

## **CHAPTER II**

### **THE DYNAMIC OF MURIA'S NUCLEAR POWER PLANT**

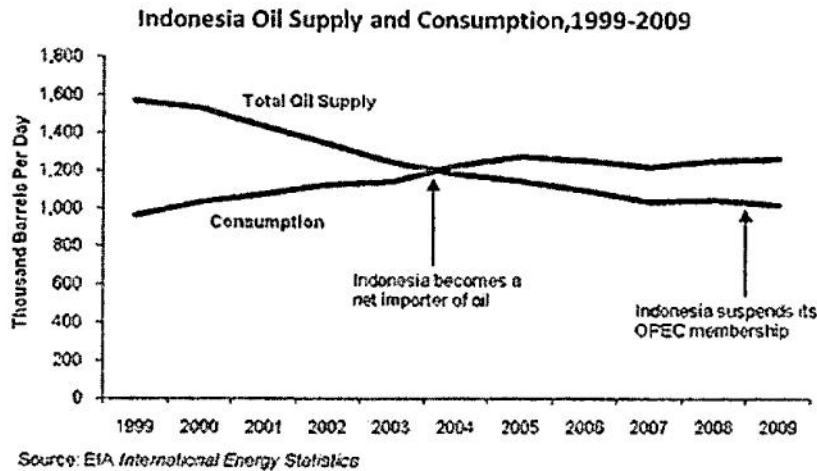
First, this chapter seeks to explain the problem of Indonesian energy condition especially in dealing with the two big environmental problems, namely energy crisis and global warming. Second, it will also discuss the position of Indonesian government on establishment of NPP. Next, Indonesian government discourse construction of Muria NPP will also be discussed. Finally, this chapter will explain the establishment of Muria NPP.

#### **A. The Problem of Indonesian Energy Condition**

There are two big environmental problems that are faced by Indonesian Government namely energy crisis and global warming. Both problems are crucial, since they influence the Indonesian energy condition, and in turn they influence the development programs in Indonesia.

First, the imbalance between energy production and consumption rate triggers an energy crisis. That's problem that happen globally, influence the Indonesian energy policies. The imbalance of production and consumption's energy become the core of global energy problem, include Indonesia. Since 1998, Indonesian crude oil production has been declining while in same time, the oil consumption is increasingly high. As a result, since 2004, Indonesia becomes an oil importer country. This condition makes Indonesia depend on the other country for its supply of energy.

Figure. 1. Indonesia Oil Supply and Consumption, 1999-2009<sup>32</sup>



Two driving factors in the imbalance of Indonesia's oil production and consumption are rapid growth population and massive world industrializations include in Indonesia. Data record that the population of Indonesia grew up to 1.5% per year during 2000-2006 together with the increase of population outside Java-Bali. The rate of population growth is parallel with the rate of oil consumption. This is shown by the data that energy consumption per sector increased by around 3.3% from 2000 to 2007. The share of industry and transportation are dominant at 47.3% and 29.7% in 2007.<sup>33</sup> This shows that the consumption of energy increased extremely high and it affects the availability of energy resources especially fossil. Until 2030 the world energy consumption will still depend on fossil energy especially the oil. Asia Pacific region with its rapid

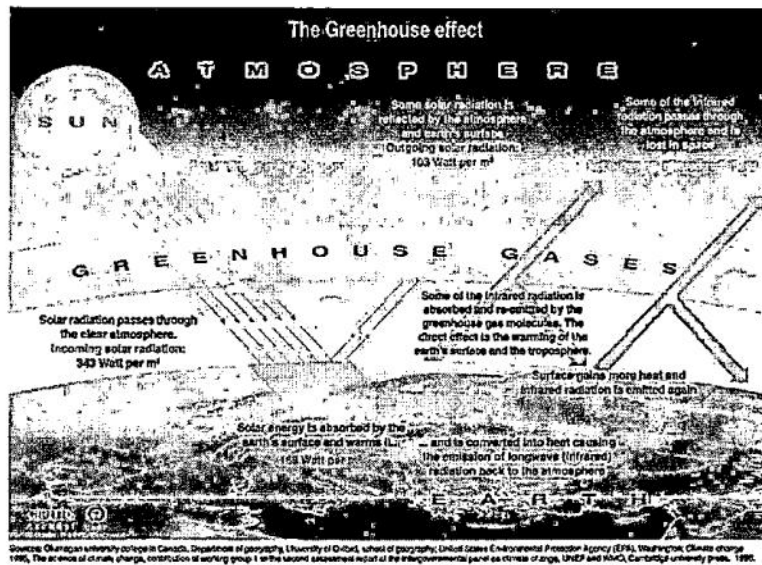
<sup>32</sup> Indonesia: No longer a net exporter of oil since 2004 (accessed March 15, 2012) available from <http://endofcrudeoil.blogspot.com/2011/06/indonesia-no-longer-net-exporter-of-oil.html>

<sup>33</sup> Farida Zed, *Indonesia Energy Outlook 2006-2023*. 2008. Available from Ministry of Energy and Mineral Resources

industrial development owns a few oil reserves. Thus, this condition places Middle East as the major supplier to cover the shortage of energy in the area.<sup>34</sup>

Second, in the recent time, there is increasing level in the average temperature of the earth's atmosphere and oceans, called global warming.<sup>35</sup> Global warming is a specific case of the more general term of climate change. It is theorized that most of the increase in global temperatures is due to human activities which are causing an amplified greenhouse effect. The primary sources of human induced global warming are carbon dioxide (CO<sup>2</sup>) and other greenhouse gases released by the burning of fossil fuels, agriculture, land clearing and other human activities.<sup>36</sup>

Figure. 2. The Greenhouse Effect<sup>37</sup>



<sup>34</sup>Krisis Energi (accessed November 15, 2010) available from <http://www.deplu.go.id/Pages/IssueDisplay.aspx?IDP=6&l=id>

<sup>35</sup>Perubahan Iklim (accessed November 15, 2010) available from <http://www.deplu.go.id/Pages/IssueDisplay.aspx?IDP=5&l=id>

<sup>36</sup>Mohamad S. Parwito, *Perubahan Iklim*. 2008. Available from Ministry of Foreign Affairs.

<sup>37</sup>The Greenhouse Effect (accessed February 29, 2012) available from <http://www.grida.no/publications/vg/climate/page/3058.aspx>

Since The United Nations Framework Convention on Climate Change (UNFCCC) put into force, the parties have been meeting annually in the Conferences of the Parties (COP) to assess progress in dealing with the climate change. COP 15 was held in Copenhagen, Denmark from 7<sup>th</sup> to 18<sup>th</sup> December 2009. President Susilo Bambang Yudhoyono stated that Indonesia has taken a commitment to reduce the level of greenhouse gasses emission about 26% by 2020.<sup>38</sup> Based on the President's explanation, as a developing country, energy crisis and global warming has really affected Indonesia. Those two big environmental problems were caused by the Indonesian dependency toward oil as its main source of energy.

#### **B. The Position of Indonesian Government on the Establishment of NPP**

To solve energy crisis and global warming, Indonesian government has taken several strategies, in its efforts to strengthen the national energy security. The strategies are implemented through the development of energy policy that focuses on the needs (demand side management), the reduction of oil subsidies to minimum level, the reformation of energy policy in order to strengthen good governance in the energy sector and the strengthening of the legislation's framework and the policy of energy diversification through the development of New and Renewable Energy (NRE).

Beside that, Indonesian government also attempts to develop the science and technology especially on the sector relating to management of NRE resources

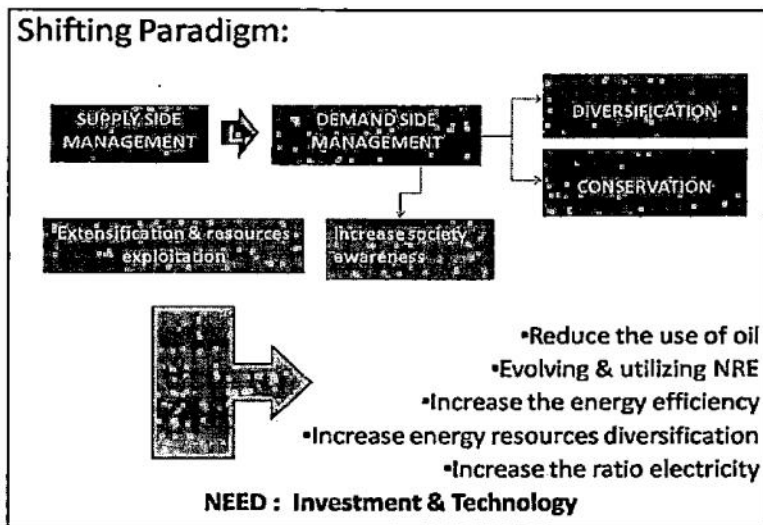
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<sup>38</sup> Bagaimana Posisi Indonesia di UNFCCC ke-15? (accessed February 29, 2012) available from <http://www.antaraneews.com/berita/1258209353/bagaimana-posisi-indonesia-di-unfccc-ke-15>

by developing several strategic partnership with other states. The government expect that through the partnership, the process of transfer technology might take place.

However, the success of national technology strategy implemantation depends largely on the government's role in funding sector. Thus, the efforts to involve foreign or domestic private parties also become the crucial thing for the investment reason. This includes technical cooperation among developing countries through the use of international forums or bilateral cooperation among states such as The ASEAN Ministers on Energy Meeting (AMEM).<sup>39</sup>

**Figure. 3. Policy Implementation<sup>40</sup>**



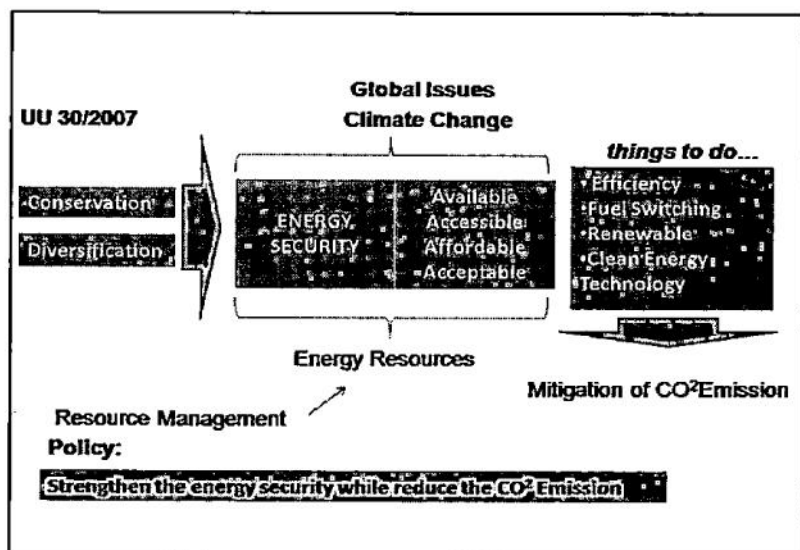
Indonesian government attempts to cut oil subsidies to minimum level in order to reduce the consumption of fossil energy and changes it to NRE. Beside

<sup>39</sup> Krisis Energi (accessed November 15, 2010) available from <http://www.deplu.go.id/Pages/IssueDisplay.aspx?IDP=6&l=id>

<sup>40</sup> M. Lobo Balia, *Pengelolaan Energi Nasional: Mandiri & Ramah Lingkungan*. 2010. Available from Seminar Nasional Energi dan lingkungan Hidup.

that, the government plan is saving the energy, particularly fossil energy. This means that Indonesian government would take conservation and also diversification of energy sources. The concept of energy security becomes very important for Indonesian government in order to solve its dependency on imported oil and to optimize the potency of national energy resources.

**Figure. 4. Energy and Climate Change's Policy<sup>41</sup>**

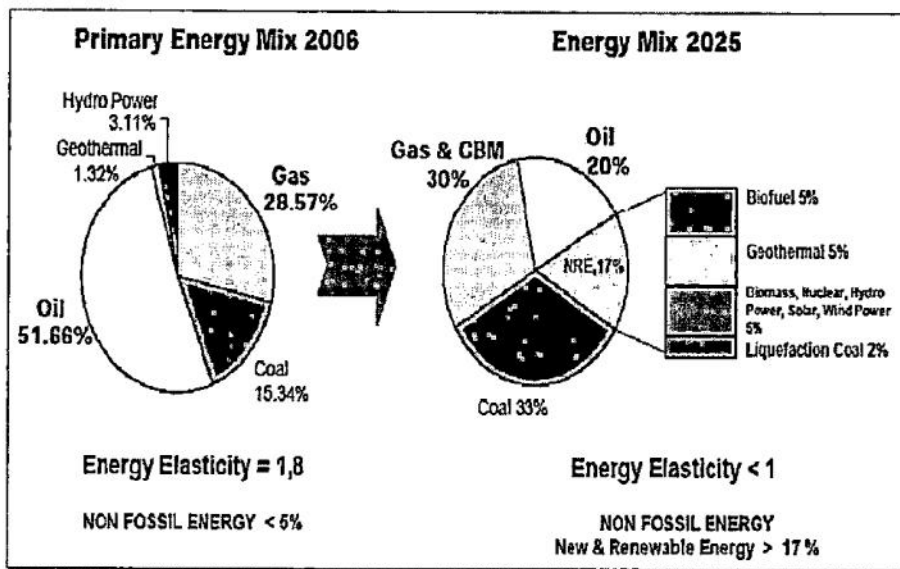


Development programs depend largely on oil. The high level of oil consumption contributes significantly to the energy crisis and global warming. This makes the reduction of greenhouse gases emissions is inevitable to do and hence, each state has to develop policy take policy to promote clean technology and to reduce the emission. The Indonesian government uses the concept of energy security to cut the dependency on imported oil and to optimize the potency of national energy resources. The commitment of Indonesian Government to

<sup>41</sup> *Ibid.*

support the programs above is realized by issuing Perpres No. 5 (Presidential Decree Scenario) in 2006 regarding to national energy policy (2006-2025). It is targeted that Indonesia reach the bigger energy mix in 2025, so that proportion of oil will be gradually decreasing. This decree states that the portion of oil will decrease to 20% (51,66% in 2006), natural gas will increase to 30% and coal will increase to 33%. This decree also states that the contribution of NRE energy in the 2025 national primary energy mix is estimated at 17%, consisting of 5% geothermal, 5% biofuel, 2% liquefaction coal and others NRE increase to 5% include nuclear.<sup>42</sup>

Figure. 5. Target of National Energy Mix 2025<sup>43</sup>

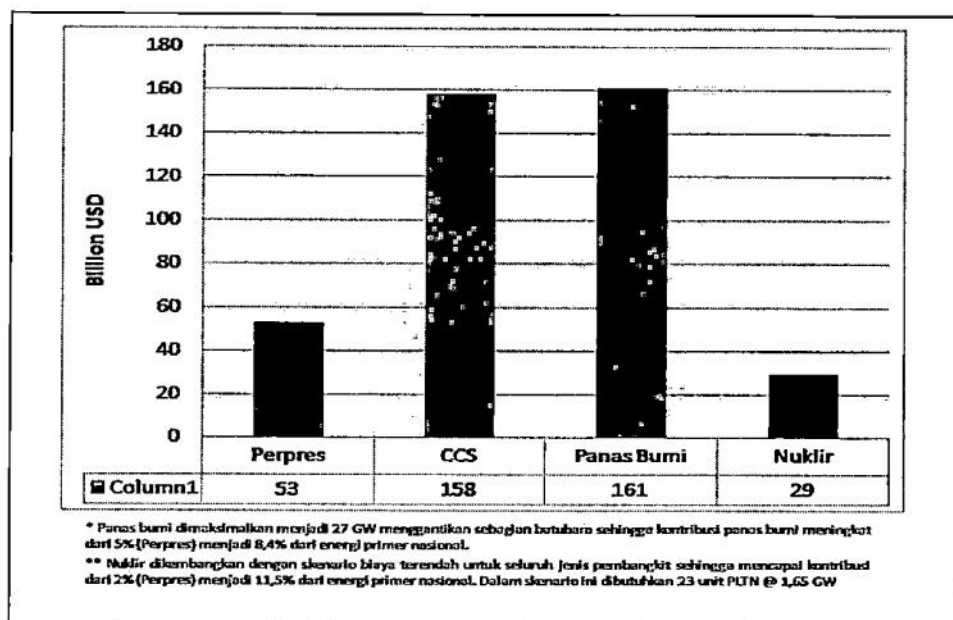


<sup>42</sup> Foreign Affairs, official note of input for ASEM Ministerial Conference on Energy Security, Brussel, June 17-18<sup>th</sup> 2009. (accessed November 17th, 2009); available from Directorate Economy Development and Environmental

<sup>43</sup> Blueprint Pengelolaan Energi Nasional 2006-2025 (accessed November 15, 2010) available from [http://www.google.co.id/url?sa=t&rct=j&q=indonesia+energy+outlook+2006-2025%22&source=web&cd=2&ved=0CCcQFjAB&url=http%3A%2F%2Fwww.esdm.go.id%2Fbatubara%2Fdoc\\_download%2F714-blue-print-pengelolaan-energi-nasional-pen.html&ei=UrZVT8nXCMbHrQeSv8mBBw&usg=AFQjCNGRNfifoiKIFDIxB4rRt-uISiKPAg&cad=rja](http://www.google.co.id/url?sa=t&rct=j&q=indonesia+energy+outlook+2006-2025%22&source=web&cd=2&ved=0CCcQFjAB&url=http%3A%2F%2Fwww.esdm.go.id%2Fbatubara%2Fdoc_download%2F714-blue-print-pengelolaan-energi-nasional-pen.html&ei=UrZVT8nXCMbHrQeSv8mBBw&usg=AFQjCNGRNfifoiKIFDIxB4rRt-uISiKPAg&cad=rja)

In addressing energy crisis and global warming through energy mix, the government clearly started to optimize the new and renewable energy, and tried to use nuclear energy as an alternative solution. The data of Ministry of Energy and Mineral Resources shows that, Indonesian Government will need 401 billion US Dollars for CO<sup>2</sup> Emission Reduction until 2025, including 29 Billion US Dollars for the development of nuclear energy.

**Figure. 6. Total Cost for CO<sub>2</sub> Emission Reduction (2006-2025)<sup>44</sup>**



To support the development of Nuclear Power Plant, Indonesian government has issued several rules and regulations, consisting of several acts, decree, regulation relating to NPP development in Indonesia. They are:

- Act No. 10 Year 1997 on Nuclear Energy

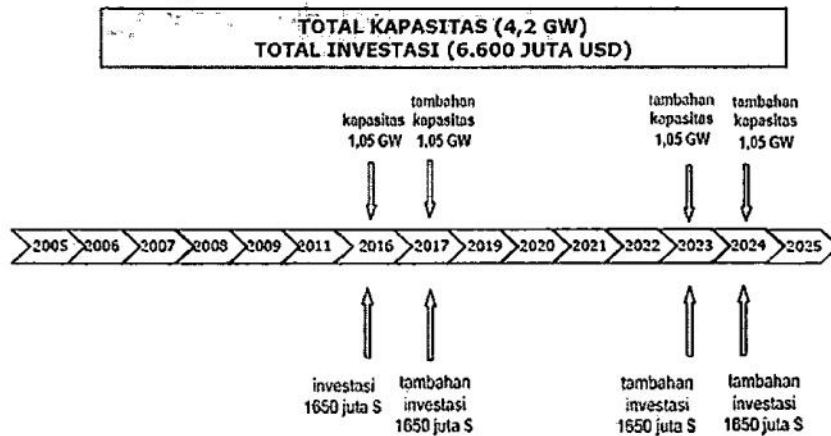
<sup>44</sup> Program DESDM dalam Rangka Menghadapi Perubahan Iklim, Jakarta, May 29<sup>th</sup> 2008 (accessed November 15, 2010) available from Ministry of Energy and Mineral Resources.



- Act No. 17 Year 2007 on National Long-Term Development Planning 2005-2025.
- Act No. 30 Year 2007 on Energy
- Government Regulation No. 43 Year 2006 on Licensing of Nuclear Reactor.
- Presidential Regulation No. 5 Year 2006 on National Energy Policy.
- National Electricity General Planning (RUKN) 2006-2026 MOEMR 2006.
- Guidance for the Application and Development of Sustainable Nuclear Energy System in Indonesia.

Related to the Nuclear Power Plant development, the process of nuclear reactor license has been regulated in Government Regulation No. 43 Year 2006. In Law no. 17 Year 2007 on Long Term Development Plan Year 2005-2025, it states that in the year of 2015-2019, NPP should be started to be utilized with the high consideration of safety factor.

**Figure 7 Milestone Nuclear Power Plant<sup>45</sup>**



<sup>45</sup> Blueprint Pengelolaan Energi Nasional 2006-2025 (accessed November 15, 2010) available from [http://www.google.co.id/url?sa=t&rct=j&q=indonesia+energy+outlook+2006-2025%22&source=web&cd=2&ved=0CCcQFjAB&url=http%3A%2F%2Fwww.esdm.go.id%2Fbatubara%2Fdoc\\_download%2F714-blue-print-pengelolaan-energi-nasional-pen.html&ei=UrZVT8nXCMbHrQeSv8mBBw&usq=AFQjCNGRNfifoiKFDLxB4rRt-uISiKPAg&cad=rja](http://www.google.co.id/url?sa=t&rct=j&q=indonesia+energy+outlook+2006-2025%22&source=web&cd=2&ved=0CCcQFjAB&url=http%3A%2F%2Fwww.esdm.go.id%2Fbatubara%2Fdoc_download%2F714-blue-print-pengelolaan-energi-nasional-pen.html&ei=UrZVT8nXCMbHrQeSv8mBBw&usq=AFQjCNGRNfifoiKFDLxB4rRt-uISiKPAg&cad=rja)

**Table. 1. Indonesian Status to the International Nuclear Arrangements<sup>46</sup>**

No.	INTERNATIONAL NUCLEAR TREATY AND CONVENTION	STATUS
1.	<ul style="list-style-type: none"> <li>• Non-Proliferation Treaty (NPT)</li> <li>• Safeguard Agreement with IAEA</li> <li>• Additional Protocol to Safeguards</li> </ul>	<ul style="list-style-type: none"> <li>• Ratified: Act No. 8/1978</li> <li>• Signed (Valid)</li> <li>• Signed (Valid)</li> </ul>
2.	Convention on Physical Protection of Nuclear Material and its Amendment	Ratified : President Decree No. 49 / 1986
3.	Convention on Early Notification of a Nuclear Accident	Ratified : President Decree No. 81 / 1993
4.	Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency	Ratified : President Decree No. 82 / 1993
5.	Treaty on the South East Asia Nuclear Weapon Free Zone	Ratified : UUNo. 9 / 1997
6.	Convention on Nuclear Safety	Ratified : President Decree No. 106 / 2001
7.	Comprehensive Nuclear Test-Ban Treaty (CTBT)	Signed 1996
8.	Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management	Signed 1997
9.	Protocol to Amend the Vienna Convention	Signed 1997
10.	Supplementary Compensation for Nuclear Damage	Signed 1997
11.	Bilateral Cooperation and Supply Agreement	Signed 1997

The act, decree, regulation that have been mention above which are related to NPP development in Indonesia are based upon the international treaty and convention related to nuclear energy. The development of all those policies

<sup>46</sup> BATAN. Nuclear Power development Issues in Indonesia at RI-US Energy Policy Dialogue. October 20, 2008. Accessed on November 16, 2010 available from Ministry of Foreign Affairs.

clearly reflects, the government's serious attention and high commitment to prevent detrimental effect of global warming through the establishment of NPP.

### **C. The Indonesian Construction on Nuclear Energy**

Indonesia is in the process of the pre-project and project decision making activities including the development of policy for implementation of nuclear power and infrastructure for nuclear power project. In fact, the policy decision by the Indonesian government considers embarking on nuclear power program based upon the commitment to use nuclear energy in peaceful, safe, secure and economic manner.

The establishment of NPP still faces a big obstacle, due to the long arguments on nuclear energy. To establish NPP itself, the government should address four factors, namely; availability, accessibility, affordability, and acceptability. Unfortunately, acceptability factor becomes the hardest factor to fulfill prior to the establishment of NPP.<sup>47</sup> Indonesian government attempts to create discourse to the public by building positive claim that nuclear energy is clean, secure, reliable and nuclear fuel is available in Indonesia.

First, nuclear energy is clean and environmentally friendly. Nuclear releases nothing into the atmosphere because do not produce carbon dioxide, sulfur, and mercury. It is no belching smokestacks or polluting gases. It also takes up hardly any land. Nuclear is the one of the chance to get clean energy. Efficient use of nuclear is also quite high. With its small mass, a large nuclear power is

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<sup>47</sup> Saatnya Indonesia Kembangkan Teknologi Nuklir (accessed November 15, 2010) available from <http://www.ristek.go.id/index.php/module/News+News/id/10275>

produced. One fuel pellet about the size of a pencil eraser produces the same energy as about 1 ton of coal. One double-reactor plant takes up a few hundred acres and can power 2 million homes. The same production from wind or solar can take tens of thousands of acres, often blighting scenic views.<sup>48</sup>

The research of International Energy Agency (IEA) in 2008 states that if nuclear capacity multiplied fourfold by 2050, nuclear is capable to reduce carbon emissions up to 6 % and furthermore it will prevent the effect of climate change. This nuclear power plant is able to reduce greenhouse gases emissions. Therefore, the uses of nuclear power plants are considered in accordance with the expectations of the global community who want a carbon reduction. Coal produces 850 tons of carbon emissions per GW/hour, oil 500 GW/hour and gas 750 GW/hour but the nuclear energy exhausted only 8 GW/hour emissions. Supply of nuclear energy assisted for 16 percent of the total world electricity and also removed emissions of 2.5 billion carbon gas each year. A total of 443 NPPs is now operating around the world have been avoided emissions of nearly 3 billion tons of CO<sup>2</sup> per year, equivalent to the emission from more than 428 million cars.<sup>49</sup>

Similarly, BATAN argues that during the operation of nuclear power, pollution caused by radioactive substances to the environment can be virtually non-existent. It is because of the water of sea or river which is used to carry heat

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<sup>48</sup> Nuclear power is true 'green' energy (accessed March 6, 2012) available from <http://www.washingtontimes.com/news/2009/jan/29/nuclear-power-is-true-green-energy/?page=all>

<sup>49</sup> Energi Ramah Lingkungan dan Aman (accessed March 6, 2012) available from <http://indonesianforum.info/energi-ramah-lingkungan-dan-aman/>

from the condenser did not contain radioactive substances. Meanwhile, radioactive gases that comes out from the reactor system confined in the reactor systems and have been through ventilation system with a multi-layered filter. The gas activity which is released through the chimney is very small (about 2 milicurie/year) so it does not have an impact on the environment. It is proven that nuclear is clean and environmental friendly energy.<sup>50</sup>

Second, nuclear energy is secure. When NPP was established, BATAN use defense in-depth's securities which are the prevention and early detection of the accident in order to avoid this to happen and to remove the radioactivity. Any requirement to ensure the safety of NPP contained in the safety analysis report. The way to keep radioactive in order not to release it into the environment is with multiple defenses as a means of defense in-depth. Starts from the building that was build laminar, from the fuel matrix to the outermost which is shackle. After entering the third generation, the safety system relies on the concept of human machine interface. It is the automatic safety system. For example when there is an earthquake, fire, or explosion, the reactor automatically turns off, so that safety is assured.<sup>51</sup>

Third, nuclear energy is reliable. BATAN believes that nuclear is clean, environmental, and inexpensive although the first establishment of NPP is more expensive than others power plant, because of that BATAN believes that nuclear

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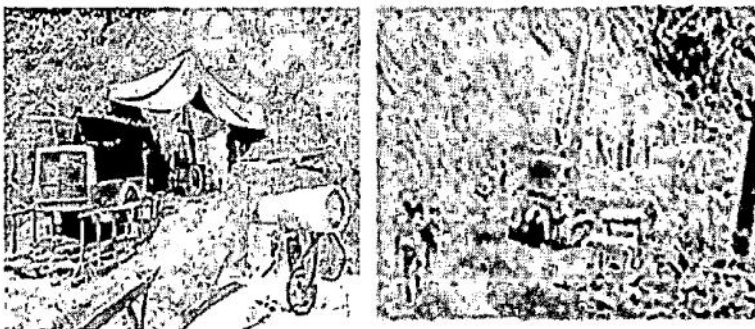
<sup>50</sup> Teknologi Nuklir Untuk Pembangkit Tenaga Listrik (accessed March 8, 2012) available from <http://www.batan.go.id/mediakita/current/mediakita.php?group=Faktualita&artikel=fak2>

<sup>51</sup> Dikendalikan Pengamanan Berlapis (accessed March 8, 2012) available from <http://internasional.kompas.com/read/2011/03/23/04081536/Dikendalikan.Pengamanan.Berlapis>

is reliable energy for the future. Before the plan to establish nuclear for electricity, nuclear science and technology has been contributing in advancing human welfare as well as in utilizing that knowledge to solve problems in various development programs such as food issues, environment, health, energy and industry.<sup>52</sup> In Indonesia, nuclear science and technology which are used for health's sector also be used for creating crop varieties such as in Subang, West Java, nuclear science is used to boost rice harvest through Inpari Sidenuk's variety as a result from BATAN's research and development.<sup>53</sup>

The last, nuclear fuel are available for NPP. Indonesia has nuclear power plant fuel, which is Uranium, in Kalan West Borneo mine sites, namely Remaja Hitam and Rirang-Tanah Merah. The resources of Uranium is about 3000 MW (e.q. 24,112 ton) for 11 year.<sup>54</sup>

**Picture. 1. Exploration of Nuclear Ore, Prospecting Uranium  
in Kalan, West Kalimantan<sup>55</sup>**



<sup>52</sup> BATAN dan Teknologi Nuklir bagi Masyarakat (accessed March 8, 2012) available from <http://www.kbr68h.com/feature/saga/5458-batan-dan-teknologi-nuklir-bagi-masyarakat>

<sup>53</sup> Panen Raya Panen Raya Padi Varietas Inpari Sidenuk Hasil Litbang BATAN (accessed March 8, 2012) available from [http://www.batan.go.id/view\\_news.php?id\\_berita=1566&db\\_tbl=Berita](http://www.batan.go.id/view_news.php?id_berita=1566&db_tbl=Berita)

<sup>54</sup> Ministry of Energy and Mineral resources. Indonesia's Energy Reserves and Production in 2007. October 2008 (accessed November 16, 2010); available from Ministry of Foreign Affairs's Document.

<sup>55</sup> Energi. (accessed March 6, 2012); available from <http://www.batan.go.id/litbang/energi.php>

**Picture. 2. Uranium Mining Test Location in West Kalimantan<sup>56</sup>**



Indonesian government develops two main programs based on the discourse about NPP to create public acceptance. The first is Program of Social Engineering that consists of community development.. The second is the Program of Socialization that consists of public education and information

First, the social engineering program that consists of community development is for developing the knowledge and capabilities for large scale utilization of nuclear energy that focuses on strengthening national capacity building through human resources development, scientific facilities development and national participation in projects and technology transfer.<sup>57</sup>

Second, the socialization program which consists of education and information programs is intended to give an integrated explanation and

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<sup>56</sup> Ibid

<sup>57</sup> Managing Nuclear Knowledge: Strategies and Human Resource Development (accessed March 6, 2012); available from [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1235\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1235_web.pdf)

illumination about the important thing of the NPP's project to fulfill the national electricity needs. The media that is used to socialize it are; face to face or direct contact, film presentation, *wayang orang* (puppet show), radio broadcast, mass media, symposium, *sarasehan* (informal meeting and discussion) and photo exhibition. The socialization process runs step by step. For the first step, the government attempts to train community figures, youths, teachers, and the member of *kopri*, civil servant and students. They also invite several members of *Muspida*, functionary to Serpong and also Reactor Kartini in Yogyakarta as nuclear research reactor place.<sup>58</sup>

Another approach that government adopt is through education. To introduce nuclear energy among students, the Ministry of Research and Technology published a book for elementary school (SD) entitled *Listrik dari Energi Nuklir*, while for middle school students (SMP) and senior high school (SMA), the book are respectively titled *Pembangkit Listrik Tenaga Nuklir, Manfaat dan Potensi Bahayanya* and *Mengenal Pembangkit Listrik Tenaga Nuklir*. In addition, Ministry of Research and Technology also publishes a pocketbook about NPP. These are to support Indonesian government as a part of socialization program or dissemination of knowledge and understanding of nuclear energy among students.<sup>59</sup>

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<sup>58</sup> Iwan Kurniawan, *Pembangunan PLTN: demi Kemajuan Peradaban? Sebuah Bunga Rampai*, Yayasan Obor Indonesia, Jakarta, 1996, page. 233

<sup>59</sup> Kementerian Ristek Terbitkan Buku Energi Nuklir untuk Pelajar (accessed March 6, 2012); available from [http://portal.ristek.go.id/news.php?page\\_mode=detail&id=1848](http://portal.ristek.go.id/news.php?page_mode=detail&id=1848)



In 2008, Ministry of Research and Technology indirectly drive teachers and students in Kudus, Pati and Jepara from elementary until senior high school to support NPP. It is because the government has massively distributed the nuclear books freely in those region. In Jepara, government cooperate with Department of Education and Cultural held several *sarasehan* (informal meeting and discussion) to introduce nuclear to the society.<sup>60</sup>

In 2009, Ministry of Research and Technology through popular humanist actor Sujiwo Tejo held *wayang orang* in a closing ceremony of Ritech Expo in Jepara on July 25<sup>th</sup> 2009. This also aims to gain support for the establishment of NPP besides doing several seminar, *sarasehan* and many others socialization programs on annual basis.<sup>61</sup>

From 2010 until now, BATAN and Ministry of Research and Technology are still conducting socialization programs in Jepara to promote the good side of nuclear energy especially to teacher and officers. The promotion is also conducted through development of supply a lot of information about science and technology of nuclear. The sites can be accessed through [www.batan.go.id](http://www.batan.go.id) and [www.worldnuclear.org](http://www.worldnuclear.org).<sup>62</sup>

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<sup>60</sup> Guru dan Murid "Digiring" Dukung PLTN (accessed March 6, 2012) available from <http://cetak.kompas.com/read/2008/04/01/00574676/guru.dan.murid.digiring.dukung.pltn>

<sup>61</sup> Sosialisasi PLTN melalui Wayang Orang Kontemporer (Dalang Sujiwo Tejo) di Jepara (accessed March 7, 2012) available from <http://blognuklir.wordpress.com/2009/07/28/sosialisasi-pltn-melalui-wayang-orang-kontemporer-dalang-sujiwo-tejo-di-jepara/>

<sup>62</sup> Sosialisasi PLTN di Jepara Ditentang (accessed March 7, 2012) available from <http://www.tempo.co/read/news/2010/10/19/177285814/Sosialisasi-PLTN-di-Jepara-Ditentang>

#### D. The establishment of Muria's NPP

In Indonesia, the first idea to build NPP came up in 1956 but the establishment of *Komisi Persiapan Pembangunan PLTN (KP2PLTN)* was in 1972, by *Badan Tenaga Atom Nasional (BATAN)* and *Departemen Pekerjaan Umum dan Tenaga Listrik (Departemen PUTL)*. Then, it was continued with a seminar in Karangates, East Java in 1975 by BATAN and Department PUTL. One of the results was a decision to establish NPP in Indonesia. At that time, only 5 places were declared as potential locations of NPP site out of 14 possible sites.<sup>63</sup>

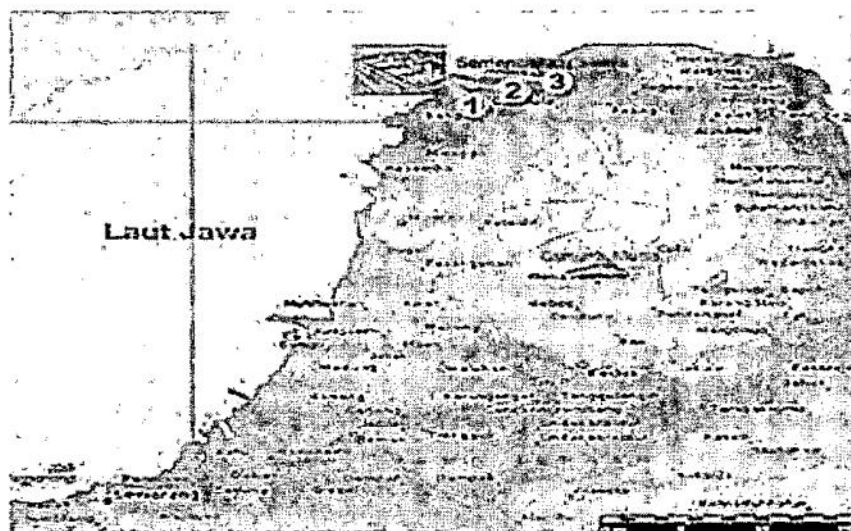
In 1989, *Badan Koordinasi Energi Nasional (BAKOREN)*, as the representative of Indonesian Government decided to conduct a comprehensive feasibility study including in-depth investigation of the potential sitting NPP in Semenanjung Muria, Central Java through international tender. *New Japan Engineering Consultant Inc (NEWJEC)* was chosen to conduct the feasibility study and the investigation, and, in 1995, there were three nominated sites, namely: 1. Ujung Lemahabang 2. Ujung Grenggengan and 3. Ujung Watu to become the first NPP's sites. Overall, the study of NPP's site in Semenanjung Muria was completed on May 1996.<sup>64</sup>

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<sup>63</sup> Iwan Kurniawan, *Pembangunan PLTN: demi Kemajuan Peradaban? Sebuah Bunga Rampai*, Yayasan Obor Indonesia, Jakarta, 1996, page. 217

<sup>64</sup> Sejarah Singkat Program Pembangunan PLTN di Indonesia (accessed March 7, 2012) available from <http://www.batan.go.id/ppen/tu/Sejarah%20PLTN.htm>

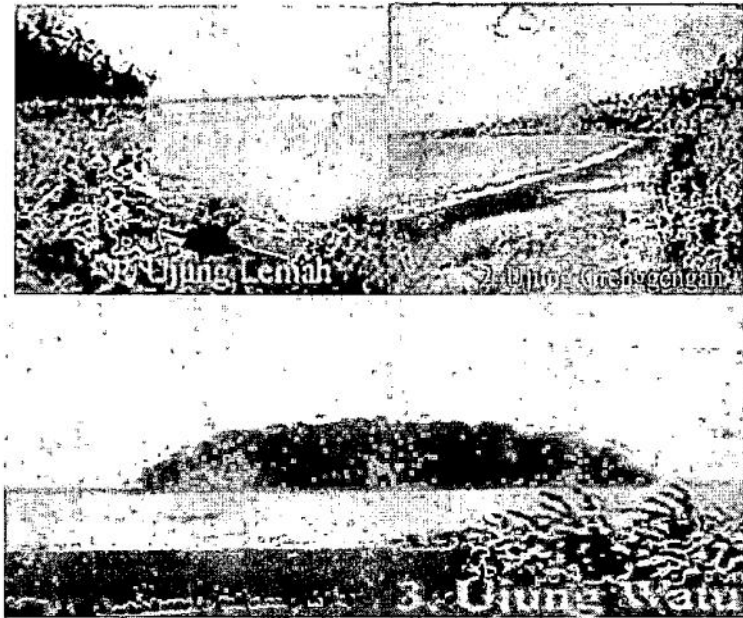
**Map. 1. Selected Sites Candidate for NPP in Jepara, Central Java<sup>65</sup>**



The continuous socialization on Muria's NPP to the people especially in Jepara by the government has not been successful. The rejection toward the establishment of Muria's NPP is strong. People did not only raising protest, but they also sealed the facility of safety monitoring and research of NPP which is BATAN's property in Balong, Jepara, on February 28<sup>th</sup>, 2008. It is an evidence that most people in Jepara do not accept the establishment of NPP in Muria. Hence, the establishment process of NPP has in fact failed to meet the Acceptability Factor while the Availability, Accessibility, and Affordability factors are fulfilled.

<sup>65</sup> Energi. (accessed March 6, 2012) available from [http://www.batan.go.id/images/litbangyasa/energi\\_0.jpg](http://www.batan.go.id/images/litbangyasa/energi_0.jpg)

Picture. 3. Selected Sites Candidate for NPP in Jepara, Central Java<sup>66</sup>



In 2009, after Greenpeace did simultaneous pressure to reject nuclear throughout Southeast Asia, Indonesian President Susilo Bambang Yudhoyono revoked NPP and said that he would develop NRE as an alternative before choosing nuclear energy. He also stated that the establish Muria NPP is uncertain.<sup>67</sup> In the year 2011 after the Fukushima's nuclear disaster, President Back re-emphasized that Indonesia should prefer other alternatives for energy.<sup>68</sup> Finally, the establishment of Muria's NPP was shelved in the year of 2009 and in it is re-emphasized in the year 2011.<sup>69</sup>

<sup>66</sup> Energi. (accessed March 6, 2012) available from [http://www.batan.go.id/images/litbangyasa/energi\\_1.jpg](http://www.batan.go.id/images/litbangyasa/energi_1.jpg)

<sup>67</sup> Sikap Presiden Soal PLTN Muria Disambut Gembira (accessed March 6, 2012) available from <http://www.antaraneews.com/view/?i=1239103391&c=TEK&s=>

<sup>68</sup> Indonesia Belum Butuh PLTN (accessed March 6, 2012) available from <http://www.greenradio.fm/news/latest/5752-indonesia-belum-butuh-pltn->

<sup>69</sup> Keberhasilan Greenpeace (accessed March 6, 2012) available from <http://www.greenpeace.org/seasia/id/about/victories/>