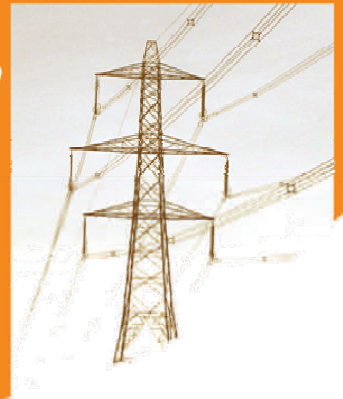


# SURVIVAL

the future of our  
national  
electricity  
industry



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***Association of Water and Energy Research Malaysia (AWER)***



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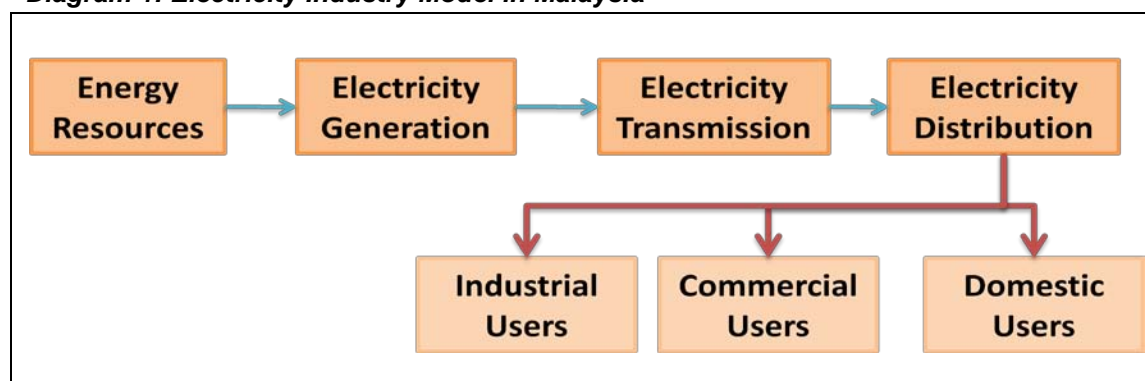


## Part 1: Background Information

### 1.1 Electricity Industry Model

The electricity industry works in a simple model of converting energy resources into electricity. The structure, operation and financial implications form a **NATURAL MONOPOLY** in the electricity market all over the world. Diagram 1 shows the simple flow of electricity industry model in Malaysia.

*Diagram 1: Electricity Industry Model in Malaysia*



Energy resources are converted into electricity (a form of energy) and connected through a grid system. This grid system is known as transmission and eventually the electricity will reach to end users via a distribution system.

The energy resource conversion into electricity and its usage is a linear process. This means that energy resources are converted and eventually will be used up. Such situation makes Malaysia in need of an efficient, effective, equitable and secured electricity model to function as well as enabling sustainable development to achieve Vision 2020.

While the regulator, policy maker and industry are geared towards reforms, Association of Water and Energy Research Malaysia (AWER) would like to analyse the situation to assist in betterment and enhancement of the reforms to protect the nation, the people as well as meeting the growing demand of electricity.

## 1.2 Benchmarking Malaysia's Electricity Industry

The electricity industry in Peninsular Malaysia and Sabah is regulated under the Energy Commission. On the other hand, electricity industry in Sarawak is being regulated under the state government. Now the utility companies will be benchmarked based on statistics obtained from official reports.

Note: [Peninsular (Tenaga Nasional Berhad - TNB), Sarawak (Sarawak Energy Berhad - SEB) and Sabah (Sabah Electricity Sdn Bhd - SESB) where necessary].

### 1.2.1 Comparison of Malaysia's Market and Foreign Market

According to BP 2030 Energy Outlook, world primary energy use is projected to grow by an annual average of 1.7% from year 2010 to year 2030. In Malaysia, based on statistics provided in National Energy Balance 2008, Malaysia records an annual average primary energy use increase by 6.1% between year 2000 and 2008. This figure is close to average GDP increase in the same period which is 6.0%. The energy demand increase is not only closely linked to GDP but also to population increase. This only proves that Malaysia's energy demand will be increasing above projected world average primary energy usage. While meeting our own demands, we need to ensure that electricity industry would be able to cater equitable tariff to ensure continuous growth of economy.

**Table 1: Comparison of Economic and Energy Indicators in selected Countries for Year 2009**

Country	Income status*	GDP (USD)	Population	GNI per capita (USD)	Energy use**
<b>Australia</b>	HI	924,843,128,521	21,874,900	43,770	5996
<b>Canada</b>	HI	1,336,067,710,612	33,739,900	41,980	7411
<b>France</b>	HI	2,649,390,172,579	62,616,488	42,620	4041
<b>Germany</b>	HI	3,330,031,687,465	81,879,976	42,450	3894
<b>Indonesia</b>	LMI	540,273,507,315	229,964,723	2,050	874 (2008)
<b>Malaysia</b>	UMI	193,092,897,727	27,467,837	7,350	2693 (2008)
<b>Singapore</b>	HI	182,231,748,149	4,987,600	37,220	3828 (2008)
<b>South Korea</b>	HI	832,511,649,033	48,747,000	19,830	4693
<b>Thailand</b>	LMI	263,772,103,261	67,764,033	3,760	1591 (2008)
<b>United Kingdom</b>	HI	2,174,529,808,278	61,838,154	41,370	3195
<b>United States</b>	HI	14,119,000,000,000	307,007,000	46,360	7075

(Source: Compiled from World Bank)

USD: US Dollar; GDP: Gross Domestic Product; GNI: Gross National Income (Atlas Method)

(\*HI: High income, UMI: Upper middle income, LMI: Lower middle income)

(\*\*unit: kg of oil equivalent per capita)

Table 1 outlines the economic and energy indicators of selected countries for year 2009. The countries with high income status are having higher energy use per capita compared to countries with lower middle income and upper middle income status. This is parallel with the increase in economic growth and productivity within these countries. Furthermore, all the countries above have different market structures for electricity market that caters the needs of people, businesses and political arrangements.

In order for Malaysia to achieve a developed and high income nation status, the energy use per capita will definitely increase. Therefore, Malaysia's electricity industry needs a holistic planning.

### **1.2.2 System Average Interruption Duration Index (SAIDI)**

SAIDI is commonly used as a reliability indicator by electricity utilities for the distribution system. SAIDI is the average outage duration for each customer served. It is calculated as: **SAIDI =  $\frac{\text{sum of all customer interruption durations}}{\text{total number of customer served}}$**

Table 2 (page 5) shows the SAIDI performance of selected utilities around the world. AWER has converted the SAIDI into a comparison index to highlight Malaysian utility companys' performance. If the index is more than 1, it means the particular Malaysian utility company performs better; and if it is less than 1 (shaded area), it means the particular Malaysian utility company's performance is lower.

AWER has also included the new record for SAIDI in Sabah for year 2010. After massive improvement works done in Sabah, the SAIDI was recorded at 687.39 minute/customer/year. Overall, TNB's SAIDI performance is better than both SEB and SESB. In addition to that, TNB has also performed a good SAIDI benchmarked internationally. Therefore, it is advisable for both SEB and SESB to further improve their SAIDI performance. At this point, KeTTHA and Energy Commission play a vital role to assist both companies to achieve the goal.

Table 2: Comparison Index of SAIDI for TNB, SEB and SESB compared international utilities

Utility company / Country*	SAIDI* (minute per customer per year)	Comparative index= SAIDI of the selected utility SAIDI of TNB or SEB or SESB			
		TNB	SEB	SESB	SESB (2010)
Aurora, New Zealand (2009)	183	2.77	0.85	0.06	0.27
Orion, New Zealand (2009)	62	0.94	0.29	0.02	0.09
TNB Distribution (2009)	66	-	0.31	0.02	0.10
SESB (2009)	2867 (687.39 – 2010)	43.44	13.27	-	4.17
SEB (2009)	216	3.27	-	0.08	0.31
Singapore (2009)	0.69	0.01	0.003	0.0002	0.001
TEPCO, Japan (2008)	3	0.05	0.01	0.001	0.004
United Kingdom (2008)	68	1.03	0.31	0.02	0.10
Citipower , Australia (2008)	26	0.39	0.12	0.01	0.04
Metropolitan Electric Authority, Thailand (2008)	50.65	0.77	0.23	0.02	0.07
Victoria (2008)	197	2.98	0.91	0.07	0.29
Powercor, Australia (2008)	142.6	2.16	0.66	0.05	0.21
South Australia (2008)	150	2.27	0.69	0.05	0.22
New South Wales (2008)	180	2.73	0.83	0.06	0.26
Tasmania (2008)	304	4.61	1.41	0.11	0.44
United States (2008)	86	1.30	0.40	0.03	0.13
Western Power, Australia (2009)	221	3.35	1.02	0.08	0.32
Energex, Australia (2009)	322.3	4.88	1.49	0.11	0.47
Pacific Corp, California (2009)	330.52 (228.25 if major incident excluded)	5.01 (3.46)	1.53 (1.06)	0.12 (0.08)	0.48 (0.33)

(\*Source: Electricity Supply Industry In Malaysia – Performance and Statistical information 2009, Energy Commission)

### 1.2.3 Average Selling Price of Electricity

**Table 3: Average selling price of Electricity in Malaysia and selected countries in Asia**

Utility / country	Domestic (sen/kWh)	Commercial (sen/kWh)	Industry (sen/kWh)	Public lighting (sen/kWh)	Agriculture (sen/kWh)	Overall (sen/kWh)
PLN, Indonesia	19.84	28.40	21.43	22.08	N/A	22.18
Kepeco, South Korea	34.83	31.16	23.34	23.92	12.67	26.37
SESB	22.64	28.50	24.46	30.06	N/A	25.54
SEB	31.17	32.12	23.70	47.08	N/A	28.90
Taipower, Taiwan	30.67	36.45	26.46	12.79	N/A	29.24
TNB	27.69	37.72	28.82	20.56	37.06	31.54
Egat, Thailand	34.58	41.88	31.08	N/A	N/A	32.58
CLP, Hong Kong	N/A	N/A	N/A	N/A	N/A	40.47
Meralco, Philippines	65.60	57.93	46.47	N/A	N/A	57.24
Tepco, Japan	85.60	59.60	59.60	N/A	N/A	68.24

(Source: *Electricity Supply Industry In Malaysia – Performance and Statistical information 2009*, Energy Commission) [N/A: Not Available]

Table 3 outlines the electricity tariff comparison for different category of users based on selected utilities in Asia. AWER has produced domestic tariff comparison index as shown in Table 4 and overall tariff comparison index in Table 5. If Malaysian utility company scores above 1, the company's tariff is lower and; if the Malaysian utility company scores below 1 (shaded area), the company's tariff is higher.

**Table 4: Domestic Tariff Comparison Index**

Utility / country*	Domestic* (sen/kWh)	Domestic Tariff Comparison Index= <u>Domestic tariff of the selected utility</u> Domestic tariff of TNB or SEB or SESB		
		TNB	SESB	SEB
PLN, Indonesia	19.84	0.72	0.88	0.64
Kepeco, South Korea	34.83	1.26	1.54	1.12
SESB	22.64	0.82	-	0.73
SEB	31.17	1.13	1.38	-
Taipower, Taiwan	30.67	1.11	1.35	0.98
TNB	27.69	-	1.22	0.89
Egat, Thailand	34.58	1.25	1.53	1.11
Meralco, Philippines	65.60	2.37	2.90	2.10
Tepco, Japan	85.60	3.09	3.78	2.75

(\*Source: *Electricity Supply Industry In Malaysia – Performance and Statistical information 2009*, Energy Commission)

Based on information in Table 4 (page 6), domestic tariff in Malaysia is relatively low compared to other Asian countries except Indonesia. However, SEB's domestic tariff is higher than both TNB and SESB domestic tariff.

**Table 5: Overall Tariff Comparison Index**

Utility / country*	Overall (sen/kWh)	Overall Tariff Comparison Index= <u>Overall tariff of the selected utility</u> Overall tariff of TNB or SEB or SESB		
		TNB	SESB	SEB
<b>PLN, Indonesia</b>	22.18	0.70	0.87	0.77
<b>Kepeco, South Korea</b>	26.37	0.84	1.03	0.91
<b>SESB</b>	25.54	0.81	-	0.88
<b>SEB</b>	28.90	0.92	1.13	-
<b>Taipower, Taiwan</b>	29.24	0.93	1.14	1.01
<b>TNB</b>	31.54	-	1.23	1.09
<b>Egat, Thailand</b>	32.58	1.03	1.28	1.13
<b>CLP, Hong Kong</b>	40.47	1.28	1.58	1.40
<b>Meralco, Philippines</b>	57.24	1.81	2.24	1.98
<b>Tepco, Japan</b>	68.24	2.16	2.67	2.36

(\*Source: Electricity Supply Industry In Malaysia – Performance and Statistical information 2009, Energy Commission)

Table 5 shows the overall tariff comparison. TNB's overall tariff is higher than both SEB and SESB. In addition to that, our current overall tariff is lower than Thailand, Hong Kong, Philippines and Japan. Even South Korea, a leading high income nation in Asia is still having lower overall tariff if compared to TNB's and SEB's tariff. Therefore, if natural gas subsidy is going to be removed gradually, the government needs to have detailed planning to ensure that our competitiveness in global market is remained. In other words, Malaysia has to improve operation efficiency holistically in generation, transmission, distribution and usage. We will address this issue further in Part 3.



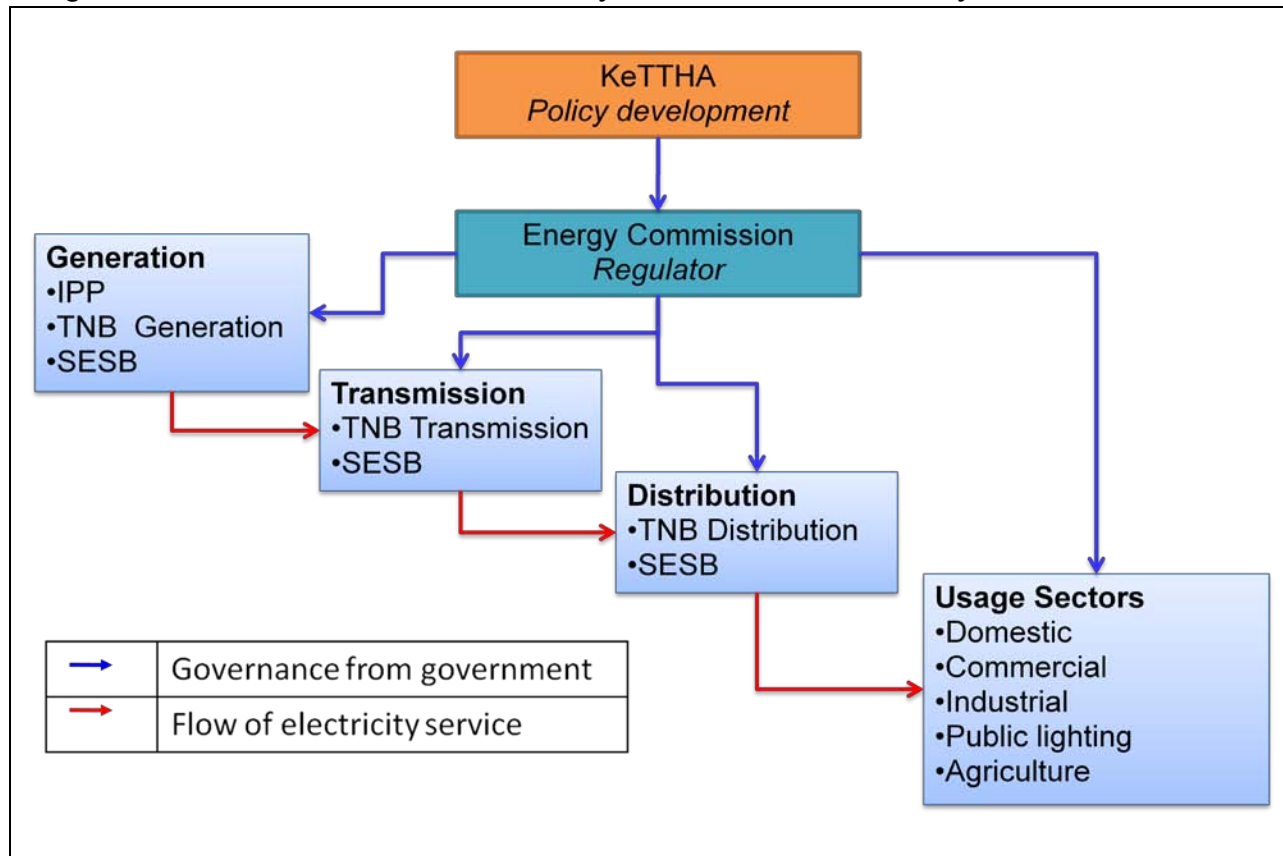


## Part 2: Electricity Industry in Malaysia

### 2.1 Current Status

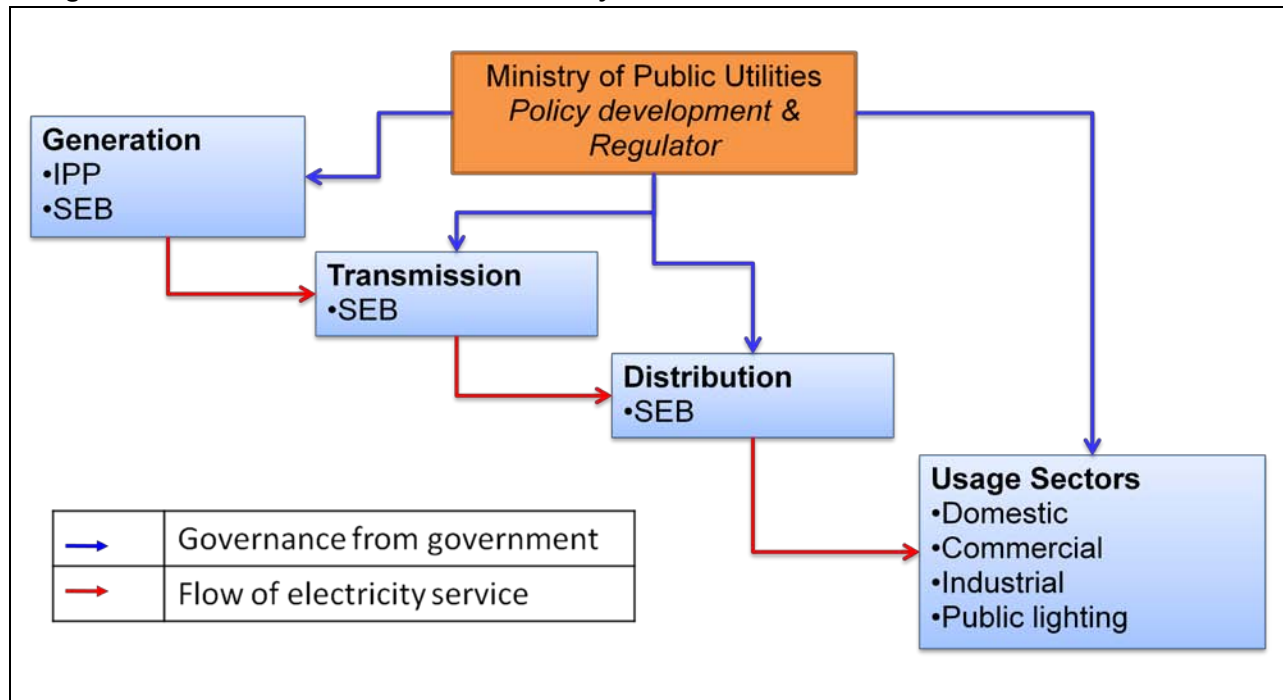
Ministry of Energy, Green Technology and Water (KeTTHA) is the federal ministry in charge of electricity portfolio for Peninsular Malaysia and Sabah. KeTTHA is focused in policy development and assisted by Energy Commission to regulate the electricity industry as well as end users. The extend of regulation varies and the role played by KeTTHA and Energy Commission in regulating IPPs (Independent Power Producers) is still vague.

**Diagram 2: Governance and Flow of Electricity Service in Peninsular Malaysia and Sabah**



On the other hand, Sarawak is functioning via a previous model implemented in Peninsular Malaysia. SEB owns Syarikat SESCO Berhad (the electricity company in Sarawak) and regulated via the Ministry of Public Utilities as shown in Diagram 3 (Page 9).

Diagram 3: Governance and Flow of Electricity Service in Sarawak



Currently, Peninsular Malaysia and Sabah are gearing towards industry reforms which will outline a new model for electricity industry regulatory framework. The success of the reforms will determine the capability of Malaysia catering the energy demand growth and attracting investors. Therefore, AWER urges SEB to be included in the industry reform process so that Sarawak can benefit from the reforms.

## 2.2 10<sup>th</sup> Malaysia Plan (2011 – 2015)

A New Energy Policy will be developed under 10<sup>th</sup> Malaysia Plan. The policy is aimed to encompass energy security and economic efficiency as well as environmental and social considerations. The policy is also said to place the following principles:

- (i) **To secure and manage reliable energy supply** - highlights the importance of securing energy resources that is reliable and environmental friendly. It also mentioned that the government is considering nuclear energy as an option and it will be dealt transparently.
- (ii) **Measures to encourage energy efficiency (EE)** - encouraging EE through a master plan and standards developed for all level of users. However, the 10<sup>th</sup> Malaysia Plan did not mention freezing the entrance of energy intensive industry (or industries that uses a lot electricity in its operation) to Malaysia especially smelting industries.

- (iii) **Adoption of market-based energy pricing** - the rationalisation of subsidy will be done periodically to achieve market pricing. The plan also mentioned that gradual removal of natural gas subsidy will be reviewed once in every 6 months to achieve the 2015 market pricing target.
- (iv) **Stronger governance** - the industry needs to be disciplined to raise productivity and efficiency. This includes renegotiation of PPA. However, the plan did not specify the degree of transparency and competitive bidding process for new generation plants.
- (v) **Managing change** - the plan did not specify type of structural change that the industry is going to adhere to. Therefore, it is unclear how the change will be managed holistically.

The Energy Commission is now working on Incentive Based Regulation that is fundamental in achieving all the above principles. However, based on AWER study and consultations with the relevant stakeholders, there are still ample of room for improvement, enhancement and clarity.

Fairness and transparency in governance, regulation, enforcement as well as pricing (through tariff) are the pertinent issues that need to be ironed out. Without proper planning, it will be impossible for Malaysia to achieve Energy Security.

## 2.3 Power Purchase Agreement (PPA)

Traditionally (a word always referred to in IPP/PPA issues), PPA has been the baby of Economic Planning Unit (EPU). By virtue of operation, EPU should not do this as it is an 'economic planning' unit and in Malaysia there is a 'commission' for Energy under laws approved by the parliament. Based on consultation with Energy Commission, Energy Commission is now fully in charge of the process of enrolling new IPPs from year 2010 onwards.

According to *Electrical Supply Industry in Malaysia – Performance and Statistical Information 2009 report*, there are 26 IPPs in Malaysia (including Sabah and Sarawak) with total licensed capacity of 16,459 MegaWatt (MW). PPA has been the centre of attention when it comes to electricity industry. PPA functions similar to concession agreements. The issues surrounding PPA are basically only one, **PRICING**.

The government has pledged to renegotiate PPA in the 10<sup>th</sup> Malaysia Plan and bring better efficiency in pricing. Based on consultations with relevant stakeholders, we were informed that the renegotiation has been dragging for some time. In addition to that,

PPA could be seen as one of the factors that make KeTTHA and Energy Commission finding it difficult to regulate the generation sector even with the Incentive Based Regulation that is currently being developed. With the first batch of PPAs are ending by year 2015 to 2016, any delay in renegotiation will not benefit the nation. Therefore, it is high time for KeTTHA and Energy Commission to develop a clear model to regulate the generation sector.

## 2.4 Electricity Tariff

Cost of electricity from generation to distribution before reaching the end users will be translated into tariff. The fuel cost is mixed between market pricing and subsidised pricing. Malaysia's coal supply is fully market based pricing as it is procured through international market. On the other hand, natural gas is still subsidised by Malaysian government and supplied by Petronas.

In Malaysia, we do not have **an effective 'fuel cost pass through mechanism' with a transparent tariff setting process**. Technically, electricity tariff should comprise the following:

- (i) **Audited** Operational Expenditure (Opex)
- (ii) **Audited** Capital Expenditure (Capex)
- (iii) **Regulated** Profit
- (iv) Reinvestment Expenditure

Reinvestment Expenditure will be used to improve technologies to achieve better efficiency. This is a basic need and reality in an engineering process. If efficiency is not improved, the overall impact to tariff definitely will rise.

Breaking electricity costs into its small components and deriving impact to tariff from each individual component will ensure a transparent tariff setting process. Under this principle, only electricity services related cost should be passed through tariff. Unfortunately, the Incentive Based Regulation that is being developed is not covering the generation sector. This is not similar to the model that the Federal Government is emphasising in the water services industry restructuring through Water Services Industry Act 2006 (WSIA).



## Part 3:

# Sustainable Electricity Industry with Equitable Tariff

## 3.1 Regulatory Framework Proposed by AWER

*Diagram 4: Proposed Regulatory Framework for Electricity Industry by AWER*

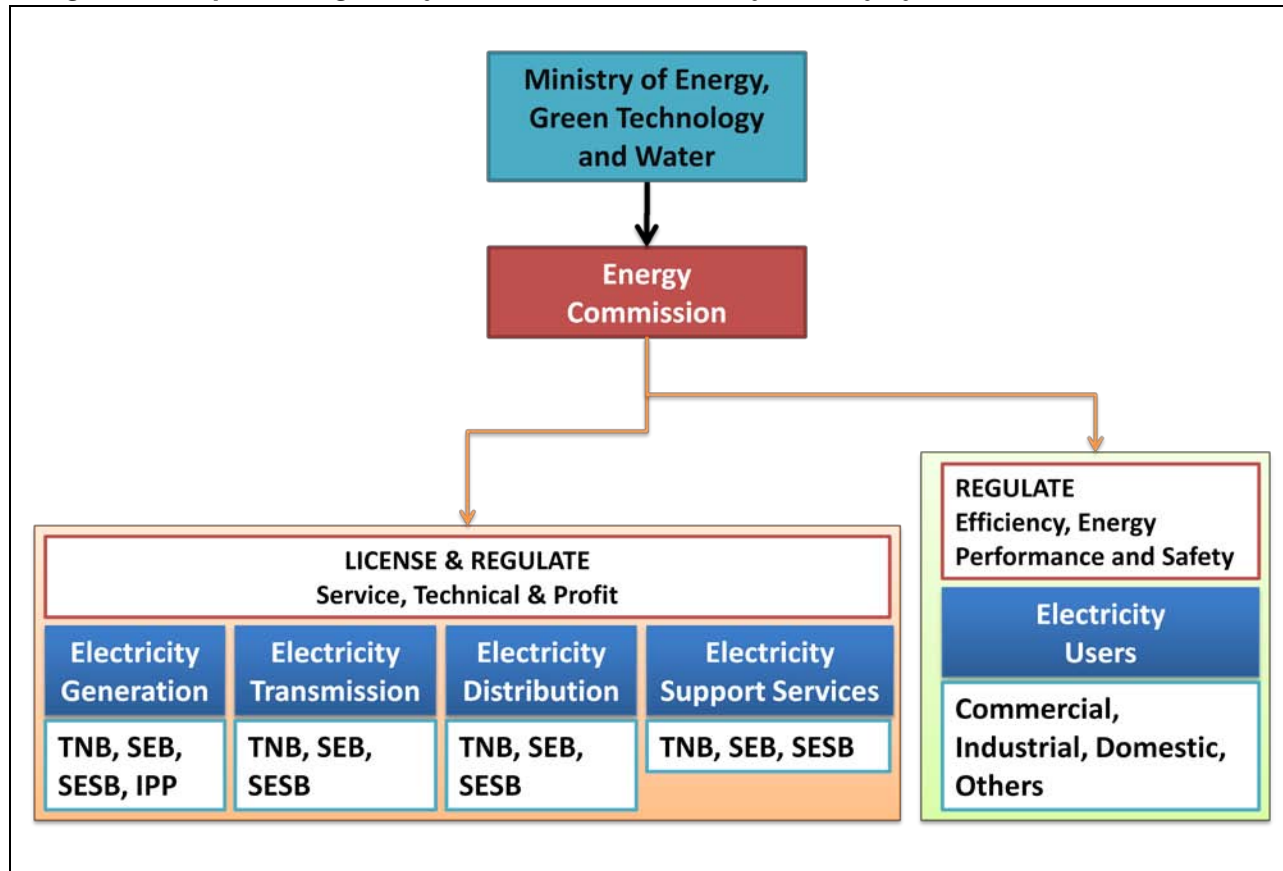


Diagram 4 shows the proposed regulatory framework by AWER for electricity industry and users. The growth of electricity industry in Malaysia must be equally benchmarked. In Sarawak, rural electrification is a core issue. Therefore, AWER would like to propose that Sarawak electricity industry to be regulated under Energy Commission as well.

AWER's proposal is aimed to enhance the Incentive Based Regulation that is being developed by Energy Commission currently. The generation sector contributes most cost to tariff. Therefore, it is vital to regulate this sector under a national regulatory framework to ensure the people's wellbeing is protected.

### 3.1.1 Regulating Electricity Generation

The major costs that contribute to electricity tariff are fuel cost and generation cost. The current model used for generation sector is not economically efficient. There are old plants or inefficient plants that need to be reinvested to improve the efficiency or decommissioned. In addition to that, **WATER AND ENERGY IS A NATURAL MONOPOLY BUSINESS**. Therefore, 'blind folding' generation cost and passing it to tariff is injustice. If generation cost can be capped via effective and transparent regulations, it will bring greater economic efficiency. Besides this, there should be a mechanism to prevent any type of **concession agreements or PPAs**. The WSIA model that is implemented in water sector is a good approach of transferring PPA into a licensing regime, where IPPs will be fully regulated like others.

The bidding process for new power plants must have better competitiveness and transparency which can result into equitable tariff. The competitive bidding should incorporate the following criteria:

- (i) **Profit that is capped** – It is unfair to pass a higher generation cost to tariff just because a particular company wants exorbitant profit. Therefore, Energy Commission must cap the profit that can be made by the companies.
- (ii) **Best generation efficiency** – Technology and its efficiency plays an important role in electricity generation. Increase in efficiency will increase the output of electricity generation with optimum fuel consumption. Therefore, technology with the best efficiency should be given priority.
- (iii) **Equilibrium between Return of Investment (ROI) and Impact to Tariff** (within operating license period) – A typical generation plant can operate beyond 20 years. Electricity industry is equivalent to water industry. It gives steady cash flow. In the first licensing period, Energy Commission must ensure a proper audit of Capex and Opex to ensure equilibrium between Return of Investment and impact to tariff can be achieved. Any extension of licensing period would only require Opex and minimal refurbishment cost to be factored in into the tariff setting.

When all of these criteria are implemented fully, we will have a real competitive bidding that can bring equitable tariff. The above are fair terms for any company to operate. This is basically because electricity industry is natural monopoly, or more precisely oligopoly. It guarantees a return with all the risk and cost are paid by users via tariff. Energy is national security; there should not be any element of exorbitant profit. Capital expenditure and operational expenditure audits are a must. This will be discussed further in section 3.2. As for the fuel component, Energy Commission must ensure that an effective and transparent 'fuel cost pass through mechanism' is in place. This will be discussed in Section 3.2.7.

### **3.1.2 Regulating Electricity Transmission, Distribution and Electricity Support Services**

These clusters are purely monopoly business. The grid system, distribution system and its components need to be managed, operated and maintained periodically. To ensure grid stability and supply security, planning and extending grid system will be done from time to time. This cost will eventually be derived as tariff and paid by the users. The customer services are also another vital point which the cost will be passed through tariff as well.

Incentive Based Regulation that is currently being developed by Energy Commission has the following core objectives:

- (i) To develop economic regulatory framework for regulating TNB
- (ii) To develop tariff setting framework and principles for tariff design
- (iii) To develop incentive mechanisms to promote efficiency and service standards
- (iv) To develop process of tariff reviews, and
- (v) To develop format of regulatory accounts and annual review process.

**Note: this Incentive Based Regulation does not cover generation sector.**

The implementation of the above objectives will assist Malaysia to improve economic efficiency and transparency as well as to achieve a balance between social, economic and environmental perspectives. This will improve the market confidence of the investors, industries and public. However, AWER would like to propose to enhance the Incentive Based Regulation's tariff setting mechanism via our proposed Tariff Setting Process that will be detailed out in section 3.2.

### **3.1.3 Electricity Users**

For electricity users, energy efficiency becomes an important element. This is because the users will be able to reduce their expenditure with better energy efficiency. Energy Commission has been doing commendable improvement in Energy Efficiency works such as labelling, audits, tax exemptions etc. Energy Commission should continue to enhance and improve the existing work in energy efficiency.

The Energy Efficiency Master Plan will eventually be derived into an act. Based on consultation with the relevant stakeholders, this act will be administered under the newly set up Sustainable Energy Development Authority (SEDA). The government must understand that Energy Efficiency and Renewable Energy (RE) are two different technology and field of work.



In the 10<sup>th</sup> Malaysian plan, the government is planning to increase RE energy mix which is less than 1 % in year 2010 to 5.5% in year 2015. The SEDA outfit is expected ready completely by end of year 2011. This authority has 4 years to achieve the target set in 10<sup>th</sup> Malaysia Plan.

AWER urges the government to ensure not to further divide and create chaos in policy implementation for energy sector. SEDA should focus on its priority which is enshrined in the SEDA bill as its objectives and energy efficiency is definitely **NOT** one of these objectives.

### 3.2 Tariff Setting Process

Tariff setting process must be transparent to ensure only actual electricity services related cost is passed to users. This will assist Malaysia to reach an equitable tariff. Equitable electricity tariff will be one of the factors for investors to invest in Malaysia as well as for affordability for all level of users. AWER would like to propose a few of the following core elements for the Federal Government to consider in implementing a transparent tariff setting process.

#### ***3.2.1 Audit of Capital Expenditure (CAPEX) and Operational Expenditure (OPEX)***

AWER would like to propose Energy Commission to conduct a **mandatory** CAPEX and OPEX audit for all companies from generation, transmission, distribution and other support services (electricity services related). The CAPEX and OPEX must be approved in order to pass it to the tariff. The determination of the costs should be monitored and regulated by Energy Commission to ensure it does not burden the people and businesses.

#### ***3.2.2 Benchmarking Electricity Services Related Costs***

Energy Commission must set a 'Benchmark Value' for every component of electricity services to create a reference value in order to cross check CAPEX and OPEX. These values are obtained from the daily operation by the licensed electricity companies (including IPPs). These values will be based on type of operation with local as well as international reference values. These benchmark values will be revised every tariff setting cycle. This will ensure operation efficiency. The main objective of benchmarking is to **PREVENT EXORBITANT PROFIT** by the companies.



### **3.2.3 Differentiating the Electricity Services Related Costs and Non-electricity Services Related Cost**

Energy Commission must ensure that **ONLY** electricity services related costs are passed through tariff. This will be carried out by the Energy Commission through transparent and effective audit processes.

### **3.2.4 Reinvestment Cost**

Electricity services system needs to be maintained and upgraded periodically. This is mainly due to wear and tear in the system. Investing in latest technologies is also another method to improve the efficiency of electricity services system. The main objective of reinvestment is to optimise operation and minimise cost. Savings made from efficient electricity service system will be passed to tariff so that people will benefit from it.

### **3.2.5 Tariff Setting to be Punitive and Representative of Usage by Sector**

The cost of electricity must be shared based on sectoral consumption. Therefore, tariff setting needs to be punitive to all sectors. Such tariff system will reward sustainable usage and penalise the wasteful usage. This element is already in presence in domestic and commercial sectors. However, for industrial sector, there is *Special Industry Tariff* that gives discount on electricity tariff if a particular industry's electricity cost is 5% or more compared to its total operational cost. Based on our consultation with relevant stakeholders, Ministry of International Trade and Industry (MITI) is responsible for such an arrangement. This approach does not make any sense in a subsidised electricity supply system as it is cheaper to waste rather than being energy efficient. To attract investors, the government may introduce an incentive system for industry players that are efficient in electricity consumption after abolishing the *Special Industry Tariff*.

### **3.2.6 Public Involvement in Tariff Setting Process to Ensure Transparency and Clear Understanding**

AWER urges Energy Commission to develop a transparent and structured tariff setting process that involves public. This is important to allow members of public, business entities and investors to understand our tariff system better. With this, all of us will be able to make informed decisions and judgments. Public will also be able to eliminate fear of tariff adjustments and to play their roles responsibly.

### **3.2.7 *Transparent Fuel Cost Pass-through Mechanism***

Energy Commission must develop a transparent and effective fuel cost pass-through mechanism to ensure the sustainability of electricity services. Currently, the coal price is based on market pricing and natural gas is still subsidised by the government. While the government is rationalising subsidy periodically, Energy Commission must ensure that only actual fuel cost is passed through tariff. For an example, if a generation plant is inefficient in generating electricity, the fuel cost should not be fully passed to tariff. With such mechanism, the industry will definitely increase its efficiency in generating electricity. Therefore, generation efficiency together with savings through bulk purchase of fuel will play a vital role in minimising the amount of fuel cost pass-through. This will ensure users could enjoy equitable tariff. This will also support for the call of establishing 'Energy Price Stabilising Fund'. This fund is self-generated and is not a form of subsidy. It is used only to cushion the sudden impact of fuel price volatility in international market.



## Part 4: CASE STUDY 1

### Power Purchase Agreement (PPA) Renegotiation

#### 4.1 Issues Surrounding PPA

PPA becomes an obvious issue to be debated whenever there is talk about electricity tariff adjustment. The whole issue is focused on capacity charges paid by national utility (TNB) to the IPPs. The fuel cost is also another concern. This has prompted the Federal Government via negotiation to form TNB Fuel to facilitate bulk purchase of coal and ensuring supply security. At the same time, subsidised natural gas is supplied by Petronas. The fuel cost pass-through mechanism that is currently practiced is unclear. Therefore, KeTTHA and Energy Commission must explain in detail to the public how the fuel cost is passed through as the fuel cost is part of our electricity tariff.

Based on our study, we found that in general the IPPs take less than 10 years to achieve their return of investment (ROI) and TNB takes more than 10 years (see Diagram 5). This reflects that IPPs had no risk at all in doing the electricity business. It is notable that one of the IPP's sister company is operating in water industry in UK. The company has to adhere with similar model practiced in Malaysia (Water Services Industry Act 2006 - WSIA). Furthermore, another IPP was involved in bidding process for one of the generation projects in overseas with highly competitive ROI. Now, the question is why these IPPs are doing electricity business in Malaysia **"WITHOUT RISK"**. We hope Economic Planning Unit could explain the justification for this.

From year 2011 onwards, the government should stop any type of concession arrangements with private companies for both water and energy sector. In reality, due to the guaranteed concession agreement and backing from the Federal Government, these IPPs were able to obtain financial loans to carry out their projects. All these costs are eventually passed back to public via tariff. That is why they are doing their business without risk.

Now, the keyword to move forward is to be equitable and competitive. AWER would like to suggest a model for renegotiation of the first generation IPPs. The government must realise that beyond the agreement period, these companies will make **RM 0.00** or in other words **NOTHING** for every Watt they generate if the PPA is not extended. The government also has 4 to 5 years of lead time to plant up new capacities (better technology with higher efficiency) if the IPP remain adamant on their stands. A businessman should know how to do their business wisely!

The electricity generation sector must be regulated and Malaysia must have our own effective electricity industry model. **Therefore, IPPs must be licensed and regulated like others.**

## 4.2 Renegotiation Model Proposed by AWER

### 4.2.1 Current operating condition of First Generation IPPs

*Diagram 5: PPA Operating Model for First Generation IPPs (non-scaled model graph)*

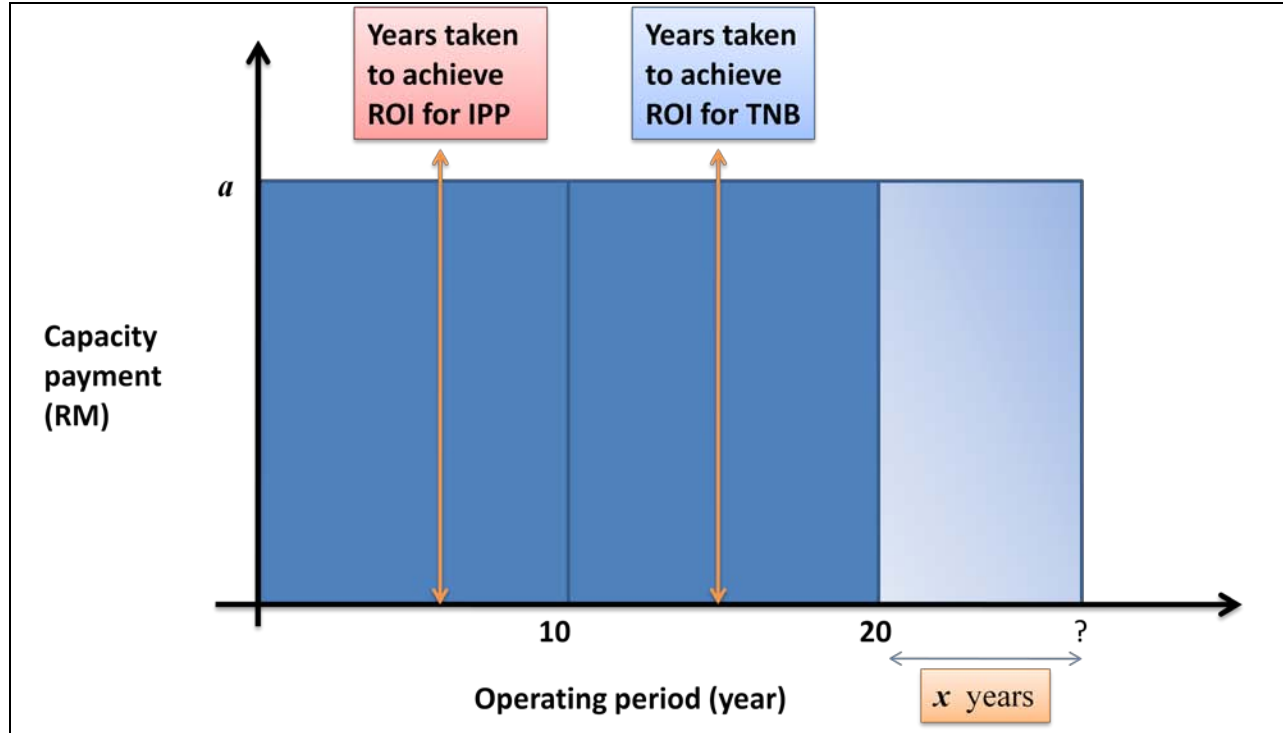


Diagram 5 shows a typical financial model for first generation PPA. Based on our study, duration taken to achieve Return of Investment (ROI) for IPPs is almost half the duration compared to TNB. After the ROI is achieved, there will be only the element of Operational Expenditure (Opex) and Profit. The current model proves to be a **non-equitable model!**

The Capacity Payment of **RM  $a$**  in Diagram 5 comprises the following:

- (i) Capital expenditure (Capex)
- (ii) Operational expenditure (Opex)
- (iii) Profit Margin

If the Capex is recovered within the first 10 years, the profit margin increases to a higher amount within the PPA period. This is slightly different for the second and third generation of PPAs. Anyway, such situation took place due to most of the PPAs were negotiated rather than an open bidding process. Currently, the first generation IPPs are

now negotiating with KeTTHA and Energy Commission to continue the PPA for  $x$  number of years.

#### 4.2.2 Renegotiation Model Proposed by AWER

**Diagram 6: PPA Renegotiation Model Proposed by AWER for First Generation IPPs (non-scaled model graph)**

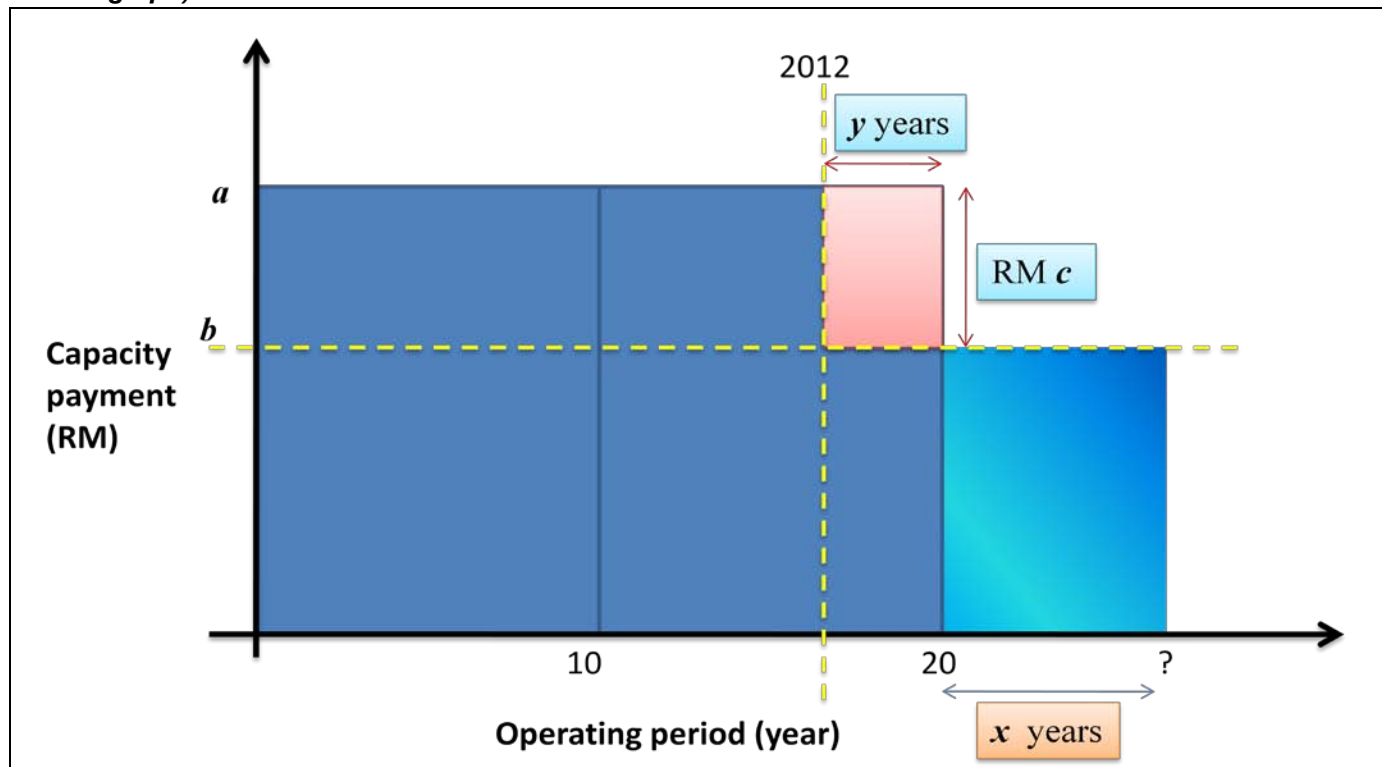


Diagram 6 shows the proposed renegotiation model by AWER for the first generation IPPs. From 2012 onwards until the end of the PPA period, the IPPs must agree to a cut of RM  $c$  for  $y$  number of years ( $y$  is the balance years of PPA period from 2012 onwards). The total cut in capacity payment is equivalent to **RM  $c \times y$  years** (which is derived based on Opex and Capex audits as well as benchmarking process). If the IPPs agree for such cut in capacity payment, then the Federal Government can consider the following suggestions in continuation to purchase electricity from first generation IPPs.

The new capacity payment of **RM  $b$**  to the first generation IPPs for  $x$  **years** must be determined by the following criteria:

- (i) Opex audit
- (ii) Refurbishment cost
- (iii) Efficiency of the plant (the IPP must guarantee an audited efficiency level)
- (iv) A regulated profit margin

The continuation is via licensing regime and they must adhere to tariff setting process requirements. A similar model could be implemented to second and third generation of IPPs as well. **This will ensure all IPPs are licensed and regulated.**

The government still has a lead time of 4 to 5 years. If the IPPs disagree to the proposed renegotiation model, **END the PPA** when the time comes. However, the Federal Government **MUST** also do the following:

- (i) open for competitive bidding now onwards as we will have sufficient time to plant up new capacities;
- (ii) the IPPs that rejected the capacity payment charges reduction should not be allowed (blacklist) to bid in any new generation projects after this;
- (iii) the ban (blacklist) should be extended to shareholders and board of directors of the IPPs, their subsidiaries as well as the parent company. None of these shareholders or board of directors should be allowed to involve in any new generation projects through any other new set ups or other forms of entities.

This is because electricity industry cannot afford to accommodate industry players that only look for profit and sacrifice the well being of public and our beloved nation Malaysia. Therefore, the Federal Government must be **FIRM** in protecting the people's interest and the country's growth.



## Part 5: CASE STUDY 2

### Sarawak To Be Regulated Under Energy Commission

The electricity sector of Sabah and Sarawak traditionally was not regulated by Federal Government under Energy Commission. Sabah was recently included under the regulatory jurisdiction of Energy Commission. This was due to serious electricity outage that was caused by insufficient generation capacity.

According to 10th Malaysia Plan, 23% of rural Sabah and 33% of rural Sarawak has **no electricity coverage**. This makes rural electrification for both Sabah and Sarawak an important agenda in the implementation of 10<sup>th</sup> Malaysia Plan.

A massive improvement work was done in Sabah in year 2010. After the improvement work was done, the SAIDI was recorded at 687.39 minute/customer/year compared to 2867 minute/customer/year in year 2009. This shows that involvement of a national level regulator like Energy Commission is vital in ensuring stability in electricity supply.

The lack of electricity coverage in rural Sarawak is mainly due to the bigger land area and overall electrification cost. Improving grid facility and rural coverage will be an uphill task due to these reasons. However, it is important to extend the electricity supply to rural areas. As the development of rural infrastructure as well as overall service development is vital, AWER urges the Sarawak state government to consider electricity sector in Sarawak to follow suit Sabah in being regulated by Energy Commission.

To enable the transition process, AWER suggests the following steps to be carried out:

- (i) Conduct gap analysis of electricity industry between Peninsular Malaysia and Sarawak;
- (ii) Conduct feasibility study on improving rural electrification in Sarawak and its financial implications;
- (iii) Conduct gap analysis of law, regulations, rules, etc. between Energy Commission and Sarawak;
- (iv) Set time frame for introduction of new regulatory framework in Sarawak;
- (v) Set adaptation period for commercial and industrial users on new regulatory framework.

We hope that the Sarawak State Government, Ministry of Energy, Green Technology and Water (KeTTHA), Economic Planning Unit and Energy Commission can form a task force to study these suggestions to ensure all stakeholders' interest is protected.



## Part 6: CASE STUDY 3

### Liberalisation of Electricity Industry – Is It A Holistic Solution for Malaysia?

#### 6.1 Liberalisation Overview

In Malaysia, the electricity generation sector was liberalised with the introduction of IPPs. While the IPPs and PPAs are still having many unsolved issues, there are already talks about liberalising the entire electricity market.

These were few questions that were part of our case study:

- (i) Are we ready for fully liberalised electricity market?
- (ii) Can we prevent cartel (a jargon used for liberalised electricity market where the industry players play up the market price)?
- (iii) Is the regulator (Energy Commission) equipped to regulate the players?
- (iv) Will it really become a non-monopoly business as electricity is natural monopoly business?
- (v) Will we be able to remain competitive in global market?
- (vi) And many more.....

Based on our stakeholders' engagements and reports reviewed, we found that there were many obstacles and unsolved issues related to liberalisation. It was also due to uncontrollable pricing. Pricing of electricity is defined by the industry players in a liberalised market.

Currently, there are many factors that are pushing non-liberalised market to open up (liberalise) their electricity industry. However, one fact still remains intact, the electricity industry is actually a natural monopoly or more precisely, it is known as oligopoly after liberalisation. For example, if we decide to buy a nasi lemak, there are hundreds of shops could offer the product. This is a free market (liberalised). But, this could not be achieved for electricity services naturally.

Furthermore, we have observed that many countries do not or only partially liberalise their electricity industry. South Korea has achieved its energy security while remaining as a competitive market and high income economy. They have accomplished all these with the current market structure that is similar to Malaysia. In Canada, full liberalisation is not practiced. The highly industrialised areas are not liberalised market. Even in Australia, not all states are liberalised. Philippines liberalised their market due to poor performance of their electricity industry and lack of domestic investment capability. After



10 years of electricity market liberalisation in Singapore, Singapore does not practice a full liberalisation due to technical issues.

Based on our study, **there are no direct indications** that Malaysia fits the needs in liberalising the electricity market in near future. This is simply one shoe does not fit all. Failure in planning for electricity sector will cause irreversible damage to the nation and its growth as well as sacrifice the well being of people.

## 6.2 Key Issues Surrounding Liberalisation of Electricity Industry

We have received responses listed below during our journey in seeking answers on why Malaysia should liberalise its electricity market. These responses were derived from focus groups, discussions and reports reviewed with all the relevant stakeholders.

No.	Answer on why Malaysia should liberalise its electricity market	Concerns Raised by Stakeholders
1	Technical, economic and service efficiency can be improved	Improvement of efficiency can be done via transparent regulatory implementation. For example, the regulatory framework that is used in water sector through WSIA is to increase the technical, economic and service efficiency. Both water and electricity sector are natural monopoly and national security. These sectors should be governed similarly.
2	Brings more Foreign Direct Investment (FDI)	FDI does not come from liberalised electricity market; it comes due to stability, competitiveness in pricing of resources, labour capacity and many other factors.
3	Many countries have done it so we should also follow suit	Many more countries have not liberalised. Those which liberalise have complex model and in very different situation that prompted or forced them to liberalise their electricity industry. Till date our need to liberalise is still not clear.
4	We have to let the market to decide. We must ensure everything is done properly to ensure liberalisation is successful. <i>(Question: Will it actually work and is there a guarantee?)</i>	None of those who are suggesting to liberalise the electricity industry actually took a strong stand or responsibility. How can a market decides success or failure as it is not a living entity? It is the decision makers that have to take the responsibility. Unbundling (or liberalising) electricity market <b>cannot be undone</b> . It is one way ticket. If there is no decision makers or 'consultants' would like to take responsibility, are we

		going to place the responsibility on the people and growth of the nation? There were also reported evidences that the generation sector and retail (sales of electricity sector) in liberalised market are <b>merging again</b> ( <i>to form Gentail</i> ) to reduce cost of electricity. This is equivalent to reinventing the wheel. So, why unbundle and bundle back the electricity industry in stages?
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Malaysia is aiming to be developed nation by year 2020. The priority must be set now on rationalising subsidy and regulating the entire electricity sector. This is to ensure public interest is protected while the nation is able to achieve energy security.

Lastly, AWER urges the government to consider the Water Services Industry Act 2006 (WSIA) model for electricity sector. The only amendment (based on Diagram 4) is the removal of 'asset light model' approach. The electricity industry is already in a better position to achieve full cost recovery. Therefore, the 'asset-light' approach is not needed.



## Part 7: The Way Forward

Association of Water and Energy Research Malaysia (AWER) hopes that the government can achieve energy security in Malaysia. Malaysia is in need of a sustainable and equitable electricity industry.

AWER applauds the method used by Federal Government in managing water sector via Water Services Industry Act 2006. However, the electricity sector is being scrutinised into something that might cause more harm to Malaysia. AWER supports the Incentive Based Regulation that is currently being developed by Energy Commission and hopes it will be extended to generation sector with other proposed amendments. We have also proposed a regulatory framework as well as tariff setting mechanism to represent actual pricing and regulated profit.

In the case of IPP renegotiation, the Federal Government must realise that the winning point of the negotiation is with the government and not IPPs. Therefore, we hope our suggestion in solving the first generation and other IPPs renegotiation can be of some help to the government. The renegotiation must be beneficial for the people and businesses in Malaysia by securing our electricity industry.

Water and energy are natural monopoly; therefore a similar model to manage both sectors can be seen as much viable solution. We hope the government takes into account our findings and suggestions.

Emperor Shi Huang Di (Dynasty Qin) connected and strengthened many fortress walls into Great Wall of China. Many dynasties rose and collapsed within the wall. It was not the might of the wall that caused the falls; it was the management within the strong wall. History can only teach us the lessons of mistakes; it is ours to decide on the way forward.

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