



TOWARDS RENEWABLE ENERGY

Of Electric Cars,
Renewable
and more
Efficient Energy,
and a Greener
way Of Life

Y.B. Dato' Sri Peter Chin Fah Kui
Minister Of Energy, Green
Technology And Water

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Renewable energy – what does it mean and just how far have we as a nation come in embracing it to fulfill our power and energy requirements?



editor's note

By definition, renewable energy is derived from natural resources such as sunlight, wind, water, rain, tides, geo-thermal heat, bio-mass and other sources that can be replenished constantly to generate electricity and power.

In pursuit of renewable energy sources, Tenaga Nasional Berhad (TNB) today invests in not only conventional power plants powered by gas, coal and diesel, but we have also made significant inroads in relation to employing other power producing alternatives.

In terms of renewable energy sources, hydro electric remains the single largest contributor to electricity generating a total of 1,012MW nationwide. More and more solar energy systems are also being deployed nationwide and are currently used to power communities in rural areas. And while still at experimental stage, TNB is also actively pursuing a number of alternative sources of generating power which includes the only wind turbine and bio-mass power plant in the country located in Terengganu.

With growing concerns pertaining to the supply of raw materials, conventional power plants dependant on gas and coal no longer presents the nation with a sustainable long-term energy programme. The predicament we are also faced with as a nation whose power needs are increasing in tandem with the country's industrialization and robust economic growth, is the fact that renewable sources of energy have not reached the stage in which it can be solely relied on as primary source of electricity and power. It is with this in mind that the Government recently signaled its intent to embrace nuclear energy which would not only be able to sustain the country's future and long-term energy requirements, but more importantly enable the unit price of electricity to be better regulated as unlike coal and gas, the impact to price increases in raw materials is almost next to none.

In pursuit of nuclear energy, TNB is however, of the opinion that power generation be looked in totality and not in isolation, whereby it will also continue to employ traditional sources as well as forge ahead to intensify the development of renewable energy sources.

In this issue of *Tenaga Link*, Minister of Energy, Green Technology and Water, Dato' Sri Peter Chin Fah Kui underlines some of the policy measures introduced and initiatives undertaken by the Government in pursuing what is essentially a "Greener Way of Life".

TNB Chairman Tan Sri Leo Moggie also shares his views on renewable energy sources and discusses the probability of Malaysia's first nuclear energy power plant. Tan Sri Leo also differentiates fact from popular public belief or perception in terms of renewable energy sources, and finds out why it is extremely challenging to pursue hydro, solar, wind, geo-thermal and bio-mass power producing alternatives.

Amidst these challenges however, also read about how the nation's first tri-hybrid power generation system which includes diesel generators, a solar station and a wind turbine works in harmony to power communities on the island of Pulau Perhentian in Terengganu.



Of Electric Cars, Renewable and More Efficient Energy, and a Greener way of Life

Y.B. DATO' SRI PETER CHIN FAH KUI
MINISTER OF ENERGY, GREEN
TECHNOLOGY AND WATER



The introduction of electric vehicles and infrastructure in support of running them, the research and commercialization of indigenous green technology, and the emergence of green townships are among various initiatives being pursued by the Ministry of Energy, Green Technology and Water in an effort to encourage Malaysians to embrace a greener culture and way of life.

As Governments around the world make a more conscious step to embrace the “green” way of life, Malaysia too is today in the forefront of this global revolution and has embarked aggressively to intensify efforts in pursuit of renewable energy and greater energy efficiency.

“We are looking at a holistic approach in advocating green technology in the country. Firstly, the Government acknowledges the fact that green technology is a new thing especially for Malaysians and therefore, approaching the public with the green technology agenda abruptly will not do any good,” said Minister of Energy, Green Technology and Water, Yang Berhormat Dato’ Sri Peter Chin Fah Kui.

The most significant step forward in pursuing renewable energy and energy efficiency has been taken in successfully drawing up the National Green Technology Policy.

The policy essentially underlines five strategic thrusts; strengthening institutional frameworks; providing conducive environment for green technology development; intensify human capital development in green technology; intensifying green technology research and innovations; and, promotion and public awareness.

In strengthening institutional frameworks, the Green Technology Council has been formed which today acts as a policy-making body spearheading the development and implementation of green technology in the country. Also established is the Malaysia Green Technology Agency which co-ordinates and implements green technology initiatives and programmes. In an effort to place Malaysia among the regional leaders in implementing green technology, the Government has also launched the Green Technology Fund that is dedicated towards implementing projects and promoting the use of green technology.

The success of green technology will also depend on a more conducive environment, and Chin said this involves promoting the growth of Malaysia’s very own green technology industry in manufacturing and services envisioned to one day be capable of supplying both local and international markets. The Government’s role will be to

introduce supportive monetary and fiscal policies to help accelerate growth in green technology. In addition to encouraging the promotion of foreign direct investments (FDIs) in green technology, the Government has also established a Green Technology Financial Scheme (GTFS) with an allocated budget of RM1.5 billion to be extended to manufacturers and users of green technology in the form of soft loans.

Chin said Malaysia's ability to emerge as a regional leader in green technology will however, depend on human capital development. In support of creating a larger pool of skilled, qualified, technically competent and productive workforce, the Ministry is continuously enhancing training and education programmes related to green technology. Other initiatives include the implementation of a retraining programme and apprenticeship scheme to enhance the competency of semi-skilled labour, the formulation of a grading and certification mechanism for competent personnel in green technology, and exploiting brain gain programmes to strengthen local expertise in green technology. In collaboration with the Ministry of Human Resources, Ministry of Youth and Sports, and Ministry of Tourism, "green" topics are also being addressed in skills training programmes to prepare the local workforce for green jobs.

Another critical area that is being developed is in research, development, innovation and commercialization of green technology. These efforts include the provision of grants and assistance to both the public and private sectors; establishing an

agency to coordinate research efforts in green technology development; enhancing smart partnerships between Government, industries and research institutions; and establishing strong linkages between local research institutions and regional and international centres of excellence in green technology.

In its pursuit Chin said, Malaysia actively engages in international dialogues and cooperation on various platforms which includes participating at the East Asia Summit (Energy Cooperation Task Force), the Asia Pacific Cooperation (APEC) Energy Working Group, and the ASEAN Ministers on Energy Meeting (AMEM).

"Many countries around the region like Thailand and Japan are quite advanced in their energy and renewable energy efforts. Thus, through these cooperation, we could share our views and at the same time learn from the experiences of these countries," he added.

These efforts however, Chin pointed out, would amount to nothing if the public did not understand or took advantage of the benefits of green technology.

"Effective promotion and public awareness are the two main factors that would affect the success of green technology development," he said. "This is particularly significant as it requires a change in mindset."

In generating greater awareness, the Ministry has undertaken various initiatives from organizing seminars, talks, carnivals, airing of television commercials, to the dissemination of energy-related articles

to the media. Every year since 2007, it has organized Energy Month which brings together various activities and energy user groups in a month-long campaign. The Ministry in collaboration with the Centre for Education, Training and Research in Renewable Energy and Energy Efficiency (CETREE) meanwhile, participates in road shows and activities in schools and institutions of higher learning providing training to both teachers and students. With the co-operation of the Ministry of Education and Higher Education, "green" topics are also today being integrated into the education system and higher education curriculum.

Promotional efforts include organizing the Energy Efficiency and Renewable Energy Carnival in 2009 that provided a platform for manufacturers of energy efficiency and renewable energy products to showcase their products and at the same time encouraging the use of these products by offering significant discounts.

This year, the Ministry will also organize the first International Green Tech Eco Products Exhibition and Conference which will be held from 14-17 October, aimed at promoting related products to local and foreign investors.

"It is paramount for us to reach the people at the grass roots level. Ultimately, the green technology agenda will reach all Malaysians and this will help the development and application of green technology reach its forefront with Malaysians adopting a green culture and green way of life," Chin said. ■



Malaysia Considers Nuclear Energy to Meet with Increasing Energy Demands

In May, the Government announced its intention to start the country's first nuclear power plant by 2021. The proposed nuclear plant is intended to meet with the country's increasing demand for energy and to ensure energy security. The country's current power usage is 14,000 megawatt and has a capacity of 23,000 megawatt.

The Ministry of Energy, Green Technology and Water has been given approval by the Economic Council to begin identifying suitable sites for the plant. The final decision on whether the plant would be built was however, at the discretion of the International Atomic Energy Agency (IAEA).

Malaysia intends to build the plant with technological assistance from South Korea, China, France or Japan.



Y.B. DATO' SRI PETER CHIN FAH KUI

*MINISTER OF ENERGY, GREEN
TECHNOLOGY AND WATER*

Nuclear energy is seen as the only viable option towards meeting with long-term energy needs. Malaysia's energy mix is currently overly reliant on gas and coal which accounts for more than 90%. Gas and coal is too costly and more susceptible to increase in prices coupled with constraints in supply. With an average increase in electricity demand of 3% per annum from 2010 to 2030, nuclear energy presents itself as a very attractive proposition in providing secure, reliable and cost-competitive electricity supply to consumers. The lifespan of a nuclear power plant is said to be between 50 and 70 years.

Prime Minister Datuk Seri Najib Tun Razak meanwhile said the Government would first invite public opinions on the future of electricity generation in the country especially the use of nuclear energy. The Government he added, was undertaking feasibility studies on nuclear energy use for electricity generation which is arguably more efficient and cost effective, and whether it was the right decision for Malaysia.

To gauge Malaysia's state of readiness in developing nuclear power, a Nuclear Power Development Programme Steering Committee led by the Ministry of Energy, Green Technology and Water was set-up in 2009 to undertake studies in several areas which include human capital readiness in embracing this new technology.

As of 2008, the IAEA reports that nuclear power provides 14% of the world's electricity, with the United States, France and Japan combined accounting for 56.5% of nuclear generated electricity. There are currently 438 nuclear power reactors in operation around the world, operating in 31 countries. France produces the highest percentage of its electrical energy from nuclear reactors at almost 90%, while 30% of electricity in the European Union (EU) is generated by nuclear energy.

The IAEA in a report stated that current forecasts suggest the world will see an increase in global energy consumption of over 50% by 2030, with 70% of this growth in demand expected to come from developing countries. Nuclear energy therefore plays a role in providing increased access to affordable energy in many parts of the world.

In implementing a nuclear power programme, the IAEA states that it would require at least 10 to 15 years before the commissioning of a power plant once a policy decision is made. Obligations and commitments associated with a nuclear power programme, both at the national and international level must also include the need to:

- Develop a comprehensive nuclear legal framework covering all aspects of the peaceful uses of nuclear energy, i.e. safety, security, safeguards, and liability, in addition to the commercial aspects related to the use of nuclear material;
- Establish and maintain an effective regulatory system;
- Develop the human resources for the State organizations and also for the operating organizations required to effectively supervise and implement the nuclear programme;
- Ensure adequate financial resources for the construction, sustained safe operation and decommissioning of the NPP, as well as radioactive waste management;
- Develop a programme for all aspects of operation, decommissioning and radioactive waste management;
- Manage nuclear materials for the long term;
- Communicate in an open and transparent manner with the public and the neighbouring Countries about the considerations behind the introduction of nuclear power.

How does nuclear produce electricity?

A nuclear reactor produces and controls the release of energy from splitting the atoms of elements such as uranium and plutonium. In a nuclear power plant reactor, continuous fission of the atoms in the fuel releases energy released in the form of heat which is then used to make steam. The steam is used to drive turbines which produce electricity (as in most fossil fuel plants, but without the combustion of fossil fuels and resultant greenhouse gas emissions).

Nuclear power plants are designed to remain operational even if they are not connected to the larger electrical grid. All nuclear power plants are equipped with multiple redundant emergency power supply (diesel generators) which can go into operation in a few seconds in case of a total failure of power supply or electricity blackout.





Did you know?

- A nuclear power plant has a staff of between 200 and 1,000 personnel who collectively have a variety of scientific, engineering and other technical backgrounds in fields needed to effectively and safely operate and maintain the plant. These include: nuclear engineering, instrumentation and control, electrical engineering, mechanical engineering, radiation protection, chemistry, emergency preparedness, and safety analysis and assessment.
- Most of the reactors available for purchase and construction are water-cooled reactors, for which significant operational experience exists worldwide. These are mainly pressurized light water reactors (PWRs), boiling water reactors (BWRs), and heavy water reactors (HWRs). These reactors are generally available in sizes of about 1000MW or greater electrical output. Slightly smaller reactors of 600-700MW output are also available using water reactor technology.
- The construction cost of new plants can vary widely. Generally, a value of US\$1.5 to US\$2 million per MW of electrical capacity is indicative of current costs for a nuclear power plant and even higher in some countries. Efforts are being made to

reduce these capital costs and some forecasts of values between US\$1 to US\$1.5 million per MW have been made for future designs. Plants with larger electrical output are generally considered to have lower capital cost per unit of output.

- The initial high capital cost in building a nuclear power plant is normally offset by low operating and fuel costs, so that over a long period the cost of generated electricity is expected to be competitive with other sources at current fuel prices. The sensitivity of the electricity generation cost to the price of fuel is also much lower for nuclear plants than for fossil fuelled power plants.
- Of the 10 nuclear power plant construction started in 2008, eight are in the Asian region similarly with the 28 of the 44 reactors currently under construction. Six of the 10 construction starts are in China. A total of 28 of the 39 newly-operational reactors that have been connected to the grid meanwhile, are in Asia.

- France is the world's largest net exporter of electric power, exporting 18% of its total production (about 100 TWh) to Italy, the Netherlands, Belgium, Britain, and Germany, and its electricity cost is among the lowest in Europe. Popular public support of nuclear power plants in France is borne from a sense of national independence and reduced reliance on foreign oil, reduction of greenhouse gases, and a cultural interest in large technological projects.

- In Asia, nuclear power plants exist or are in the process of being constructed in Japan, China, Republic of Korea, Democratic Republic of Korea and India. Capacity is greatest in Japan, with 54 reactors in operation and two under construction. In the Republic of Korea, with 19 reactors are in operation and one under construction. India has 14 operating reactors while in China, there are nine operating reactors.
- Nuclear power plants emit virtually no greenhouse gases. The complete process of producing nuclear energy – from uranium mining to waste disposal, including reactor and facilities construction – emits only two to six grammes of carbon per kilowatt-hour. Therefore, the operation of the world's nuclear power reactors avoids the release of roughly 600 million tonnes of carbon, should the same energy be generated by a proportionate mix of non-nuclear sources.■

TNB Power Station



Of Renewable Energy Sources, Differentiating Fact from Popular Belief, to Going Nuclear

Tan Sri Leo Moggie
Chairman
TNB

As Malaysia's first Minister of Energy, Telecommunications and Posts, a post he was appointed to in 1978 and served for over two decades (1978 – 1989 and 1995 – 2004), Tan Sri Leo Moggie was one of the key individuals responsible for mapping out Malaysia's energy requirements and policies.

Retiring from the Government as the former Minister of Energy, Communications and Multimedia in 2004, he is today the Non-Executive Chairman of Tenaga Nasional Berhad and is as passionate if not more, speaking of a subject that has been very close to his heart.

Tenaga Link spoke to Tan Sri Leo Moggie who shares his views on the company's commitment towards renewable energy sources and the current debate on whether Malaysia should invest in a nuclear power plant.

RENEWABLE ENERGY SOURCES

"As far as TNB is concerned, we are very conscious of our role in seeking renewable energy sources and there has been a lot of work behind the scenes that encourages this."

One of the earliest efforts was to encourage generation of electricity and power from bio-mass, in view of the large amounts of waste materials produced by the palm oil industry.

The initial target in the mid-90s was to be able to have bio-mass contribute to about 5% of the nation's electricity supply. Unfortunately, due to unfavorable conditions and cost factors at the time, this could not be achieved.

While the nation today is powered largely by coal and gas power plants, Tan Sri Leo said supply of both gas and coal has grown into a significant concern. Malaysia's gas reserves are decreasing while coal is being used in large volumes by other countries, especially China and India, for electricity generation,- putting greater pressure on both supply and prices.

"If you look at coal for instance, there are already a number of concerns. Firstly, the question of carbon emissions, and secondly, the demand for it worldwide also threatens the security of its supply and this has caused the prices of coal to constantly increase and inevitably have an impact on the electricity tariffs."

SEPARATING FACT FROM POPULAR BELIEF

“TNB is committed towards identifying sources of renewable energy. The issue at hand, and one that is being glossed over, is that renewable energy sources have yet to be able to achieve the desired volume in which it can be relied on as a base load or primary source of electricity and power.”

“Renewable energy sources have yet to be able to achieve the desired volume in which it can be relied on as a base load or primary source of electricity and power.”

While the general public’s perception is that Malaysia’s all-round hot weather can be used to generate electricity via solar power, the strange fact is that the sun shining in the middle of winter in a Scandinavian country may perhaps be a better source to harness the sun’s heat.

“Yes we enjoy a considerable amount of hot and sunny weather in Malaysia but we also have very low cloud cover. The other challenge is of course electricity generated must be used immediately. The technology to store the energy, which is produced from solar for example, is still not available. Then there is the question of cost. Production of electricity using solar technology is still on the expensive side. It may be sometime yet for it to cost-effective to be commercially used on a large scale,” Tan Sri Leo explained.

TNB however, today operates a number of solar hybrid stations throughout the country which is mainly used to power rural areas.

Similarly with wind turbines, Malaysia also does not experience consistent wind sufficiently required to generate power efficiently and reliably. And while studies were undertaken some years back on the possibility of geo-thermal power plants

in Sabah, again, the actual quantities of thermal activity could not be established to justify the high capital expenditure required in constructing a plant.

“As a country that is developing, all these various forms of renewable energy sources; solar, wind turbine, bio-mass and geo-thermal are important and can contribute to the total supply of electricity and power in the longer term. But it is unlikely that it will contribute substantially to accommodate the desired levels required in the near future.

“Having said this, these alternative forms of renewable energy sources should be encouraged and continued in the event the technology one day evolves which makes it then not only suitable but commercially viable to pursue on a greater scale.”

Elaborating on the potential of hydro electric, Tan Sri Leo said while this remained one of the most reliable sources of energy, there were limited locations suitable in Peninsular Malaysia. Most probable locations have in fact, already been developed. Peninsular Malaysia’s hydro potential is in fact limited to 1700MW.

He also cited social and environmental concerns pertaining to the development of hydro electric dams which often involved the sensitivity of relocating communities and the clearing of land.

“Power generation should be looked in totality and not in isolation. This would mean combining the use of conventional ways of producing power, renewable energy sources and new alternatives”

And while there were significantly more areas that could be potentially developed in Sarawak for hydro electric purposes, the distance separating it from Peninsular Malaysia would mean not only significant

cost to put in place the transmission lines but there is also the issue of these lines crossing international waters. Increased economic development in Sarawak meanwhile, also demanded greater supply of electricity within the state.

The question of power generation should be looked in totality and not isolation. This would mean combining the use of conventional ways of producing power (gas and coal), renewable energy sources such as hydro, solar, geo-thermal, bio-mass and wind, and new alternatives such as nuclear energy and better and more efficient use of energy.

ARE WE READY FOR NUCLEAR ENERGY?

“Unless we identify and plan from now, Malaysia’s increasing demand for power will see our reserves down to about 20% by 2015. For us this is a risky level as our demand growth is high. This is why it is necessary to look at alternatives such as nuclear energy. For immediate and short-term purposes, TNB will need to look at increasing the capacity of our coal-powered plants,” Tan Sri Leo said.

In pursuit of a secure, reliable and cost-efficient source of primary electricity supply, he said, Malaysia cannot ignore considering building nuclear power plants. While the initial cost to develop a nuclear power plant was high, by nature of it being a dependable source of power supply meant that the unit cost of electricity could be managed better and in a more stable form over the long term.

“Nuclear energy is nothing new to Malaysia. We already have a small reactor in the country for medical use”.

“It was always an option to use nuclear power but in the 1980s it was decided to consider it as a last option. Today however, we are at a stage where we now find it necessary to revisit this option.”

“There are so many other countries around the world that safely operate nuclear power plants and they have managed to contain this concern. This is something that we will have to learn from them.”



In anticipation of Malaysia embracing nuclear energy one day, engineers and personnel from the then Lembaga Letrik Negara (LLN) had also been exposed to the appropriate knowledge, competencies and experiences in dealing with nuclear energy power plants. In 2008, TNB also established a Nuclear Energy Unit and is today in contact with other utility companies and authorities around the world that operate nuclear power plants. Since June 2008, TNB has also sent more than 90 of its personnel for training, courses, workshops and seminars related to nuclear energy.

In weighing the option to embrace nuclear energy, Tan Sri Leo understood and shared the public's concern about a nuclear accident (mainly in reference to Chernobyl) and the disposal of radioactive wastes.

"There are so many other countries around the world that safely operate nuclear power plants and they have managed to contain this concern. This is something that we will have to learn from them."

"While there is concern about the disposal of radioactive wastes, there are also many countries around the world that have been able to address this safely. Obviously, this is something that has to be addressed.

"And as much as we are concerned about adopting nuclear energy, this concern is not peculiar to us in Malaysia. There are so many other countries around the world that safely operate nuclear power plants and they have managed to contain these concerns. This is something that we will have to learn from them."

"Nuclear energy should be developed hand in hand with renewable energy and energy efficiency. These options should complement each other, not either or."

The setting-up of a nuclear power plant he added, would also be required to strict pre-requisites, regulations and audits by the International Atomic Energy Agency (IAEA). This involves site considerations, the geological stability of the area proposed, a minimum safe distance from the nearest community settlement, and transportation and logistical requirements to fulfill.

On TNB's role in the proposed nuclear power plant, Tan Sri Leo said the company if entrusted by the Government to undertake the programme, was prepared and experienced to accept the responsibility of becoming the developer-cum-operator of the first nuclear energy power plant.

"I am confident that we can do it and we have our own initiative preparing our personnel for it. We have the experience in building and operating power plants."

INCREASING ELECTRICITY DEMAND VS. WASTAGE

While the increasing demand in electricity/power reflects directly on Malaysia's robust economic growth, Tan Sri Leo did not deny the fact that a significant percentage of the increase could be attributed to wastage.

While there are no data and statistics to pin down the precise amount of wastage, a survey carried out by the Ministry of Energy, Telecommunications and Posts some years back did reveal that if selected industries were to invest in energy efficient equipment, it could save them up to 30% in terms of electricity consumption.

"There is definitely significant amounts of wastage which is why a lot more can be done at both the consumer and industry level to encourage them not only to invest in energy efficient equipment and household items but more importantly discourage them from wasting electricity.

"These initiatives can be as simple as switching off any electrical equipment when not in use, using machines at off peak hours (particularly in industries where there are peak and off-peak tariff rates), having the air-conditioning system at optimum temperature settings etc."

This, he explained, was also precisely why the Government approved electricity tariff for households utilizing up to 200kWh is maintained at 21.8 sen/kWh, while next 200 kWh (201 -400 kWh) is charged higher at 33.4 sen/kWh, and those utilizing more than 901kWh are charged even higher at 44.6 sen/kWh.



In addressing the increasing power supply demand, Tan Sri Leo also raised another pertinent point in which he suggests that the Government look into the type of industries Malaysia should be encouraging for the future.

"Are we encouraging the right kind of industries or should we continue to encourage industries which consume tremendous amounts of power? This is a policy matter that needs to be addressed by the Government and the relevant agencies.

"At TNB, we remain committed to our role and that is to ensure we continue to provide the country with sufficient power."■



Ir. Hj. Azman Mohd appointed as Chief Operating Officer/ Executive Director of TNB

Ir. Hj. Azman Mohd, Vice President (Distribution) has been appointed the Chief Operating Officer/Executive Director of TNB effective 15 April 2010. Ir. Hj. Azman was born on 26 September 1957 at Gong Kapas, Kuala Terengganu. He received his early education at Sekolah Rendah Sultan Sulaiman and his secondary education at Sekolah Menengah Tengku Bariah in Kuala Terengganu. He then studied for a Diploma in Engineering at Newark Technical College in the United Kingdom (1974-1976) before pursuing a Degree in Engineering at the University of Liverpool (1976-1979). He obtained Masters in Business Administration from Universiti Malaya in 1996.

In 2008, he was conferred the Pingat Darjah Kebesaran Johan Mangku Negara (J.M.N) by His Majesty the Yang di-Pertuan Agong. Ir. Hj. Azman Mohd was appointed Vice President (Distribution) on 14 November 2008. Prior to this, he was Senior General Manager (Operations – Region 2), Distribution Division of TNB. Tenaga Link wishes to congratulate Ir. Hj. Azman on his appointment as the Chief Operations Officer/Executive Director of TNB. May he chart great success in his new endeavour. In expressing gratitude for the appointment, Ir. Hj. Azman described it as a responsibility and trust that must be discharged with full confidence.

“I feel blessed on this appointment. I pray and hope that I am able to take up the trust and discharge my responsibilities to the best of my ability,” he said. He also considered the appointment as an opportunity for TNB employees to aspire for higher positions, be it within or outside the company. “This is about the company’s internal succession planning,” he elaborated. Ir. Hj. Azman also recorded his appreciation for the support he has received particularly from all employees of the Distribution Division who have worked closely with the senior management in providing the best services to customers.

Well done, Ir. Hj. Azman Mohd!



Hj. Hussin Othman spearheads the Distribution Division

Kuala Lumpur – TNB’s Board of Directors in its meeting held in May 2010 approved the appointment of Hj. Hussin Othman, Senior General Manager (Asset Management) of TNB’s Transmission Division as Vice President (Distribution) with effect from 1 June 2010.

Hj. Hussin’s appointment is to fill the position that fell vacant following the appointment of Ir. Hj. Azman Mohd as TNB’s Chief Operating Officer/Executive Director in April.

Prior to his appointment, Hj. Hussin was the Senior General Manager (Asset Management) of Transmission Division, State General Manager for Selangor and Perak respectively.

During his service as the General Manager for the two states, Hj. Hussin Othman had succeeded in winning several prestigious awards for the Distribution Division.

When heading Perak, Hj. Hussin Othman led the State team in winning the Distribution League Table Championship Trophy in 2005. He also succeeded in bringing home the Technical Sports Championship Trophy in 2006 which used to be dominated by TNB Melaka.

As the head of Selangor, he distinguished himself by forming a strong team that succeeded in winning the 2007 Technical Sport Championship Trophy for the state.■



TNB Metering, Billing/CRM Asia 2010 Conference



Tenaga Nasional Berhad (TNB) in May played host to the Metering, Billing/CRM Asia 2010 Conference which brought together almost 40 high-level industry speakers and 350 delegates worldwide.

Held at the Shangri-La Hotel in Kuala Lumpur, the two-day event from 11-12 May, organised by Synergy Clarion Events, was a platform for industry players to exchange ideas, share their experiences and showcase some of the latest smart metering technologies.

“The core purpose of smart meters is to provide information on how consumers use their electricity on a real-time basis. Armed with this knowledge, consumers can have more control over their electrical usage. This real-time data will play an important role in smart grids which is the next big technology to revolutionise the utility industry in Asia,” said Yang Berhormat Dato’ Sri Peter Chin Fah Kui, the Minister of Energy, Green Technology and Water. His speech was read by Deputy Minister Yang Berhormat Puan Noriah Kasnon who also officially opened the conference.

The advent of smart grids and smart meters is expected to be able to reduce energy consumption by 10% as Governments around the world shifts the attention to reducing carbon emissions in favour of securing, supplying and promoting greater energy efficiency. In addition, smart metering is also seen as a logical step in a world that is today heavily reliant on digital communication systems.

Meanwhile, in his welcoming address, TNB Chairman Tan Sri Leo Moggie said TNB has been supportive of adopting new technologies for both energy metering and billing systems in an effort to enhance customer service.

TNB embarked on the use of electronic energy meters which replaces the previous generation’s electromechanical energy meters since 1985. Effective 2002, all defective electromechanical energy meters were also replaced with the new electronic energy meters.

Going a step further, TNB in 2005, began installing automatic energy meters for Large Power Customers (LPCs) which permits electricity consumption to be read accurately and timely from a remote reading centre.

Tan Sri Leo said automatic energy meters also pave the way towards paperless billing in which trials are currently underway to gauge the acceptance of customers of having their bills made available online on TNB’s website or via email.

“Automatic energy metering systems benefits both the customer and TNB by providing accurate information on energy usage and the ability to each customer to trend their electricity consumption”.

“These systems enable customers to plan their energy consumption more efficiently and cost effectively and at the same time, help TNB to detect theft of electricity and irregularities in the usage of electricity,” Tan Sri Leo added. ■

Dialogue with EC Pahang

BEST SERVICE TO CUSTOMERS A TOP PRIORITY

Energy Commission hopes TNB can minimize supply disruption to customers

Kuantan – Senior General Manager (Operations - Region 2), Roslan Ab. Rahman said TNB Pahang needs to accord priority in providing the best service to electricity consumers in line with the Government's objective of placing the people first and giving top priority to achievement.

Roslan was speaking after chairing the recent dialogue session held between the Pahang State Energy Commission and Pahang State TNB Management.

The three-hour dialogue session was conducted in a harmonious and 'family' atmosphere and had succeeded in finding solutions to several critical issues.

Roslan also said that TNB took serious view of and would ensure that electricity supply to Government projects especially to new school buildings, be given due priority.

He requested the Pahang TNB Management to be fully aware of newly-initiated Government projects and to monitor its progress so that electricity supply can be provided to the buildings on the dates stipulated.

Roslan also informed the Energy Commission that TNB not only held dialogues with different consumer sectors such as the Federation of Malaysian Manufacturers (FMM) and steel manufacturers and plastic manufacturers, but had also conducted frequent dialogues with consumers in the rural areas through its Community Leaders Outreach Programme (CLOP). Such dialogues serves as a platform for bringing TNB closer to the rakyat and leaders at the state level where their views and feedback are taken into account and used to further enhance TNB's service quality to its 7.3 million customers.



In his closing remarks, Roslan said that action and reports should immediately be submitted to the Commission and urged that the existing cooperation between the regulatory body and TNB Pahang be further enhanced for mutual benefit.

Meanwhile, Shahidan Baharom, the Security Commission's Head of Investigation and Enforcement said that as a regulatory body for electricity supply, any action taken by the Commission must be fair to both the consumers and electricity suppliers.

The Commission is currently concerned with the issue of electricity supply disruption to consumers and hopes that such incidents can be reduced. He was optimistic that such dislogues held at state level would help to overcome many issues raised for the benefit of consumers and electricity suppliers.

Also raised by the Commission was the issue of Over Voltage, registration of competent persons, temporary electricity supply for

construction sites dan cases of electricity-related accidents. TNB on the other hand, highlighted concerns with regards to the disconnection of electricity supply to gambling premises, the Commission's cooperation in publicising the use of electronic meters and rationale of low power charge rates to consumers.

Shahidan also requested all TNB Regional and Branch Managers in Pahang to continue working closely with the Energy Commission in the state in their joint efforts to speedily solve all issues raised by the consumers.

On the implementation of electricity supply performance standards based on Guaranteed Service Level (GSL), Hjh. Nazariah Ibrahim, TNB's General Manager (Customer Service and Marketing) said that joint-discussion with the Security Commission Headquarters on GSL 1 (Frequency of Supply Disruption) and GSL 2 (Supply Recovery Period) is ongoing before these can be fully applied.■

Development of Customer Link

Corporate Account Relationship Enhancement (CARE) Program is a Program developed in December 2007 to form a better relationship with TNB's corporate customers.

CARE Program adopts the concept of 'one contact point', where a special executive (CARE Manager) from the Customer Service & Marketing Department, is appointed to manage a corporate account. The CARE Manager is responsible to create continuous interaction between TNB and their respective corporate customers in order to obtain feedback on TNB's services.

The main objectives of CARE Program are:

- To foster closer two-way relationship between TNB and corporate accounts and at the same time to give better service to corporate customers.
- To get feedback from corporate accounts on TNB's services, to monitor and to take effective actions in order to fulfill the customers' needs.
- To promote TNB's bulk payment scheme.

In its implementation, the Program has identified 8 segments such as the following:

- Bank/Financial Institutions
- Business Complexes
- Utilities
- Fast Food Chains
- Telecommunications
- Hotels
- Transportations
- Petroleum

As at FY2009/10, CARE Program is into its 3rd year of implementation. It has benefited corporate customers privileged to be under the CARE Program. Following are the initiatives carried out under the Program.



The main objective of the programme is to enhance relationship between TNB and its Corporate Customers whilst giving exposure on its current products and services

Continuous Interactions

Two-way communication is practiced between CARE Managers and their respective corporate customers to enhance relationship via phone-ins, walk-ins, e-mails, formal/informal meetings, get together and visits.

The CARE Managers are ready to offer solutions to any issues or concern addressed by the customers. Frequent visits were made to customers' premises to gauge the growing concerns and issues with some personal touch. These issues or concerns are monitored closely through a special application that enables complaints or queries to be managed effectively through a particular contact person.

Through this effort, we have managed to understand customers' needs and concerns much better in order to effectively handle and resolve issues raised. This achievement is strongly attributed from the continuous support and assistance from all TNB state, region and district offices nationwide.

CARE Group E-mail

Corporate customers are given special attention and latest information is made available through specially designed CARE E-mail group which is developed to expedite updating of information effectively.

Annual Event

To date, we have organised two successful events under the CARE Program that was held on 17 December 2008 and 12 November 2009. The events organised were luncheons and visits to TNB premises and Control Centre. The main objective is to further enhance the relationship between TNB Distribution Division Management and customers and to give exposure to customers on TNB products and services. This event also marked the occasion of acknowledging loyal customers.



Talks/Briefings on TNB Products & Services

Special talks/briefings were conducted with customers in order to increase their awareness on services rendered by TNB. Briefings by Subject Matter Expert (SME) on energy efficiency and power quality were arranged for the corporate customers to educate and increase the level of understanding on certain issues.

Courses & Talks

In an effort to promote continuous improvement, courses and talks were conducted for our CARE Managers. This is to build greater professionalism and excellence in providing service to our customers. The following courses/talks were being held during FY2009/10:

- i) Building Customer Service (21 – 22 January 2008)
- ii) Enhancing Protocol and Business Networking (16 – 17 June 2008)
- iii) TNB CARE Manager Service Communication and Writing Skills (30 – 31 March 2009)
- iv) Up Your Service (24 March 2010)

Continuous Improvement

During this FY2009/10, a survey will be conducted to gauge customer feedback on the CARE Program where all 46 customers under the CARE Program will be amongst the sample to provide feedback that would help improve our services in future.

Future Planing

In line with the growing customers and higher expectations, the CARE Program may undergo further expansion and strengthening of its services. The CARE Managers will continue to provide significant feedback towards improving customer service and image of the company.■



SREP – Sustaining Nature for Our Future



Roughing through steep terrain for 45 minutes in four-wheel drive vehicles was certainly an unforgettable experience for the management team from the Headquarters Distribution Division who recently visited the Sungai Kerling Mini Hydro Station in Rawang.

Looking at the steep slope of the hills alone created jitters amongst those who traveled in the convoy of vehicles. However, with the skills and dexterity displayed by our drivers, the delegation, headed by Ir. Hj. Mustafa Din, Senior General Manager (Operations – Region 1) arrived safely at the Sungai Kerling Mini Hydro area. The facility is situated approximately 12km from the Kuala Kubu Hot Spring.

Upon arrival, the group was given a briefing on the operating system of the mini hydro by Dato' Shamsuddin Hayroni, Director, Renewable Power Sdn. Bhd., the company responsible for the construction of the Sungai Kerling Mini Hydro.

The Sungai Kerling Mini Hydro is one of the projects under the *Small Renewable Energy Power Project (SREP)* and has the

capacity to generate electricity supply of 2MW to the grid through the 'run-of-river' scheme.

The scheme involves the erection of minor barriers or mini moulds to the flow of the river that drain into an *intake*. The water is then channeled to the mini hydro station to move the generator-linked turbine which subsequently produces electricity.

The electricity produced is then channeled to the Station Main Switch (SSU) at Lembah Damai to meet with the power needs of the area.

TNB's involvement in the development of the mini hydro project underlines the company's support of the Government's initiative in developing sustainable energy for the country. ■



Government selects TNB to implement Hybrid Solar Project for Rural Schools



The then Vice President (Distribution), Ir. Hj. Azman Mohd thanked the Federal Government for the trust it has placed in Tenaga Nasional Berhad (TNB) in implementing the electricity supply project to rural schools through the Hybrid Solar System (HSS) at a cost of RM98 million.

The Ministry of Education (MoE) is acting on behalf of the Government in ensuring the smooth implementation of the said project.

Ir. Hj. Azman said this on the occasion of the visit by the Ministry's Deputy Secretary General (Development), Dato' Badarudin Abd Rahaman to Sekolah Kebangsaan Lenjang and Sekolah Kebangsaan Kitom in Kuala Lipis, Pahang recently.

The visit was to obtain an overview of the project as well as to look into other requirements such as rewiring, site location and accessibility difficulty so that these

problems could be resolved at the project site in the future.

TNB's challenge is to complete the HSS at 36 schools in the interiors of Pahang, Perak, Kelantan and Johor by March 2011.

"As the implementor of this important project, the Distribution Division needs to prepare a project management plan to ensure the smooth implementation of this project and in fulfilling the Government's expectation," stressed Ir. Hj. Azman.

Ir. Hj. Azman further indicated that he and Hjh. Nazariah Ibrahim, General Manager (Customer Services and Marketing) will act as the coordinators between TNB and the Government.

"The Customer Services and Marketing Department will coordinate, monitor and review actions if necessary to ensure the

Government's expectations are fulfilled. Given the expertise and experience, I am fully confident that TNB will be able to complete this project successfully", said Ir. Hj. Azman.

Also present during the visit were Chairman of the Pahang Orang Asli Affairs and Rural Development Committee, Datuk Wan Rosdy Wan Hashim, State General Manager of TNB Pahang, Datuk Rumai Abdullah and Mohd Azhar Abdul Rahman, Acting Managing Director of TNBES. TNBES is TNB's contractor for the HSS project.

The delegation also visited the rural water supply project in the vicinity of the schools. The project which deploys modern technology is also implemented under the supervision of the Ministry of Education and will benefit not only students of the schools in Lenjang dan Kitom but also people in the nearby villages.■

Terengganu at the Forefront of Pioneering Hybrid Electricity Supply

The best of both worlds – conventional power plants running on gas, coal and diesel, together with renewable energy sources in the form of hydro, wind, solar & bio-mass.

Pulau Perhentian is a jewel off the coast of Terengganu, synonymous with its white sandy beaches, crystal clear water and rich marine life. However, in recent years one of the most unlikely attractions have been two 30-metre tall structures facing the South China Sea that have drawn enormous curiosity from visitors to the island.

Majestically sat on top of the highest point of Pulau Perhentian Kecil (the smaller of the two islands, the structures are the only wind turbine power generators in Peninsular Malaysia.

“It has become quite a tourist attraction,” said Terengganu State General Manager for Tenaga Nasional Berhad Ir. Haji Md Yuslan Md Yusof.

The wind turbine which generates 200kW of electricity (enough to power approximately 200 households), was a project undertaken in collaboration between TNB, the Terengganu State Government and the Ministry of Regional and Rural Development (MRRD) as part of the national effort to look into sources of renewable energy.

Pulau Perhentian also houses the only tri-hybrid power system in the country which in addition to the wind turbine, the island is also powered by a solar power generator capable of producing another 100kW of electricity, while conventional diesel generators produce the remaining 500kW of electricity required. Pulau Kapas meanwhile, runs on a dual-hybrid system (solar and diesel).

According to Ir. Haji Md Yuslan, the hybrid system currently was still under evaluation, although preliminary results have shown that both wind turbines and solar generators offered tremendous potential.





The biggest challenge in putting up wind turbines in Malaysia however, is preventing it from being struck by lightning, while solar generators are dependant on ideal hot weather conditions.

“These are some of the factors that TNB, together with the Terengganu State Government are still studying. An exercise is also underway to map suitable locations to house wind turbines by the State Government. In the event, we can address the various issues pertaining to wind turbines for example, who knows, it may just be feasible enough to even establish a wind turbine farm similar to what you have in Southern California in the United States, or solar farms for that matter.”

Terengganu’s electricity consumption at the moment peaks at 528MW and it has been increasing over the last three years (2007: 480MW) (2008:487MW) (2009: 511MW). There are currently two gas-powered power stations in Terengganu producing 1200MW and 800MW respectively, and two hydro electric power stations (Sultan Mahmud Power Station 400MW and Berang Mini Hydro Power Station 480kW). Work is currently underway to complete a third hydro power station (Kenyir 2 dam) which is capable of producing another 250MW by 2015.

In terms of power generation, gas remains the biggest source of electricity for Terengganu (83%) followed by hydro which contributes 16% and diesel. Both solar and wind generated electricity for the moment equates to less than 1%. In terms of consumption, 70% of electricity is absorbed by the industrial sector (364 factories), 20% used by the commercial sector (47,244 premises) and the remaining 10% utilized for residential purposes (238,133 households). The industrial use of electricity has also grown by 10% since 2009.

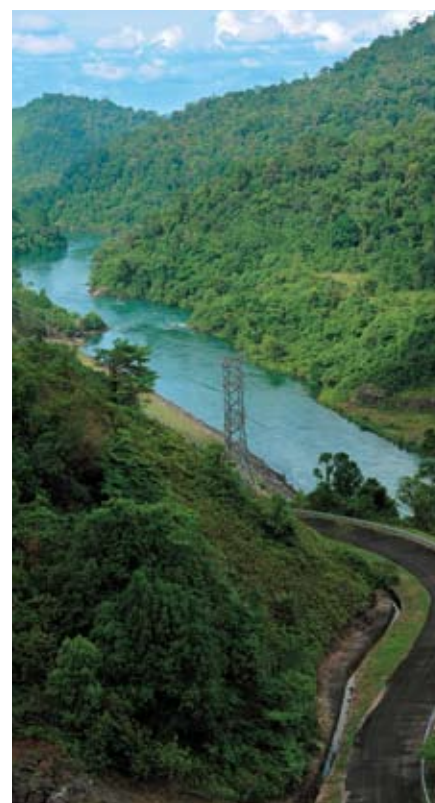
“Identifying sources of renewable energy is extremely important for us in Terengganu, given the fact that gas supply, which comes from the offshore fields of Terengganu, is expected to be uncertain beyond 2019,” Ir. Haji Md Yuslan said.

“While Malaysia has other sources of gas in Sabah, these are being sold at higher market prices to countries like Japan under long-term contracts. Both coal and diesel is also becoming increasingly costly. Demand for coal worldwide has also increased which places additional challenges in obtaining sufficient supply. Then, there is the question of escalating costs in terms of maintenance and this is precisely why it is important to look towards alternative sources of energy.”

Another potential source of renewable energy being looked into is palm bio-mass. There are about 20 FELDA schemes throughout Terengganu and in the process of palm oil production, millions of tones of palm wastes are being generated and often disposed off via burning or left unattended in effluent ponds. In pursuit of this initiative, TNB, under its Small Renewable Energy Program (SREP), is currently evaluating, a palm bio-mass facility proposal in Telok Kalong, Kemaman which will be capable of producing 10MW of power.

In the pursuit of renewable energy sources and comparing the three alternatives currently presented (wind turbine, hydro and solar), hydro electric, Ir. Haji Md Yuslan believes, yield the greatest potential in terms of suitable geographical locations, cost, efficiency and practicality.

“What has to be understood, however, is the fact that while hydro at the moment is the single largest form of renewable energy that contributes to the state and country’s electricity requirements, the volume generated remains insufficient and incapable of replacing conventional sources of power generation.”■



AT YOUR SERVICE Tenaga Nasional Berhad Terengganu

State General Manager:

Ir. Haji Md Yuslan Md Yusof

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Experience in TNB: 19 years

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"We support all initiatives to reduce greenhouse emissions intensity by 40% of 2005's level by the year 2020"