, President Soekarno formed Electric and Gas Services, under the Department of Public Works and Energy. On 1st of January the Services was changed into BPU-PLN (Badan Pemimpin Umum Perusahaan Listrik Negara/General Board of State Electricity Company) engaged in electricity, gas and coke. The board was eventually dismissed and changed into two state companies to manage state electricity and gas, they were State Electricity Company (PLN) and State Gas Company (PGS) on 1st of January 1961 (bumn.go.id, 2011).

Electrical energy in Indonesia has been managed by an electrical institution, PT. PLN. Through Steam Electricity Power Plant (PLTU) as a renewable energy, PT. PLN is attempting to give electrical service in the entire territory in Indonesia. The position of PLTU is increasingly dominating the power plants in Indonesia and it is supported by 35.000 MW electricity program, which is the government's project to build 35.000 MW power plant for 5 years (2014-2019). This project has a developmental mission that leads to economic growth, in addition to meet electrical needs for Indonesian societies. Through this project, it is expected that the widespread of electricity will be equal for all Indonesian communities, including in remote villages (bumn.go.id, 2011).

In steam electricity power plant, the source of energy is typically used to generate electricity. The ways of PLTU to work is by using generator driven by steam turbine from steam pressure generated by water steam and it is heated by fuel in the boiler. Coal power plant is very vital in all countries (Cahyadi, et al., 2015). In fact, the popularity of coal as an energy source of power plant has been left by developed countries (Greenpeace Indonesia, 2015). In addition to create economic growth, PLTU seems to answer the interconnection network limitation that is not enough to meet electricity needs for more complex life of the society. Interconnection network often overloads to help some big industries that need more energy so that there are some cases one of them is blackout as the impact of the weak network. PLTU project is the most dominant power plant construction

project with the spreading percentage is more than 50% (bumn.go.id, 2011).

### 3.1 Implication of PLTU in Indonesia

So far PLTU gives so many benefits, including creating new jobs, increasing economic growth because the industries are more productive and providing electricity needs by using coal that is easy to be obtained in Indonesia. The massive construction of PLTUs in Indonesia is a phenomenon that attracted researchers and academicians to conduct some researches. Research team of Harvard University was one of them that were interested to study the damages of environment and human health issues caused by PLTU in Indonesia. The results show that coal was the largest contributor to air pollution and the largest source of greenhouse gas emissions (GGE), which triggered climate change. Coal mining caused unfixable damages and one of them was direct impacts on environmental elements such as soil, water sources and air which were difficult to be recovered. In fact, many CSR of companies change the responsible for coal mining reclamation into other fields, so that the damages of habitat and environment are perceived not only by human but also other creatures. According to a study conducted by Greenpeace Indonesia in 2015, 300 km or 45% rivers in South Kalimantan potentially contaminated with hazardous waste from mining concessions. International Energy Agency (IEA) revealed that coal contributed to 44% of the total global CO<sub>2</sub> emission caused climate change and exposed harmful and deadly chemical substances such as mercury and arsenic (Greenpeace Indonesia, 2015). The steps technically performed to make use of coal as power plant also contributed to some environmental issues. The issues were caused when coal mining process affected the natural exploitation, as well as clean water issue caused by the use of water sources for coal washing before coal was distributed and wasting of transportation fuel in the process of distributing coal. The information informs us about various negative impacts caused by the construction of PLTUs that ecologically damages natural ecosystem.

Further, the results show that the number of premature death estimation due to operating PLTUs is approximately 6.500 inhabitants/year. Java Island is the most strategic area to build PLTUs because the industries are growing rapidly. If the plan is realised, it can be estimated that premature death will increase to 15.700 inhabitants/year in Indonesia, and the estimation of total death is 21.200 inhabitants/year

including outside of Indonesia (Greenpeace Indonesia, 2015).

Other Asian countries, such as Myanmar also perceives the impacts on its environment due to the construction of coal power plants. Although it has not been completely operated, the project assisted by China has been created a number of environmental issues including the exposure of ash, gas and particulars produced by this project and it pollutes farms, livestock and water sources of the cities and ecosystem. The problems can also threat the lives of local people due to health issues (Koplitz et al., 2017). The impacts of coal mining and PLTU haunt the natural life and the living things around it, and unconsciously human will also feel the impacts threatening their health and Research Team of Harvard found that the issues could cause shot life.

### 3.2 Investigation of the Interest behind PLTU Mega Project in Indonesia

Coal sector experienced a post global financial crisis in 2008 caused by the low price of coal in International market (Tirto.id, 2017). One of the causes of that low price was the impacts on living environment caused by the combustion of coal in order to generate electricity in power plants. The crisis caused great impacts on coal sector in Indonesia. This was because Indonesia was one of the countries that had abundant coal sources. In 2015, a research found that Indonesia was the number one coal exporter in the world, but there were 20% Indonesian people who had not got electricity service from the state. Most of the people were in small islands far from the city centre. In general, Indonesia has only 3% coals, therefore the government keep exploring coal as the source of fuel. However, a research then found that coal industries were able to account for 4% of Gross Domestic Product (GDP) in Indonesia. The data was beyond expectation and rejected the argument by the government that coal industry was one of the proponents of economic growth in Indonesia (Koplitz et al., 2017)

After being explored, the total availability of coal resources in Indonesia reaches 119.444.56 million tons, with 29.078.28 tons of reserve spread over 20 provinces in Indonesia. Sumatera and Kalimantan are the centres of national coal production because they have the largest coal sources and reserves (Fachlevi, Putri, & Simanjuntak Sahat M H, 2015). The operation of coal sector is the result of the construction of PLTUs project supported with 35.000 MW initiated by the government. The limited capacity of funding by the government is the

backdrop to involve private sectors including coal businessmen and investors in order to undergo the PLTU project. Some dominant foreign investors to fund the project are Japan and China. There are also two local banks that contribute in funding-Mandiri and Bank Indonesia. These banks are very exclusive, because their contributions helped the mega project. Market Forces research revealed that Japan and China were the main funding sources. These contributions cannot be separated from the roles of the two countries as the biggest countries that provide materials of PLTU (tirto.id, 2017).

The use of coal as power plant fuels in Indonesia has been left by developed countries in Europe and Asia, including Japan and China. The environmental damages caused by coal encouraged the making of an agreement about climate change in Paris in 2015. The agreement was followed by some developed countries from Europe and Asia to commit in reducing emission which was considered to cause climate change and global warming. Japan and China involved in the agreement. Both of them agreed to lower the average air temperature by 2% above the global air temperature average, by pressing the use of fossil energy (coal) and increasing the portion of renewable energy (tirto.id, 2017).

In realising the agreement, Japan and China have reduced the number of coal consumption as power plant and changed over the use of wind and sun as the materials to generate electricity (Koplitz et al., 2017). On the other hand, both countries have undergone business to develop PLTU in Indonesia and other Asian countries such as Myanmar. Simultaneously, what have done by Japan and China is big potential to increase global temperature causing climate change.

The agreement of climate change followed by Japan and China did not make these countries stop supplying PLTU equipment in some developing countries, including Indonesia. Various research findings related to the impacts caused by PLTUs did not make the project be stopped by the government. PLTU mega project in Indonesia became the most interesting business to get unlimited profit by exploiting natural resources, which were contested by all authority holders. On one hand, this project was able to supply funds to foreign countries as capital owners, but on the other hand the project planned to be an effort to provide the limitation of electricity energy seemed to be beneficial only for many industrial sectors in Indonesia whose existence contributed to increase state revenues. What was explained above seems to emphasize that behind the development of PLTU mega project in Indonesia there were a series of interests of developmentalism

actors including foreign investors and the government to accumulate capital, particularly economic capital. It is an ironic fact, considering that currently the distribution of electricity is still not evenly distributed throughout the territory of Indonesia.

## 4 DISCUSSION

PLTUs in Indonesia adopted a number of knowledge from developed countries that were able to develop coal power plant to supply electricity needs. Referring to Foucault's idea that knowledge and power are two sides of a coin. The implementation of power creates knowledge object, conversely knowledge creates power influences and it can be used to dominate others (Sarup, 2003). The adoption of knowledge shows that by using their knowledge, developed countries are able to dominate developing countries in their efforts to transform into developed countries. Simultaneously, knowledge is able to intervene developing countries to follow the ways and standards performed by developed countries in order to overcome the limitation of electricity issue.

Further, the development of PLTUs in various areas in Indonesia shows that there is a political practice between human and nature. On the other hand, Japan and China seemed to meet the natural rights through an agreement of climate change in Paris in 2015. However both countries gave capitals to build PLTUs and the construction was one of the causes of climate change. Referring to the idea of Politics of nature, Bruno Latour explains that science makes a concept which separates nature and human. The difference of the concept creates unbalanced power. Knowledge has a power that allows human to do political practice. The political practice tends to damage nature that provides natural resources, including energy. Humans use their ability to dig natural resources which are able to generate electricity. But by using this ability, humans keep exploring nature and ignore the impacts (Block and Jensen, 2011:79).

The intervention of foreign investors in construction PLTUs in Indonesia shows that there is a political practice in the aspect of energy which tends to damage nature or environment. Both investors and government simultaneously try to control the nature which is able to generate electricity by using the developmental practice oriented to capital accumulation and they ignore the rights of nature as habitation of human. What has been wanted by Latour is to remove the limitation between nature and human which is separated by knowledge. This is because

both nature and human are able to play their own roles as political actors. Nature and human can work together to solve the problems. Both of them have the same rights, which can be fulfilled in democracy system.

What have been the questions until now are: Is the PLTU really appropriate and needed by the people of Indonesia? Or does this project make the nature as a commodity for the interest of capitalists? We never know whether Indonesia deliberately turns a blind eye to the huge losses that will be experienced by the construction of PLTUs. A series of interests and environmental damages-including climate change and premature death threat behind the construction of PLTUs-emphasize that the project is not in line with the objectives of Indonesia which have been established in the preamble of the 1945 Constitution of Republic of Indonesia which includes: (1) protect the whole people of Indonesia and the entire homeland of Indonesia, (2) advance general prosperity and develop the nation's intellectual life, (3) contribute to the implementation of a world order based on freedom, lasting peace and social justice (Dipoyuda, 1985:7).

## 5 CONCLUSION

Referring to the construction of PLTUs in Indonesia, one of the things needed in constructing PLTUs is ecological justice. Nicholas Low and Brendan Gleeson try to give an idea on the importance of ecological justice in the practice of ecological politics, which is usually performed in development. The practice of ecological politics should distribute power to environment for all living creatures (Low and Gleeson, 2002:22). This idea is a critic for human to concern to the sustainability of other living creatures and also to make human not too dominant in controlling the nature. The impacts of PLTU explained by Research Team of Harvard University are the examples of human domination in controlling the nature or environment. The construction of PLTUs can be seen as ecological injustice, in which the nature is not seen as an object which needs to be prioritised to be kept.

On the other hand, the construction of PLTUs refers to what is stated by Giddens about the modernity juggernaut which sees that the project is the form of capitalism and industrialism as a machine to exploit Indonesian natural resources, with global scale (Giddens. 2009). The negative consequences from the project are the causes of humans less awareness about the risks that will come in the future.

PLTU is the impact of developed countries' political practice to get economical profit. Indonesia is the opportunity, the place where capital is not considered to have national bond so that it is free to be invested because political rhetoric of globalization only prioritizes economical profit (Hirst and Thomson, 2001:266). It also reflects that the orientation of development in Indonesia leads to economic growth, it does not perform justice development based on the needs of society. Based on the orientation of the development, referring to Sen's idea that implementation of Indonesian development has not been realised the entitlement or given the basic human rights (citizens). The implementation of PLTU shows that the orientation of development of welfare by the government is under the influence of Neo-liberalism, which forms human as human capital. The instruments of the construction of PLTUs do not refer to the effort of human capability development which includes life expectancy, health and education in society (Sen, 1999:49). Referring to Sen's idea, it emphasizes that the development does not give freedom for the society to respond the opportunity and fulfil their will, otherwise it conquers the society by giving them new and complicated problems.

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