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Environmental Challenges and Polices of India

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ABSTRACT

One crucial problem faced by India is the dependence on fossil energy reaching to 93,3%, while the share of renewable energy is only 7,7%. This causes two implications. Firstly, India is at the situation of insecurity energy due to the limitation of the availability of fossil energy. Since 2004, India is net importer oil country. Secondly, the use of fossil energy creates CO2, a component of greenhouse gases stimulating global warming and climate change. One strategy to deal with this problem is by implementing new energy system consisting of developing renewable energy and energy efficiency. This paper observes the impact of the use of fossil energy, the measures taken to deal with these problems and the issues of implementing the measures. This research relies on secondary data available at the Ministry of Energy and Mineral Resource, Ministry of Environment and Forestry specifically at by Proper Secretariat, and other relevant sources.

Keywords : Fossil Energy, Insecurity Energy, Global Warming, New Energy System.

I. INTRODUCTION

As mentioned at Presidential Decree 21 of 2017 on General Plan of National Energy that energy resource is no longer treated as export commodity but as a national development capital for achieving self-managing energy, to ensure energy availability and to achieve domestic energy need, to optimize integrated and sustainable energy management, to improve energy efficiency, to ensure afair and equal access, to develop technology competence of industrial energy and energy service, to create employment opportunity and to control the impact of climate change and to ensure environmental sustainability [1]. From the perspective of social and environment, the policies need to be underlined are efforts to develop renewable energy, energy efficiency, fair and sustainable energy management.

II ENVIRONMENTAL AND SOCIAL IMPACTS

Exploration and exploitation of fossil energy specifically coal as energy source creates environmental and social impacts. As quoted by Kompas Daily Newspaper (May 30, 2018) most mining companies in Aceh did not implement reclamation [2]. Bad mining management stimulate forest degradation, loss of wildlife habitat,

degradation of river basin and escalation of social conflict. Similar cases occur in Kalimantan where provincial and local government prioritize mining sector as engine of economic growth. In South Kalimantan there are 813 mining permit with 6,4 million hectare. In East Kalimantan with the area of 12,7 million hectare, 5,2 million hectare (46%) is allocated for mining with the number of mining permit reach to 1400 where 232 mining companies left the area without any reclamation. Agrarian conflict in East and West Kalimantan reach to 126 cases [3].Environmental degradation caused by mining activities place environmental quality index in South Kalimantan are at the lowest ranking among Kalimantan pro vinces and at the rank of 26 among 35 provinces in India.

III INSECURITY ENERGY

Since 2004, India has been a net oil importer country. The need of fuel oil reach to 1,6 million barrel per day while the production capacity only 800.000 barrel per day [4]. The increase of energy consumption has been stimulated by economic and population growth, inefficient use of energy and government subsidy for energy consumption. Energy potential of fossil energy show that petroleum reserve leaving 12 year, natural gas 33 year, coal 82 year. Based on data of General Plan of National Energy (2017), 79,3 % coal produced is being exported to other countries while coal reserve only 3,1% of world reserve [5].

IV THE IMPACT OF CLIMATE CHANGE

The use of fossil energy causes the increase of CO2, a component of greenhouse gases stimulating global warming and climate change. Data in 2017 showed that CO2 emission increased from 433,3 million ton in 2013 to be 464, 4 million ton in 2014. It was also true for CO2 emission per capita which was 1,8 ton/ capita in 2013 to be 1,9 ton/ capita in 2014 [5]. Indian government promised to reduce greenhouse emission at 26 % in 2030 as business as usual and 42% with international assistance. Based on data released by World Energy Report (2006), total emission of CO2from energy sector reach to 286 million ton. Emission will increase twice every twelve year in which coal is the largest carbon source [6] Total contribution of CO2 emission from developing countries including India predicted to increase in 2020 reach to 18365 million ton from world total emission at 38214 million ton. The impact of global warming and climate change include sea level rise, sea temperature rise, air temperature rise, increase of rainfall, evaporation and tropical storm.As archipelagic country with second longest coast line where 65% population live at coastal area, India is at the vulnerable condition affected by the impact of climate change. In addition, agriculture, animal husbandry and fishery will be severely affected by climate change.

V NEW ENERGY SYSTEM

New Energy system is one strategy dealing with energy problem consisting of development of renewable energy and energy efficiency. The following table shows the abundance of renewable energy and its installed capacity

Table 1.Renewable Energy Potential in India

Type	Potential	Installed Capacity
Hydro	75.091MW	4,826 MW
Geo-thermal	28.910 MW	1438,5 MW
Ocean	17,989 MW	0,3 MW
Bio-energy	32.654 MW	1671 MW
Solar	4.8 kWh/m2-day	78,5 MW
Wind	3-6 m/sec	3,1 MW
Mini &Mikro hydro	19,385 MW	197,4 MW

Source: General Plan of National Energy (RUEN), 2017 [7]

From this potential of renewable energy it is necessary to accelerate utilizing them to meet the

target of renewable energy share. Indian government determined that the target of renewable energy contribution to national energy mix is expected to be 23% in 2025 and 50% in 2030. However, this plan went slowly. In 2006, the share of renewable energy was 5% and in 2018 it only reach As compared to fossil energy, renewable energy is more environmentally friendly, creates employment opportunity and increase income for local people. However, there are many issues related to renewable energy including a diverse geography, uncertain regulation, unclear market, weak coordination among relevant agencies causing the high price of renewable energy. According to Widodo (2018) the policy of developing energy in India is based on low cost and ignore social and environmental cost as mentioned about the impact of fossil energy [8].

VI ENERGY EFFICIENCY

Another aspect of new energy system is energy efficiency through change of people's behavior and institutions in consuming energy. One program showing the significant contribution for energy efficiency is business performance rating (proper) initiated by Ministry for Environment and Forestry [9]. To achieve a green and gold ranking, participating industries must adopt a cleaner production principles which successfully deal with environmental pollution and create energy efficiency, water use, waste generation, and emission reduction as shown at the following table.

Table 2. Eco-efficiency of Proper Participating Industries

Year	Energy (giga joule)	Water (m^3)	Emission (tonne CO2 eq)
2016	249,808,268	447,463,288	75,663,410
2015	919,098,110	533,128,233	48,193,255
2014	26,105,806	491,815,713	48,076,583

Year	Hazardous Waste(tonne)	Non-Hazardous Waste (tonne)
2016	6,444,846	3,245,604
2015	4,786,034	9,419,229
2014	3,205,649	11,908,001

Source: Proper Secretariat, 2017[9]

Table 2 shows the huge energy efficiency and emission reduction resulted from Proper. However, the number of industries participating at Proper are less than 10% compared the number of industries potentially cause significant environmental impacts reaching to 25 000 industries.

VII CONCLUSIONS AND RECOMMENDATIONS

1. The dependence on fossil energy bring implications on insecurity energy, environmental and social Impacts, and global warming and climate change.
2. New energy system is a the strategies to deal with these problems consisting of developing renewable energy and energy efficiency
3. The high price of renewable energy need to be dealt by providing subsidy, simplification of procedure 4. and incorporation of environmental and social cost of the use of fossil energy
5. The development of renewable energy is able to support economic growth, fairness, justice, equity and environmentally friendly
6. In relation to energy efficiency, it is required need to adopt change of behavior in consuming energy both individually (household, people's behavior) and institutionally (industry, government, private sector,)
7. It is required to obliged industries potentially cause significant environmental impacts to participate at Proper for energy efficiency and emission reduction

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