Social Engineering to The Development Plan of Experimental Power Reactor (RDE)

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Abstract. Social Engineering Study has been conducted to the development plan of Experimental Power Plant (RDE). BATAN plans to build and operate the RDE in area Puspiptek Serpong, South Tangerang City. The RDE development will directly or indirectly provide social impact for South Tangerang City. The social impact of RDE development needs to be anticipated since the beginning to ensure that communities receive the benefits of RDE. Therefore, assessment of the social engineering of the RDE development plan needs to be done in an integrated manner with relevant stakeholders. Social Engineering is designed to involve the active participation of key stakeholders in connecting information in a persuasive and open communication pattern to answer the public information needs of the RDE project. The aim of the study was to determine the social engineering strategy for the RDE development plan. The methods used include secondary data collection and primary, coordination and discussion through the activities of consignation and focus group discussions (FGD), followed by analysis and evaluation of data. The results of the study provide the benefits to compile strategies and design of specific dissemination activities in each stakeholder group to encourage stakeholder participation in the success of the RDE program and increase public acceptance.

Keywords: Social Engineering, RDE, stakeholder, dissemination, public acceptance

1. Introduction

Based on the mandate of Act No. 17 year 2007 about RPJMN to start utilizing nuclear energy in the third RPJM (2015-2019)[1], BATAN plans to build and operate the Experimental Reactor (RDE) in area Puspiptek Serpong, South Tangerang City[2]. As a first step in the development of the RDE has been evaluated the RDE site and the current permit site for the Development of Experimental Reactor (RDE) has been published by the Nuclear Power Regulatory Agency (BAPETEN)[3-4]. After obtaining the permit of the site followed by construction preparation work[5,6].

Problems will arise as the same time with the implementation of the RDE that can be interpreted as a challenge to fully understand to society. Social impacts will arise along with the construction of the RDE[7]. By conducting a social impact assessment of the RDE program, it will be known to what extent the community receives the impact of RDE utilization so that real perception and preference of the community are obtained and furthermore, will be known to what extent of community participation and involvement in RDE utilization. The population total, education level, age and work of communities around the RDE site need to be known because it is directly or indirectly related to
this study, which will make it easier to plan social engineering, which will affect the public acceptance of RDE.

Social engineering is the intervention of the scientific movement of a particular ideal vision aimed at influencing social change[8]. Social engineering of the RDE development plan is a way of achieving a planned social change to anticipate the social impact that arises. The RDE project located in the Puspiptek Area that has been designated as a special technology-based area, is expected to provide benefits for the South Tangerang Government.

The aim of the study was to determine the social engineering strategy for the RDE development plan. The results of the study provide the benefits to compile strategies and design of specific dissemination activities in each stakeholder group to encourage stakeholder participation in the success of the RDE program and increase public acceptance.

The location of the RDE project is located in the strategic area of the city, namely PUSPIPETEK, in Setu Sub-district of Tangerang Selatan City Banten. Puspiptek is a strategic area devoted to high technology[9,10]

2. Methodology
The methods used include secondary data collection and primary, coordination and discussion through the activities of consignation and focus group discussions (FGD), followed by analysis and evaluation of data. Secondary data collection is done through literature review which includes data collection of population number, age, education, and employment, and mapping community groups that have obtained information on nuclear technology and its utilization, especially RDE.

Primary data is collected through FGD and Stakeholder Involvement with representatives of proportional stakeholders used to obtain information through direct discussion to the extent to which social engineering needs to be properly defined against the RDE development plan. Each FGD and Stakeholder Involvement is done by considering the composition of community representation in each sub-district, in South Tangerang City. Consignation is performed to analyze FGD and Stakeholder Involvement results.

Figure 1. Research Location
The location of the research is based on geographical position, RDE tread is located in South Tangerang City and located at coordinates 06°21'26" south latitude and 106°39'37" east longitude[11]. South Tangerang City consists of 7 Subdistricts, namely Setu, Serpong, Pamulang, Ciputat, East Ciputat, Pondok Aren, North Serpong. Figure 1 shows the Map of the Boundaries of Districts and Borders of Tangerang Selatan Village[12].

3. Results and Discussion

The development plan of RDE in Puspiptek Serpong area, South Tangerang City can present meaning, based on the level of knowledge and perception, and can cause different worries among the community. It relates to people's knowledge of nuclear technology, which is more focused on the needs, benefits and threats that can occur. The threat posed by the RDE project may involve technological, location and motivational aspects underlying the choice of technology.

Nuclear technology abandoned the minds of the people that the technology is quite harmful to human health and life, based on the incident of nuclear bombs in Hiroshima and Nagasaki, nuclear reactor accidents in Chernobyl Russia and nuclear reactor accidents in Fukushima Japan.

A social engineering needs to be done to provide an understanding of the surrounding community towards the use of RDE development. In determining social engineering, the primary data is obtained through Focus Group Discussion (FGD) and Stakeholder Involvement with representation of proportional stakeholders from 7 (seven) sub districts in South Tangerang City: Setu, Serpong, Pamulang, Ciputat, East Ciputat, Pondok Aren and North Serpong. Based on Central Bureau of Statistics (BPS) data, the population of South Tangerang City in 2016 is 1,593,812 people[13], as shown in Table 1. BPS reported that the sub district of Pondok Aren has the largest area of 20.3% of the total area of South Tangerang, and has the largest population of 23.8%;[14] The largest population is in Pondok Aren sub-district with 24%, while Setu sub-district is only 5% of the total population of South Tangerang. When observed by looking at population density, eastern ciputat district has the highest density, while Setu sub-district is the lowest[13].

| Districts      | Population Person | Male Person | Female Person |
|----------------|-------------------|-------------|---------------|
|                | %                 | %           | %             |
| Setu           | 83.777            | 5.26        | 42.805        | 51.09         | 40.972 | 48.91 |
| Serpong        | 177.677           | 11.15       | 88.066        | 49.57         | 89.611 | 50.43 |
| Pamulang       | 341.967           | 21.46       | 172.524       | 50.45         | 169.443 | 49.55 |
| Ciputat        | 232.559           | 14.59       | 118.166       | 50.81         | 114.393 | 49.19 |
| Ciputat Timur  | 206.729           | 12.97       | 104.039       | 50.33         | 102.690 | 49.67 |
| Pondok Aren    | 379.354           | 23.80       | 191.832       | 50.57         | 187.522 | 49.43 |
| Serpong Utara  | 171.749           | 10.78       | 85.476        | 49.77         | 86.273 | 50.23 |
| **Total**      | **1,593,812**     | **100**     | **802,908**   | **50.38**     | **790,904** | **49.62** |

From the data, it is known that Setu sub-district has the widest planting area for agriculture than most other areas, while Pamulang sub-district is the most livestock sector. From the energy sector, electricity consumption for households experienced an average increase from 2012 to 2015 of about 5%, while usage in 2016 increased by 80%. It is reported that the company in South Tangerang City in 2014 is still dominated by Limited Liability Company (PT) as much as 65%, and then commanditaire vennootschap (CV) as much as 23%, while individual companies as much as 11%;[13-20].

In an effort to explore respondents' attitudes about RDE development plans, respondents will be grouped by age, education and employment, community groups who have obtained information on nuclear technology and their utilization.

As Rahmaddin wrote in the blog website that strategies in social change there are three, namely normative-reeducative strategy, persuasive strategy and power strategy[21]. The social change plan that will be done is usually adapted to social movement election. From some experts' opinions say, there is a focus on leadership, communication and funding issues. But on the other hand there is a focus on the idea and interaction between social movements[22]. In other words, the theory of change is articulated properly is a hypothesis that can be tested about how the plan activities will contribute to achieve the desired results program[23].

The author in planning the social engineering of the RDE development plan will combine two strategies, namely education and persuasive. According to the author's view that the social engineering strategy with the power approach will have an enormous impact on psychological psychology and will imprint both physically and psychologically. By persuasively educating, the community will be invited to take part in a structured and planned change. The idea of a better social change in the right and more realistic way can encourage people's desire to participate in the mission of social change. Basically social engineering is not intended to control the community but rather to open space for the community to actualize so that it can be clearly seen the role of the community in the process of social change.

In this connection, the techniques undertaken by making the configuration of society in some segments with the background on the background of education, work, age, and interests. One with others will be elaborated in one objective that the community can benefit from the existence of the RDE Development. The first step will be community mapping based on the parameters of education, occupation, age and interests. The results of the mapping will be done cros-tab so obtained the correlation between parameters with each other to the acceptance of benefits for the community. With social mapping, community capture of the advantages and disadvantages of RDE development will be obtained. The next stage will be a series of persuasive education to meet the interests of the community through focused discussions on the existence of RDE which can later be utilized. As shown in Figure 2 is the author's proposal in the formation of opinion based on the segment of society.

Figure 2. Work plan of opinion formation
The SWOT analysis [24,25] is then carried out to determine the impact that will occur both positively and negatively and simultaneously anticipate on a constructive basis. From a series of intensive discussions will be formed permanent forums with various backgrounds of the community sustainability contained in regular meetings.

Tabel 2. Distribution of respondents

| Resources                        | Intstitution/Personal | Metode                  |
|----------------------------------|-----------------------|-------------------------|
|                                  | Institution           | Personal                |
|                                  | District Executive    | Officials               |
|                                  | Sub District Legislative | Officials            |
|                                  | Village Executive     | Officials               |
|                                  | Party faction Legislative | Chairman of           |
|                                  | Non Government Organization | the party            |
|                                  | Community organization Informal | Person/Group         |
|                                  | Intellectual groups   Informal | Person/Group          |
|                                  | Religious organizations Informal | Person/Group         |
|                                  | General Public        Informal | Person                |

The results of the mapping of respondents made a networking scheme that would make it easier to carry out action plans against community groups with background and interaction with the RDE development plan. Furthermore, socialization, dissemination and social engineering activities are conducted based on mutual interests between BATAN and the surrounding communities.

Figure 3. Strategy and implementation of social engineering
4. Conclusion

Based on the research results have obtained data related to population, education, employment etc. in the city of South Tangerang. The Data cover 7 (seven) sub districts, namely Setu, Serpong, Pamulang, Ciputat, East Ciputat, Pondok Aren and North Serpong. This data is important for the input of stakeholders in the city of South Tangerang. The first step will be community mapping based on the parameters of education, occupation, age and interests. The next stage will be a series of persuasive education to meet the interests of the community through focused discussions on the existence of RDE which can later be utilized. Furthermore, the mapping will be conducted in accordance with the background adjusted to the tendency to accept, disagree or floating/doubtful to the RDE development plan, and then will be done social engineering in accordance with the trend.

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