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RESEARCH ARTICLE

THE ANALYSIS ON POLICY ABOUT RENEWABLE ENERGY DEVELOPMENT.

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Abstract

The availability of fossil energy reserves in Indonesia was in fact increasingly critical. Some efforts, therefore, must be taken to develop new-renewable energy. This study was aimed to analyze the policy on new-renewable energy by examining Innovative Program for Converting Garbage into Energy in Kepanjen District, Malang Regency. Some findings were found. The program for renewable energy development was already stated in Local Regulation (Perda) No.2/2011 on Regional Medium-Term Development Plan (RPJMD) for period 2010 to 2015. There were three institutions responsible for implementing this regulation. First was the Energy and Mineral Resources Services (Dinas ESDM) as the main sector. The Innovative and Regional Landscaping Services (Dinas Ciptakarya dan Tata Ruang) was second agency responsible for garbage management. Third organization was Bio-Environment Office (BLH) with responsibility for environment preservation. Based on data analysis with policy theory which applied Friedrich's institutional model, it was found that governmental response for implementing regulation on new-renewable energy was only for the sake of formality. Problems were still existing, such as lack of coordination across institutions, prominence of ego-sectoral mindset, low competency of human resource, limited budget for implementing the program, low response to community problem, and low performance of government officers.

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Introduction:-

Energy was global issue from which all countries would attempt to secure and maintain their energy capacity for the feasibility of development. Not only useful to support all human activities, either in economical or social works, Mega (2008; xviii) also related energy availability with environmental issue. "Energy, the very fuel of all human activities, is synonymous to life and vitality. It is ubiquitous and concerns everybody, everywhere. It supports all socio-economic progress and has profound links with the environment" When this energy issue is related with global warming, that becomes already a strategic agenda in the geopolitical aspect of energy production and usage, therefore, it needs policy to deal with environmental problem at local level. In this context, an innovative program to convert garbage into energy would be importantly relevant. This program was lively discussed in many forums. Innovation, as explained by Oxford Dictionary (quoted by Muluk, 2008; 44), was rooted from the word innovate, meaning as make change; introduce new things or in other words, bring in novelties or bring changes. In short, it is about changing something into something new. Grindle (2007; 146) mentioned some important steps that must be

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done by local government to develop innovative policy. These are: identifying innovations, selecting initiatives, conducting interview and documenting evidences, recreating the process, and finally, implementation.

In this condition, national energy, as explained by the Ministry of Research and Technology (2006;4), was in the transition period from centralized-monopoly toward decentralized-openness. The Ministry (2006;4) urges all relevant parties “to encourage innovations at local level by utilizing non-fossil energy sources such as biomass, hydromicro, solar base, and others”. United Nations for Environment Programme (UNEP) also recommends innovative policies in energy sector. One of them is by “switching from fossil fuels to others that emit little or no noxious and greenhouse gases, such as renewable energy” (2002;7).

The definition of new energy has been stated in Law No.30/2007 on Energy, precisely in Chapter I Verse 1. New energy is “a source of energy that can be produced by new technology derived either from renewable energy or non-renewable energy, such as nuclear, hydrogen, coal bed methane, liquified coal, and gasified coal.” In Verse 6, “renewable energy is a source of energy produced from sustainable energy resource if managed properly, and such energy resource includes native heat, wind, bio-energy, sun beam, water stream and water fall, and the movement and differentiation of temperature at sea layer.” Similar concept was also given by Article 1 Verse 4 President Decree No.5/2006, that said that “renewable energy is a source of energy produced by sustainable natural energy resource if managed properly, and this resource involves native heat, bio-fuel, river stream, solar heat, wind, biomass, bio-gas, sea wave, and sea depth temperature”.

This study attempts to analyze the response and implementation of Law No.30/2007 on Energy, especially in Malang Regency. The policy has been set in the form of new-renewable energy (EBT) development program. It is a follow-up from Regional Medium-Term Development Plan (RPJMD) for period 2010 to 2015, and has been enforced through Local Regulation No.2/2011. For managing and utilizing the garbages, two policies are made by Local Government of Malang Regency, respectively: (1) Local Regulation of Malang Regency No.4/2003 on Garbage Transport Service, and (2) Malang Regent Instruction No.2/2011.

Local Government of Malang Regency has built an integrated site for garbage management in Talangagung, Kepanjen District, Malang Regency. This place is called as Final Processing Site (TPA) Talangagung. In this site, garbage management has achieved a process of utilization where garbages are converted into energy by an innovative technology. This technology is biomass gasification, respectively a method processing organic garbages into energy source.

Other studies have confirmed local government’s successful policy in developing renewable energy potential. One example is China. International Energy Agency (IEA) (2011;25) reported that local community in China has utilized renewable energy source in form of “smart card”. It is pre-paid card where customer must fill it with amount of money (like voucher), and when this card is fiddled into home-installed instrument, it provides direct connection with biogas network. This arrangement is only possible when the required infrastructures are available and reliable.

In Turkey (Gokcol et.al, 2008), biomass was used for meeting the needs for energy, electricity, household heater, fuel for vehicle, and heat energy for industry. Other study in Thailand (Jerasom, 2001) indicated that biomass energy was quite potential to be managed into new generation of electricity in short-term and medium-term periods.

Several studies in some countries about policy of utilizing biomass as energy (Radetzky, 1997) had found that biomass contributed 3.5% to the usage of primary energy among the countries belonged to Organization for Economic Cooperation and Development (OECD), and it was contributing 3.1% of final consumed energy. Policy on biomass energy becomes popular since 1990 when people start to concern with green-house effect while biomass does not show adverse effect. Since then, biomass energy policy is applied by various countries. The competing ability of biomass energy, compared to fossil energy, would be economically higher if we also count the external effect of fossil fuel such as green-house heating and environmental damage.

Method Of Research:-

This study uses qualitative approach. Qualitative data are explored using various sources, involving primary and secondary data. According to Sugiyono (2010; 225), “primary source is the source of data providing data directly to data collector, and primary data are obtained usually from interview and observation”. Meanwhile, secondary data are collected with documentation.

The author analyzes garbage management policy in Malang Regency using institutional model because this model is considered as quite relevant. As said by Dye (1978; 20-37), institutional model was a traditional model in the process of public policy-making. The center of attention, or the focus, of this model remains on the organizational structure of the government. This model also explains cause and consequence of the policy made by government. This policy is vulnerable to politic activity in many governmental agencies, including legislative, executive, and judicative agencies, and also central (national), regional and local level of governments.

Result and Discussion:-

The response of Malang Regency Government to new-renewable energy (EBT) development program is reflected in Regional Medium-Term Development Plan (RPJMD) for period 2010 to 2015, and has been enforced with Local Regulation No.2/2011. This document helps Malang Regency Government to achieve its development vision, "To realize the People of Malang Regency who are Self-Dependent, Religious, Democratic, Productive, Progressive, Secured, Orderly, and Competitive". All these characters are abbreviated into "MADEP MANTEP".

Pursuant to the statements of vision and mission, and also in relative with development issues and also strategic analysis on RPJMD, there are eight specific goals that must be achieved in the next five years. One of this goal is improving availability, quantity and quality of highway, water, innovation/residence, and energy infrastructures to support economical, social and cultural activities (Goal 5). Other goal is improving the quality of life environment function and natural resource management when environmental trespassing becomes rampant by increasing the extent of reforestation land and also by increasing the level of the manageable natural resource (Goal 8).

General target is an expected target from the development in Malang Regency in the next five years. The successful attainment of this target would impact on all living aspects of community, among others is the construction and maintenance of highway, water, innovation/residence, and energy infrastructures to support tourism economic and poverty eradication (Target 5). Eighth target is the control over the planning and utilization of spaces and also over the issuance of permit for pollution-susceptible industry in parallel with the increase of natural resource management.

The formulation of vision, mission, goal and target is then classified into 4 major agenda of development, including creating prosperous community, respectively a community with the increased capacity to meet livelihood with better warranty for better future (Target 4).

Development focus for the next five years in Malang Regency is given upon seven actual fundamental problems. One of them is fulfilling basic service and social security for poor community, especially in relation with energy adequacy (rural electricity and biogas utilization), clean water, and environmental health, mainly in the isolate hamlet and poverty center (Priority 7).

Development strategy and public policy direction in the RPJMD are sufficiently describing a serious posture from Malang Regency Government to develop new-renewable energy. Data have supported this position, along with its relevant programs and action plans such as Strategic Plan (Renstra) and Work Plan (Renja) of Local Government Task-Force Unit (SKPD). Indeed, SKPD will work based on main task and function, and objective condition and situation based on review and result of development assembly.

The author found only one program in Renstra and Renjathat giving attention upon renewable energy development in Malang Regency. This program is called as "The Monitoring and Restructuring of People Activity that Potentially Damaging the Environment and Fostering and Developing the Electricity." Other program which is also potential for renewable energy development in Malang Regency, and it is called as "The Monitoring and Restructuring the Control of Environmental Pollution and Degradation with the Improvement of Garbage Management Performance" (Page 6/111).

The author also discovered the expected performance condition in the end period of RPJMD, especially in relation with energy. It is consistent with the Priority of Local Development Program (page 8/113). The priority of the Division of Energy and Mineral Resource was 100% monitoring and fostering the miner community. The Division of Life Environment has taken as priority of 80% socialization and extension of rules and laws about life environment control, and also 76% improvement of community care to garbage management.

One interesting fact is that the expected performance in the end period of RPJMD is not relevant with Strategic Plan from the Energy and Mineral Resources Services for Malang Regency. Ironically, the Services' Strategic Plan has been made referring to RPJMD of Malang Regency, Strategic Plan of Energy and Mineral Resources for East Java Province for period 2009-2014, and Strategic Plan of the Ministry of Energy and Mineral Resources. Any strategic plans must be made by considering all directions of all policies in the upper-level agencies, even until ministerial level, to ensure that good organizational relationship is obtained.

Other attractive finding in the strategic plan of the Energy and Mineral Resources Services is that this plan has covered strategic issues about energy. The strength of this plan is huge potential resource. Fundamental weakness, however, concerns with suboptimal community participation, and less accurate data. Despite this concern, the opportunity of making good cooperation between central and provincial governments is widely open. The prominent challenge is that discretion and responsibility of main task and function can still overlap.

The formulation of vision and mission is already good. It is put on the slogan "To achieve the Sustainable Development of Energy and Mineral Resource with the Principle MADEP MANTEB for People Welfare". There are four missions considered. One of them is "to support the achieving of the development of electricity at rural area, the development of self-dependent energy in sustainable manner, and the development of new-renewable energy (EBT)". From these, five medium-term goals are set by the Energy and Mineral Resources Services for Malang Regency. One of them is "to develop the source of new-renewable energy (EBT) to support the energy reserve for people". The target of this goal is "the achievement of new-renewable energy that is efficient, self-dependent, and sustainable". Vision and mission of the Energy and Mineral Resources Services are elaborated into programs based on goals and target indicators as shown in Table 1.

Table 5.8:- Medium-Term Target Indicators of Service Provided by the Energy and Mineral Resources Services for Malang Regency for Period 2011-2015, if Related to Goals.

No	Target Indicators	Targeted Performance by Year					Accumulation until 2013
		1	2	3	4	5	
1	Number of village/ community that utilizing alternative energy/biogas.	-	-	1 unit	1 unit	1 unit	1 unit
2	The construction of biogas management site.	12 units	12 units	12 units	12 units	12 units	36 units
3	The construction or the maintenance of PLTMH/Mini.	1 location	2 locations	1 location	1 location	1 location	4 locations
4	The construction of PLTS and wind-generator plant.	-	10 units	30 units	10 units	20 units	40 locations
5	Planning for developing electricity generator and biogas.	-	3 locations	-	3 locations	-	3 locations
6	The implementation of new-renewable energy fostering.	-	3 villages	4 villages	3 villages	4 villages	7 villages

Taking account strategic plan and performance indicator from the Energy and Mineral Resources Services for Period 2011-2015, new-renewable energy in Malang Regency is still relatively low. In general, this target has different location every year, and in the fifth year, the number is accumulated. Targets are relatively moderate, and tend to be less comprehensive, especially relating with the fact that the energy development program that utilizes garbage-based biomass is not shown up at all in the target or target indicators.

Although the program of converting garbage into energy at TPA Talangagung of Kepanjen District has given promising result, it is not a program from the Energy and Mineral Resources Services. Exploration with interview has shown that this program represents more the innovation of staffs who work at the Innovative and Regional

Landscaping Services. It is not surprising because this Services is responsible for garbage management in Malang Regency. Depth interview and observation in October 2012 have revealed the fact that biofuel potential, precisely garbage-based biomass, has been increasingly great in Malang Regency. However, only a half of it is managed by the Innovative and Regional Landscaping Services, precisely reaching at ± 376 m³/day (37.8%) of garbage emergence total at the scale of district capital (IKK), which can achieve ± 993.6 m³/day. There is around ± 617.6 m³/day (62.2%) of garbage emergence managed self-dependently by community. Complete description is given in Table 2.

Table 2:- Garbage Quantity in Malang Regency.

No.	Uraian	Volume/ Prosentase
1	Domestic garbage emergence at the scale of Regency.	$\pm 3,000$ m ³ /day
2	Urban garbage emergence at the scale of District Capital (IKK).	± 993.6 m ³ /day
3	Garbage transport service at the scale of IKK.	± 376 m ³ /day
4	Percentage of self-dependent service.	± 617.6 m ³ /day
5	Percentage of IKK-scale service.	37.8 %
6	Percentage of Regency-scale service.	12.5 %
7	Percentage of organic garbage.	66.07 %
8	Percentage of inorganic garbage.	33.93 %

Source: The Innovative and Regional Landscaping Services.

As shown by numbers in Table 2, the Innovative and Regional Landscaping Services has a limited capacity in managing garbages in all regions of Malang Regency. Domestic garbage emergence rate at Regency Scale has reached $\pm 3,000$ m³/day, but the capacity to manage garbages at Regency level is smaller than percentage of IKK-scale service, which counts for 12.5 % (375 m³/day). In other words, there are around 87.5% citizens in Malang Regency who must by perforce manage their own garbages self-dependently although garbage volume can be estimated to 2,625 m³/day. There are three agencies with interdependent tasks in the program of managing garbages and converting them into energy. These are: (a) the Division of Cleanliness and Garden Affairs at the Innovative and Regional Landscaping Services, with responsibility on garbage management; (b) the Division of Energy and Electricity at the Energy and Mineral Resources Services with responsibility on the new-renewable energy development program; and (c) Bio-Environment Office (BLH) with responsibility on improving the quality and function of life environment, and ensuring sustainable development of natural resource. The Energy and Mineral Resources Services was the leading sector in succeeding the new-renewable energy development program. Garbage management was indeed the responsibility of the Innovative and Regional Landscaping Services. Fortunately, this Services has some staffs with innovative capacity to utilize methane gas (CH₄) produced by garbage to be flown into people houses to be used as energy for cooking. BLH concentrates its attention on educating people with media, including school, by emphasizing on 3R Principle (Reduce, Reuse, Recycle). All these three agencies have worked based on their main task and function. However, their works in garbage, environment and energy issues are subjected to overlap, where coordination of all agencies is lacking of synergy, especially when they must succeed renewable energy program. It seems that there is sector-based egocentrism between the Energy and Mineral Resources Services and the Innovative and Regional Landscaping Services because since the beginning, garbage management is the responsibility of the latter agency. There is a similar enthusiasm among leaders of the agencies but each agency must walk on its work based on its own main task and function.

Strategic Plan (renstra) and Work Plan (renja) of the Energy and Mineral Resources Services for Malang City, if comprehensively understood, do not touch at all the new-renewable energy development program, especially relating with garbage-based energy. One reason is given by Ahmad Wahyudi as the Head of the Division of Energy and Electricity: "The conversion of garbage into energy is only consolation. TPA must focus only on composting, because managing compost into energy may take additional cost and time" (Interview on 22 October 2012).

It is clear that the potential of TPA Talangagung is not utilized well. Innovative step possibly taken by TPA may be "to reduce" negative effect of methane gas by managing this gas into energy to be flown into nearby citizens. However, this innovation is challenged by the apathy of officers in other offices. It signals not only less effective relationship across organizations and also low quality of communication between them. If main task and function are considered, it is clearly seen that the leading sector in the development of new-renewable energy is the Energy and Mineral Resources Services. Garbage problem, in the beginning, is resolved by the Innovative and Regional

Landscaping Services. It has been successful in managing garbage into energy but it lacks of synergy with the Energy and Mineral Resources Services.

Other technical problem is about budget and human resource competency. Indeed, the Energy and Mineral Resources Services is the leading sector that is responsible to implement this program. There is incompatibility between staffs' skill and the work that becomes their responsibility. Of all human resources available, only one staff with the proper skill at work in the Division of Energy and Electricity, and this staff is the graduate from electronic engineering. The Energy and Mineral Resources Services, moreover, does not yet have General Plan of Local Energy (RUED). Reason behind this is that there is less awareness that the energy reserve of oil-gas fuel has approached to the scarcity. However, this is not yet considered as "energy emergency". Malang Regency is only witnessing the fact that new-renewable energy development is only temporary and partial, or it is not yet comprehensively developed.

Conclusion:-

The analysis of data was done with policy theory which used Friedrich's institutional model. Result of analysis showed that governmental response for implementing local regulation on new-renewable energy was limited only to the formality. Three agencies have overlapped responsibilities in succeeding the policy. These are: the Energy and Mineral Resources Services (Dinas ESDM) as the leading sector; the Innovative and Regional Landscaping Services (Dinas Ciptakarya dan Tata Ruang) with responsibility for garbage management; and Bio-Environment Office (BLH) with responsibility for environment preservation. The coordination of all these agencies is challenged by sector-based egocentric, human resource incompetency, weak coordination, and low sense of crisis among community and officer, which all of them lead the programs of these agencies to have less synergy and integration.

Suggestion:-

Local Government and relevant stakeholders should improve sense of crisis in anticipating the subside of fossil energy reserve. It can be achieved by formulating the less sporadic but comprehensive new-renewable energy development policy as a part of implementation of Law No.30/2007 on Energy. For succeeding this policy, stakeholders must improve coordination and supervision, and are willing to eliminate sector-based ego, especially those who work at relevant agencies. Other measure is by increasing the socialization of the issue to the community and all officers through media, including school, to introduce the importance of environment conservation and alternative energy development. Stakeholders are required to create conducive investment climate that attracts private and foreign capitalists because this climate can facilitate a healthy partnership between government and private in dealing with budget limit problem. Finally, the restructuring of officer resource management can be initiated after conducting objective analysis on the work that is the responsibility of the officer.

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