

Reconstruction Model of Community Development for Energy Self Sufficient Village

Nugroho Pratomo, Universitas Indonesia, Indonesia
Martani Huseini, Universitas Indonesia, Indonesia
Francisia Ery Sika Seda, Universitas Indonesia, Indonesia

The Asian Conference on the Social Sciences 2015
Official Conference Proceedings

Abstract

Indonesia's switch from a member of the Organization of the Petroleum Exporting Countries (OPEC) to a net oil importer in the 2000s amid soaring oil price prompted the government to find a new alternative to meet the country's energy demand.

Under the administrations of President Susilo Bambang Yudhoyono, the Southeast Asia's biggest economy began to develop several new and renewable energy resources, including the development of *jatropha curcas* plant oil as biodiesel. At the time, *jatropha* biodiesel was planned to be developed through energy-self-sufficient village (ESV) program. The pilot project of this new program was the Tanjungharjo Ngaringan District in Grobogan, Central Java. However, the ESV program in Tanjungharjo ceased to exist in 2009.

The purpose of this article is to explain the various factors that led to the ESV program's failure in Tanjungharjo by using Soft System Methodology (SSM).

Keywords: *jatropha curcas*, community development, biodiesel, Indonesia, soft system methodology

iafor

The International Academic Forum
www.iafor.org

Introduction

In 1962, Indonesia joined the OPEC as the Southeast Asia's sole representative at the organization. The soaring energy demand, thanks to the rapid growth in the archipelago, however, forced the country to give up its OPEC membership in 2009. Prior to its withdrawal, Indonesia was already a net oil importer for several years and thus failed to meet its production quota. With this turn of events, the government must switch its attention to the development of new and renewable energy resources, which is also environmentally friendly, to meet the national energy demand.

The issuance of the Presidential Decree No. 5/2006 on National Energy Policy, which is later included in the National Energy Management Blueprint 2006-2025, indicated that the government saw the potential of the new and renewable energy resources development in Indonesia. In the regulation, the energy mix development plan was also stated with 20 percent of fuel usage is expected by 2025, followed by coal (33 percent), natural gas (30 percent), and renewable energy (17 percent). In this context, the new and renewable energy resources may consist of several types, with 5 percent each for biofuels and geothermal, biomass, nuclear, hydro, solar, and wind in the sum of 5 percent, as well as liquefied coal of 2 percent.

In the meantime, one of the new and renewable energy resources that Indonesia already began to develop is bodies. The raw material that was attempted to be developed into biodiesel was *jatropha curcas* Linn (*jatropha curcas*). While this plant, locally known as *tanaman jarak pagar*, is recognized as medicinal plants, its function as raw material for biodiesel is unobserved.

A type of shrub, the average height of *jatropha curcas* may reach as high as 6 feet. *Jatropha curcas* plants live in the tropical and the subtropical area in America, Asia, and Africa. In Indonesia, *jatropha curcas* live in the forests of West Nusa Tenggara and East Nusa Tenggara. However, in some regions such as Central Lombok, East Lombok, Sumbawa, and Bima in West Nusa Tenggara, the locals have cultivated *jatropha curcas* plants. (Prihandana, 2007, p: 103-104).

The ideal rainfall that is required by this type of plant to grow is between between 200-1500 mm per year. *Jatropha curcas* seeds can grow on dry land with poor critical nutrient. *Jatropha curcas* plants blossom at the age of 6-8 months, with optimum and stable productivity from the age of 5 years. In 1 hectare barren land, this plant can be cultivated as many as 3,300 stems and in normal soil about 2,500 stems; whereas in fertile soil, its density is only about 1,670 stems per hectare. In Indonesia, the development of *jatropha* plant-based biodiesel was carried out through Desa Mandiri Energi (DME) or Energy-Self-Sufficient Village (ESV) program.

The plan was initially carried out between 2007 and 2010, involved 27 provinces which are the basis of *jatropha curcas* plant-based biofuel. These villages would then be supervised by several ministries and state-owned enterprises (SOEs). As a form of development scheme, castor oil-based ESV made in the form of plasma-core. Each one of the ESVs has 6 plasmas, of which every single of it has 50 hectares of *jatropha curcas* plant fields with a production capacity of crude castor oil (Crude *Jatropha* Oil, hereinafter referred to as CJO) of 25 liters/hour or 100 kg of *jatropha curcas* seeds/hours.

In each ESV, there is a processing plant or refinery that also acts as the core. The refinery is capable of producing pure castor oil (Purified Jatropha Oil, hereinafter referred PJO) from CJO. Partial results of this PJO would be then returned to the farmers in order to meet their daily energy needs, especially as a mixture of diesel and kerosene substitute. Meanwhile, most of PJO are sold to state electric company (PLN) and biodiesel plants owned by Indonesia's state-owned oil and gas company, PT Pertamina.

However, based on the observations on the presence of castor oil-based ESV, it is apparent that it did not go entirely well. In some areas, the program is stagnant. Some of plant oil-based ESVs are, in fact, no longer running, including Subang, West Java with 180 developers and 10 locations of nurseries; Cirebon, West Java with 200 developers and 10 locations of nurseries; and Banjar, West Java with 245 developers and 5 locations of nurseries. In the Prambanan district and Turi, Sleman, Yogyakarta province, the vast amount of garden plants reduced from 100 hectares in 2006, to 21.2 hectares in 2012.

(<http://www.harianjogja.com/baca/2012/03/20/tajuk-masih-ada-harapan-untuk-jarak-172002>, accessed in Januari 2013, 14.22 WIB).

Another example is the failure of the ESV program in Tanjungharjo Village, District Ngarangan in Grobogan, Central Java. The village was where the President Susilo Bambang Yudoyono inaugurated the ESV program in 2007, assisted by state-owned agribusiness firm, PT Rajawali Nusantara Indonesia (RNI). In the area, there is a mill (processing plant) for castor seed processing, which now has stopped its production. Jatropha curcas plantation area, which once covered 45 hectares of land, are now non-existent since local farmers have cut down all crops in 2009.

(“Program Presiden SBY, Gagal, Desa Mandiri Energi di Grobogan”, <http://female.kompas.com/read/2011/03/07/16112734/Gagal.Des.Mandiri.Energi.di.Grobogan>, accessed in Januari 2013, 4:52 WIB).

The processing mill in Grobogan was operated by PT Energi Hijau Lestari, which was “in cooperation” with PT. RNI. The factory itself was supposed to serve as the main purchaser of castor oil in the area. In order to facilitate the farmers for after the harvesting, the government also offered seedling and machinery. From the economic point of view, the failure of the jatropha curcas plant-based ESV program in this area was due to the lack of market for the biodiesel and no particular link between farmers and Pertamina. This occurred as a result of the absence of institutions that could manage the biodiesel production of the farmers as well as lack of assistance from the government to local farmers. The jatropha curcas seeds from the farmers only valued Rp3.000,-/kg (around 40 cents USD per kg).

However, from the technology point of view, the biodiesel produced by the farmers, with various simple distillation equipment, was only able to produce biodiesel with a maximum level of 90 percent. This percentage is below the requirement from Pertamina, which is around 99.8 to 99.9 percent. From the economic side, the seeds of from the jatropha curcas farmers is only appreciated for Rp3,000,-/kg.

In this research paper, the author would like to explore about the reason why the ESV program in Grobogan was failed. In addition, the author would like to recommend

several points on how to the project from social point of view, with society empowerment model and sustainable development principles.

Research Method

The research methodology used in this article is the soft system methodology (SSM). In general, there are 7 steps that should be done in SSM, which are (Checkland, 2006; Hardjosoekarto, 2012) : Problem situation considered problematic; Problem situation expressed, to describe real problematic situation into a diagram called rich picture; Root definitions of relevant purposeful activity; Conceptual models of the systems named in the root definitions; Comparison of models and real world; Change; and Action to improve the problem situation. This article will not discuss all of the detailed steps, however, the result can be discussed as follows.

Result

The problem situation is considered problematic on the ESV program in Tanjungharjo Village, Grobogan, Central Java. This is concluded after conducting literature study and references, as well as observations, and in-depth interviews with the owners of the issue that is addressed. The in-depth interviews with the owners of the issue were conducted to the Director of Bioenergy for Directorate General of New and Renewable Energy Resources of the Energy and Mineral Resources Ministry, Head of Economic Development Planning Board in Grobogan, Tanjungharjo Village Chief, President Director of PT Enhil, Chairman of Farmer's Group "Ngudi Rejeki" in Tanjungharjo Village, "SOE Care" (RNI, PT Pertamina and state-owned gas firm PT Gas Negara).

Based on the interviews with the Director of Bioenergy, it was revealed that from the very beginning, the directorate general was not deeply involved on the development of ESV program in Grobogan. This directorate general was, instead, forced to be involved for the event where the President of Republic Indonesia inaugurated the ESV program. At that time, the plantation of *jatropha curcas* in the area was not presentable so they bought mature plants from elsewhere for the event.

The idea of *jatropha curcas* plant as one of the potential alternative commodities, came from one research in West Nusa Tenggara where the *jatropha* seed valued to Rp8,000 per kg. Intensive media coverage triggered many communities to grow *Jatropha*. Whereas the considered reasonable price for *jatropha curcas* seeds would be around Rp500-1,000,-/kg of peeled seeds, which caused farmers to become reluctant in cultivating *jatropha curcas* plants. Meanwhile, the government is yet have a system to market *jatropha*.

The second interview was with Heri Susanto, Head of Economic Division in the Development Planning Board in Grobogan. He was a liaison with the central government during the ESV program. The interview revealed that the area was, in fact, unprepared to become part of the ESV program, yet the President still declare Grobogan as ESV and promised to support with Rp.10 billion of financial aid in 2007.

During the development of this program in 2008, the government asked for implementation guidelines in order to administer the financial assistance. The grant itself consist of Rp 100 million from PT Gas Negara, Rp 50 million from PT RNI, and Rp 9.85 billion from Pertamina. Most of the grants, Rp 5 billion, were used to build a processing factory in Toroh District in Grobogan. Meanwhile Rp600 million were used for operations. Subsequently, the local administration formed 15 farmer groups specified for the development of *jatropha curcas*. The local administration also performed socialization and group meetings. However, the local administration claimed to never received any guideline so they did not know about the fund flow. Each of the farmer's groups was then asked to open a bank account and the grants were distributed directly to those group. As for the development of *jatropha curcas*, Grobogan saw this type of plant being planted for around 3.5 million rods. Unfortunately, the plantation process did not go as expected. On top of that, the cost was too high for its cultivation. For every liter of *jatropha curcas* oil, it will need around 4-5 kg of *jatropha curcas* seeds. With each kilogram is Rp.1,500,- and adding the processing cost, every liter of *jatropha curcas* oil will cost Rp8,000,-

In February 2014, interview with the chief of farmer's group "Ngudi Rejeki" in Tanjungharjo Village was conducted. It was then revealed that the initial plan was to deliver peeled seeds of *jatropha curcas* to PT Enhil, a local mill processing. However, those farmers thought the price (Rp700 per kg) was too low, especially compared to other commodities, such as corn, soybean and rice. It did not worth their effort and cost. *Jatropha curcas* plants can only be harvested after 6 months. In every single day, the farmers can get 120 kg of unpeeled *jatropha curcas* fruit. Another problem that was raised was the unclear marketing system and miscommunication with PT Enhil.

In general, the Tanjungharjo Village was never involved in the ESV scheme since the very beginning. It was "coincidence" that the factory (belonged to PT Enhil) located in Tanjungharjo Village, which is the most relevant place for the President to inaugurate the district as ESV. The financial assistance that was announced by the President was neither managed nor known by PT Enhil. Instead, the financial assistance was directly managed by Pertamina. The development of *jatropha curcas* plants was not cultivated by locals from the very beginning. Instead they only grow them as hedgerow for their houses or rice fields. As the President is visiting the village, machines and raw materials were delivered to the Tanjungharjo Village to give an impression that the cultivation of *jatropha curcas* was already existed for quite some time.

Based on the interview with the director of PT Enhil (February 15, 2014), it was revealed that the development of Tegalharjo Village as an ESV was initiated by the presence of PT Enhil, originated by Hartono, who like many Indonesians uses only one name, and Rama Prihandana. Founded in 2005, PT Enhil was a private firm with focus on developing *jatropha curcas* oil as biofuel to meet energy consumption in the village with economical price. This scheme was also expected to generate more income for the villagers who mainly farm rice plants and corn fields.

Both the developmental process as well as the refining of *jatropha curcas* kernel into *jatropha curcas* vegetable oil took around two years. During this time, the production reached as many as 700 liters per day. However, when President Susilo Bambang Yudhoyono visited Tanjungharjo Village on February 21 in 2007, problems started to arise. In the visit, which was a part of the announcing of the ESV program and took

place in PT Enhil's office, the President promised to give financial aid to 15 farmer's groups in the amount of Rp 10 billion.

Although the donation ceremony took place during the event, PT Enhil was basically in the dark about the origin of the financial aid, let alone its disbursement as well as distribution. Based on an interview with Evita Herawati Legowo, the director general of oil and gas affairs at the Energy and Mineral Resources Ministry (May 16, 2014), it can be concluded that the ESV national program was initiated in mid-2006 in an extended Cabinet meeting. In essence, the idea behind the ESV program was presented directly by the President. At the same time, the President also announced that he would inaugurate the ESV program in Grobogan as well as holding out the financial assistance to the local farmers.

Subsequently, the President asked Pertamina in terms of the provision of the relief fund to the local farmers. However, after the inauguration of the ESV program, the promised funds was not disbursed immediately. Basically, this case was linked to some technical aspects on the allotment procedures of the donation, which require a coordination between relevant institutions. In the end, however, it was decided that the relief fund would be transferred directly to the accounts of the local farmers.

Based on an interview (May 19, 2014) with a member of the biofuel national team with the Energy and Mineral Resources Ministry and an expert staff of Pertamina president director, Didik, who uses only one name, as well as a member of Pertamina's corporate social responsibility (CSR) team, Rudi Sastiawan (May 20, 2014), it was concluded that the government asked Pertamina for the financial assistance in the amount of Rp 10 billion through CSR.

This was done after the President officially announced the biofuel program in program. However, there was no follow up. A portion of the funds was used to buy a land, to purchase machines, and to build a factory.

Pertamina also attempted to distribute the machines to each farmer's groups so that each groups could produce *jatropha curcas* oil independently. In addition, the financial assistance was awarded directly to the farmers in cash, transferred to the bank accounts of 14 farmer's groups.

This was done in accordance with the distribution regulation of the Environmental Partnership Program or locally known as Program Kemitraan Bina Lingkungan (PKBL). The application of the financial assistance itself was entirely up to the local farmers. This program was in motion from 2006 to 2009. Pertamina also recommended to the villagers to buy the seeds from Industrial and Refreshment Plant Research Center, locally known as Balittri, under the Agricultural Ministry. During the implementation, Pertamina was only involved in the *jatropha curcas* oil processing through the newly established union. As for the marketing of the outcome from this production, Pertamina was not involved. In cooperation with Sukabumi Balittri, Pertamina also carried out cultivation training for the farmers with a main focus on *jatropha curcas* plants.

In general, there were several issues that, according to Pertamina, became the reasons why ESV program did not succeed in Grobogan.

First, the problem with the local administration, which has a crucial role to play in creating a conducive environment where this program could be a success. The local administration, in reality, did not actively present that role. Problems arose when the Regent did not give this program enough support. In fact, the local administration, in this case, was only “represented” by the Local Development Planning Board.

Second, the problem with the human resources aspect, especially in terms of the lack discipline from the local farmers. In this case, the local farmers tend to get easily discouraged when trying to grow *jatropha curcas* plants. In addition, the local farmers were “unwilling” to process *jatropha curcas* kernel.

Third, the problem with uneconomical price of *jatropha curcas* biofuel. In general, this was related to the policy aspect. The economical problem of *jatropha curcas* biodiesel arose when the government still subsidized fuels and 3-kg LPG. This uneconomical condition was also obvious when one compared the selling price of 3-kg LPG with the production process of *jatropha curcas* oil. For example, if *jatropha curcas* kernel in the amount of 1 kilogram was processed, it would only produce 25 percent of oil or 0.25 liter. Whereas in average, 1 kitchen stove would need as many as 2 liters of oil or equal to 8 kilograms of *jatropha curcas* kernel. Taking into account that the land space belonged to the farmers to grow *jatropha curcas* plants was only 0.5 hectare, the outcome would be uneconomical. So as when one compare the effort that is needed to produce *jatropha curcas* oil with the effort that is needed for other activities the farmers generally do. These farmers and villagers may work as motorcycle taxi drivers or grow corns instead yet they would still be able to purchase 3-kg LPGs. As a result, *jatropha curcas* biodiesel was not competitive.

Fourth, the problem with alleged sabotage to existing factories. Several occurrences such as damages to the processing machine, bolts that were presumably inserted to the machine intentionally to induce damages and later on found, generator cable loss, electrical box panel loss, and cables that were installed backwards, were just a few cases that indicated sabotage.

Fifth, the problem with the environment and the nature of the *jatropha curcas* plants. In terms of environmental aspect, the selection of certain type of *jatropha curcas* plants that is suitable with both land condition and climatic condition was also crucial. Based on the experiences in Grobogan, it was shown that *jatropha curcas* plants would grow even massively when it was not cultivated massively.

Sixth, the problem with the mindset of the farmers and villagers who immediately incline to the business aspect. Those farmers and villagers did not see *jatropha curcas* oil as an alternative fuel that could be both produced and utilized for their subsistence. In contrast, they saw this as a new commodity that could be sold to generate their income.

This program was divided into 2 forms, large and small scale. As a form of small-scale biofuel development, the ESV program was a part of it. The purpose of ESV program was to have a biofuel development scheme that could be carried out directly by the society. Based on various experiences with ESV programs in many regions, one of the conclusions was that most locals would be oriented to the income aspect.

Another problem that led to the failure of the cultivation of *Jatropha curcas* plants as biofuel raw material was the absence of a transportation system that could pick up *Jatropha curcas* kernel from the farmers and bring it to the big refineries where *Jatropha curcas* could be processed with a capacity 100,000 KL.

In fact, this was a part of the *Jatropha curcas*-based biofuel development national plan in a large scale. The existence of various *Jatropha curcas* oil refineries in many regions, in reality, could not be utilized by the farmers from other regions as a potential market for their *Jatropha curcas* seed product they had produced. The distance between the farmers who cultivate *Jatropha curcas* plants and the large-scale *Jatropha curcas* oil refineries and the absence of a distribution system led to the inability of the farmers to market their *Jatropha curcas* kernel.

In terms of the role of the government, the Energy and Mineral Resources Ministry was indeed not involved in PT Enhil's *Jatropha curcas* oil development. The Energy and Mineral Resources Ministry was only involved towards the ceremony and the declaration of ESV program by the President. Whereas in terms of the problem with the local officials was that, even though they stated their readiness, they did not actually understand fully what were the requirements of a program. This kind of situation may actually occurred in the case of Grobogan. This condition was evidenced with the absence of the change in mindset within the community that the presence of *Jatropha curcas* plant-based oil could reduce their spending.

In terms of the importance of the change in the mindset of the community, an intensive mentoring with relatively long period of time was necessary. This was due to the fact that, with the so-called "project" pattern, the probability of the project would not be sustained was enormous.

Based on an interview with the founder of the Cooperation "Dian DME", which has 14 *Jatropha curcas* farmer's groups as its members, in Toroh Sub-district (on June 19, 2014), it was shown that the main problem lied on the production cost of *Jatropha curcas* oil, which was simply too expensive compared with diesel. The second problem was that the supply of *Jatropha curcas* plant-based oil was limited. The *Jatropha curcas* plant can only be harvested once every year.

Conclusion

At the macro level, fuel subsidies should be gradually reduced until it is completely abolished. This is basically related to the fact that fuel subsidies has created distortions on energy prices in Indonesia. As a result, other alternative energy resources (including biofuels) were not competitive. Based on an interview with Pertamina (on May 19, 2014), one of the main reasons behind the failure of the *Jatropha curcas* plant oil-based ESV program was the existence of fuel subsidies. The impact was that the *Jatropha curcas* plant oil that was produced were not competitive. In addition, the villagers also preferred fossil-based fuels, especially subsidized diesel because it was easier to obtain at gas stations.

At the micro level, the change of the orientation and the understanding on the importance of alternative energy development as a solution towards energy crisis was the first precondition. Local resources-based alternative energy development to fulfill the energy demand of the villagers for their subsistence was the foremost before distributing the rest to other regions. This idea should be planted to the community so

that they would be willing to meet the “challenges” to develop a local resources-based alternative energy development that is beneficial to meet their energy demands. In addition, it is necessary to give a comprehensive understanding towards the villagers that what they do, in essence, was an integral part of a national energy policy. Hence, the unfreezing stage, just like introduced by Lewin (1951) could be done with burning platform technique. This technique is implemented by building an understanding about the energy crisis that this country face, including Tanjungharjo Village community. This energy crisis is due to the fact that the oil reserves as well as the national crude oil and LPG production are all declining, with 60 percent of the current consumption is fulfilled by imports. The failure to tackle this energy crisis could turn into the increasingly expensive energy prices, including for household needs. The unfreezing stage, in essence, was the precondition to the implementation of the organizing and society empowerment conceptual model. In order to achieve the organizing, a common understanding between the parties is necessary. The main issue of the awareness is the need of a new renewable energy resources development as a part of the national energy security and sustainable environment development toward the community. Although the society currently could easily purchase 3-kg LPG or firewood as household energy sources, this situation cannot be maintained. The wide and uncontrollable use of firewood could lead into the deforestation. This situation calls for breakthrough that may cover the energy demand in a sustainable way. By means of raising the awareness on a sustainable energy need, the process of organizing and community empowerment can be started. In the end, it is expected to push more public participation on this subject.

The method to convey this message can be done utilizing local cultures such as wayang (shadow puppets) or social counseling during local art performances such as Tayub (a social dance from Java). Socialization could also be performed through radio shows or local TV stations continuously. Referring to the persuasion method presented by Goldstein et al. (2008), several methods that can be done were building a fear that often paralyzes. This fear is expected to arouse communications and to stimulate the villagers to take an action to reduce the threat. The fear is that, some time in the future, the villagers will not be able to obtain cheap and accessible energy when fossil-based fuels and LPG completely run out. The same thing will happen to firewood as there will be no more forests in the future if the firewood consumption is not controlled. The next part is where the initiators offer a solution to the problem by doing favors to the people. In doing the persuasion, the initiator may use the sentence “who can help me to find a solution toward the energy problem?” With that, it is expected that the community will accept the invitation to develop an alternative energy without any coercion. If it is needed to persuade several people who are deemed to have influences toward the ESV program success, it can be done through personal requests. It is expected that they will feel “valued” and thus willing to participate in ESV program activities.

In the next stage, the initiators would also need a certainty from the village community, especially the owners of the issue, such as the leaders of the farmer's groups, officials, and village leaders, about their commitment in the development of ESV. If it is needed, the initiators together with the owners of the issue should write a written commitment on the objectives and the plans in relation to the alternative energy development and ESV.

After the commitment from the owners of the issue is formed the initiators should be able to ensure that the six key elements as the foundation to push the public participation can be fulfilled in every steps that will be taken. This is done in order to begin the second stage that Lewin (1951) mentioned, which is the change. Building the compatibility that is built on the basis of trust among the villagers, in essence, could be started from the identification process and social relations mapping at the village itself. Based on the results of the two processes, the development of a more extensive mutual trust can be done. The initiators may take several ways in the process of identification and social relations mapping. Informal discussions, in essence, is the most effective way to achieve that goal. During informal discussions, the stakeholders, especially the villagers, would not feel burdened by the activities. In addition, the initiators may get a better understanding on what are the interests of each stakeholders from these informal discussions. With that, the identification process on what are the benefits from each parties can be generated.

References

Bibliography

Adi, Isbandi Rukminto. (2007). *Perencanaan Partisipatoris Berbasis Aset Komunitas*, Fisip UI Press, Jakarta.

Alfitri. (2011). *Community Development, Teori dan Aplikasi*, Yogyakarta, Pustaka Pelajar, Yogyakarta.

Arstein, Sherry R. (1969). "A Ladder of Citizen Participation", *Journal of the American Institute of Planners* 35 (4), July, 1969, Boston, American Institute of Planners.

Checkland, Peter and John Poulter. (2006). *Learning for Action: A Short Definitive Account of Soft System Methodology and Its Use for Practitioners, Teachers and Students*, Chichester, John Wiley and Sons.

Goldstein, Noah J., Steve J. Martin, Robert B. Cialdini (2009), *Yes!: 50 Scientifically Proven Ways to Be Persuasive*, New York, Free Press.

Hardjosoekarto, Sudarsono. (2012). *Soft System Methodology (Metode Serba Sistem Lunak)*, Jakarta, UI Press.

Lewin, Kurt, (1951), *Field Theory in Social Science: Selected Theoretical Papers*, Harper & Brothers. First Harper

Nee, Victor. (2003). "The New Institutionalism in Economics and Sociology", CSES Working Paper Series Paper No.4

Prihandana, R (2007). *Dari Energi Fosil Menuju Energi Hijau*, Jakarta, Proklamasi Publishing House.

Law No. 6/2014 on Villages

Law No. 19/2013 on the Protection and the Empowerment of Farmers

Mitchell, Bruce, B Setiawan, Dwita Hadi Rahmi. (2010). *Pengelolaan Sumberdaya dan Lingkungan*, Yogyakarta, Gajah Mada University Press.

Internet

<http://www.harianjogja.com/baca/2012/03/20/tajuk-masih-ada-harapan-untuk-jarak-172002>, accessed in Januari 2013, 14.22 WIB.