

## ARTICLE

# PUBLIC PERCEPTION OF ENERGY CONSERVATION: A STUDY CONDUCTED IN THE CENTRAL JAVA PROVINCE OF INDONESIA

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### ABSTRACT

The world has grown significantly, and with this growth, industry and population continue to mitigate and develop new resources. Energy is one such resource where sustainability has been threatened by the very institutions that sought to use the resource. Natural gas, for instance, continues to dwindle, creating a concern for alternate sources of energy. One measure that can improve the sustainability of energy is its conservation. In this paper, the perceptions of energy conservation in Indonesia bring to focus some of the most critical elements meant to improve the use of energy in their country. The study area took a sample of PLN respondents, who make up 100 percent of the energy consumers in the Central Java Province. This paper should improve the understanding of energy conservation about public awareness and social marketing.

### INTRODUCTION

The conservation of energy is perhaps one of the most innate priority causes in the world. It is critical that the developments in science, industry, and technology are sustainable and environmentally sensitive. All over the world, governments have engaged their people and countries, through institutions of campaigns to improve the efforts to save energy in all spheres of their industry. Looking at Central Java province of Indonesia can further expand the understanding of the strides the country has taken to improve the use, distribution, and conservation of energy.

Legal control of the energy sector in Indonesia could be traced after the launch of the first private Energy Company (PT Paiton Energy). The Electricity Law of 1985 defines some predispositions that formed the foundation of the Energy Sector. Some of the earliest details of the same saw a lot of the involvement of private companies as Independent Power Producers (IPP). These institutions were tasked with their responsibility for commercialization of the energy products in the country. The companies would be able to address the energy needs of the country through a state-owned company called PT Perusahaan Listrik Negara (PLN). The company saw much of the modern development in energy integrate into the industries and households in Indonesia.

Looking at the strides the country has experienced in the dissemination of information and creation of awareness on issues pertaining energy conservation, the understanding of the public on the issue of energy conservation and specifically its value to industry and sustainable economic development has been noted to be important influences in improving the energy conservation efforts of a country. The government has set a target to reach an electrification ratio of 92% by 2021. Such creates the need and perceived value of energy in the country. Some of the monetary investments that must be made in the same breadth total an astonishing \$96 billion [1]. The IPPs and other private investors are expected to meet this investment capital demand.

To capture the full value of this energy, the creation of awareness on matters like energy conservation preempts its importance and, more than that, its sustainability. The energy goals of the country are steep. They will have a significant impact on the economic performance and industrial growth of the country [1]. Countries that have seen such economic and industrial development often fail to consider the core issues that come about environmental and energy conservation. Effects, such as climate change and global warming, threaten the sustainability of the planet. Looking at the public perception and, specifically, its value in improving the use of energy can improve the understanding of the intended course of action that the government of Indonesia ought to institute.

As of 2012, the economy of the country recorded a growth rate of 6.2% in the GDP. In 2013, the GDP was recorded to be growing at a rate of 6.8%. These statistics preempt the energy needs of the country. It has been estimated that the demand for electricity should rise to an average 7.4% by 2019. Such figures also inspire analysis of the value of the energy conservation. The country has a population of 248 million with an inclusive 74 million in the emerging middle class [1, 2]. This increase in the population of the country makes environmental and energy conservation primary concerns for the government of Indonesia.

### MATERIALS AND METHODS

The paper analyses some reforms that have been implemented for the improvement and development of infrastructure in the energy sector. Some of the critical inferences the paper makes include an in-depth analysis of the core functions of the government and corporate institutions in improving the state in which the country uses and distributes energy. The research performed a qualitative analysis on Indonesia and, more importantly, the Java District in the country.

#### KEY WORDS

Public perception,  
Energy conservation,  
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The aim of the study was to uncover the measures taken to improve the value of energy conservation and critically analyze the creation of awareness and distribution of information regarding energy conservation. The perceptions of the public are also included in the paper, citing from relevant studies performed by both academic institutions and professionals in the energy sector of the country. These tools were critical in understanding the discourses that may have been formed in the economy, institutions, and public of Indonesia. In this paper, the baseline understanding of energy conservation is with people of Indonesia. Several media outlets and socialization platforms are developed and maintained to inform the public about energy conservation and their role in it. Other important metrics that can improve the use of energy in the country are the factors that influence purchasing decisions of electronic goods [3]. Creating a policy that regulates the use of technology regarding environmental and energy conservation that can have a significant impact on the energy conservation of a country is necessary [3, 4].

Companies that distributed electricity and other social amenities to the public had a direct link to the consumption trends in the country. They, therefore, held a critical role in the use and conservation of energy in the country. In analyses of these core factors, the paper should present important niches that may not have been exploited. Minimizing on wastage through phasing out high energy consuming appliances, for instance, can improve the overall sustainability of the country's energy supply [2, 5].

## RESULTS

The power sector in Indonesia is regulated by the Ministry of Energy and Mineral Resources. It has several sub-agencies from which it implements policy and pushes for increased value and investment in the energy sector of the country. Some of the core functions of the company include the creation of a national energy plan. In this plan, 10-year energy use is developed. The Ministry of Energy details issues like capacity needs within the ten-year period, information on resource allocation, and investment options for the company.

The potential for renewable energy is another important concern the government considers. The plan also accounts for the potential sources of renewable energy that can be incorporated into their national grid. These functions are often delegated to private organizations and government agencies. Some agencies include the Directorate General of Electricity and the Directorate General of New and Renewable Energy and Energy Conservation [2]. Through such institutions, companies can improve on their distribution and use of energy.

Some reforms that have been implemented and advocated for in the last three years include, the use of energy saving lamps, reduction of the consumption of electricity, and even regulation of the temperature in buildings. These are critical steps that ought to improve the strides that individual entities in the country can make to safeguard the energy needs of their country [6]. Taking the perspective of both technical and human influences, the conservation of energy in Indonesia can be critiqued. These two dimensions of energy use and distribution are critical as they undermine or improve the public value of environmental conservation within the country.

A survey that sampled ten regions represented in the PLN Surakarta district and the provincial capital, Semarang, was undertaken to find out the efficiency of energy conservation within the country and, more specifically, the perceptions of the people of Indonesia on energy conservation. The respondent's responses were recorded in an Achievement index. The achievement index defined the perceptions of individuals through a gap analysis. Below is the Criteria for the Achievement Index.

**Table 1:** Energy conservation respondent's index

Gap Score	Category
0-1.00	very low
1:01 to 2:00	low
2:01 to 3:00	fair
3:01 to 4:00	high
4:01 to 5:00	very high

The respondent's gap score gives an accurate depiction of the understanding of the respondents on energy conservation. The researchers from this survey employed ordinal logistic regression to define the scope of the outreach programs and their impact on energy conservation in the country.

The study took a sample of 65% Female respondents and 35% Male respondents. Their ages were spread across, 17 -25, 26-35, 36-45, 46-55, 56-65 and Over 66 Years old, whose sample was, 6%, 11%,19%, 38%, 16% and 10%, respectively. Other important statistics that defined the study include the educational background, work background, income and spending background, electrical power use, and use of electricity meters. This information would improve the accuracy of its objectives.

### Level of public awareness

The public awareness level was calculated at 2:00. All categories were included in this analysis. This finding warrants an increase in programs and policy that improve on the conservation of energy in Indonesia. While there have been significant strides that the government has made in terms of television advertisements, radio, and even print media, there is still a significant stride to be made. For instance, social marketing can improve the public interest in matters concerning energy conservation.

## CONCLUSION

Given the result on the Achievement Index, several important conclusions can be derived from the index. For instance, the gap analysis indicated a low achievement index on the public awareness in relation to conservation of energy. This is an important starting point, as it forms the baseline on which the government and private firms must consider when improving energy conservation.

The study also uncovered the discourses in communicating energy conservation to the public. The most effective media outlets proved to be radio, the Internet, and television [7]. Many respondents often relied on these means to get information on important policy and issues affecting their communities. Using this tool can, therefore, be useful in improving awareness in the country.

While advertising on social media, among other forms of multimedia, the critical factors of conservation meant more than awareness had to be implemented. Energy conservation demands the initiative from every consumer and household [8]. Reducing the consumption of electricity through creating a 5pm to 10pm policy on conservation can be an avenue through which change can be effected on the ground [7]. Advocating for the use of energy saving technology and reducing the use of natural gas also improved the sustainability of energy in the country

## RECOMMENDATION

Education is an important and effective avenue through which information can be passed. The study did not cover under 17-year-olds. One institution through which conservation can be taught and incorporated into the culture of the country is through its inclusion in the education system of Indonesia. The increase in the middle-class population implies the country should see an increase in the demand for energy [8]. As the country develops, the government will have to implement tariffs and policies that improve the measures on energy conservation in the country. Price instrument, for instance, can be a powerful tool through which the government improves the strides in the conservation of energy [9, 10, 11]. Socialization is an important part of the process. As more people learn about energy conservation and their role in improving the use of electricity, among other important sources of energy, a culture around conservation of energy can be developed [10,12]. The government should aim to create this culture from the corporate institutions to individual homes. By implementing such a reform, the country should see a significant improvement in energy use and conservation.

### CONFLICT OF INTEREST

There is no conflict of interest.

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