

ALTERNATIVE ENERGY TOWARDS NATIONAL SUFFICIENCY Energy needs are an inseparable need of human live nowadays. Energy plays an important role in the sustainable social, economical and environmental living as agreed world-wide in the World Summit on Sustainable Development (WSSD).

The world energy in the future, as forecasted by Energy Information Administration (EIA), until the year 2025 will still be dominated by fossil based fuel: oil, natural gas, and coal -- alternative energy will still play a small role. Meanwhile, from usage perspective, oil based energy usage is dominated by transportation sector, and is predicted to continuously increases until 2025, while the commercial and residential sector will see not much changes.

The World wide electric consumption is projected to increase from 14.275 billion watt in 2002 jumping to 26.018 billion watt in 2025, and most of the source for this energy needs will be coal based which constitute almost 40%, followed by the ever increasing natural gas.

In Asia, the projected energy needs will increase from 110 quadrillion Btu (Qbtu) in 2002 to 221 Qbtu in 2025 or increase 200% within 23 year period. From those such high increases,, China is the country with the highest increase, that is from 43 Qbtu in 2002 to 109 Qbtu in 2025.

With such high energy needs, some countries, such as Japan, Malaysia, Thailand, etc. planned to save energy . In Malaysia, SREP (Small Renewable Energy Power) program were planned, and a Special Committee on Renewable Energy (SCORE) were formed to run the program. Meanwhile, Thailand has formed EPPO (Energy Policy and Planning Office). EPPO policy stated a goal to save fossil based energy usage up to 70 % with 10 years Strategic Plan Energy Conservation. That strategy main focus is to increase the efficiency and economic in transportation, industry and residential sectors. To head towards the goal, steps to develop human resources and increasing community awareness has been taken through various campaigns. To direct the alternative energy goal, Thailand formed DAEDE (Department of Alternative Energy Development and Efficiency). Currently, Thailand already have renewable alternative energy source consisting of approximately 17% of the whole energy needs, and their domestic usage covers for more than 53% of it, while import takes 46%.

Energy usage in Indonesia also follows the general world wide trend --it is increasing as the population, economy or technology growth increases. Energy usage mix in Indonesia currently is more than 90% fossil based, consisting of oil 54,4%, gas 26,5% and coal 14,1%. For native heat (Panas Bumi) 1,4%, PLTA (Hydro based) 3,4%, while new and renewable energy 0,2%.

The oil reserve is estimated at 9 billion barrel, with average production rate of 0,5 billion barrel per year, therefore the oil reserve wil be depleted in about 18 years. The estimated reserve of natural gasis 170 TSCF (trillion standard cubic feet), while the production capacity reaches 8,35 BSCF (billion standard cubic feet) which are divided for export 4,88 BSCF and for domestic usage 3,47 BSCF. The coal reserve in Indonesia is estimated at 57 billion ton, and consist of explored reserve of 19,3 billion ton; with production capacity of 131,72 million ton per year. Therefore, assuming there is no additional explorations, the coal reserve will stand for 147 years.

From reserve perspective, Indonesia still has large enough reserve, but the main issue in Indonesia is that there are no policy that provided for national energy sufficiency/tenacity, where so many communities have not even get supply of energy such as electricities, not enough domestic oil production to fulfill domestic energy needs so that import is needed, subsidized oil prices that heavily burdening government financials, and if the price is adjusted to conform to internasional pricing, there will be unrest in the population due to the low buying power, etc.

At this time, electricity availability in Indonesia has only reached 21,6 GW or 108 watt per person, almost exactly like India which is only one sixth of Malaysia (609 watt/person) and far lower than Japan that already reached 1.874 watt/person. Ironically, Indonesia has a lot of potential for electricity , from non-fossil energy like native heat (Panas Bumi) equivalent of 27 Giga watt (GW), hydro power 75 GW, biomass 49 GW, solar power 48 kWh/m²/day, wind power 9 GW, uranium 32 GW or in total more than 230 GW and only 10% has been used for electricity.

The availability of energy that can be used by the Indonesian people is still very low, that is 0,467 toe per capita, compare that to Japan with 4,14 toe/capita, but on the other hand, so much energy was wasted, estimated at 470 toe per million US Dollar, while Japan only 92,3 toe per million US Dollar.

To cope with the issues in the energy sector, many policies have been created, such as Kebijakan umum bidang energi (KUBE) (General Energy Sector Policy) since 1981, and it has been revised in 1987, 1991 and 1998. Also, Kebijakan Energi Nasional (KEN) (National Energy Policy) created in 2003. Kebijakan Pengembangan Energi Terbarukan (Renewable Energy Development Policy) and Konservasi Energi (Energi Hijau) (Energy Conservation) that was issued by Departemen Energi dan Sumber Daya Mineral (Department of Energy and Mineral Resources) on 22 Desember 2003.

The Policies above have not completely answered all of the issues; therefore, for operational reason, the Blueprint Pengelolaan Energi Nasional 2005-2025 (National Energy Management Blueprint 2005-2025) which stated: The energy usage mix for oil shall become 26,2%, Natural Gas 30,6%, Coal 32,7%, Hydro Power 2,4%, Native Heat 3,8% and others 4,4% comprising of : biofuel, solar power, wind power. Fuelcell, biomass, nuclear energy, etc.

The Blueprint has not been formalized into government policy, therefore has not been used as a national reference. For that matter, it's been suggested to create an energy law as the main umbrella for matters related to energy , and then the adaptation or related laws, such as nuclear energy laws, electricity laws, etc. The law must be accompanied by instruments to make it easier to implement, both in the regions and in central.

It is also necessary to revise the pricing policy, to lower the subsidies, the smuggling of refined fuel oil to foreign countries, the mixing of different types of oil, etc.. Coordination at national level is necessary. especially with regard to the Police, the Army and other law enforcing agencies.

Regional Policy typically waits for policies from the central; with the advent of the energy law and its clear programme, regions can decide the energy development direction that matches their existing potential.

Fiscal Policy related to energy is very important, such as those that can provide fair and consistent incentives. The Incentives that are needed, among others, are provision for tax incentive in the form of postponement, dispensation, waiver of VAT, as well as import tax exemption for those companies that are active in the renewable energy sectors and energy conservation; appreciation to businesses that excel in implementing energy conservation and utilization of renewal energy; luxury item tax exemption for renewal energy and energy conservation equipment; providing interest-free financial loans for engineering sector as an investment in renewable energy and energy conservation development.

Research and Development in the alternative energy and energy conservation needs to be directed towards improving national capabilities in the mastery of science and technology, within the framework of developing the related service and technology of renewable energy and energy conservation, through the cooperation with superior research institute or industry. Besides that the program needs to be budgeted well, the cost for research and development can be taken from the reduction of subsidies, as well as from special budgets that can reduce the social and economical cost due to energy wasting issues. Government budget for alternative energy is suggested to be 2,5% of subsidy budget, be it subsidy for oil or subsidy for electricity, and year after year, is given priority for increases to accelerate resolution of energy issues.

Educational Policy needs to be directed towards encouraging public to initiate more alternative energy and energy conservation implementations. In addition, technical regulations are required to guarantee availability and utilization of high quality, safe, reliable and environmental-friendly alternative energy and energy conservation.

Also the implementation of standard to guarantee product quality for energy products as well as for the energy system and equipment produced domestically or internationally, related to alternative energy and energy conservation.

If in Malaysia, they've SCORE and Thailand formed EPPO, in Indonesia, other than organization in the Departemen ESDM(Department of Energy and Mineral Resources), BP Migas has been formed. To specifically manage the alternative energy and energy conservation, it is recommended to form alternative energy and energy conservation organization separate from existing department.

One need to be aware that the resolution to the national energy problem cannot happen overnight, and it must encompasses comprehensive long term policies. Holistic and comprehensive long term Macro level policies that are consistently implemented is much needed.

RECOMMENDATION

Energy reserve in Indonesia is still large, but has not provide the national energy tenacity, while fossil-based energy utilization has its limitation, therefore conservation and high efficiency is necessary. Especially for oil energy, besides the limited domestic reserve, the domestic production capacity is also decreasing year after year and cannot meet the OPEC quota..

Therefore, it's been suggested to create an energy law as the main umbrella for matters related to energy , and then the adaptation or related laws, such as nuclear energy laws, electricity laws, etc. The law must be accompanied by instruments to make it easier to implement, both in the district and in central. It is also need to provide a clear program, such should be stated in the energy blue print, that need to be synchronized with housing, transportation, industry and commercial area policy. The blueprint needs to be formalized to be a national reference, so that all energy related needs should be adapted to the blueprint.

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