



Strategic Steps To Make Effective National Energy Conservation Movement

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ABSTRACT

The aim of this research is energy conservation as a pillar of national energy management which has not received adequate attention in Indonesia. The method used in this writing is qualitative descriptive. This method is used to describe the facts in the field. The results achieved in this research are the increasingly popular idea of using energy economically as a "smart way of living". The clearest indicator of the work carried out by the energy conservation center and other elements of society is Japan's success in positioning itself as the country with the best energy usage productivity in the world and maintaining this position over the period until now. The conclusion of the results obtained is the acceleration of the formation of an energy saving culture by involving all elements of society with a religious and sociocultural approach.

INTRODUCTION

Energy conservation as a pillar of national energy management has not received adequate attention in Indonesia. Energy management in the country has so far prioritized how to provide energy or expand access to energy to the community. This is realized, among other things, through increased exploitation of fossil fuels or development of rural electricity. Energy consumption on the other hand is still allowed to increase rapidly, faster than economic growth. This is shown, for example, by the demand for electric power.

By doing conservation, it is as if we have found a new source of energy. If Indonesia can save fuel consumption by only around 10 percent, it will be as if Indonesia has "discovered" a new oil field that can produce around 150,000 barrels per day, but in reality producing that much fuel requires quite large costs both for exploration and production. . This means that the costs that can be saved by carrying out conservation are very large. Energy conservation according to PP No. 5 of 2006 is the use of energy efficiently and rationally without reducing the use of energy that is really needed.

The losses due to not implementing an energy conservation program have actually been felt in the country. The exact loss figure due to not implementing energy conservation properly has never been calculated with certainty, but it is believed that this figure is very large. Diseases that arise from unhealthy national fuel consumption patterns ("fuel subsidies", smuggling, mixing and the resulting political costs) will more or less be overcome if we implement strict energy conservation, especially in the transportation and industrial sectors.

One of the factors that prevents energy conservation from developing in Indonesia is the view among the public that Indonesia is a rich country blessed with abundant energy resources, and therefore using energy sparingly is not considered a necessity. Understanding of energy conservation as a practical action has also not developed among the public because there is still a lack of dissemination of information or campaigns regarding energy conservation techniques. Legislation regarding energy conservation has not yet been developed.

Likewise, the formation of a special government/private agency to handle energy conservation issues has not yet been established. As a result of the very rapid growth in energy demand in Indonesia, the development of carbon emissions into the air in Indonesia is also increasing rapidly. Below is a graph of the growth of carbon emissions into the air from 2000 to 2010 with current energy usage patterns. It is estimated that in 2010 carbon dioxide emissions into the air in Indonesia reached 425 million tons. It's a number that can't be said to be small.

Japan is a developed country that has recorded amazing developments in the field of energy conservation, as a result of public and government cooperation since the First Oil Crisis (1973). When the oil crisis hit, Japan's dependence on petroleum for its primary energy consumption was still around 80 percent.

Because the very high spike in oil prices at that time hit the Japanese economy hard, the government took this momentum to strictly regulate Japan's energy consumption structure (energy mix). Energy diversification on the supply side is carried out by replacing the use of petroleum with natural gas and nuclear power. Natural gas in the form of LNG was imported from Indonesia and a nuclear power plant was built to reduce dependence on petroleum. Energy conservation is applied on the energy consumption (demand) side, especially in activities in the industrial sector.

In 1978 the Second Oil Crisis occurred. The Japan Energy Conservation Center was established to expand Japan's previously tireless efforts in energy conservation. Japan's first Energy Conservation Law was issued in 1979 and underwent several improvements later.





As a result of the movement to reduce dependence on petroleum and implement energy conservation, the share of petroleum in Japan's energy consumption portfolio, which was originally 80 percent during the First Oil Crisis, has been reduced to around 47 percent today. On the consumption side, continuously developing energy conservation efforts, especially in the industrial sector, have led Japan to become the leading country in the world in terms of energy utilization productivity/GDP. Below is a graph showing the ratio of energy utilization to gross domestic product which reaches 0.1. This means that in Japan there is still growth in energy demand for industry and this growth results in growth in GDP. Meanwhile, Indonesia has high energy demand but has not been able to significantly increase GDP. This can be seen in the graph below that Indonesia wastes a lot of energy with a ratio of 1.84. Meanwhile, England and Germany experienced lower energy demand growth compared to their economic growth, namely with ratios of 0.0 and 0.12.

Japan's success in implementing energy conservation is based on a number of things such as the issuance of the Energy Conservation Law (Law on the Rational Use of Energy). The Energy Conservation Center was established and operates with very strong government support (especially the Ministry of Economy, Trade and Industry), preparing and disseminating regulations and technical instructions for energy conservation in various energy use sectors to the public. Japan also takes advantage of its specific advantages/approaches, for example in the use of TQM (Total Quality Management) which was developed for energy conservation purposes.

The support and participation of the Japanese people in the national energy conservation program, including developing an energy-efficient lifestyle (living smart with energy) is a very important factor behind Japan's success in implementing the energy conservation program. Thailand actually has a wealth of energy resources, for example natural gas, but they do not see themselves as a country rich in energy resources. On the other hand, Thailand is one of the countries in Asia that pays great attention to how to use energy rationally and economically.

LITERATURE REVIEW

In Thailand's government administration, the energy sector has a fairly important place, not only being the responsibility of a technical department. This is more or less based on the idea that energy is something that requires handling in many sectors and because energy concerns the lives of many people. Energy conservation is also a subject that is paid attention to by various departments in the Thai government administration. As shown in the graph below, the United States, which has large national energy needs, implemented energy conservation starting from 1973 until 1997 and finally in 1997 the United States was able to reduce 50% of its people's energy demand. The aim of the Energy Conservation Law is to contribute to healthy national economic growth through implementing regulations to use energy rationally in all usage sectors and developing the use of energy resources that will meet economic and environmental demands at home and abroad.

The Conservation Law places an obligation on the Minister of Economy, Trade & Industry to determine the rules/standards given to industry in saving energy. The obligation to issue instructions and regulations regarding energy conservation and supervise them is also given to other relevant Ministers, for example the Minister of Land, Infrastructure and Transportation for energy saving regulations in offices and buildings. In principle, every energy user in Japan is subject to regulations to use energy economically.

The Japanese Energy Conservation Law, which consists of 6 articles and 30 paragraphs, basically also contains quite detailed regulations, especially for industry (factories), buildings and machinery/equipment. For example, industries in the Energy Conservation Law are categorized into Class I Industries and Class II Industries based on the annual consumption of fuel or electricity they use. Furthermore, different industrial classes are subject to different obligations, for example in terms of determining an energy manager, submitting medium/long term work plans in the field of energy management, periods for submitting reports regarding energy use, etc. Table 1 shows the industry grouping scheme and the obligations regulated in the Energy Conservation Law.

More detailed rules regarding how energy conservation must be carried out are determined by the Technical Minister, for example the Minister of Land, Infrastructure and Transport. In general, the rules made here are very detailed and technical. For example, for combustion in a boiler, the ratio between the air flow and the type of fuel used is strictly regulated, which has previously been scientifically proven to ensure optimum combustion. The maintenance schedule for production machines and equipment is strictly determined by national regulations. Likewise, guidelines for, for example, generating minimum costs from power generation systems are given to power companies to adhere to. Energy conservation does not always mean using as little energy as possible, but rather spending costs for the lowest possible energy consumption. How to achieve this is given in the instructions provided free of charge to various energy-using sectors.

Energy managers have an important role in planning efficient energy use in their work units and implementing these plans in their organizational units, including carrying out energy conservation exercises for the organization's employees. Energy managers need to take part in energy conservation training and competition exams which are held periodically by the Energy Conservation Center. The Energy Conservation Law also emphasizes the Government's obligation to encourage the mass movement of energy conservation. This is done, among other things, by providing fiscal incentives for energy conservation activities by industry and services, as well as promoting energy conservation movements and awareness for all levels of society. Energy audits are provided for large energy users (factories,



buildings, etc.) by energy audit experts coordinated by the Energy Conservation Center at free cost or borne by the government. If the results of the energy audit then recommend replacing new equipment that is useful for saving energy, then the government can help provide credit for the replacement of the energy-saving equipment.

METHOD

The method used in this writing is qualitative descriptive. This method is used to describe the facts in the field. The aim of the method is to: 1) Collect detailed actual information by describing existing symptoms, 2) Identify problems and examine applicable conditions and practices, 3) Make comparisons and evaluations of existing conditions and facts. 4) Determine what other people have done in facing the same problem and learn from others to determine and establish a decision plan for the future.

RESULT

To facilitate energy audit activities (as well as help carry out energy conservation measures) the Japanese government also encourages the development of energy service companies (ESCO: energy service companies), for example in the form of tax breaks and the provision of capital goods. The existence of ESCO, especially in the initial period, really helped encourage the promotion of national energy conservation. ESCOs in Japan have now grown considerably in the number and specialization of the energy conservation work they handle.

Increasing public awareness of energy conservation through campaigns, training and labeling activities for products, activities and supermarkets that have energy conservation advantages is a task encouraged by the Energy Conservation Law and in practice is mostly carried out by the Japan Energy Conservation Center.

The Japan Energy Conservation Center is not a purely Government organization, but is a semi-private organization guided by the Minister of Economy, Trade & Industry (METI). The Japan Energy Conservation Center was founded in 1978 as a response to the First & Second World Oil Crisis as well as Japan's strategic answer to managing its national energy. The Energy Conservation Center is headquartered in Tokyo with 8 branches throughout Japan. There are around 3,000 members (industry, offices, ESCO, universities, etc.) who support the activities of the Energy Conservation Center.

The extensive activities of the Energy Conservation Center are used as input/aimed directly at government offices including research centers and universities, energy consumption and production sectors as well as the general public. Examples of success in developing energy conservation in various use/production sectors are widely presented every year throughout Japan. Included in the activities for the industrial sector are energy audit and energy conservation services for various types of factories, energy conservation education and training, holding state exams for energy managers, as well as developing industrial technology that has high energy efficiency including its dissemination. For the commercial and household sectors, activities carried out by the Energy Conservation Center include audit and energy conservation services for buildings, developing label systems for various household/building equipment products (including stores that market these products), navigating energy savings, developing work international cooperation in determining products with high energy efficiency, developing ESCO for the commercial and household sectors, publishing energy conservation instructions and standards for households and offices which are distributed free of charge nationally.

For the transportation sector, the efforts made by the Energy Conservation Center include holding energy conservation competitions and exhibitions in the transportation sector, popularizing various simple ways to conserve energy that can be carried out by the public and transportation companies (including campaigning for idling systems), as well as holding energy-saving vehicle competitions. (including top runner programs). The Energy Conservation Center develops an energy conservation database, conducts open consultations (including using e-mail and interactive dialogue on TV) regarding energy conservation and popularizes the Japanese energy conservation model internationally, including by inviting participants from other countries to study conservation. energy carried out by Japan.

The result achieved from the work of the Energy Conservation Center is the increasing popularity of the idea of economical use of energy as a "smart way of life" among Japanese society. The clearest indicator of the work carried out by the Energy Conservation Center and other elements of society is Japan's success in positioning itself as the country with the best energy usage productivity in the world and maintaining this position over the period until now.

In Thailand's government administration, the energy sector has a fairly important place, not only being the responsibility of a technical department. This is more or less based on the idea that energy is something that requires handling in many sectors and because energy concerns the lives of many people. Energy conservation is also a subject that is paid attention to by various departments in the Thai government administration. Figure 1 shows a macro chart of energy management in the Thai government. The National Energy Policy Council (NEPC) is chaired by the Prime Minister with Deputy Prime Ministers, and includes a large number of Ministers (Energy, Industry, Transport, Finance, Science & Technology, etc.). The main task of the NEPC is to establish the National Energy Policy and the National Energy Development & Management Plan.

It is clear from the organizational structure related to national energy policy in Thailand that energy conservation is a subject that receives enormous attention. The Energy Conservation Committee in the above organizational structure is more concerned with energy conservation funding issues. The main task of the Energy Committee is to prepare



instructions, criteria and priorities for the appropriate use of Energy Conservation funds.

DISCUSSION

Energy conservation as a pillar of national energy management is currently not receiving adequate attention in the country. Based on energy intensity data, Indonesia is a country whose energy utilization productivity is very low compared to many countries in Asia. Energy in Indonesia, including fuel, is used wastefully. The potential for energy conservation is actually very open in Indonesia. The image below shows energy use based on user type and sector in Indonesia. It is clear that fuel is the type of energy most consumed in Indonesia and that the transportation sector is the main user of fuel.

Awareness about energy conservation has actually emerged in Indonesia, especially during the World Oil Crisis period of the late 1970s. The prolonged world economic recession as a result of rising world oil prices at that time (even though it meant an oil boom in Indonesia) was quite worrying for a number of energy analysts in the country, especially because of concerns that Indonesia's oil wealth would not last long, especially if consumption patterns were not reduced.

The Presidential Instruction on Energy Conservation was issued in 1982 (Inpres No. 9/1982) which was later refined by Presidential Decree No. 43 of 1991. Among the community, non-governmental organizations (Energy Saving Society) emerged which paid attention to energy conservation. An ESCO was established by the government which then made it a BUMN in the energy sector (PT KONEBA). PLN has carried out several demand side management projects to reduce electricity consumption on the usage side. The Department of Energy carries out a number of energy conservation pilot projects, for example in government office buildings (the same is done in college campus buildings). The government even published the RIKEN document (Energy Conservation Master Plan) which was not followed by a clear action plan.

The energy conservation movement, which has been partially and on a small scale, has actually been carried out by the government and elements of society, and has not generated a large enough impact or been followed by broader energy conservation actions. In fact, since the 1990s, when energy consumption in Indonesia has skyrocketed, energy conservation activities have almost been forgotten. Energy consumption tends to become increasingly wasteful, energy prices are not adjusted to its economic value, and the subsidy burden borne by the APBN to finance energy use by the public (in the form of fuel and electricity subsidies) is increasing. Another consequence is pollution that is getting worse due to energy use activities, especially in urban transportation.

Allowing energy consumption patterns to continue wastefully will be very detrimental, both in terms of the economy, the environment and efforts to maintain the benefits of energy resources themselves. Because the "diseases" that arise as a result of ignoring energy conservation efforts are quite severe, the implementation of energy conservation as a necessity cannot be postponed any longer in Indonesia.

Thus, it is very necessary to promote energy conservation for every energy-using sector (transportation, industry, offices, households) as well as every type of energy used (especially fuel). How to "half force" or build public/government awareness to make energy conservation a new culture needs to be developed.

CONCLUSION

According to the author, several strategic steps that need to be taken to make the energy conservation movement more effective are: 1) Energy saving campaigns, conducting energy audits (free of charge), disseminating energy conservation techniques, providing incentives for efficient use of energy. 2) Prepare an Energy Conservation Law (as detailed as that developed for example by Japan). 3) Establish a National Energy Conservation Center (as done by Japan/Muangthai). 4) The need for an Energy Law as a legal basis for implementing energy conservation. 5) The need for financial institutions to support investment in implementing energy conservation. 6) The need for fiscal policies (import duties & tax incentives) that are selective and support energy conservation measures. 7) Accelerate the formation of an energy saving culture by involving all elements of society with a religious and sociocultural approach.

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