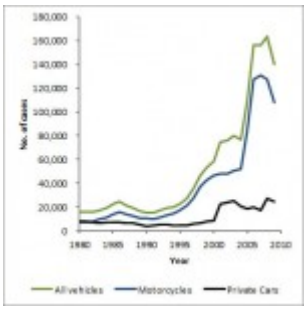
Private car theft statistics in Malaysia: One stolen every 24 minutes

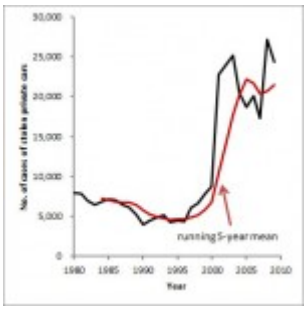
Update (26 Feb. 2013): My two blog articles on car security and car theft statistics in Malaysia were used in ntv7's The Breakfast Show today (Episode 41). Go to tonton (search for the show — free registration and free viewing) to view the show's segment on car security (at about 42:20 minutes).

Update (23 Mar. 2012): I wrote a review of some car security systems in Malaysia.

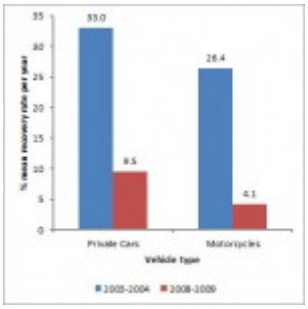
Nissan Grand Livina: Possibly the safest Nissan model from car thieves?

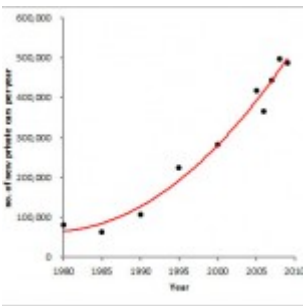


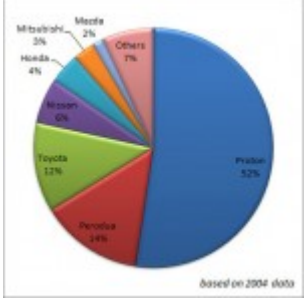
Rise in vehicle theft in Malaysia



Number of stolen private cars in Malaysia







Recovery rate for stolen vehicles in Malaysia

Number of registered cars in Malaysia

Car models stolen in Malaysia (in 2004)

This week I traded in my 9-year old Perodua Kembara for a spanking new Nissan Grand Livina. My Kembara has served me well, but it has recurring problems with its drive shaft, couplings, and suspension. Particularly, in the past two years, new problems have started to emerge such as a mysterious oil leak (undetected even by car mechanics), increasingly rigid suspension, air-conditioning that cannot be left on for longer than two hours, creaking sounds from my drive shaft whenever I make a sharp and slow turn, peeling car tint, and a boom box that, well, doesn't boom anymore.

Even a complete engine overhaul a year ago could not bring new life into my old Kembara.

My old Kembara also felt too small for my family, and I would become easily tired especially after long journeys because my old car didn't seem to travel comfortably any more.

After some research, I settled on Nissan's Grand Livina (advertised as "DRIVES LIKE A SEDAN, FITS LIKE AN MPV" – how could I resist?). So, on September 28, 2010, 1:30 pm, and without much fun fare, I bid adieu to my old Kembara and received my new Grand Livina.

One of my first concerns when I got my new car was about car security. We have all heard about the rise in car theft in Malaysia, but I was curious to exactly what the real statistics were.

However, getting detailed information about car crime statistics in Malaysia, at least from the internet, is rather scarce. I present here what data I managed to find, and by examining the trends, I did some mathematical estimations to fill in the "gaps in data" and to make some projections.

A study by ACP Amar Singh Sidhu showed that motor vehicle theft is high and rising. In 1980, motor vehicle theft comprised only 22% of the total crime cases. But this has increased to 49% in 2004. I estimate that motor vehicle theft would now make up about 74% of the total crime cases in 2009. This means that today

three quarters of the crime in Malaysia would be due to vehicle theft.

And motorcycle theft is a huge percentage of the type of total motor vehicles stolen. In 2004, for example, motorcycles comprised 68% of the total motor vehicle theft, whereas private cars was 27%. The proportion of motorcycle theft shows an increasing trend. In the 2005-2009 period, motorcycles are estimated to make up 80% of all the motor vehicles stolen, and private cars 15%.

As a private car owner, what concerns me more is the statistics on stolen private cars. Surprisingly, the number of private cars stolen generally fell every year from 1980 to 1995, after which this trend reversed. Especially after 2000, the number of stolen private cars increased sharply. In 1980-1995, the average number of stolen private cars is 5,958 a year, but in 2005-2009, this figure increased by more than 3.5 times to 21,501 private cars stolen a year.

In the "honeymoon" period of 1980-1995, the number of stolen private cars fell an average of 3.2% every year, but in 2005-2009, the number of stolen private cars instead increased by an average of about 6.4% every year. This translates to a private car stolen every 24 minutes in Malaysia since 2005.

What about the recovery rates for stolen vehicles? In 2003-2004 period, the average recovery rate per year for private cars was 33.0% (motorcycles was 26.4%). This means there is a one-third chance that a stolen private car would be recovered and returned to its grateful owner.

However, the latest PIAM statistics show that the recovery rates have since fallen sharply. In the 2008-2009, the average recovery rates per year for stolen private cars and motorcycles were less than 10% and 5%, respectively! This is very alarming news for me. It means there is now less than one in a ten chance of getting back one's stolen car.

I contacted one GPS car tracking company which fits a hidden tracking device in a car. The idea is this tracking device helps to locate the stolen car by giving out its GPS coordinates, increasing the chance of recovery. The salesman from this GPS car tracking company said that their recovery rate is 80% (although they advertised their recovery rate as 90%). No matter, either 80 or 90% is sufficiently impressive compared the national average of less than 10% for private cars. Moreover, the company's average period of recovering a stolen vehicle is 4 days.

Since 2005, the average number of newly registered cars per year is 442,023, and the addition of new cars increases by about 7.3% per year. As stated earlier, since 2005, private car theft increases by an average of about 6.4% per year.

This means that more private cars are added to the roads per year than private cars (old and new) are stolen per year. So, the risk of having your car stolen is actually increasingly less per year simply because the number of stolen cars can't keep up with the number of cars being added to the roads per year.

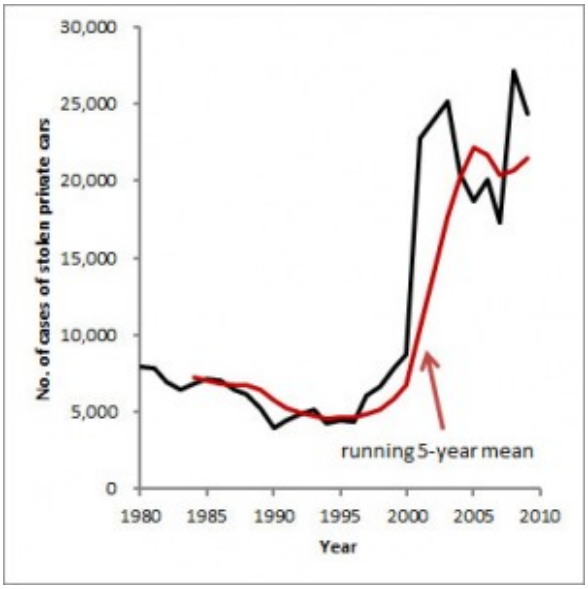
Not all cars are created equally. Some cars are more popular with thieves. Latest statistics show that local cars, Proton and Perodua, are the two most stolen cars, making up two-thirds of the type of car models stolen. More than half (52%) of the car models stolen are Proton. This dubious honour continues even to 2009, where 57% of the private cars stolen belong loyally to Proton.

Although Nissan cars are the fourth most stolen car models in Malaysia, its proportion only forms 6% of the all car models stolen. The latest PIAM statistics reveal Nissan Vannette is the most stolen Nissan model. But what about Nissan Grand Livina? The 2010 PIAM list showed none reported stolen for both 2008 and 2009! Pure joy.

At the end of this exercise, I am now more mindful about the car theft statistics in Malaysia. I also did some researching on ways to beef up car security: what works (to some extent) and what doesn't (myths, over-hype, etc.). The web is full of advice on car security and stories about experiences of having a car stolen or nearly stolen.

So, what did I do to improve the security of my Nissan Grand Livina? Did I fix any steering lock, gear lock, brake/clutch lock, GPS car tracking system, immobilizer, motion and sound detector, anti-tilt alarm, or window security tint?

Ah, lesson number one in car security — Don't show, don't tell. The less people know about your security, the better.



Number of stolen private cars in Malaysia

Sources and additional reading

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Sesame Street Live in Malaysia: Unfortunately unnoticed

Sesame Street recently came to Malaysia for a three-day live performance (3-5 Sept. 2010) at Stadium Putra, Bukit Jalil, Kuala Lumpur. My family and I went for the Saturday night show (4 Sept, 8:30 pm), and I was surprised by the rather tepid turnout. The stadium was only about one-quarter filled, with the biggest crowd, surprisingly, packing the front (best) row seats.

The first lady, Michelle Obama, in an episode for the 40th anniversary of Sesame Street (photo from www.babble.com)

I suppose this tepid turnout should not have been surprising considering the low key promotion about this show in Malaysia. There were some mentions about this

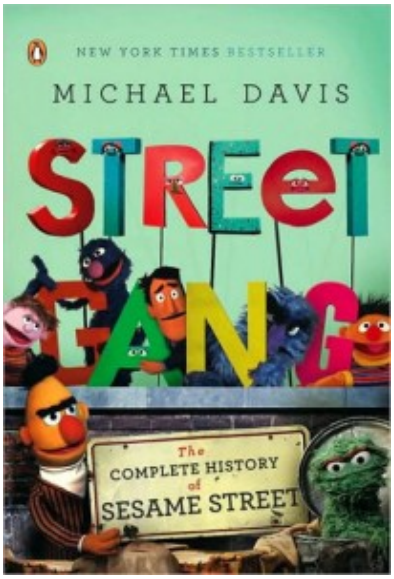
show in the local newspapers but only when the show was about a few days away from starting. And, as far as I know, there were no mentions about this show at all on TV, be it terrestrial or satellite.

My wife and I only knew about Sesame Street's live performance when we spotted their promotional leaflets tucked away at some inconspicuous corner at one of the MPH bookshop.

Who hasn't heard about Sesame Street? I remember watching (and being captivated) by this show on TV when I was growing up. And I was still watching it when I was much older. My favourite puppet (or should it be monster?) was Oscar. I liked his sweet-and-sour disposition. Although he is always grouchy, he has a caring and soft heart, even if Oscar tries hard to convince you otherwise.

Caroll Spinney, who plays Oscar (as well as Big Bird) (photo from www.latimes.com)

Northern Calloway, who plays the jive-talking David (photo from)



Street gang: The complete history of Sesame Street by Michael Davis

But what I also remember vividly was the gradual diminishing role for one of Sesame Street's favourite characters, David, played by Northern Calloway. David is the young man who helps out at Mr. Hooper's store. David was funny, hip, and jive-talking, and he could sing and dance very well. He also played the steady to Maria, another character at Sesame Street. What was distinguishable about their relationship was that David and Maria didn't just act out their respective roles on TV, but their romance looked real. And there was, of course, Oscar, who playfully courts Maria and never fails to try to get in between David and Maria.

So imagine my surprise when David appeared increasingly less on Sesame Street and suddenly, one day, Maria marries someone else on one of the Sesame Street's episode. Huh? What happened to David? Back then I was too young to comprehend, I suppose. But after reading Michael Davis' book "Street gang: The complete history of Sesame Street", I learned what happened to Northern Calloway who played the role of David.

Northern Calloway suffered from severe mood swings, and on Sept 20, 1980, Calloway went on a street rampage and even beating up a woman severely. That incident was the start of Calloway's decline. Although he was later rehabilitated, he was never the same as before: he appeared dull and unreliable, remembering his script lines increasingly less. At one time, as detailed by Michael Davis' book,

Calloway appeared on set, seemingly oblivious to his surroundings and with potato chips around his mouth.

Eventually, Northern Calloway was released from Sesame Street show in 1989, and a year later, Calloway died, at age 41, of cardiac arrest.

The talented Northern Calloway sings the very catchy "What's the name of that song?" in Sesame Street episode no. 0666 (Nov. 4, 1974)

Reading Michael Davis' book brought back memories. It helped me recall one of the best Sesame Street's episodes: explaining about Mr. Hooper's death. Mr. Hooper was played by Will Lee, who died suddenly of heart attack on December 7, 1982. I was fortunate back then to have caught that particular episode on TV.

Below, I placed the actual script from that episode explaining about Mr. Hooper's death to the kids. This script is taken from Michael Davis' book:

> *Big Bird: Hey, it's time for your presents. I've just drawn up pictures of all my grown-up friends on Sesame Street. And I'm going to give them to you. I'm going to be an artist when I grow up (The drawings are passed out and admired.) And last, but not least, ta-da. (He shows everyone a drawing of Mr. Hooper, in his half-glasses and bow tie.) Well I can't wait till he sees it. (Awkward silence and glances all around.) Say, where is he? I want to give it to him. I know. He's in the store.*
>
> *Bob: Big Bird…he's not in there.*

Big Bird: Then…where is he?

Maria (looking around and then rising to talk directly to Big Bird): Big Bird, don't you remember we told you? Mr. Hooper died…He's dead.

Big Bird: Oh ya. I remember…Well, I'll give it to him when he comes back.

Susan: Big Bird…Mr. Hooper is not coming back.

Big Bird: Why not?

Susan (standing now, stroking Big Bird's feathers): Big Bird, when people die, they don't come back.

Big Bird (sorrowfully): Ever?

Susan: No, never.

Big Bird: Well, why not?

Luis: Well, Big Bird…they're dead. They can't come back.

Big Bird (trying to comprehend): Well, he's got to come back. Who's going to take care of the store? Who's going to make my birdseed milkshakes and tell me stories?

David: Big Bird, I'm going to take care of the store. Mr. Hooper…he left it to me. And I'll make you your milkshakes and we'll all tell you stories…and make sure you're okay.

Susan: Sure, we'll look after you.

Big Bird (shuffling away with his head down): Well…it won't be the same.

Bob (choked with emotion): You're right, Big Bird…It's…It's It'll never be the same around here without him. But you know something? We can all be very happy that we had a chance to be with him…and to know him…and to love him a lot…when he was here.

Olivia: And Big Bird, we still have our memories of him.

Big Bird: Well, yah. Our memories…Memories, that's how I drew this

picture…from memory. And we can remember him and remember him and remember him as much as we want to…But I don't like it. (On the verge of tears): It makes me sad.

David: We all feel sad, Big Bird.

Big Bird (asking once again): He's never coming back?

David: Never.

Olivia: No.

Big Bird (a little angry): I don't understand. You know, everything was just fine. Why does it have to be this way? Give me one good reason!

Gordon: Big Bird, it has to be this way…because.

Big Bird (quieting): Just because?

Gordon: Just because.

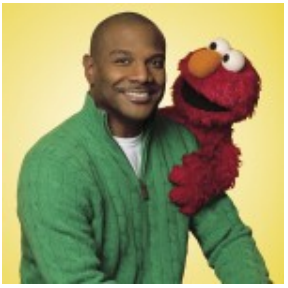
Big Bird (admiring his drawing): You know, I'm going to miss you, Mr. Looper.

Maria (smiling, as tears run from the corner of her eye): That's Hooper, Big Bird. Hooper.

Big Bird (as the cast surrounds him): Right. (Fade to black.)

This script was for "Farewell, Mr. Hooper" episode No. 1839, which was aired on November 24, 1983. This episode was also selected by the Daytime Emmys as one of the ten most influential moments in daytime television history.

Reading Michael Davis' book not only brought back memories from my childhood but also made me realize how special and unique Sesame Street is. Sesame Street is over 40 years old today, and how many television series do you know can last even half of that length?



Kevin Clash, who plays Elmo (photo from www.wpt.org)

Frank Oz, who plays Cookie Monster (as well as Grover) (photo from www.lyonpuppets.com)

Jim Henson, the heart of Sesame Street, with his muppets (photo from mugglespace.com)

Jon Stone, writer and producer. Note his pencil never leaves him. (photo from muppet.wikia.com)

Joe Raposo, music composer and pianist (photo from www.raposogroup.com)

Joan Cooney, one of the founders of Sesame Street (photo from muppet.wikia.com)

Sesame Street is also the first children TV program which has a board comprising educators, psychologists, child development specialists, and pediatricians to help to guide the educational value of Sesame Street. It was the first of its kind to marry entertainment and science to produce an effective 'edutainment'. Sesame Street was also the first where the government and private sector collaborated to produce a TV series.

Today, Sesame Street faces very stiff competition from more hip and energetic TV shows such as Barney. It is sad to read from Newsweek that Sesame Street now lies 15th place in the rank of popular TV children shows. From 130 episodes a year, Sesame Street now only produces 26 episodes a year. Moreover, in 2009, Sesame Street had to layoff 20% of its staff. Being a non-profit organization means Sesame Street faces additional challenges not faced by other TV shows. Sesame Street is duty bound to educate children but not to fall into the commercial frenzy of toys as their main revenue. Malaysia's ubiquitous cable TV, Astro, doesn't even show Sesame Street as a regular program.

So, with that background in mind, on the night of September 4, 2010, my family and I went to a live performance of *Sesame Street: When Elmo grows Up*. I am glad to report that we all had a blast. My son, Zachary, whom even before the show, was already a fan of Sesame Street (without requiring any encouragement from my wife or me), was super-charged during the show: running and dancing around during and after the show. My son's favourite monster is not Oscar but Cookie Monster. He loves Cookie Monster's never-ending obsession with cookies (or plates, cups, furniture, books, etc, etc should cookies be absent or insufficient) and his manic and frantic ways.

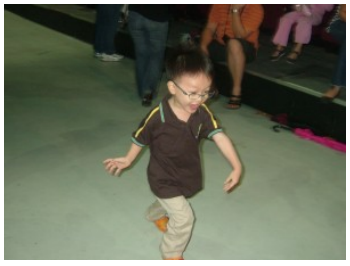
So this blog is my tribute to Sesame Street. Oh yes, this blog is brought to you by the letter S (for Sesame Street) and the number 41 (for being 41 years old).

Sesame Street Live in Malaysia. Zachary's

favourite: Cookie Monster!

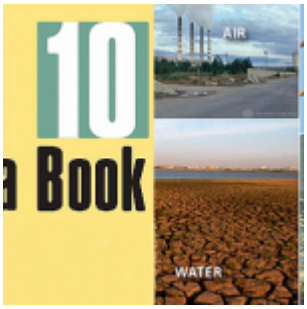
Sesame Street Live in Malaysia. Oscar, being his usual grouchy self.

Sesame Street Live in Malaysia. Big Bird and cast belt out the finale.



Sesame Street Live in Malaysia. Zachary having a blast running around the front stage area.

Sesame Street Live in Malaysia. Good times.



Environmental statistics 2010 for Malaysia

The Little Green Data Book series is an annual publication by World Bank on the environmental statistics for each country in the world. The latest is The Little Green Data Book 2010 and it is available for free for download.

Anyway, I have downloaded the data specifically for Malaysia and place them here as a table for easier reference.

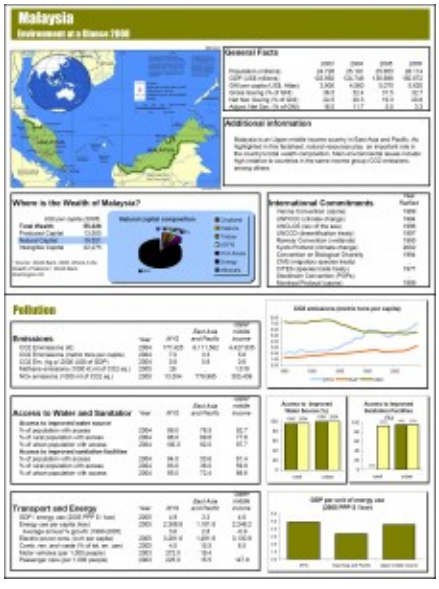
Environmental Statistics 2010 for Malaysia
(data from World Bank, http://go.worldbank.org/MDXNK51HB0)

Statistics	Malaysia
Population, total (millions)	27.0

Statistics	Malaysia
Urban population (% of total)	70.4
GDP (current US$) (billions)	221.8
GNI per capita, Atlas method (current US$)	7,250
Land area (sq. km) (thousands)	329
Agricultural land (% of land area)	24.0
Forest area (% of land area)	62.7
Bird species, threatened	42
GEF benefits index for biodiversity (0 = no biodiversity potential to 100 = maximum)	14
GDP per unit of energy use (constant 2005 PPP $ per kg of oil equivalent)	4.7
Energy use (kg of oil equivalent per capita)	2,733
Combustible renewables and waste (% of total energy)	4.0
Energy imports, net (% of energy use)	-30.0
Electric power consumption (kWh per capita)	3,667
Electricity production from coal sources (% of total)	29.5
CO2 emissions (kt)	187,729
CO2 emissions annual growth rate	2
CO2 emissions (kg per 2005 PPP $ of GDP)	0.6
CO2 emissions (metric tons per capita)	7.2
PM10, country level (micrograms per cubic meter)	23
Passenger cars (per 1,000 people)	225
Renewable internal freshwater resources per capita (cubic meters)	21,470
Annual freshwater withdrawals, total (% of internal resources)	2
Annual freshwater withdrawals, agriculture (% of total freshwater withdrawal)	62
Improved water source (% of population with access)	99
Improved water source, rural (% of rural population with access)	96
Improved water source, urban (% of urban population with access)	100

Statistics	Malaysia
Improved sanitation facilities (% of population with access)	94
Improved sanitation facilities, rural (% of rural population with access)	93
Improved sanitation facilities, urban (% of urban population with access)	95
Mortality rate, under-5 (per 1,000)	6
Adjusted savings: gross savings (% of GNI)	38.4
Adjusted savings: consumption of fixed capital (% of GNI)	11.9
Adjusted savings: net national savings (% of GNI)	26.9
Adjusted savings: education expenditure (% of GNI)	4.0
Adjusted savings: energy depletion (% of GNI)	13.1
Adjusted savings: mineral depletion (% of GNI)	0.1
Adjusted savings: net forest depletion (% of GNI)	0.0
Adjusted savings: carbon dioxide damage (% of GNI)	0.7
Adjusted savings: particulate emission damage (% of GNI)	0.0
Adjusted net savings, including particulate emission damage (% of GNI)	19.2

Also available is Malaysia’s fact sheet for 2008 (click image below to expand to full size).



Malaysia at a glance, 2008 (http://go.worldbank.org/MDXNK51HB0)

Electricity demand, economic growth, and sustainable energy resources in Malaysia

In my previous blog entry, I wrote about the consequences of large dams, such as Malaysia's Bakun Dam, on social and environment aspects. Essentially, I remarked that Bakun Dam, as a hydroelectric dam, is not a sustainable energy choice because it causes serious, long term, and irreversible destruction to many social and environmental aspects. Moreover, the expected lifespan of the gargantuan Bakun Dam could be shorten from 50 to 30 years if serious buildup of silt (sediments) occurs.

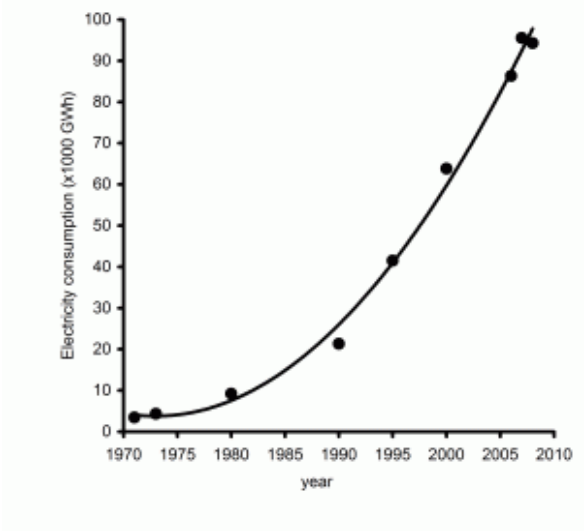
Malaysia: Where to, electricity? (photo from mypalmoil.wordpress.com)

The Malaysian government's perseverance with the construction of Bakun Dam contradicts the country's Green Technology policy, launched in mid 2009, which seeks for more sustainable sources and technology development for energy.

That said, however, the construction of Bakun Dam is justified strictly from an economic point of view. Malaysia's aspirations for higher economic growth to break Malaysia from the so-called "middle-income trap" and to become a developed nation mean much more energy is required.

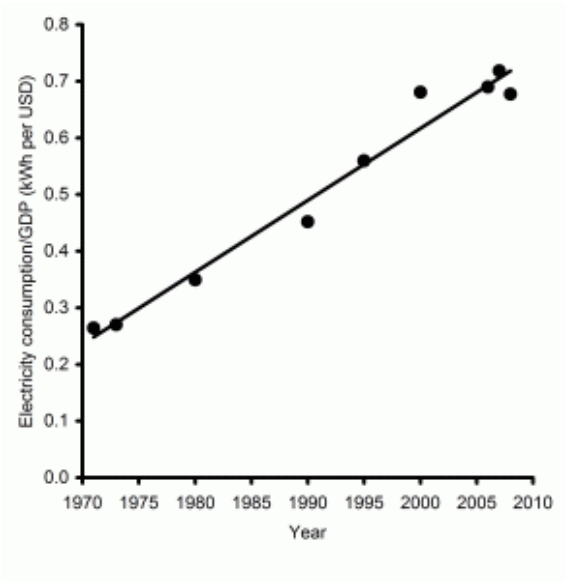
Malaysia's consumption of energy increases every year. In 2008, the total energy demand in Malaysia was 522,199 GWh, of which the industrial and transport sectors were the two largest users of energy, accounting more than three-fourths of this total demand. The residential and commercial sector was the third largest user (14%) of energy in Malaysia, and only 1% of the total energy was consumed by the agriculture sector.

The consumption of electricity in Malaysia rises rapidly every year, with an average of 2,533 GWh per year. The electricity consumption, for instance, in 1971 was 3,464 GWh and 94,278 GWh in 2008. By 2020, Malaysia's electricity consumption is expected to increase by about 30% from its present value to 124,677 GWh.



Malaysia's electricity consumption (1971-2008)

Moreover, there is a strong relationship between Malaysia's GDP (Gross Domestic Product) and Malaysia's electricity consumption. To put it succinctly: high GDP = high economic growth = high production = high energy. For every 1 USD increase in GDP (at year 2000 rate), electricity consumption would increase by 13 Wh.



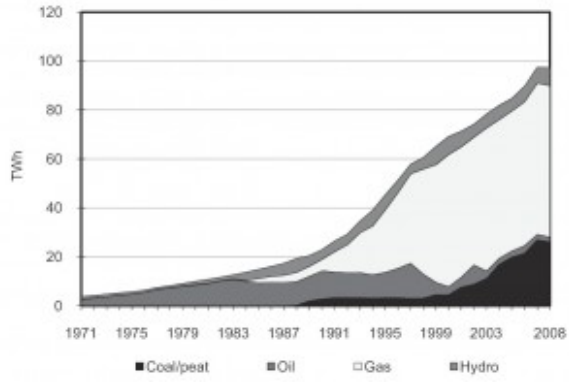
Strong linear relationship between Malaysia's electricity consumption and GDP (1971-2008)

At full operation, Bakun Dam would most probably generate 10,512 GWh (50% of its potential capacity, the world average for hydroelectric dams), which means

that Bakun Dam could contribute nearly 8.5% of the expected electricity demand by 2020.

Thus, from these projections, Bakun Dam is needed to support Malaysia's desire for high economic growth. But looking solely from an economic perspective is myopic because Bakun Dam, as stated earlier, is socially and environmentally destructive. But what are the sources of green energy in Malaysia?

Traditionally, Malaysia's energy sources for electricity are based on a "four-fuel mix" strategy: gas, oil, hydro, and coal. From 1970 to 1980s, oil was relied heavily for electricity generation, but this over-reliance led to rapid depletion oil in Malaysia. But since the mid 1980s, gas and coal are increasingly being relied on for electricity generation. By 2010, for instance, it is estimated that gas and coal would contribute 92% of the sources for electricity generation. Hydro and oil would contribute the rest (7 and 1%, respectively).



Four-fuel mix: sources of electricity in Malaysia (1971-2008) (International Energy Agency. 2010. Energy balances in non-OECD countries. 2010 edition. IEA, Paris)

Recently, the government has started to introduce a "five-fuel mix" strategy with renewable energy as the fifth source for electricity generation. The most promising potential for renewable energy in Malaysia is the biomass and biogas from the oil palm industry. This is not surprising considering that 15% of the total land area of Malaysia is covered by this single crop alone.

Palm oil mill in Malaysia (photo from gopdc-ltd.com)

There are 417 palm oil mills in Malaysia, of which 246 are in Peninsular Malaysia and 117 in Sabah. These mills discard about 30 million tonnes of biomass, including empty fruit bunches (EFB) and other residues (shells and fibers), every year. Every tonne of EFB could potentially produce about 40W of electricity, whereas every tonne of biomass residues (shells and fibers) an average of 148 W.

In addition to these oil palm biomass wastes, palm oil mills also produce about 43 million tonnes of palm oil mill effluent (POME) per year. These effluents, due to anaerobic (oxygen poor) conditions, emit greenhouse gases such as methane (65%) and carbon dioxide (35%). These biogases could be captured for electrical generation, rather than polluting the air and contributing to global warming. The biogases emitted from every tonne of POME could be captured to potentially generate 8 W of electricity.

Empty fruit bunches (EFB) (photo from hishambioproc.blogspot.com)

At Copenhagen Climate Change Conference 2009, Malaysia pledged to reduce the country's carbon emission by 40% by 2050. Part of this would be achieved by boosting renewables' contribution to energy from the current 50 MW to 2,000 MW by 2020. This is certainly achievable considering that biomass and biogas from the palm oil mills could potentially contribute over 3,200 MW of electricity per year. This also means that, potentially, Malaysia's oil palm could contribute about 28,000 GWh or meeting more than one-fifth of Malaysia's electricity demand by 2020.

However, problems of irregular EFB supply and technology limitations currently hamper full exploitation of oil palm biomass for electrical generation.

Another major contender for renewable energy source is solar radiation. Being near the equator means Malaysia enjoys 12 hours of daylight per day all year round. On average, Malaysia receives 3 kWh per square meter per day from solar radiation.

The Suria 1000 programme is a government-initiated scheme to use photovoltaic solar cells to capture solar radiation for use in residential and commercial sectors. Photovoltaics, unfortunately, suffer from low solar-to-electricity efficiency. On average, photovoltaics have 10% efficiency.

This means photovoltaics would convert captured solar radiation into electricity at a rate of 3 x 0.1 = 0.3 kWh per square meter per day. As stated earlier, Malaysia's demand in electricity by 2020 would reach 124,677 GWh. So, if we want solar power to contribute 10% of this expected electricity demand, the total land area needed for photovoltaics is: (124,677 x 1000 x 1000 x 0.1) kWh / (0.3 kWh per square meter x 365 days) = 114 square kilometers.

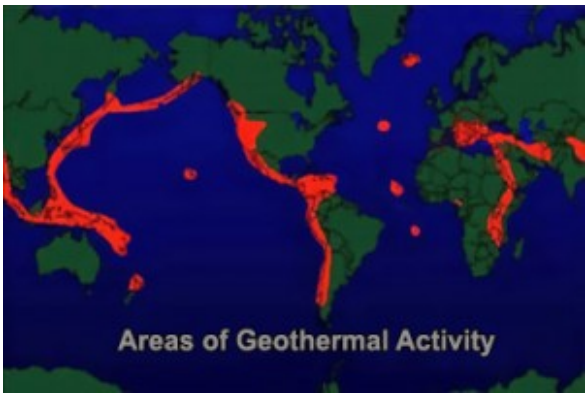
Malaysia's total land area is nearly 330,000 square kilometers, so the fraction of land area needed for photovoltaics (114 square kilometers) is only 0.03%. We can further work out that to completely contribute to Malaysia's electricity demand in 2020 by solar power (100% contribution), the total land area needed for photovoltaics is only 1,140 square kilometers or 0.3% of Malaysia's total land area.

So, even though solar photovoltaics suffer from low conversion efficiency, the land area needed to capture solar radiation for electricity generation is no more than one-third of 1% of Malaysia's land area. Moreover, solar photovoltaic cells

can be placed on roofs of houses and buildings, so these cells can occupy the same land area as houses and buildings (no additional land area required for photovoltaic cells if they are placed on roofs).

However, photovoltaics are prohibitively expensive at present. It costs about RM22.50 for every 1 kWh of electricity generated per year. This means for photovoltaics to contribute to even 10% of expected electricity demand by Malaysia in 2020, the total cost for photovoltaics would be over RM280 billion!

If Malaysia is willing to spend RM7 billion on Bakun Dam for electricity generation, the cost of photovoltaics must fall to about RM0.50 per 1 kWh of electricity. Possible? This is a fall in cost by a whooping 45 times than the present rate. Although the technology in solar power is progressing fast and cost falling, it is unlikely that solar power can be a major contributor to electricity generation in Malaysia in the short term.



World geothermal regions (from depletedcranium.com/geothermal-power-generation-potential-and-limits)

Geothermal power is another source of renewable energy in Malaysia, but its source is currently untapped. This is unfortunate because Malaysia lies in a geothermal region. Countries like Indonesia and Philippines are already utilizing geothermal as a source of electricity, producing about 1,196 and 1,930 MW, respectively. Recently, a geothermal reservoir was found in Tawau, Sabah, which has the potential to provide up to 67 MW of electricity.

Nuclear energy. Right for Malaysia?
(photo from keetsa.com)

And there is of course nuclear energy. Although nuclear is a non-renewable energy, its use to meet Malaysia's energy demand must be considered. Nuclear energy suffers from a poor reputation, but its safety record is improving. Countries that derives their electricity from nuclear energy such as France, South Korea, Germany, and Japan shows that nuclear energy is a practical and safe solution as well as having very low carbon emission. Nonetheless, building nuclear power stations are very costly (nearly RM10 billion a station) and require lengthy period before these stations could go on-line (about a 10-year preparation).

Other than finding sustainable sources of energy, the Malaysian government is planning to improve energy efficiency and to promote awareness among the public on the importance of energy conservation.

In conclusion, Malaysia faces big challenges ahead to meet the country's growing demand for energy using sustainable practices. Malaysia can succeed provided there is a concerted effort for increasing the: 1) implementation and management of sustainable energy sources, 2) energy efficiency, and 3) awareness by the Malaysian public on energy issues and a change of lifestyle that has a lower carbon footprint.