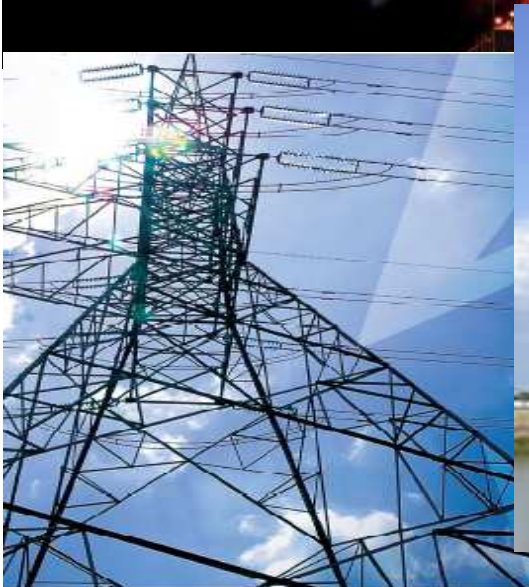


**LAPORAN INTERIM PRESTASI PERKHIDMATAN
PEMBEKALAN ELEKTRIK DI MALAYSIA**

***INTERIM REPORT ON THE PERFORMANCE OF THE
ELECTRICITY SUPPLY SERVICES IN MALAYSIA***

UNTUK SEPARUH TAHUN PERTAMA 2010

FOR THE FIRST HALF YEAR OF 2010



Bil. / No.

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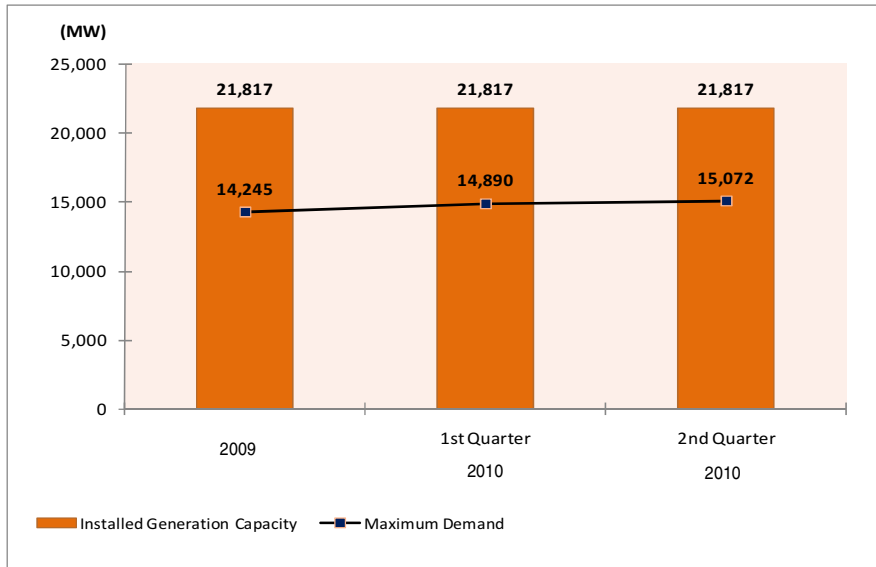
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1.0 PEMBEKALAN DAN PERMINTAAN BEKALAN ELEKTRIK
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Gambarajah 1 : Kehendak Maksimum dan Kapasiti Penjanaan di Semenanjung Malaysia – Separuh Tahun Pertama 2010

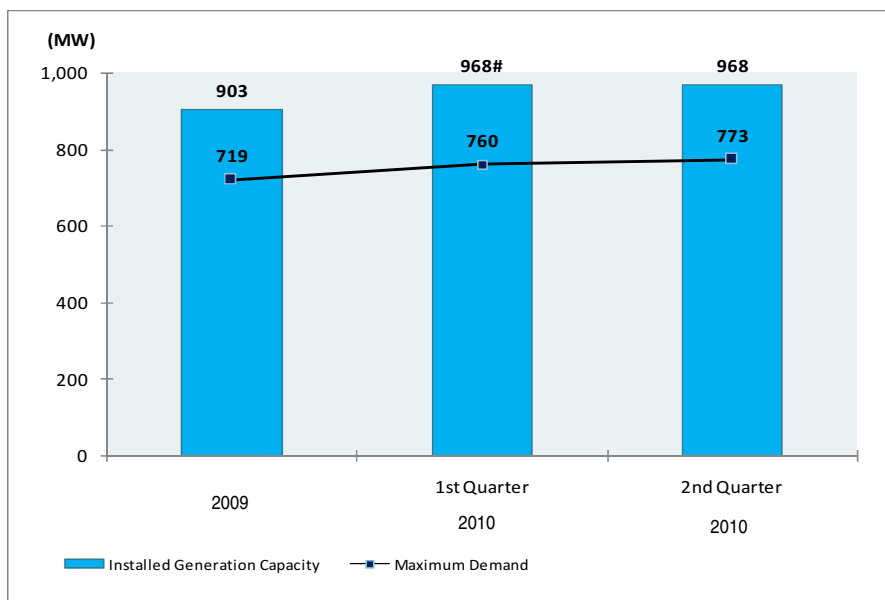
Figure 1 : Maximum Demand and Installed Generation Capacity in Peninsular Malaysia for the First Half Year of 2010



Sumber / Source :
 Tenaga Nasional Berhad

Gambarajah 2 : Kehendak Maksimum dan Kapasiti Penjanaan di Sabah – Separuh Tahun Pertama 2010

Figure 2 : Maximum Demand and Installed Generation Capacity in Sabah for the First Half Year of 2010



Nota / Note :

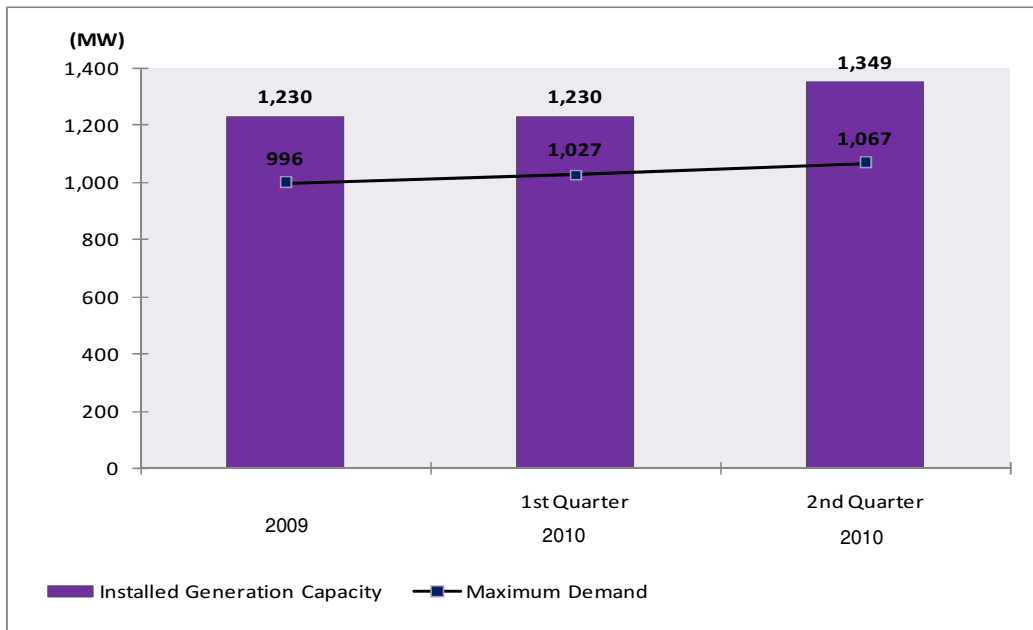
1) Mulatugas tarbin gas 65 MW bagi kitar terbuka Fasa 1 di Ranhill Powertron Sdn. Bhd. pada Mac 2010

Commissioning of the first phase 65 MW open cycle gas turbine in Ranhill Powertron II Sdn. Bhd. in March 2010.

1.0 PEMBEKALAN DAN PERMINTAAN BEKALAN ELEKTRIK
ELECTRICITY SUPPLY AND DEMAND

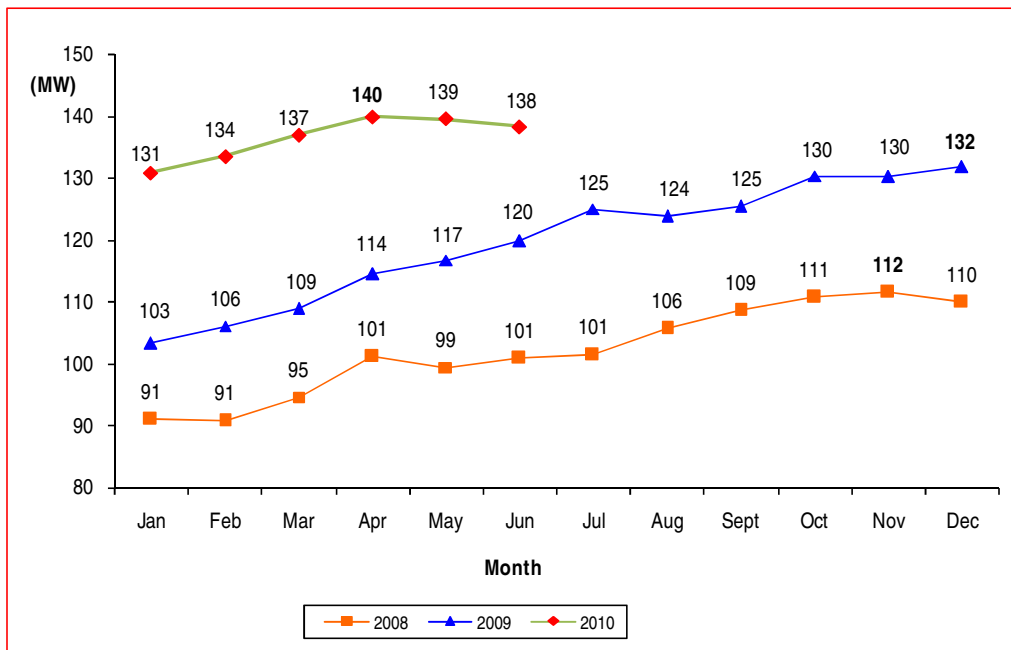
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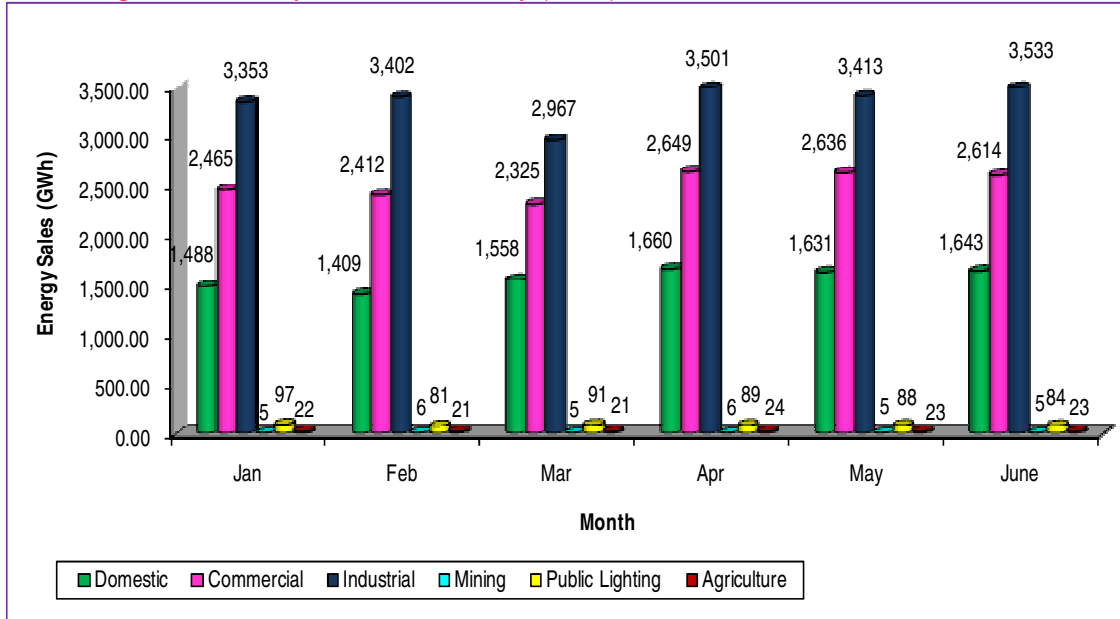


2.0 JUALAN TENAGA ELEKTRIK
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2.1 JUALAN TENAGA BULANAN TNB, SESB, SARAWAK ENERGY BERHAD (SEB) DAN NUR
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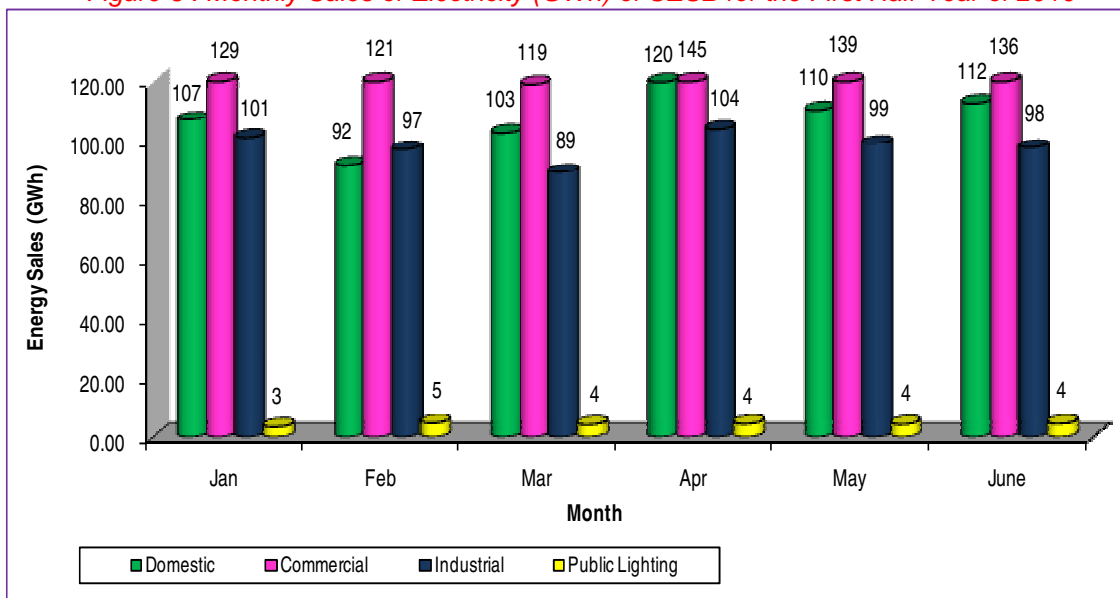
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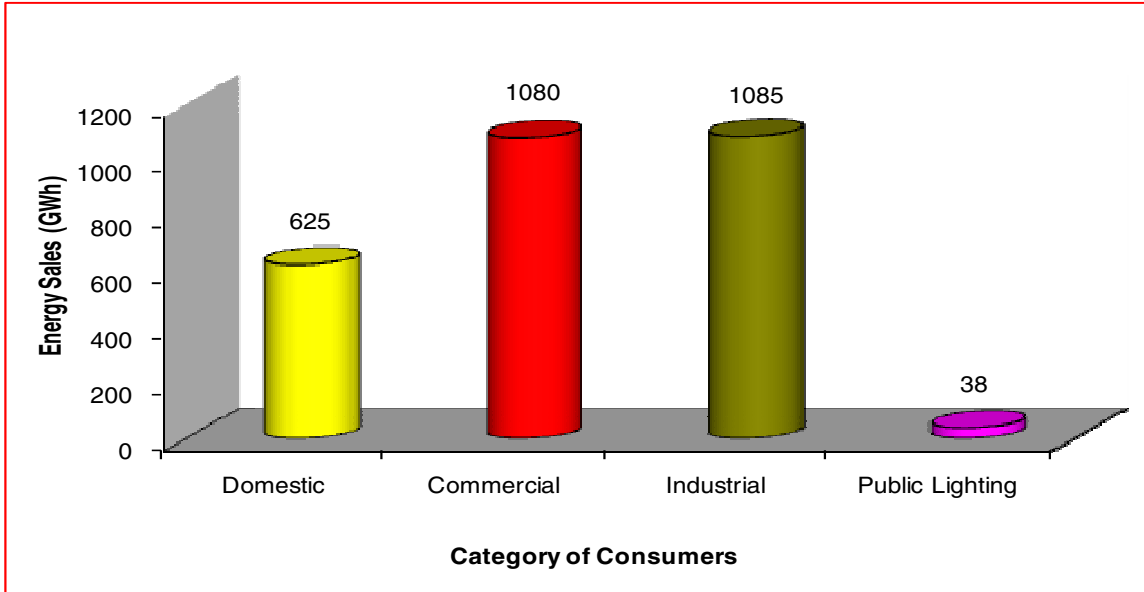
Figure 6 : Monthly Sales of Electricity (GWh) of SESB for the First Half Year of 2010



2.0 JUALAN TENAGA ELEKTRIK
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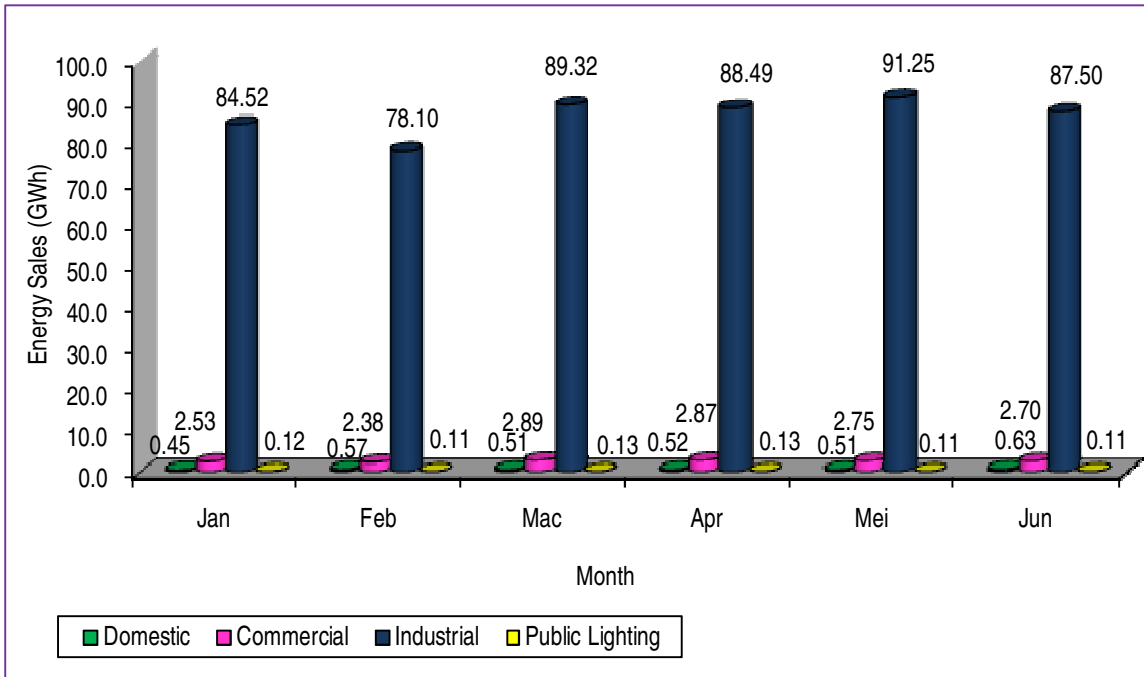
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2.0 JUALAN TENAGA ELEKTRIK SALES OF ELECTRICITY

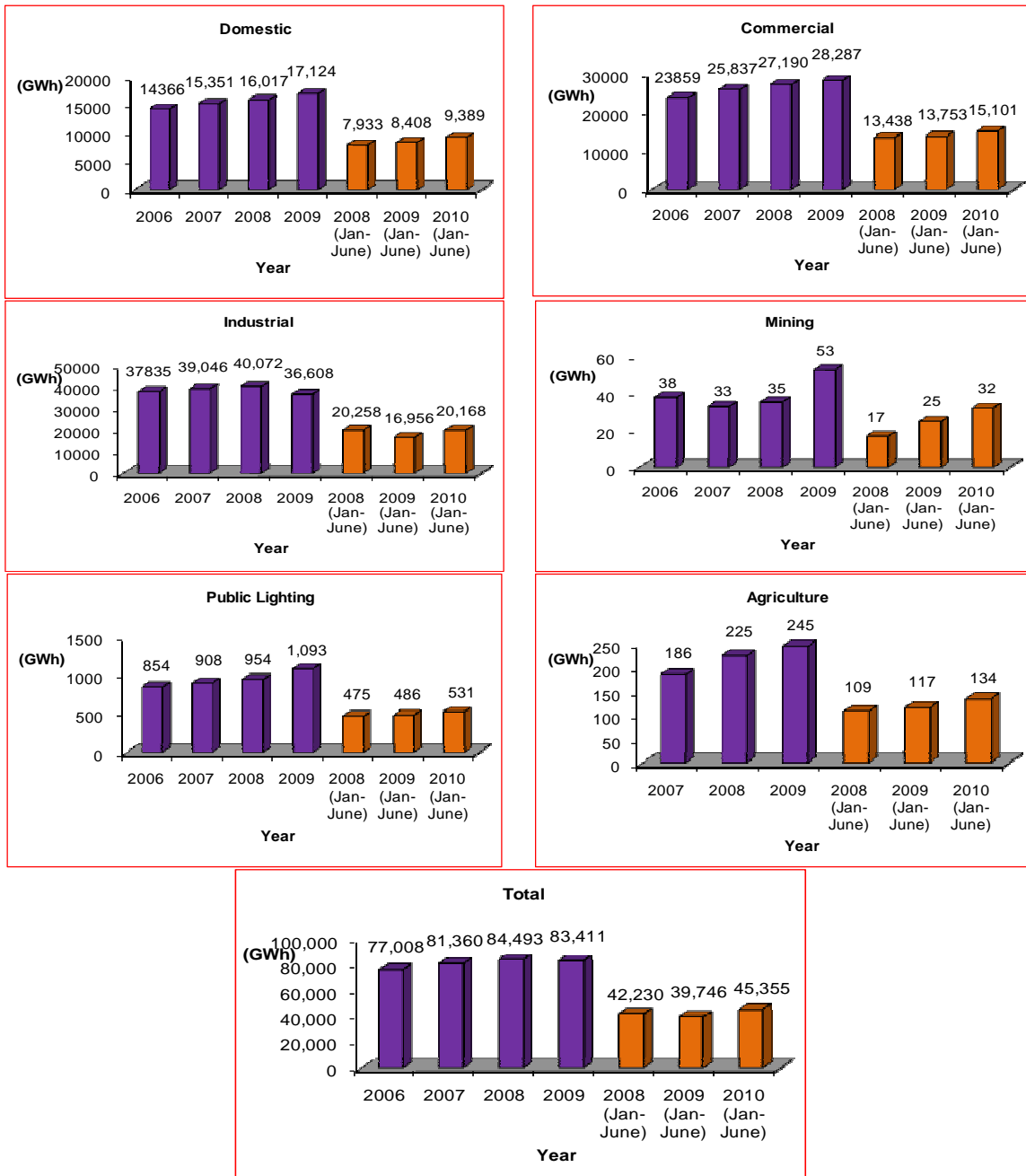
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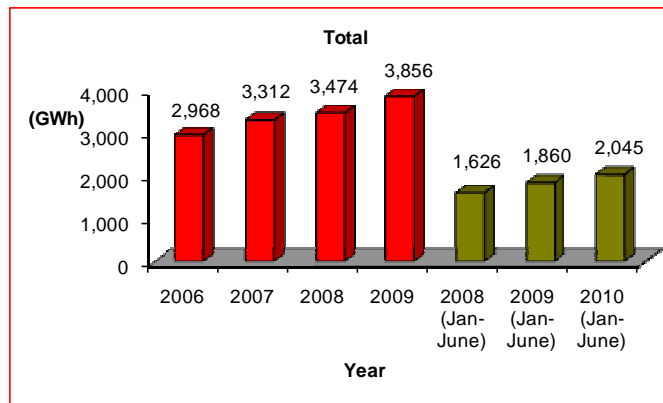
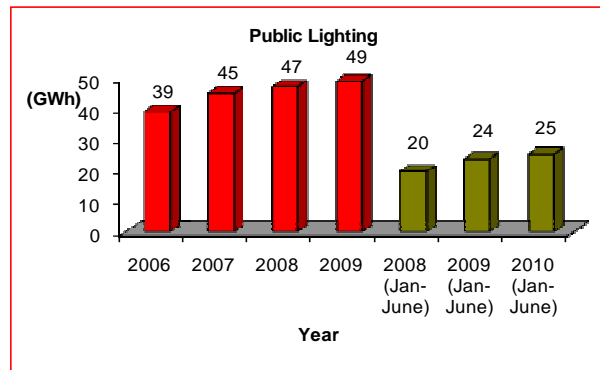
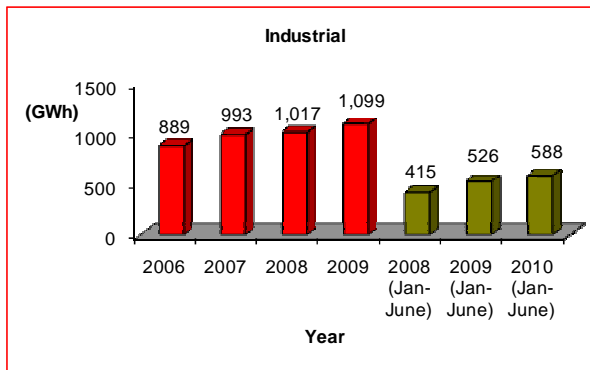
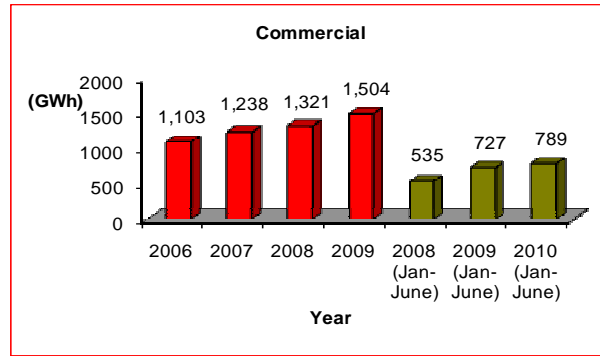
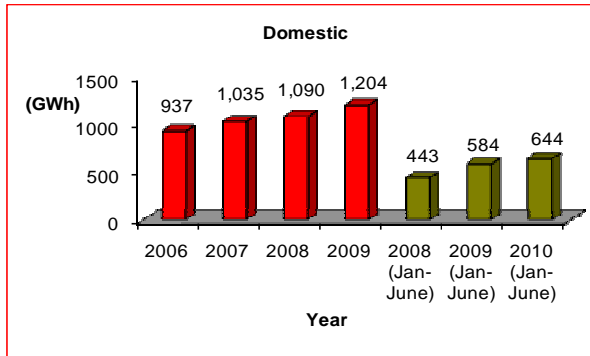
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Gambarajah 10 : Jumlah Jualan Tenaga (GWj) oleh SESB untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2006 Hingga 2009

Figure 10 : The Total Electricity (GWh) of SESB for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



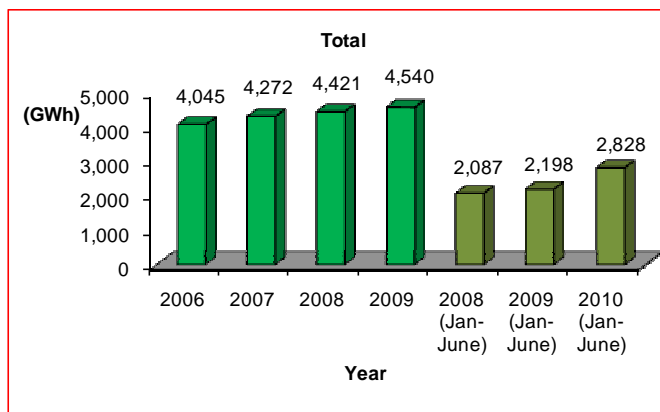
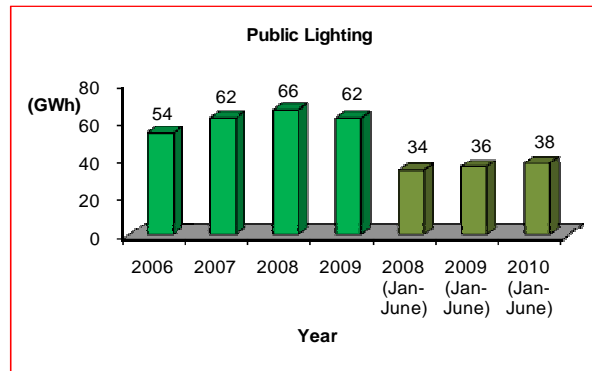
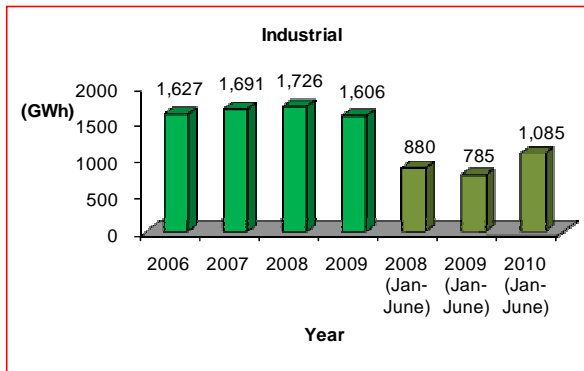
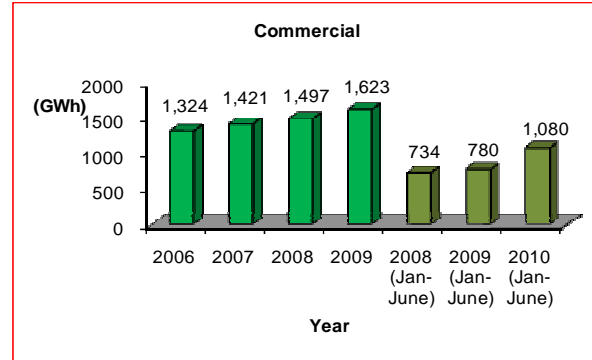
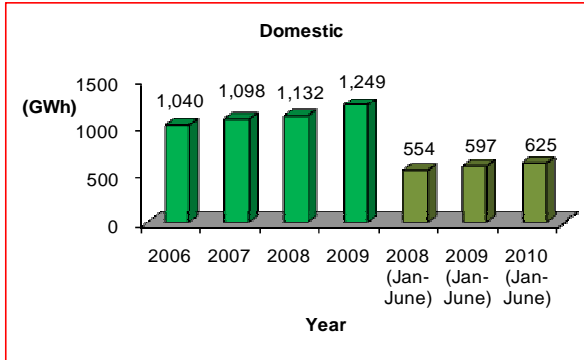
2.0 JUALAN TENAGA ELEKTRIK
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Gambarajah 11 : Jumlah Jualan Tenaga (GWj) oleh SEB untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
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Figure 11 : The Total Electricity (GWh) of SEB for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



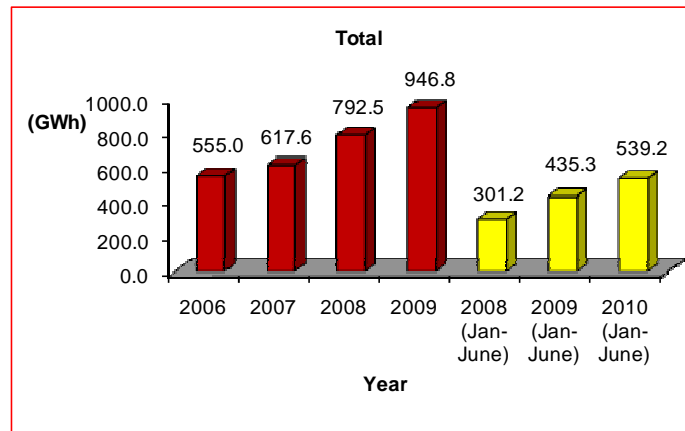
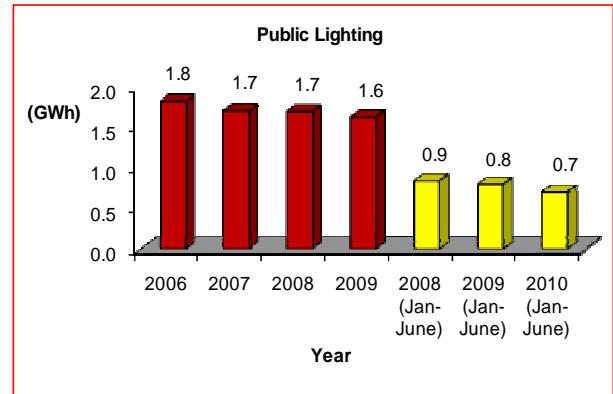
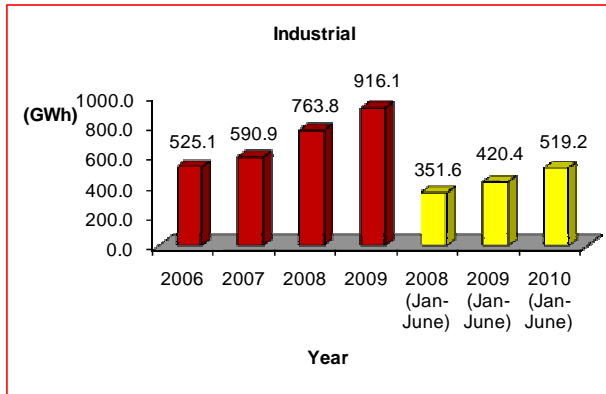
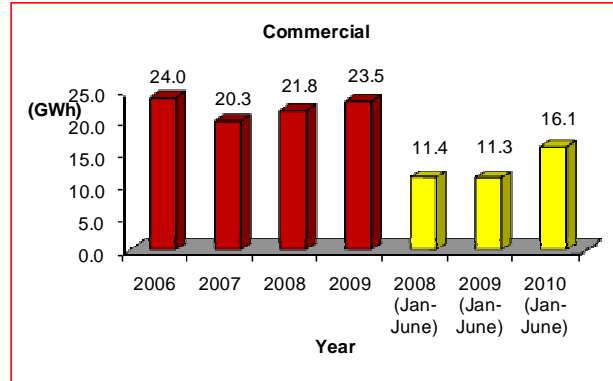
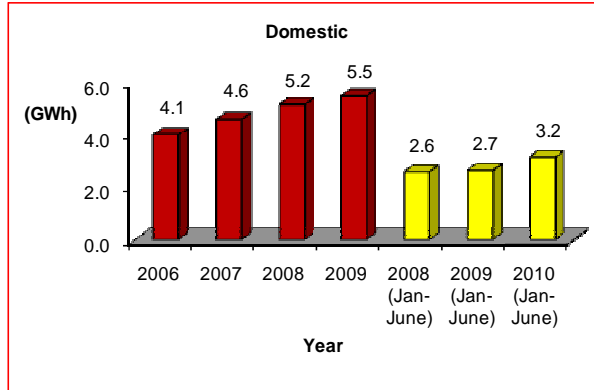
2.0 JUALAN TENAGA ELEKTRIK
SALES OF ELECTRICITY

Gambarajah 12 : Jumlah Jualan Tenaga (GWj) oleh NUR Distribution Sdn. Bhd. untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2006 Hingga 2009

Figure 12 : The Total Electricity (GWh) of NUR Distribution Sdn. Bhd. for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK RELIABILITY OF ELECTRICITY SUPPLY

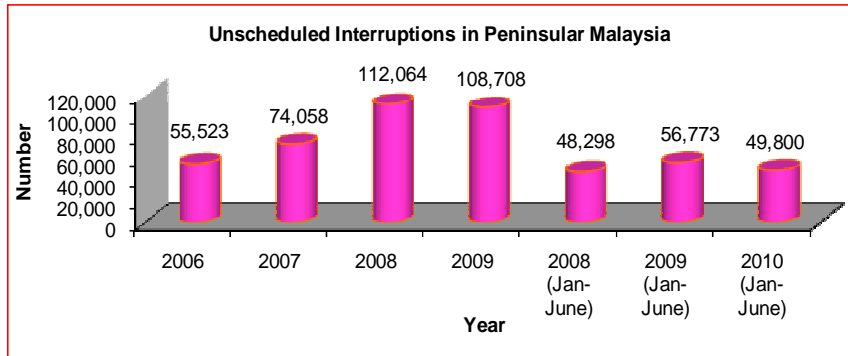
3.1 STATISTIK GANGGUAN BEKALAN – TNB STATISTICS OF SUPPLY INTERRUPTIONS - TNB

Gambarajah 13 : Bilangan Gangguan Bekalan Elektrik di Semenanjung Malaysia untuk :

- Separuh Tahun Pertama 2008, 2009 dan 2010
- Sepanjang Tahun 2006 Hingga 2009

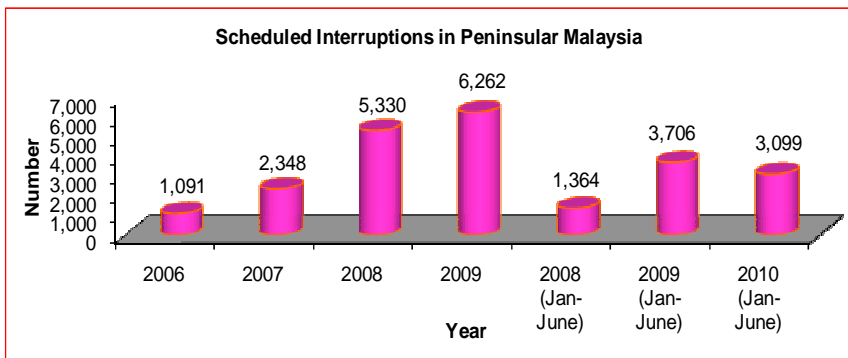
Figure 13 : Numbers of Electricity Supply Interruptions in Peninsular Malaysia for :

- First Half Year of 2008, 2009 and 2010*
- In the Year 2006 to 2009*

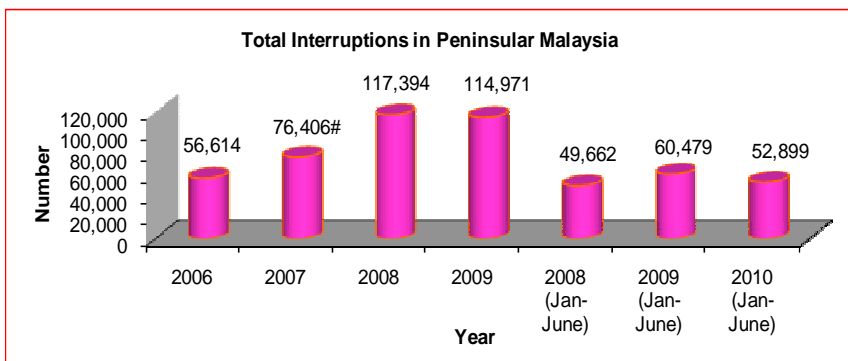


Nota / Note :

Mulai September 2007, TNB menggunakan sistem pemantauan dan pelaporan prestasi sistem pembekalan dengan menggunakan software baru iaitu TOMS (Total Outage Management System).



From September 2007, application of new monitoring and reporting system on performance of supply system using the new software, i.e. Total Outage Management System (TOMS).



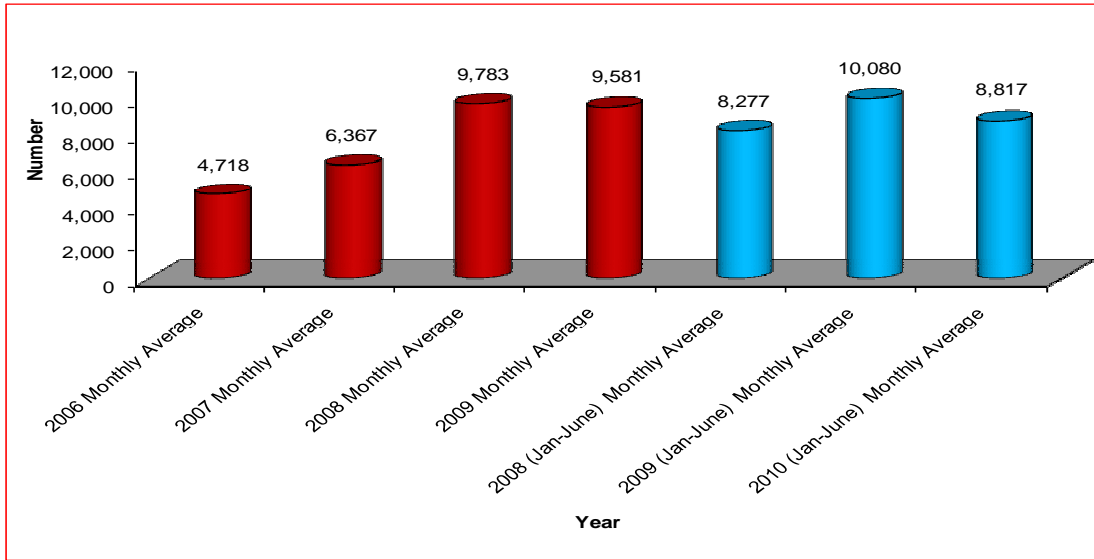
3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
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Gambarajah 14 : Purata Bilangan Gangguan Bekalan Elektrik Bulanan di Semenanjung Malaysia :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2006 Hingga 2009

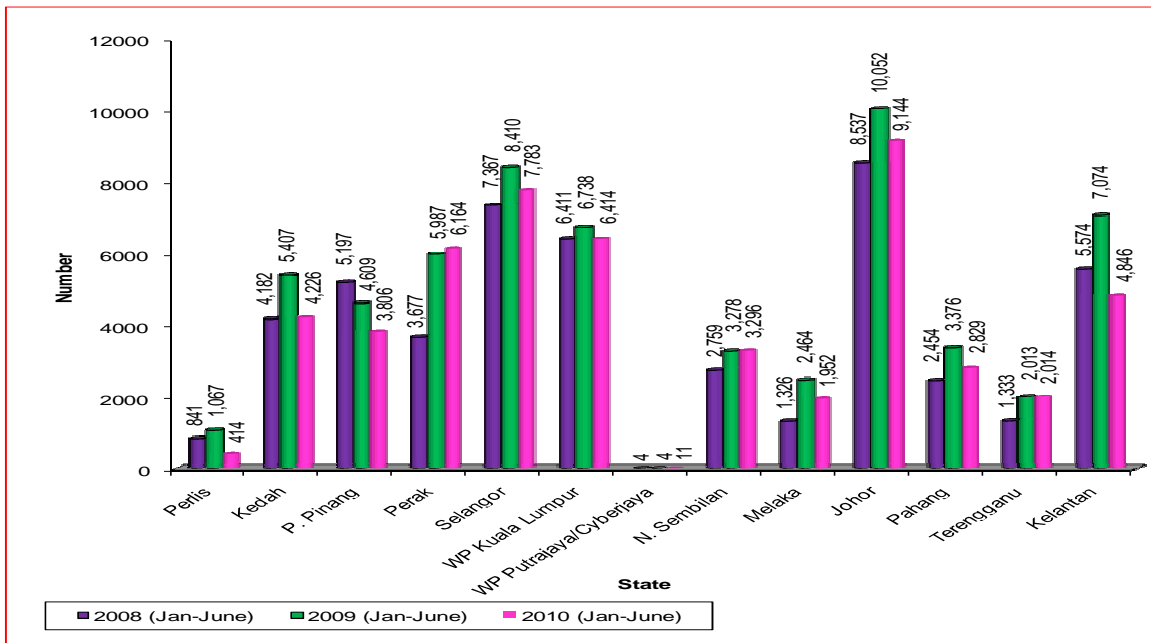
Figure 14 : Monthly Average of Electricity Supply Interruptions in Peninsular Malaysia for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



Gambarajah 15 : Jumlah Kumulatif Bilangan Gangguan Bekalan Elektrik bagi Negeri-negeri di Semenanjung Malaysia untuk Separuh Tahun Pertama 2008, 2009 dan 2010

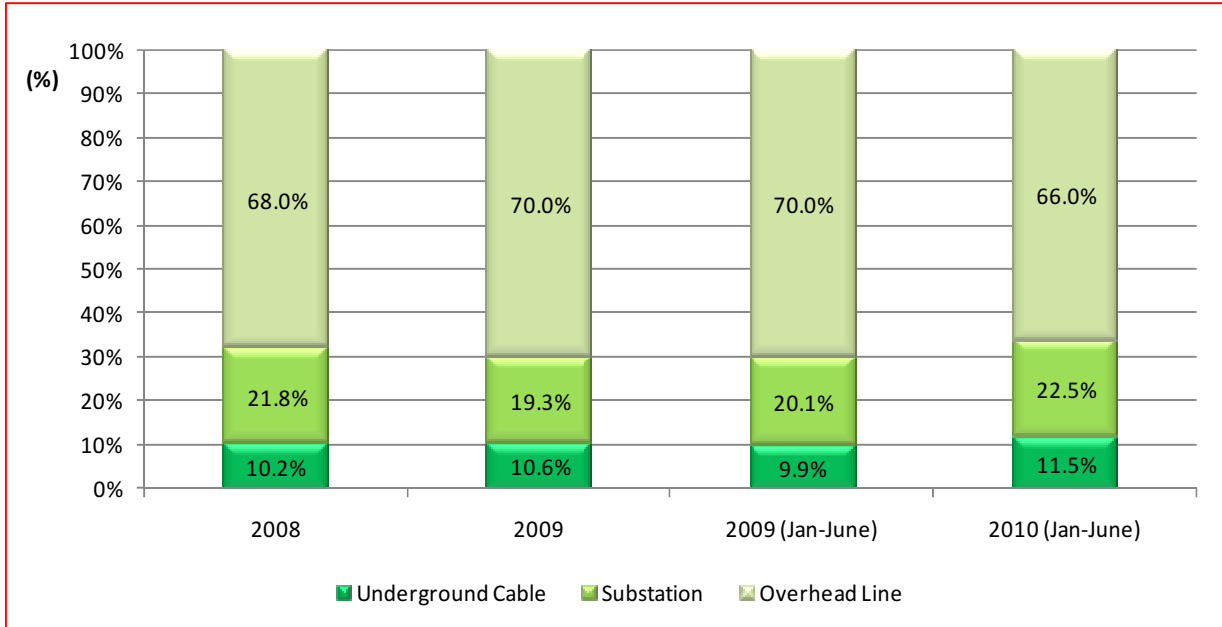
Figure 15 : Total Number of Supply Interruptions in Various States in Peninsular Malaysia for the First Half Year of 2008, 2009 and 2010



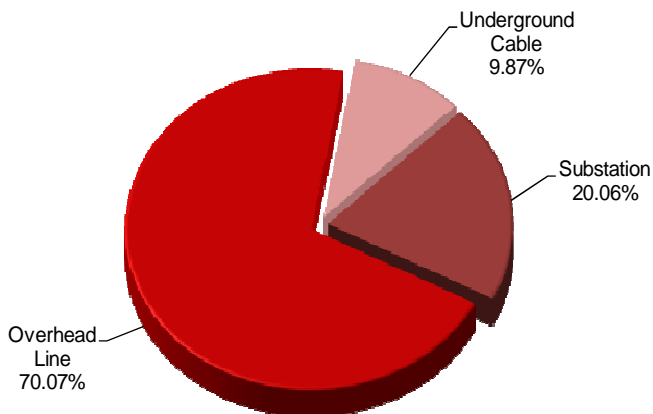
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 i) Separuh Tahun Pertama 2009 dan 2010
 ii) Sepanjang Tahun 2008 dan 2009

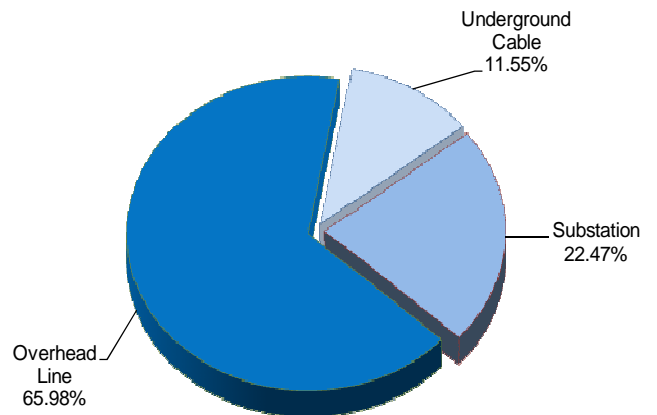
*Figure 16 : (a) Percentages of Total Number of Supply Interruptions in Peninsular Malaysia Based on the Component of Network for :
 i) First Half Year of 2009 and 2010
 ii) In the Year 2008 and 2009*



(b) Peratusan Tahun 2009 (Jan-Jun)
Percentages in 2009 (Jan-June)



(c) Peratusan Tahun 2010 (Jan-Jun)
Percentages in 2010 (Jan-June)



Nota / *Note* : Tidak termasuk gangguan bekalan voltan tinggi
Excluding high voltage supply interruptions

3.0 KEBOLEHARAPAN (*RELIABILITY*) BEKALAN ELEKTRIK *RELIABILITY OF ELECTRICITY SUPPLY*

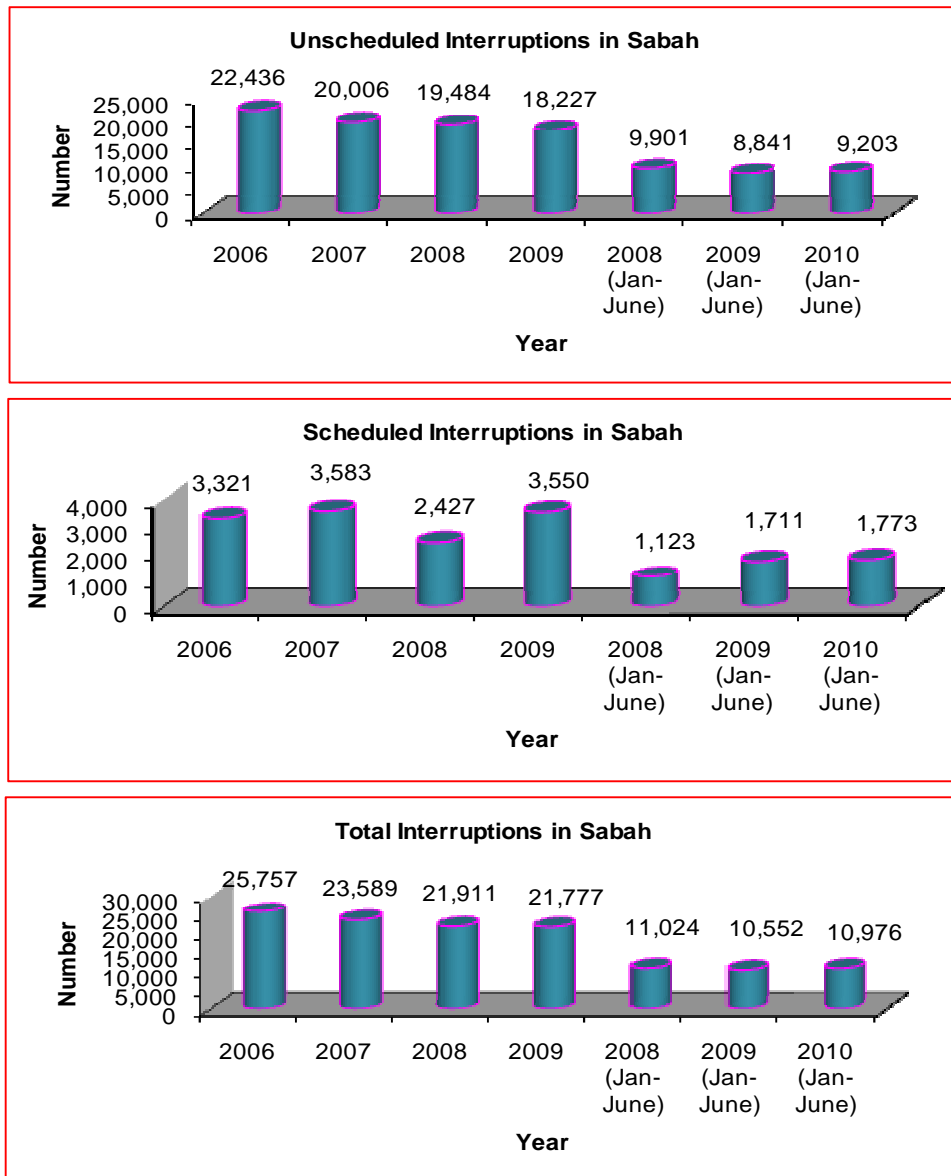
3.2 STATISTIK GANGGUAN BEKALAN - SESB *STATISTICS OF SUPPLY INTERRUPTIONS - SESB*

Gambarajah 17 : Bilangan Gangguan Bekalan Elektrik di Negeri Sabah untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2006 Hingga 2009

Figure 17 : Numbers of Electricity Supply Interruptions in Sabah for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



Nota : Tidak termasuk gangguan pada sistem penghantaran dan penjanaan

Note : Excluding interruptions in transmission and generation system

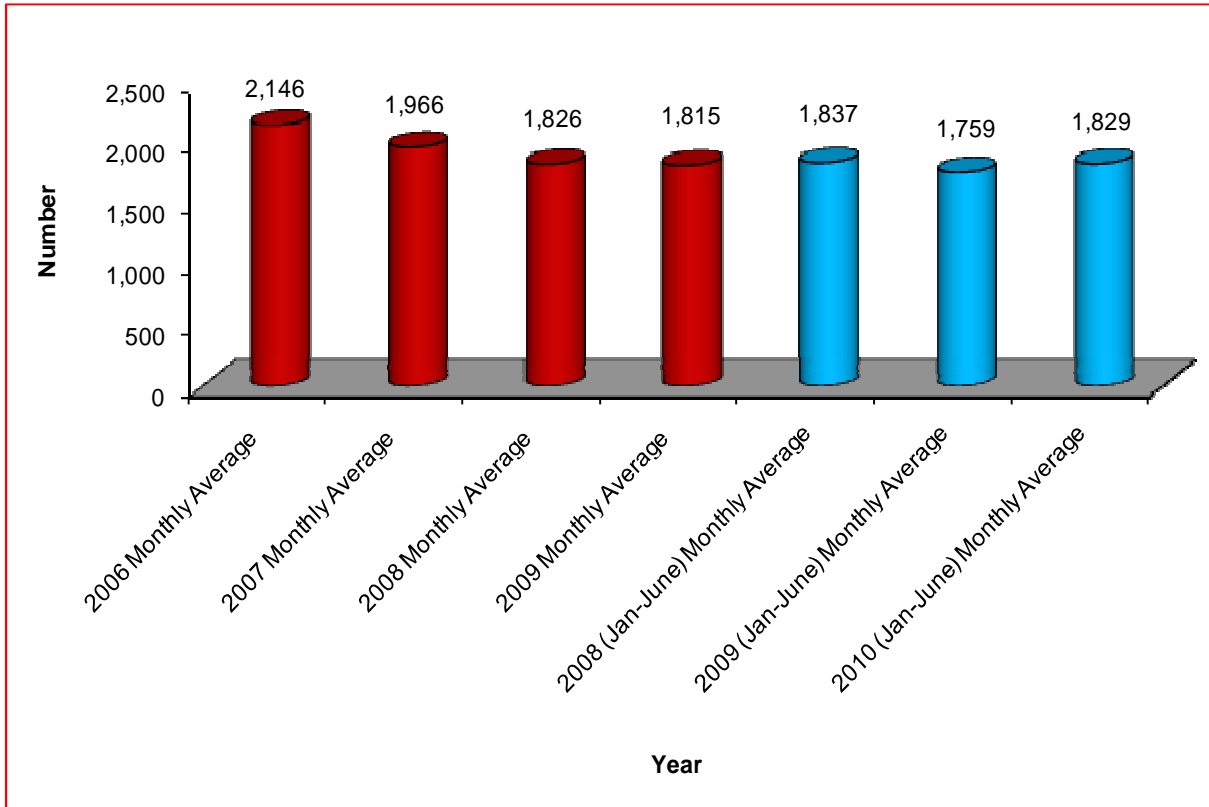
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Gambarajah 18 : Purata Bilangan Gangguan Bekalan Elektrik Bulanan di Negeri Sabah untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2006 Hingga 2009

Figure 18 : Monthly Average of Electricity Supply Interruptions in Sabah for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

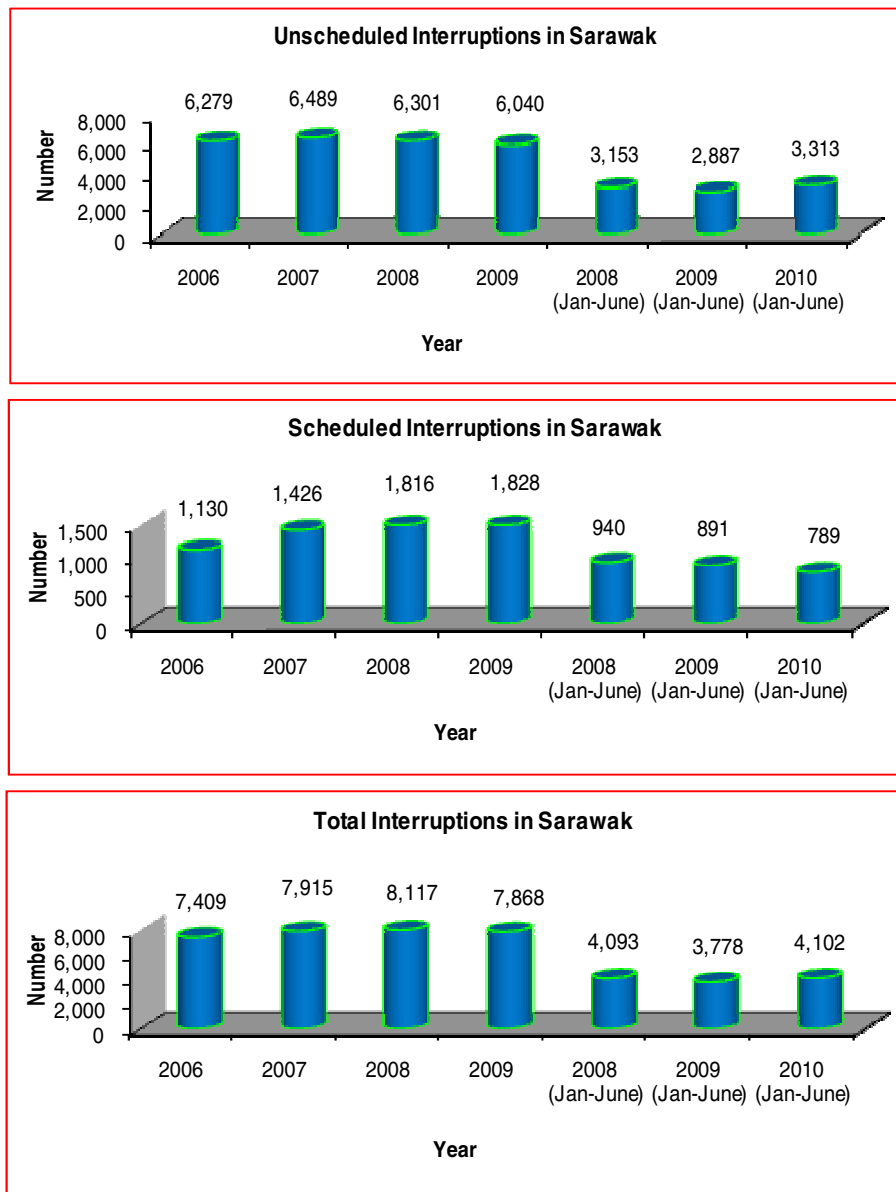
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Gambarajah 19 : Bilangan Gangguan Bekalan Elektrik di Negeri Sarawak untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2006 Hingga 2009

Figure 19 : Numbers of Electricity Supply Interruptions in Sarawak for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



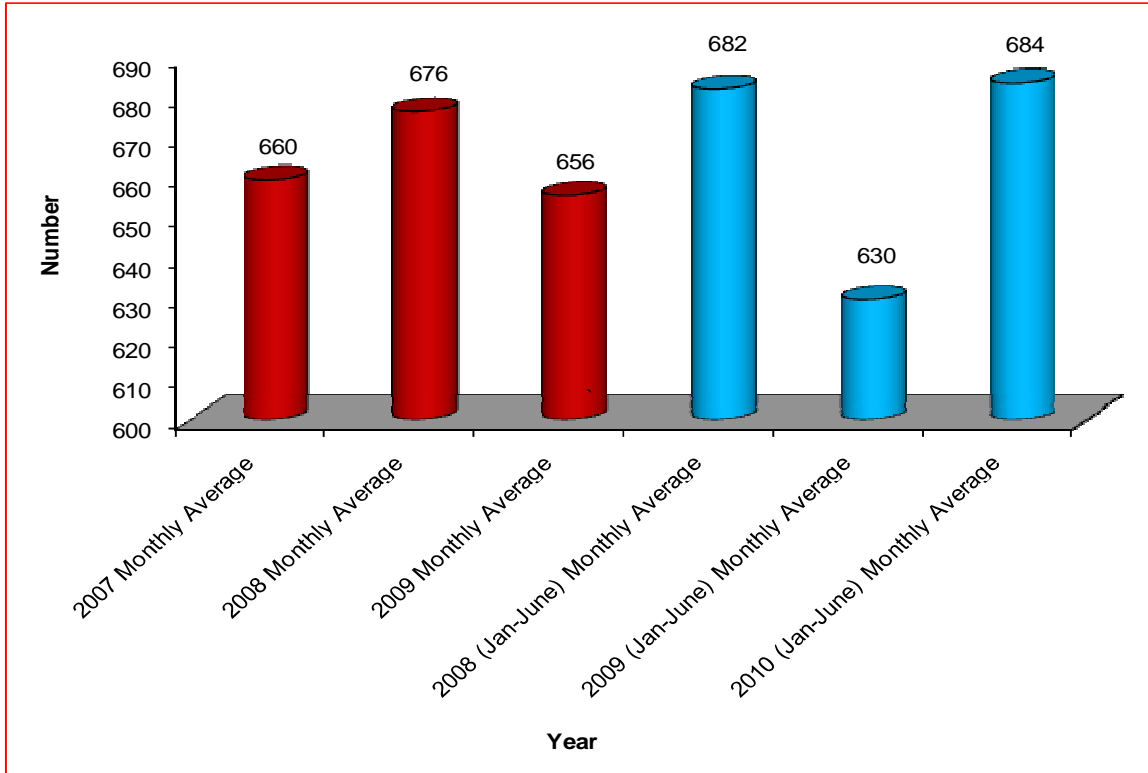
3.0 **KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK** **RELIABILITY OF ELECTRICITY SUPPLY**

Gambarajah 20 : Purata Bilangan Gangguan Bekalan Elektrik Bulanan di Negeri Sarawak untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2006 Hingga 2009

Figure 20 : Monthly Average of Electricity Supply Interruptions in Sarawak for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

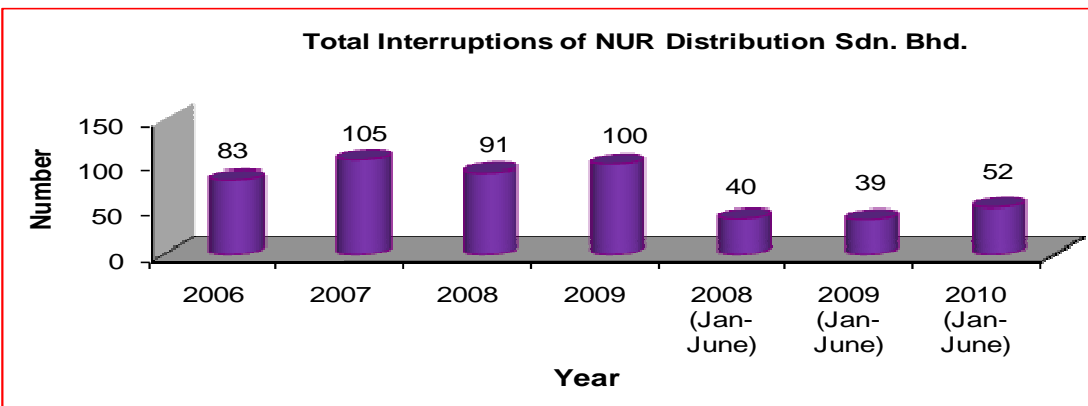
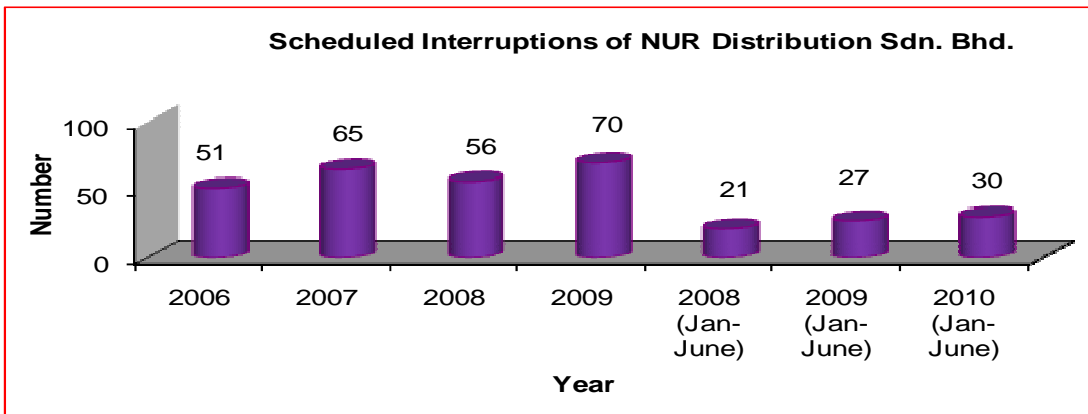
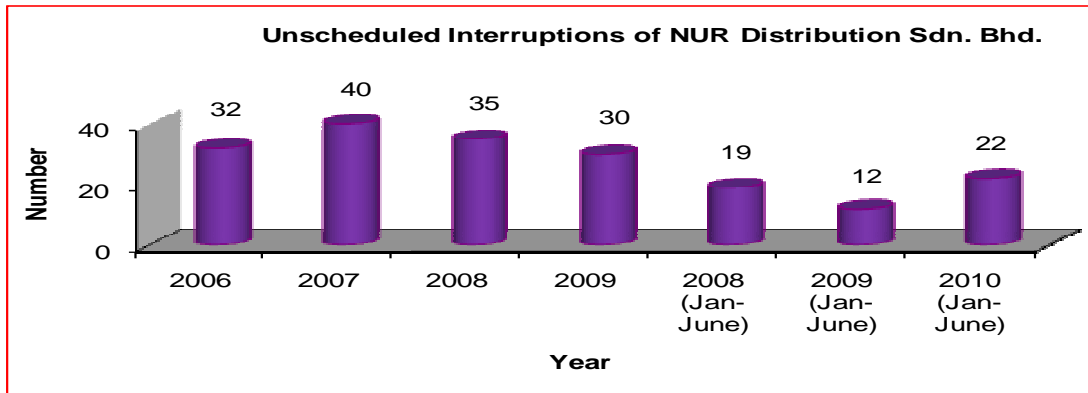
3.4 STATISTIK GANGGUAN BEKALAN – NUR
STATISTICS OF SUPPLY INTERRUPTIONS - NUR

Gambarajah 21 : Bilangan Gangguan Bekalan Elektrik di Kulim Hi-Tech Park (KHTP) yang dilaporkan oleh NUR Distribution Sdn. Bhd. untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2006 Hingga 2009

Figure 21 : Numbers of Electricity Supply Interruptions in Kulim Hi-Tech Park (KHTP) by NUR Distribution Sdn. Bhd. for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



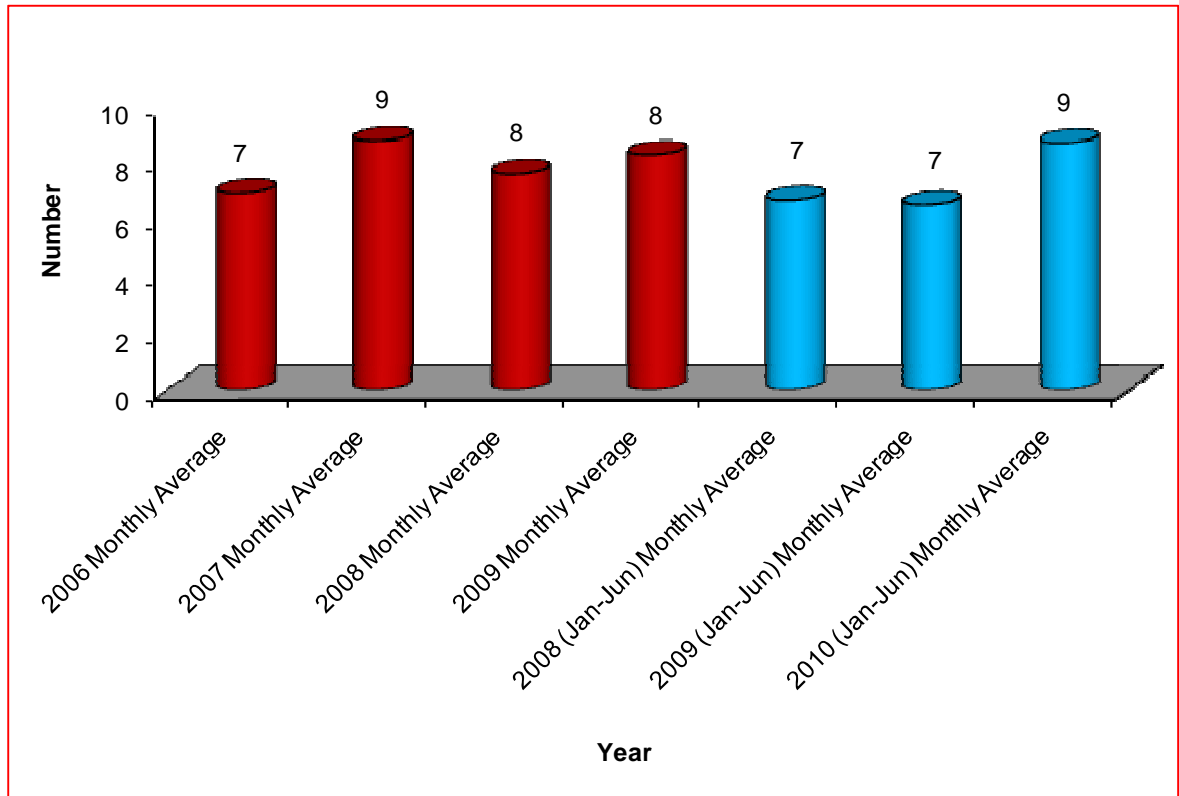
3.0 **KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK** **RELIABILITY OF ELECTRICITY SUPPLY**

Gambarajah 22 : Purata Bilangan Gangguan Bekalan Elektrik Bulanan di Kulim Hi-Tech Park (KHTP) yang dilaporkan oleh NUR Distribution Sdn. Bhd. untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2006 Hingga 2009

Figure 22 : Monthly Average of Electricity Supply Interruptions in Kulim Hi-Tech Park (KHTP) Reported by NUR Distribution Sdn. Bhd. for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2006 to 2009*



3.0 KEBOLEHARAPAN (*RELIABILITY*) BEKALAN ELEKTRIK *RELIABILITY OF ELECTRICITY SUPPLY*

3.5 SISTEM PENGAGIHAN TNB *DISTRIBUTION SYSTEM OF TNB*

3.5.1 SYSTEM AVERAGE INTERRUPTION DURATION INDEX (SAIDI)

Jadual 1 : SAIDI (Minit/Pelanggan/Tahun) bagi Negeri-Negeri di Semenanjung Malaysia untuk :

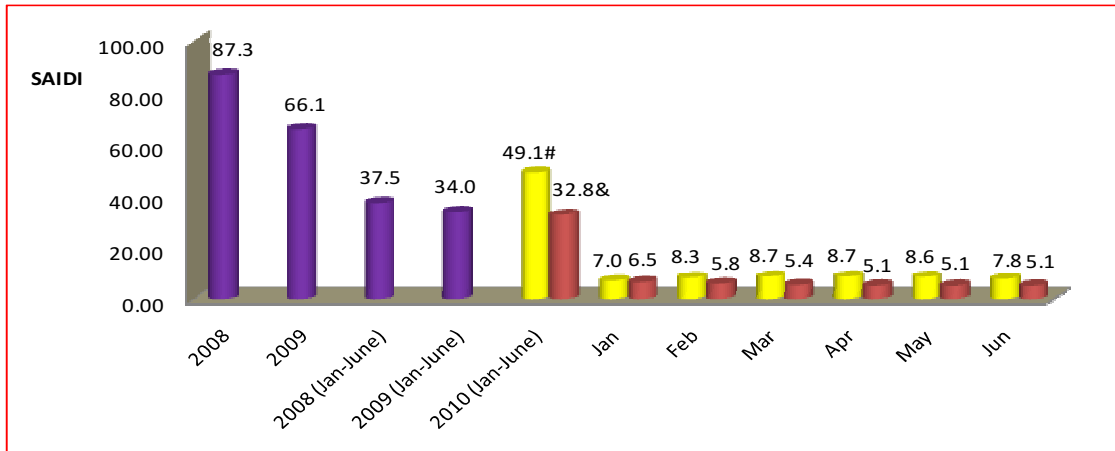
- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2007 Hingga 2009

Table 1 : SAIDI (Minutes/Customer/Year) for the Various States in Peninsular Malaysia for :
i) First Half Year of 2008, 2009 and 2010
ii) In the Year 2007 to 2009

Tahun <i>Year</i>	Indek SAIDI Keseluruhan <i>Overall SAIDI (Minutes)</i>	Negeri Paling Tinggi Indeks SAIDI <i>State with Highest SAIDI</i>	Negeri Paling Rendah Indeks SAIDI <i>State with Lowest SAIDI</i>
2007	75.7	Pahang (108.4)	WP Putrajaya/Cyberjaya (2.1)
2008	87.3	Johor (120.5)	WP Putrajaya/Cyberjaya (6.6)
2009	66.1	P.Pinang (111.3)	WP Putrajaya/Cyberjaya (0.2)
2008 (Jan-Jun)	37.5	Melaka (51.8)	WP Putrajaya/Cyberjaya (5.9)
2009 (Jan-Jun)	33.9	Kelantan (52.8)	WP Putrajaya/Cyberjaya (0.19)
2010 (Jan-Jun)	49.1	Perak (99.8)	WP Putrajaya/Cyberjaya (7.8)

Gambarajah 23 : SAIDI (Minit/Pelanggan/Tahun) di Semenanjung Malaysia untuk Separuh Tahun Pertama 2010

Figure 23 : SAIDI (Minutes/Customer/Year) in Peninsular Malaysia for the First Half Year of 2010



Nota / Notes :

- Mulai Januari 2010, TNB telah mengambil langkah untuk mempertingkatkan sistem pelaporan SAIDI yang lebih tepat dengan menggabungkan perisian-perisian TOMS, eCIBS dan ERMS. Perisian baru ini dipanggil *Enhanced TOMS*.

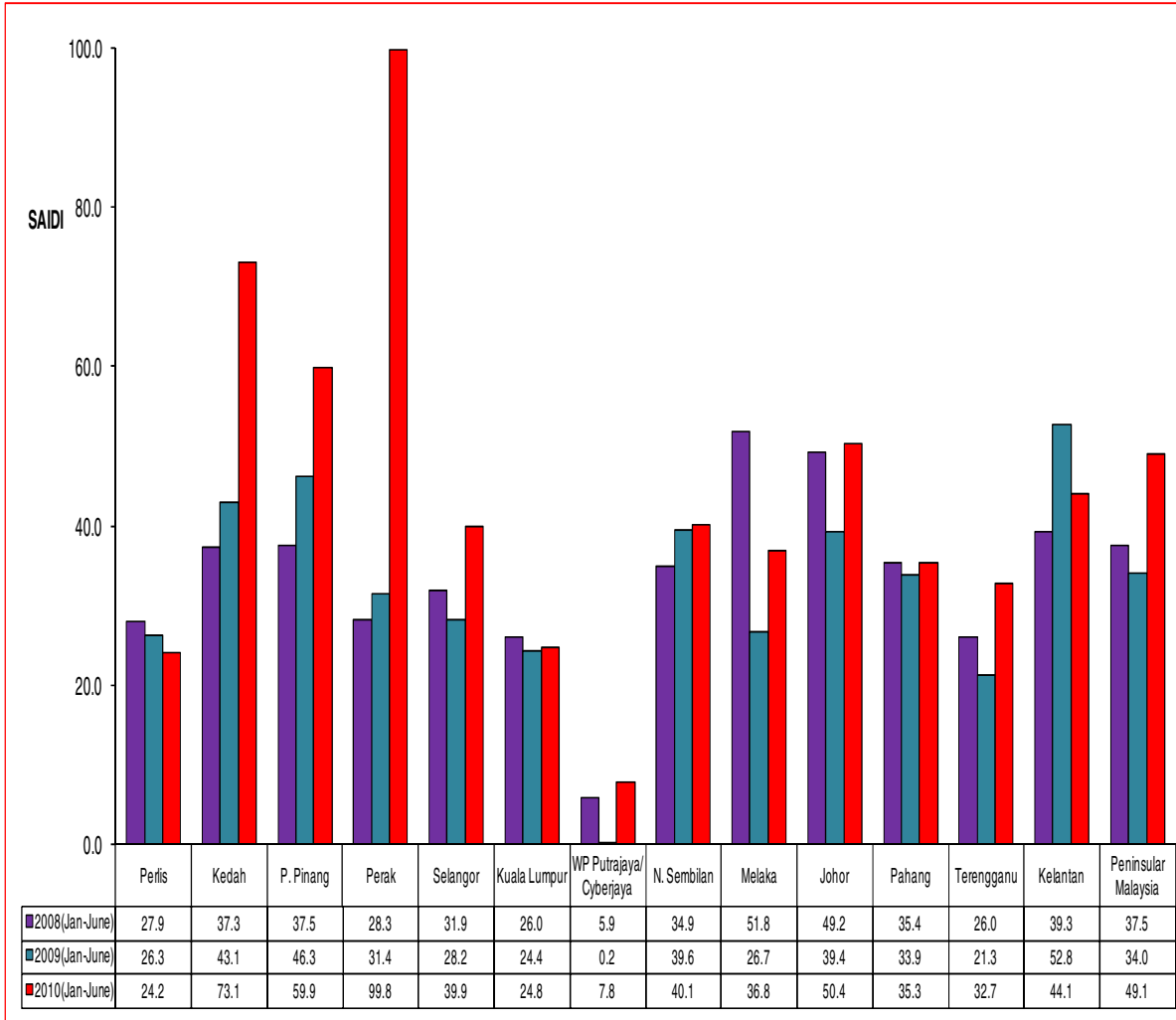
From January 2010, TNB has taken steps to improve on the data collection and recording, with the integration of TOMS, eCIBS and ERMS into a new system called Enhanced TOMS.

& - SAIDI dikira menggunakan perisian lama (TOMS).
SAIDI calculated using old software namely TOMS.

3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

Gambarajah 24 : SAIDI (Minit/Pelanggan/Tahun) Terkumpul bagi Negeri-Negeri di Semenanjung Malaysia untuk Separuh Tahun Pertama 2008, 2009 dan 2010

Figure 24 : SAIDI (Minutes/Customer/Year) for the Various States in Peninsular Malaysia for the First Half Year of 2008, 2009 and 2010

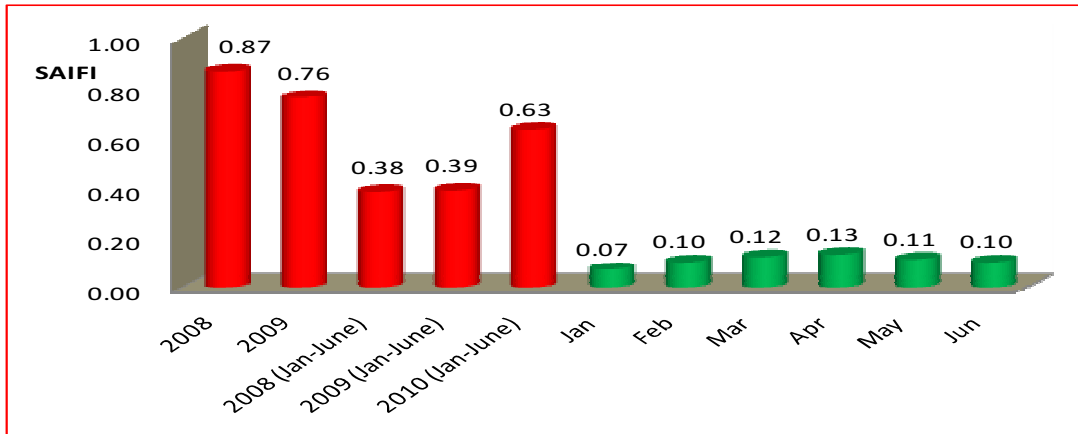


3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

3.5.2 SYSTEM AVERAGE INTERRUPTION FREQUENCY INDEX (SAIFI)

Gambarajah 25 : SAIFI (Bil. Gangguan/Pelanggan/Tahun) di Semenanjung Malaysia untuk Separuh Tahun Pertama 2010

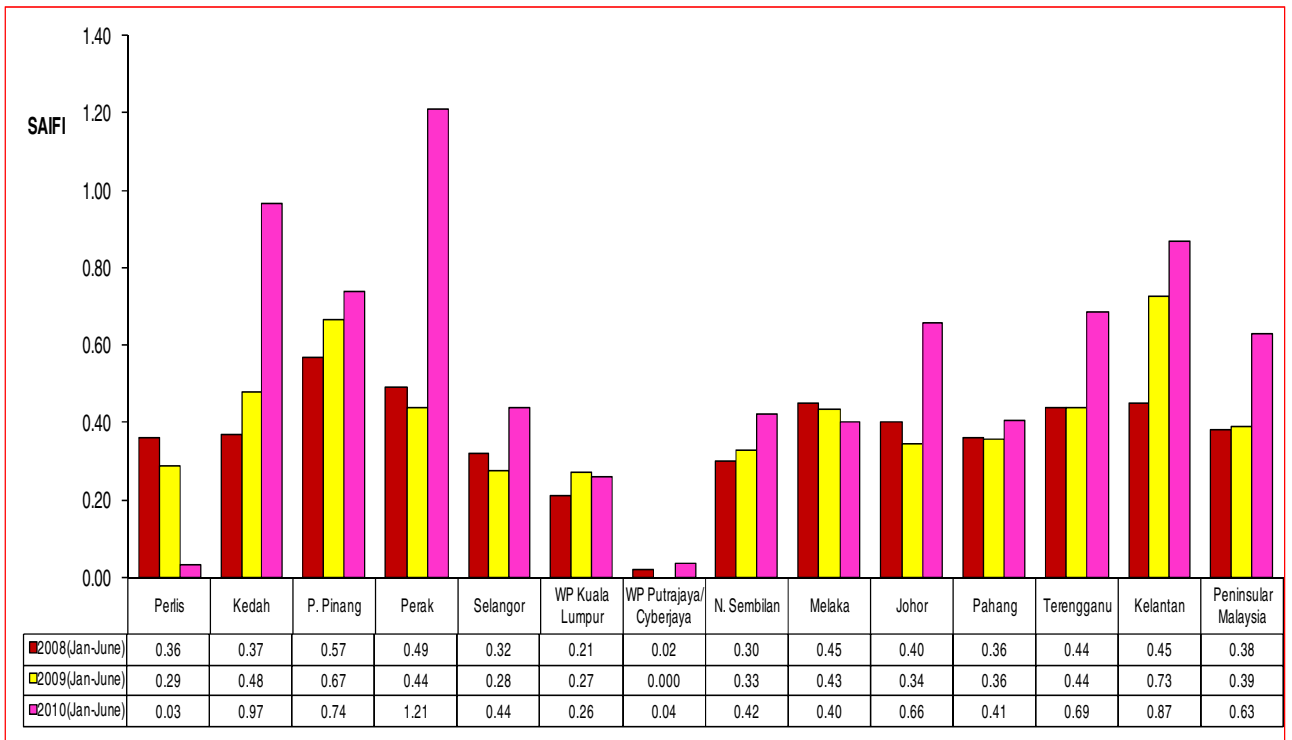
Figure 25 : SAIFI (No. of Interruption/Customer/Year) in Peninsular Malaysia for the First Half Year of 2010



Nota / Note : SAIFI pada tahun 2010 dikira menggunakan perisian baru (Enhanced TOMS)
SAIFI in 2010 is calculated using new software namely Enhanced TOMS

Gambarajah 25 : SAIFI (Bil. Gangguan/Pelanggan/Tahun) Terkumpul bagi Negeri-Negeri di Semenanjung Malaysia untuk Separuh Tahun Pertama 2008, 2009 dan 2010

Figure 25 : SAIFI (No. of Interruption/Customer/Year) for the Various States in Peninsular Malaysia for the First Half Year of 2008, 2009 and 2010

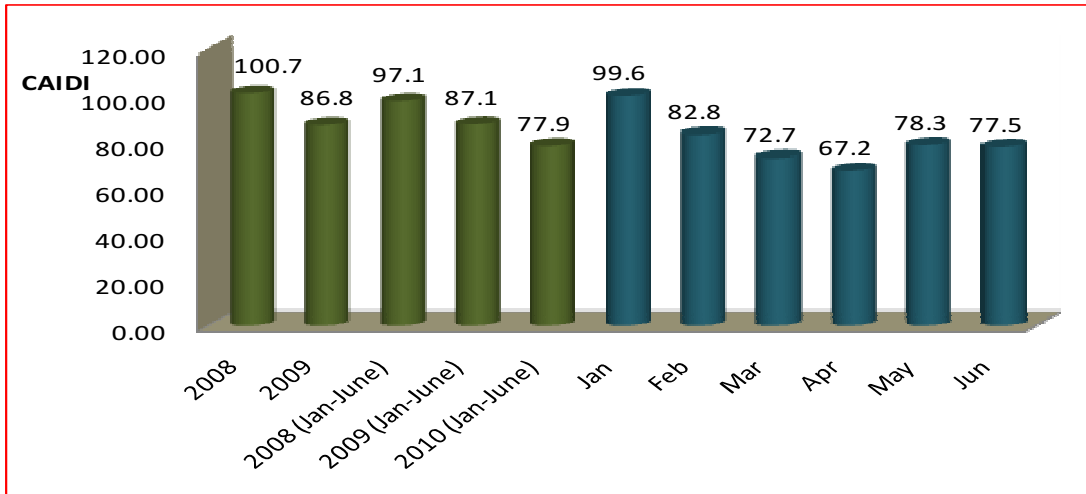


3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

3.5.3 CUSTOMER AVERAGE INTERRUPTION DURATION INDEX (CAIDI)

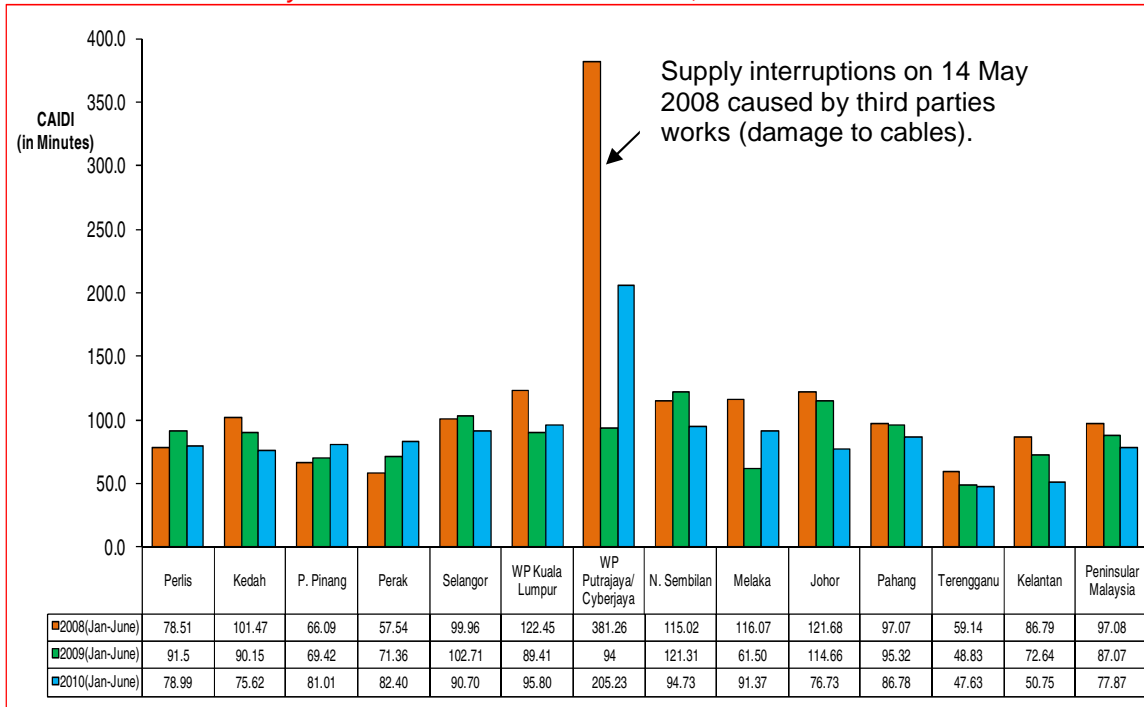
Gambarajah 27 : CAIDI (Minit/Pelanggan Terlibat/Tahun) di Semenanjung Malaysia untuk Separuh Tahun Pertama 2010

Figure 27 : CAIDI (Minutes/Interrupted Customer/Year) in Peninsular Malaysia for the First Half Year of 2010



Gambarajah 28 : CAIDI (Minit/Pelanggan Terlibat/Tahun) Terkumpul bagi Negeri-Negeri di Semenanjung Malaysia untuk Separuh Tahun Pertama 2008, 2009 dan 2010

Figure 28 : CAIDI (Minutes/Interrupted Customer/Year) for the Various States in Peninsular Malaysia for the First Half Year of 2008, 2009 and 2010



3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

3.6 SISTEM PENGAGIHAN SESB
DISTRIBUTION SYSTEM OF SESB

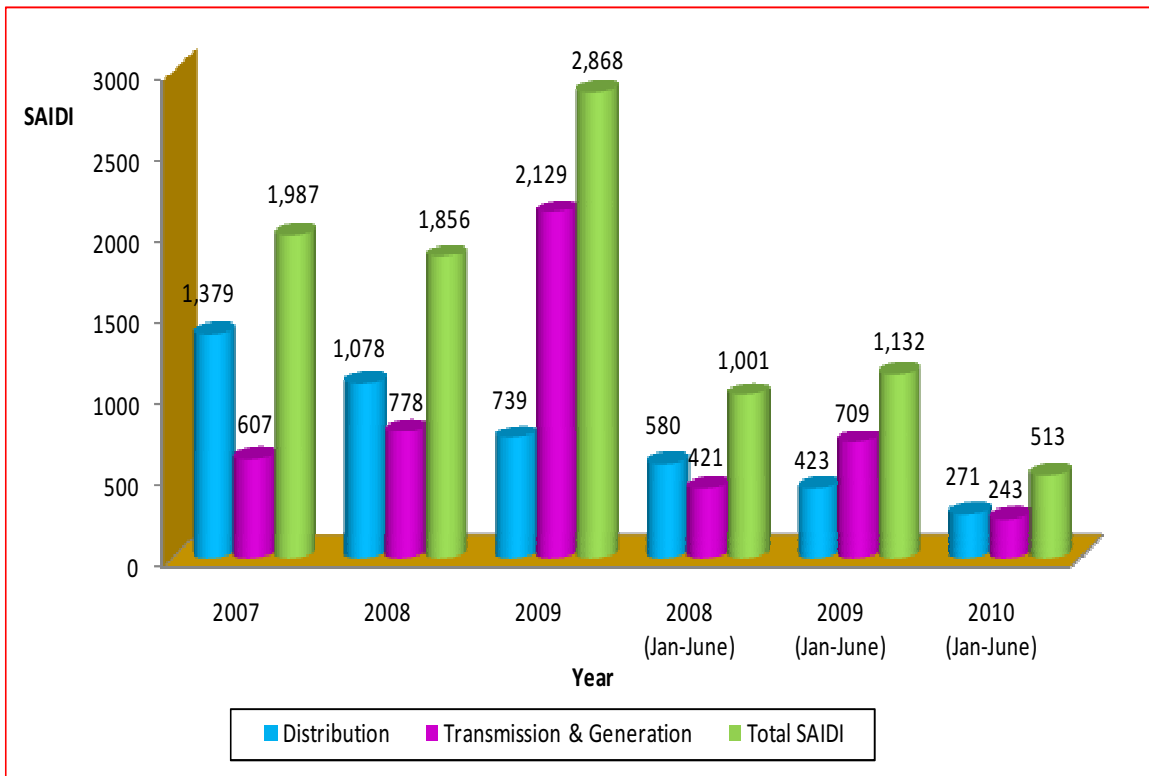
3.6.1 SYSTEM AVERAGE INTERRUPTION DURATION INDEX (SAIDI)

Gambarajah 29 : SAIDI (Minit/Pelanggan/Tahun) di Negeri Sabah untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2007 Hingga 2009

Figure 29 : SAIDI (Minutes/Customer/Year) in Sabah for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2007 to 2009*



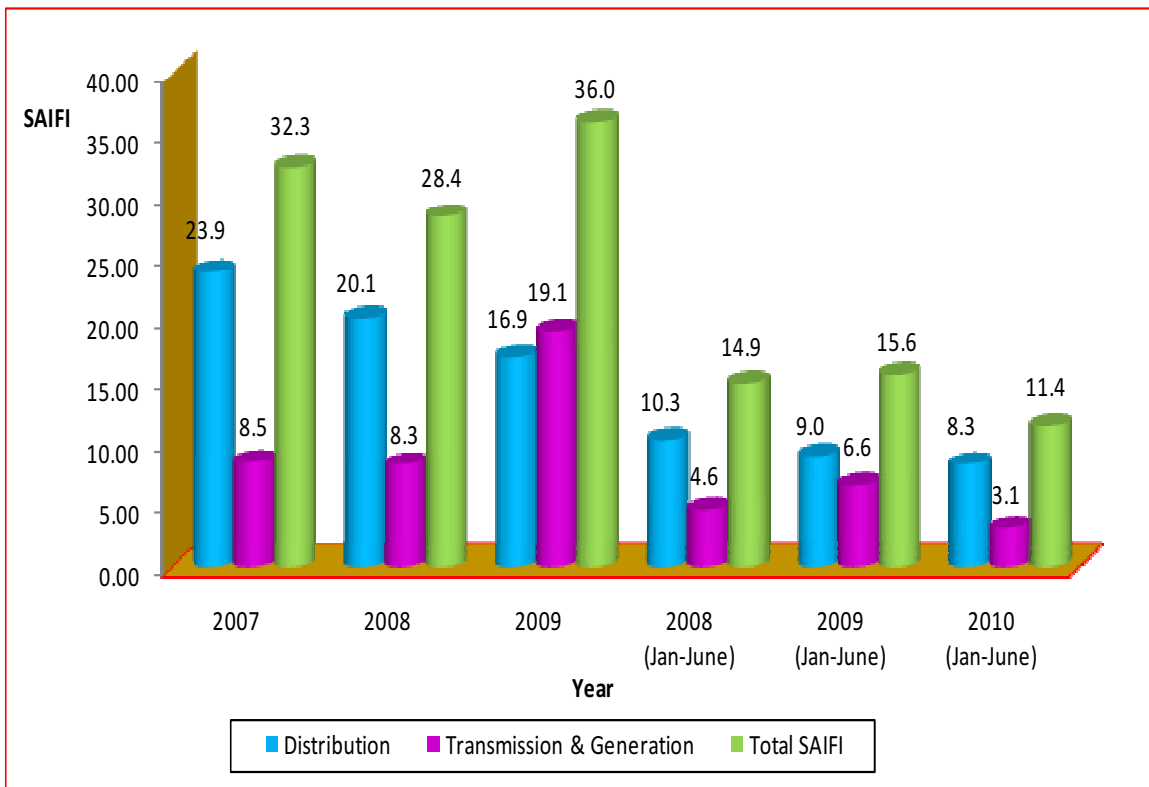
3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

3.6.2 SYSTEM AVERAGE INTERRUPTION FREQUENCY INDEX (SAIFI)

Gambarajah 30 : SAIFI (Bil. Gangguan/Pelanggan/Tahun) di Negeri Sabah untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2007 Hingga 2009

Figure 30 : SAIFI (No's of Interruption/Customer/Year) in Sabah for :
i) First Half Year of 2008, 2009 and 2010
ii) In the Year 2007 to 2009



3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

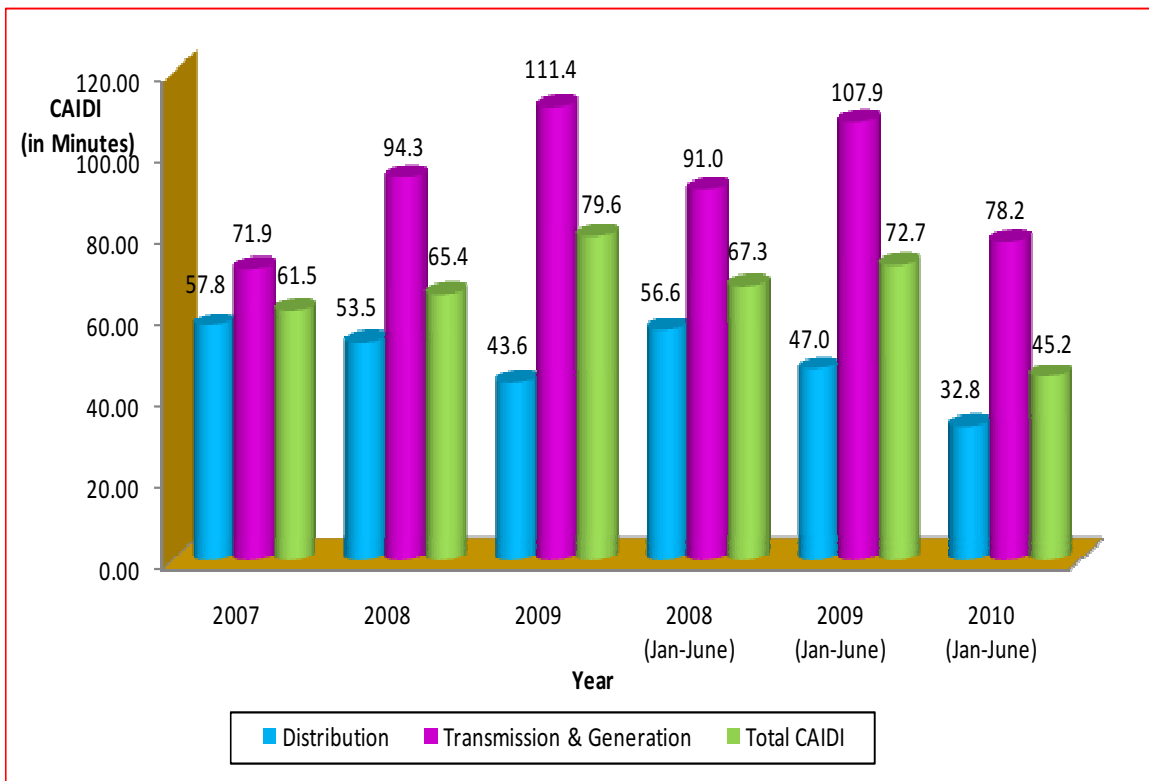
3.6.3 CUSTOMER AVERAGE INTERRUPTION DURATION INDEX (CAIDI)

Gambarajah 31 : CAIDI (Minit/Pelanggan Terlibat/Tahun) bagi Negeri Sabah untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2007 Hingga 2009

Figure 31 : CAIDI (Minutes/Interrupted Customer/Year) in Sabah for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2007 to 2009*



3.0 KEBOLEHARAPAN (*RELIABILITY*) BEKALAN ELEKTRIK *RELIABILITY OF ELECTRICITY SUPPLY*

3.7 SISTEM PENGAGIHAN SEB *DISTRIBUTION SYSTEM OF SEB*

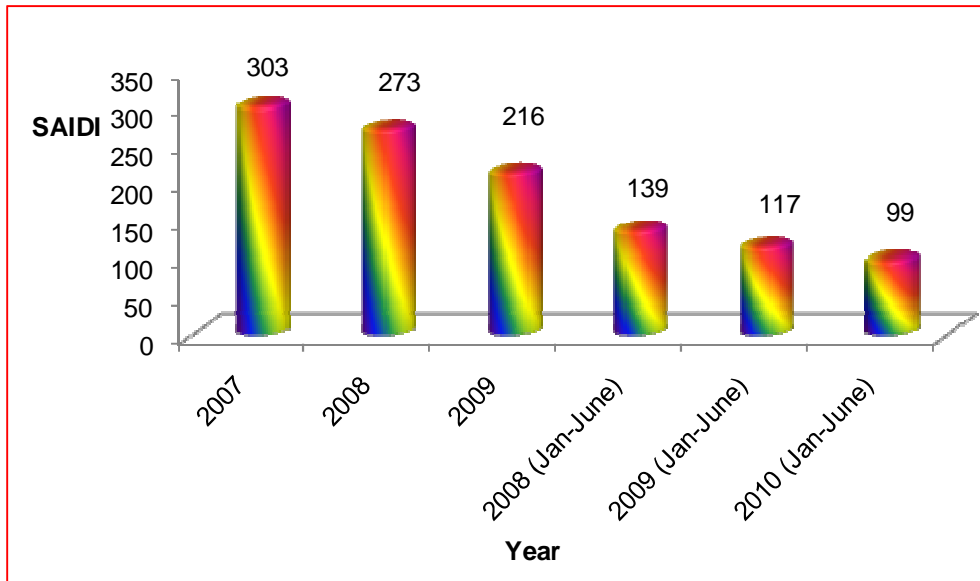
3.7.1 *SYSTEM AVERAGE INTERRUPTION DURATION INDEX (SAIDI)*

Gambarajah 32 : SAIDI (Minit/Pelanggan/Tahun) SEB untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2007 Hingga 2009

Figure 32 : SAIDI (Minutes/Customer/Year) of SEB for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2007 to 2009*



3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

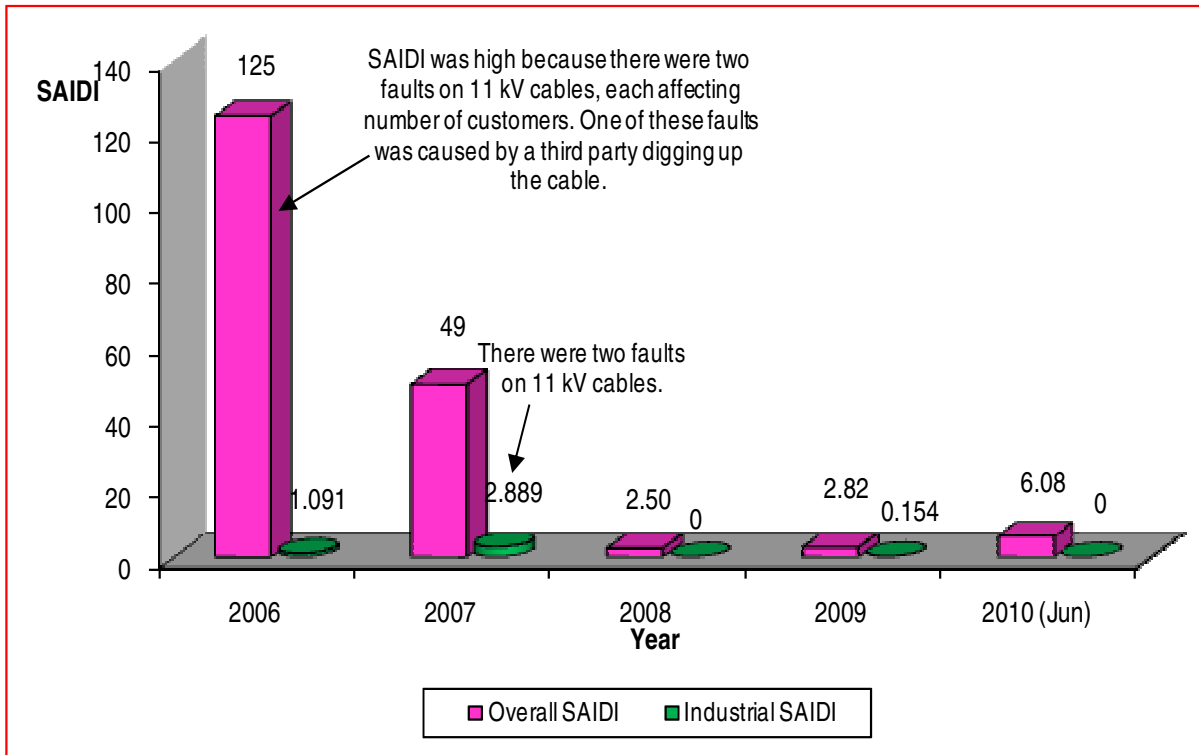
3.8 SISTEM PENGAGIHAN NUR
DISTRIBUTION SYSTEM OF NUR

3.8.1 SYSTEM AVERAGE INTERRUPTION DURATION INDEX (SAIDI)

Gambarajah 33 : SAIDI Keseluruhan dan Industri (Untuk Pengguna Voltan Tinggi) di Kulim Hi-Tech Park (KHTP) yang dilaporkan oleh NUR Distribution Sdn. Bhd. untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2007 Hingga 2009

Figure 33 : Total SAIDI and Industrial SAIDI (for High Voltage Customers only) in Kulim Hi-Tech Park (KHTP) Reported by NUR Distribution Sdn. Bhd. for :
i) First Half Year of 2008, 2009 and 2010
ii) In the Year 2007 to 2009



3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

3.9 PRESTASI SISTEM PENGHANTARAN DI SEMENANJUNG MALAYSIA
PERFORMANCE OF TRANSMISSION SYSTEM IN PENINSULAR MALAYSIA

Jadual 2 : Statistik Pelantikan Sistem Penghantaran dengan Kehilangan Beban 50 MW Ke Atas untuk Separuh Tahun Pertama 2009

Table 2 : Statistics of Transmission System Tripping with a Load Loss of 50 MW and Above for the First Half Year of 2010

Perkara / Indicators	Jan	Feb	Mar	Apr	May	June
Bilangan Pelantikan <i>No. of Tripping without Load Shedding</i>	0	1	0	0	0	1
Bilangan Lucutan Beban <i>No. of Tripping with Load Shedding</i>	0	0	0	0	0	0
Kehilangan Beban Maksimum (MW) <i>Maximum Load Loss (MW)</i>		56				61.5
Tenaga Yang Tidak Dibekalkan Semasa Pelantikan (MWj) <i>Unsupplied Energy due to Tripping (MWh)</i>		112.1				57.3
Purata Tenaga Tidak Dibekalkan Setiap Pelantikan (MWj) <i>Average Unsupplied Energy per Trip (MWh)</i>		112.1				57.3
Purata Tempoh Setiap Pelantikan (Jam:Minit) <i>Average Duration per Trip (Hour)</i>		2:00				0:56
Tenaga Tidak Dibekalkan Semasa Lucutan Beban (MWj) <i>Unsupplied Energy During Load Shedding (MWh)</i>	0	0	0	0	0	0

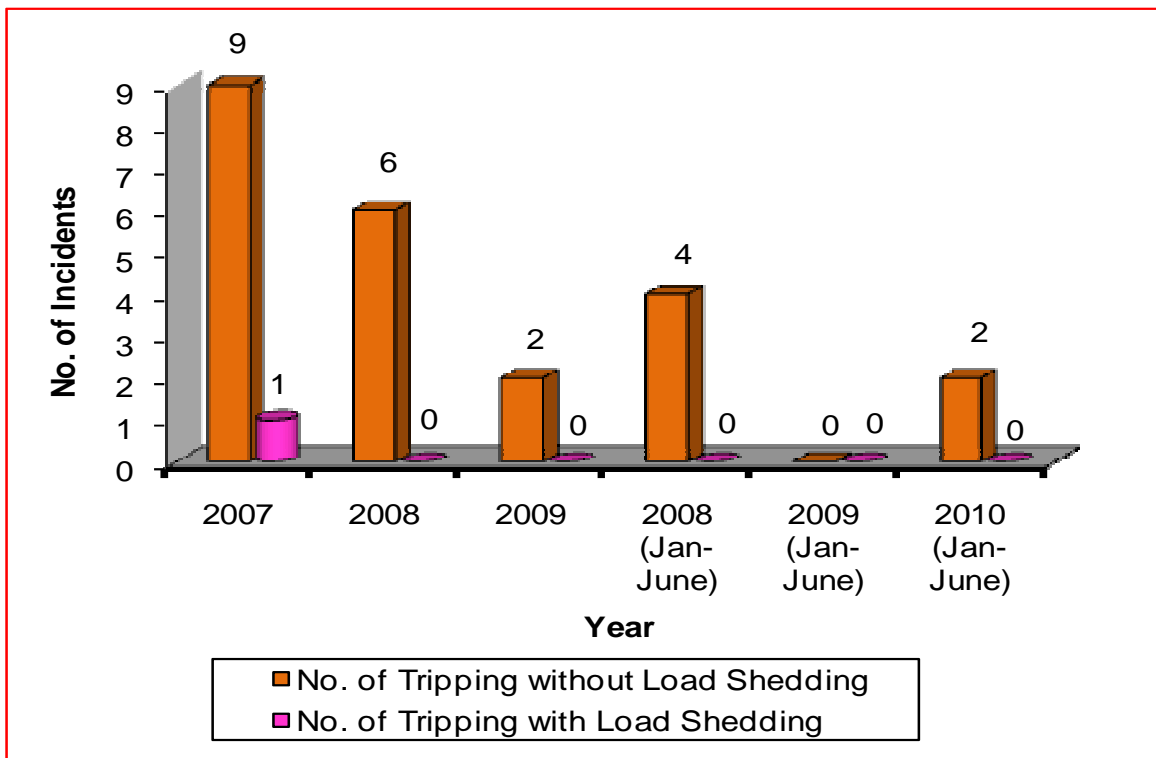
3.0 KEBOLEHARAPAN (RELIABILITY) BEKALAN ELEKTRIK
RELIABILITY OF ELECTRICITY SUPPLY

Gambarajah 34 : Bilangan Pelantikan Sistem Penghantaran di Semenanjung Malaysia dengan Kehilangan Beban 50 MW ke Atas untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2007 Hingga 2009

Figure 34 : Number of Transmission System Tripping in Peninsular Malaysia with a Load Loss of 50 MW and Above for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2007 to 2009*

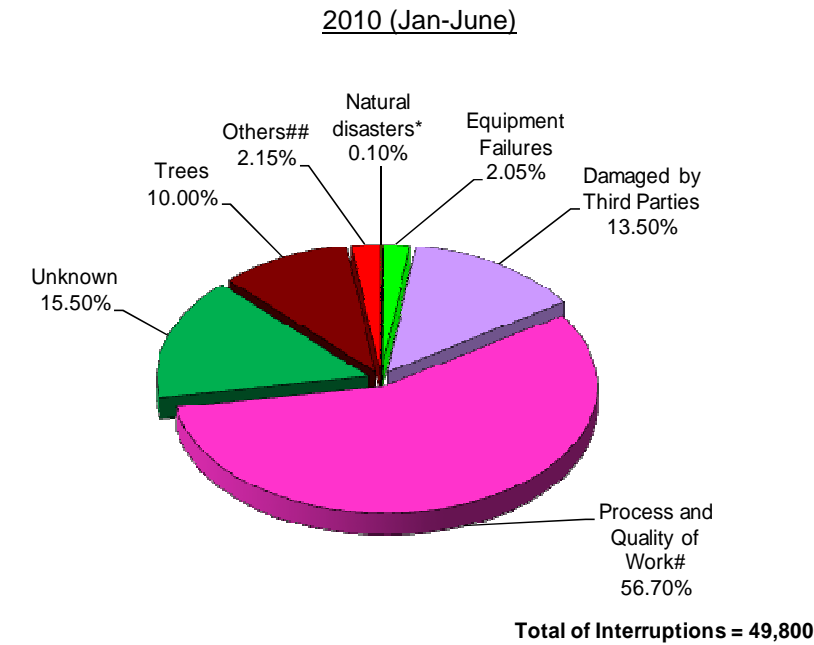


**4.0 PUNCA GANGGUAN BEKALAN ELEKTRIK
CAUSES OF ELECTRICITY SUPPLY INTERRUPTIONS**

**4.1 PUNCA GANGGUAN BEKALAN ELEKTRIK – TNB
CAUSES OF ELECTRICITY SUPPLY INTERRUPTIONS - TNB**

Gambarajah 35 : Punca-Punca Gangguan Bekalan Elektrik Tidak Berjadual di Semenanjung Malaysia

Figure 35 : Causes of *Unscheduled Electricity Supply Interruptions in Peninsular Malaysia*



Nota :

* (angin, ribut, banjir, tanah runtuh dan lain-lain);

(Pemasangan kena langgar, kecacatan rekabentuk, kerosakan geganti, *transient overload*, pencerobohan/perbuatan khianat)

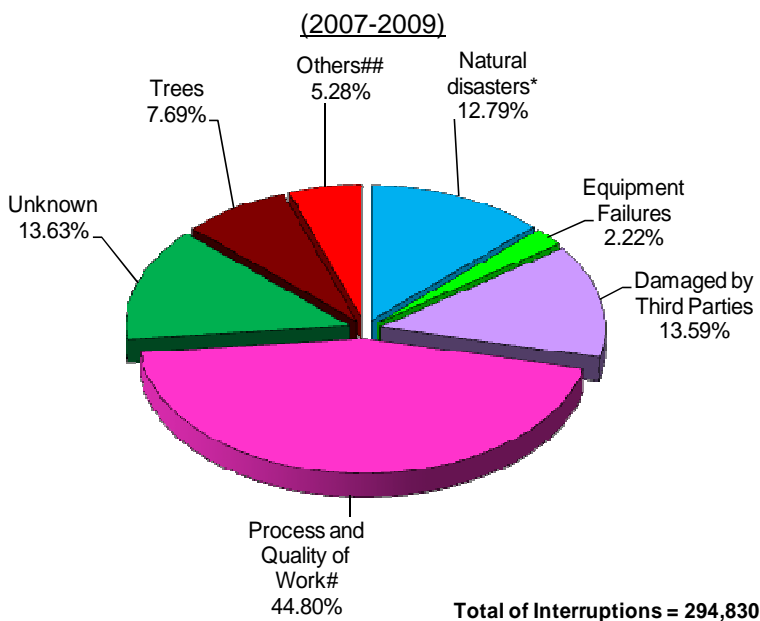
(sambungan tidak baik, mutu kerja, beban lampau dan senggaraan)

Notes :

* (wind, storm, flood, land slides and etc.);

(ageing of insulation, design defect, relay malfunction, *transient overload*, encroachment/vandalism, maloperation of protection)

(loose contact, quality of work, overloading and maintenance)

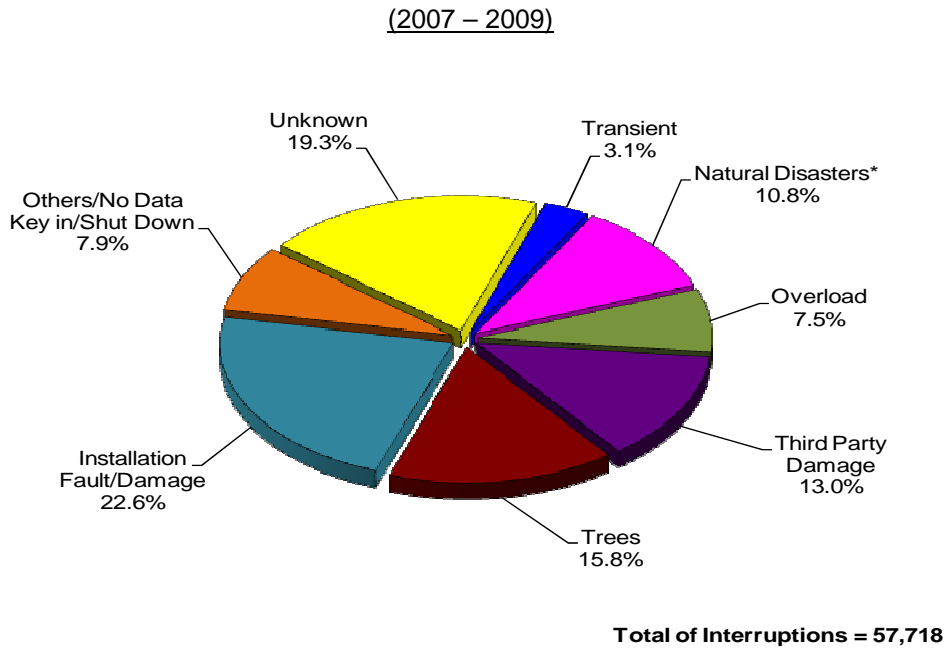
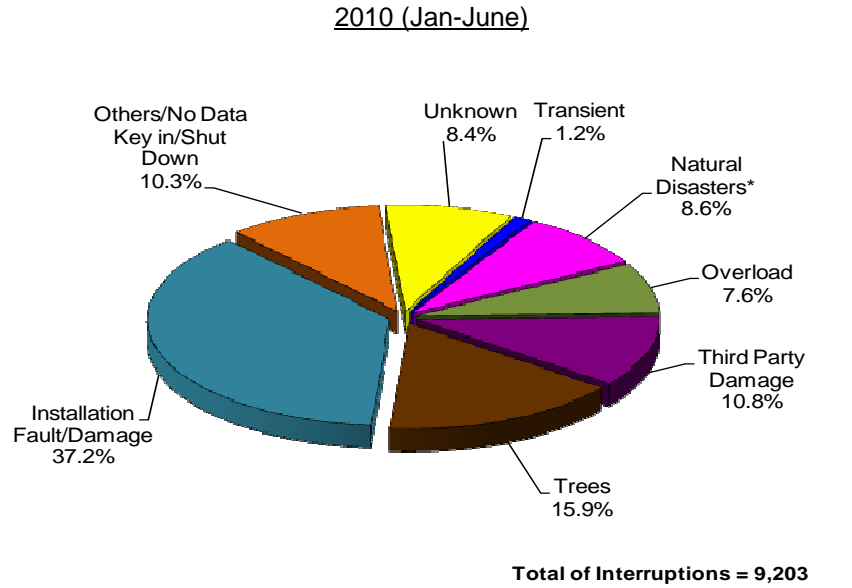


**4.0 PUNCA GANGGUAN BEKALAN ELEKTRIK
CAUSES OF ELECTRICITY SUPPLY INTERRUPTIONS**

**4.2 PUNCA GANGGUAN BEKALAN ELEKTRIK – SESB
CAUSES OF ELECTRICITY SUPPLY INTERRUPTIONS - SESB**

Gambarajah 36 : Punca-Punca Gangguan Bekalan Elektrik Tidak Berjadual di Negeri Sabah

Figure 36 : Causes of Unscheduled Electricity Supply Interruptions in Sabah



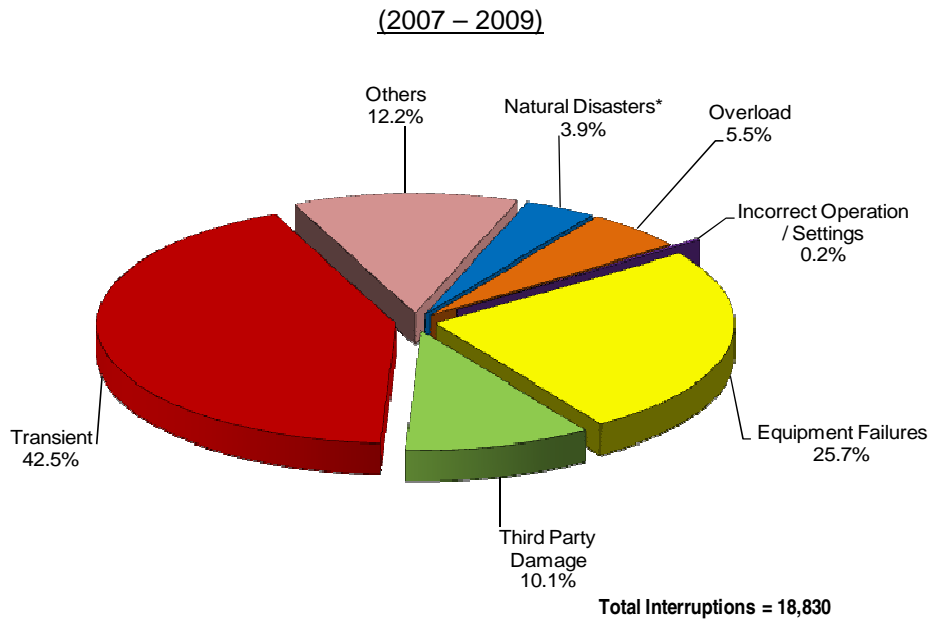
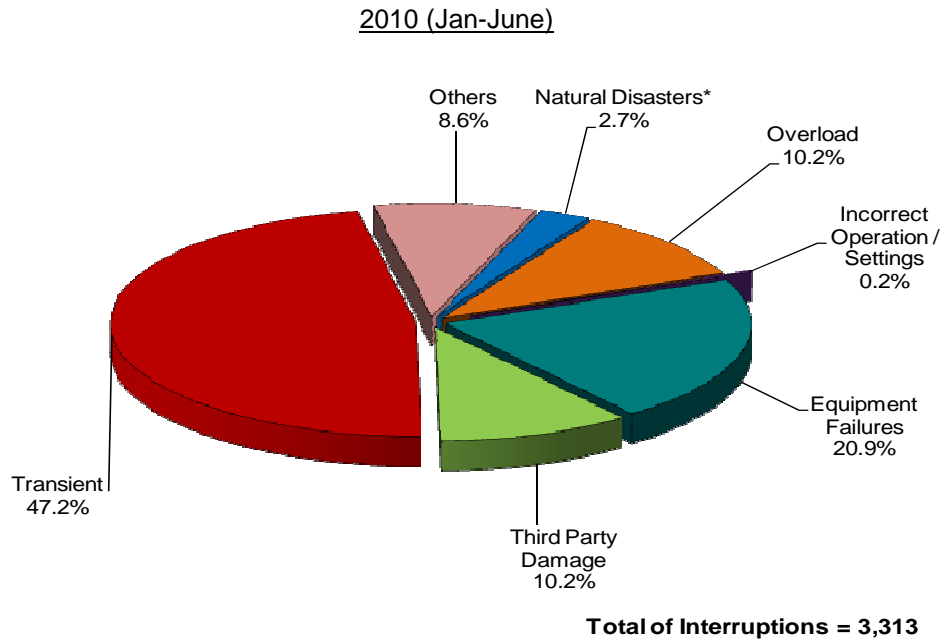
Nota : * (angin, ribut, banjir, tanah runtuh dan lain-lain)

*Note : * (wind, storm, flood, land slides and etc.)*

4.0 PUNCA GANGGUAN BEKALAN ELEKTRIK
CAUSES OF ELECTRICITY SUPPLY INTERRUPTIONS

4.3 PUNCA GANGGUAN BEKALAN ELEKTRIK – SEB
CAUSES OF ELECTRICITY SUPPLY INTERRUPTIONS - SEB

Gambarajah 37 : Punca-Punca Gangguan Bekalan Elektrik Tidak Berjadual SEB
 Figure 37 : Causes of Unscheduled Electricity Supply Interruptions of SEB



Nota : * (angin, ribut, banjir, tanah runtuh dan lain-lain)

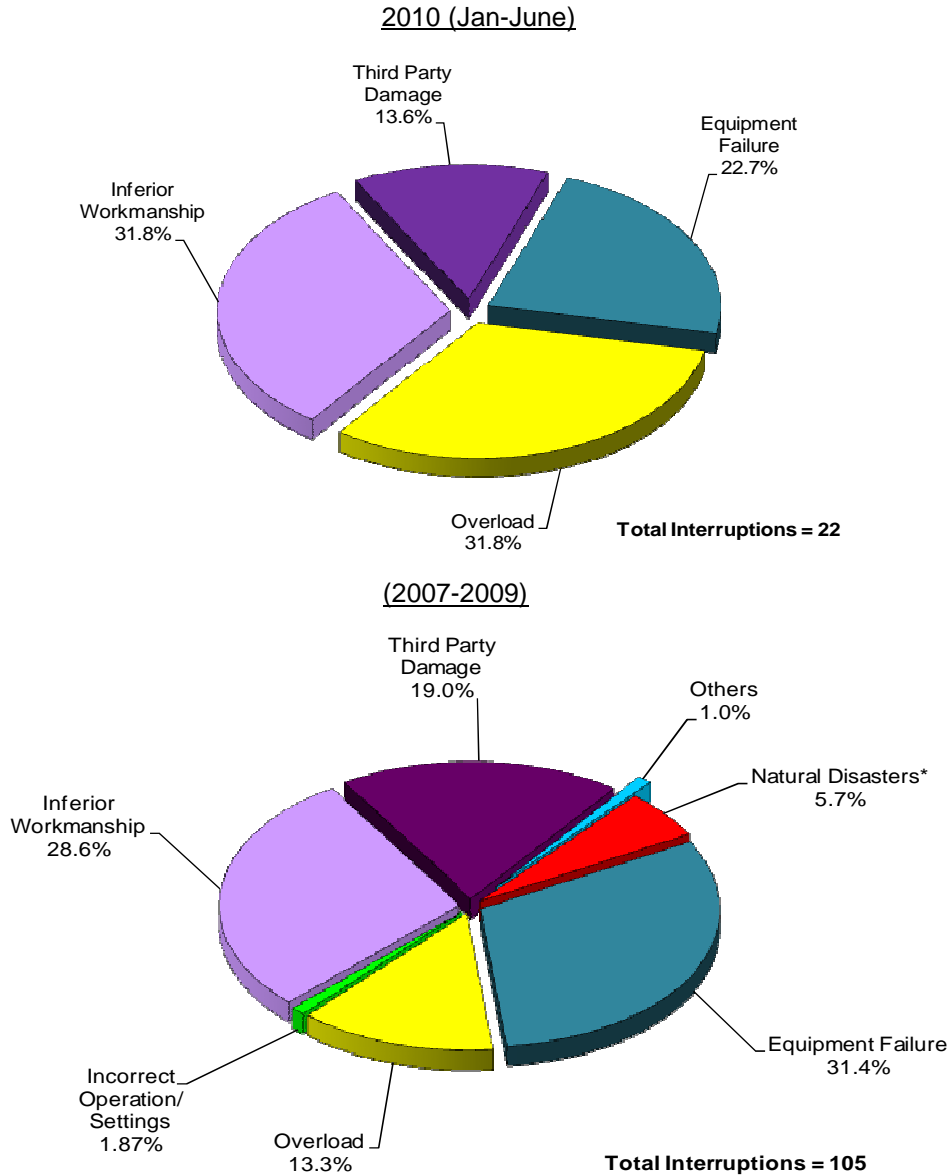
Note : * (wind, storm, flood, land slides and etc.)

4.0 PUNCA GANGGUAN BEKALAN ELEKTRIK
CAUSES OF ELECTRICITY SUPPLY INTERRUPTIONS

4.4 PUNCA GANGGUAN BEKALAN ELEKTRIK – NUR
CAUSES OF ELECTRICITY SUPPLY INTERRUPTION - NUR

Gambarajah 38 : Punca-Punca Gangguan Bekalan Elektrik Tidak Berjadual NUR Distribution

Figure 38 : Causes of Unscheduled Electricity Supply Interruptions of NUR Distribution



Nota : * (angin, ribut, banjir, tanah runtuh dan lain-lain)

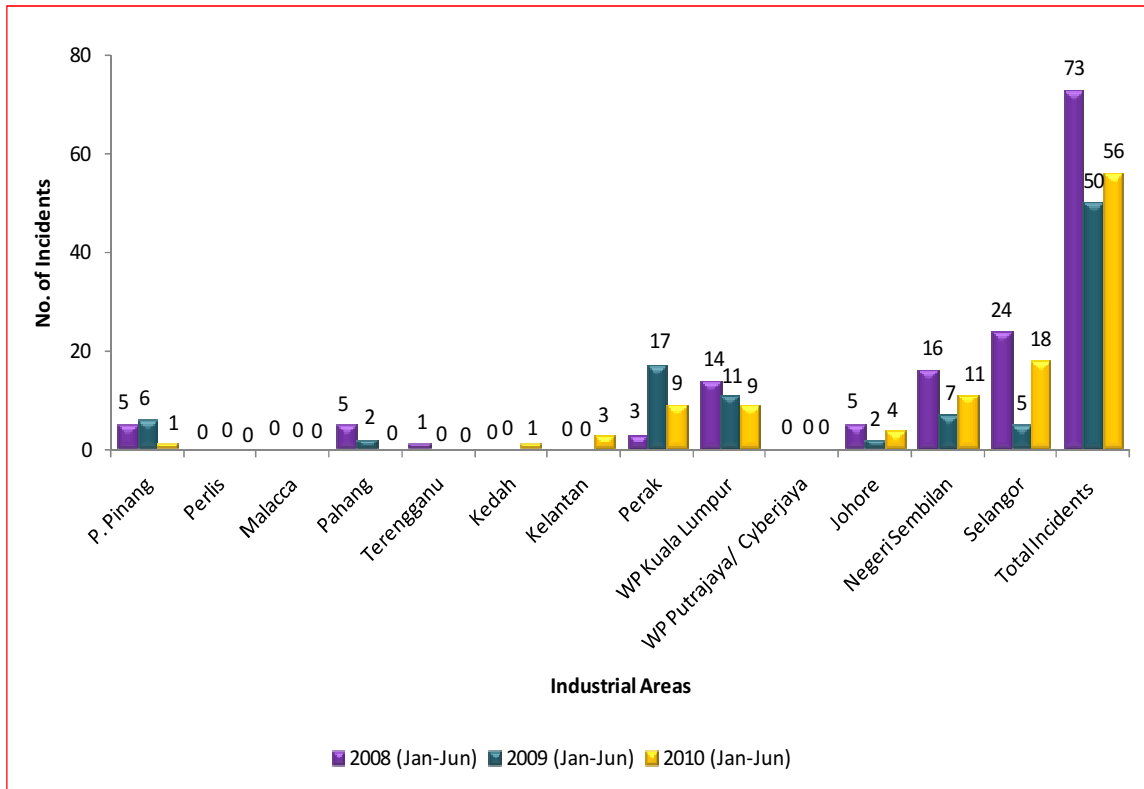
*Note : * (wind, storm, Flood, land slides and etc.)*

**5.0 KUALITI BEKALAN
 (POWER QUALITY)**

**5.1 INSIDEN VOLTAGE DIPS – TNB
 INCIDENTS OF VOLTAGE DIPS - TNB**

Gambarajah 39 : Bilangan Insiden *Voltage Dips* yang dilaporkan di Kawasan-Kawasan Perindustrian Utama di Semenanjung Malaysia untuk Separuh Tahun Pertama 2008, 2009 dan 2010

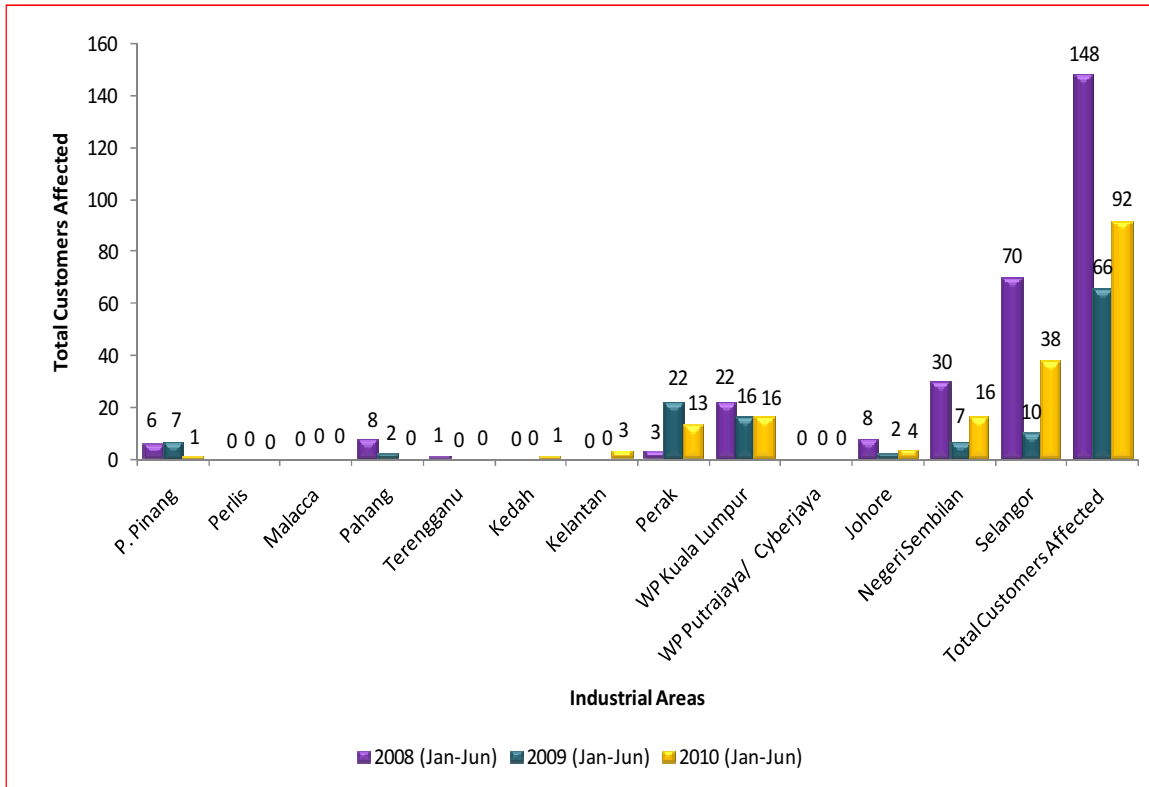
Figure 39 : Number of Voltage Dips Incidents Reported in Major Industrial Estates in Peninsular Malaysia for the First Half Year of 2008, 2009 and 2010



**5.0 KUALITI BEKALAN
 (POWER QUALITY)**

Gambarajah 40 : Bilangan Pengguna Terlibat dalam Insiden *Voltage Dips* untuk Separuh Tahun Pertama 2008, 2009 dan 2010

Figure 40 : Number of Customers in the Major Industrial Estates Affected by Voltage Dips for the First Half Year of 2008, 2009 and 2010

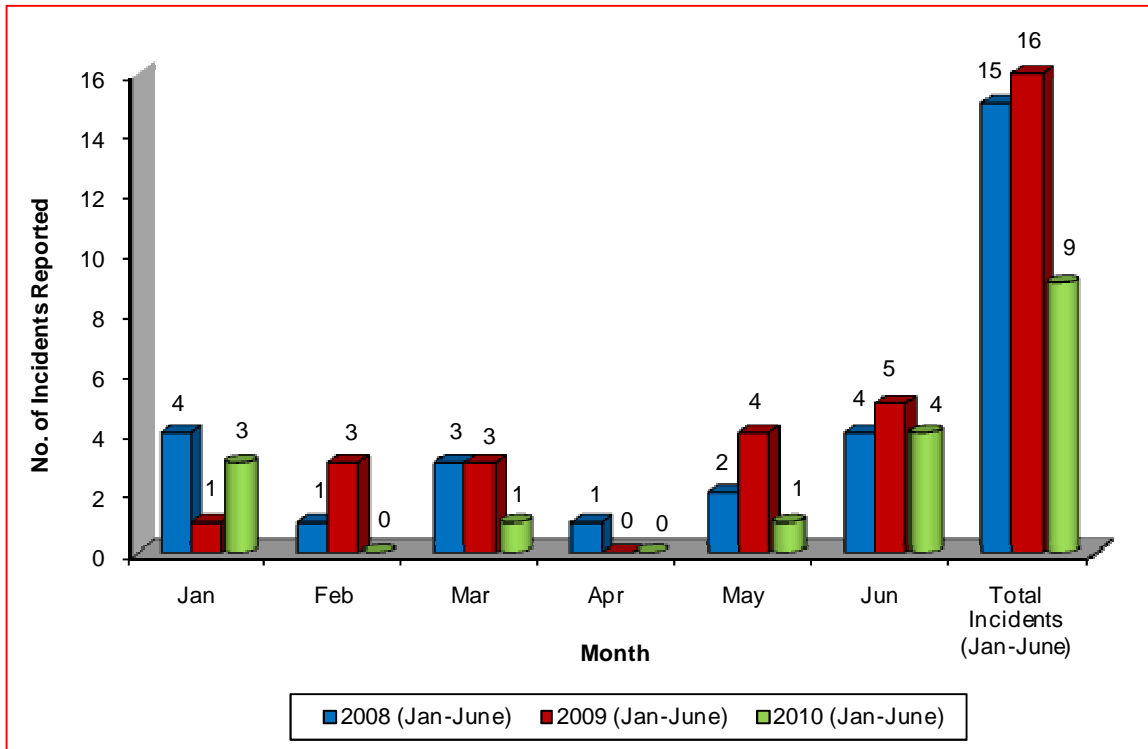


**5.0 KUALITI BEKALAN
(POWER QUALITY)**

**5.3 INSIDEN VOLTAGE DIPS – KULIM HI-TECH PARK (KHTP)
INCIDENTS OF VOLTAGE DIPS – KULIM HI-TECH PARK (KHTP)**

Gambarajah 41 : Bilangan Insiden *Voltage Dips* di KHTP yang dilaporkan oleh NUR Distribution Sdn. Bhd. Untuk Separuh Tahun Pertama 2008 Hingga 2010

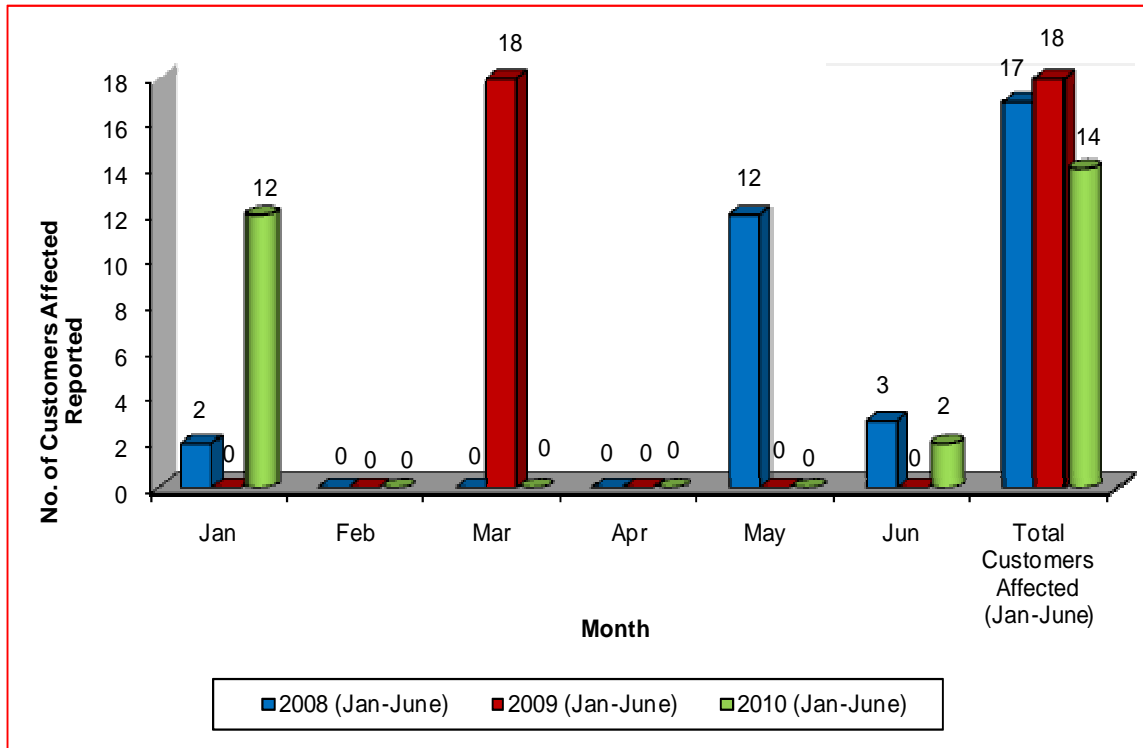
Figure 41 : Number of Voltage Dips in Kulim Hi-Tech park Reported by NUR Distribution Sdn. Bhd. For the First Half Year of 2008 to 2010



**5.0 KUALITI BEKALAN
 (POWER QUALITY)**

Gambarajah 42 : Bilangan Pengguna Terlibat Dalam Insiden *Voltage Dips* di KHTP Untuk Separuh Tahun Pertama 2008 Hingga 2010

Figure 42 : Number of Customers in Kulim Hi-Tech Park Affected by Voltage Dips For the First Half Year of 2008 to 2010



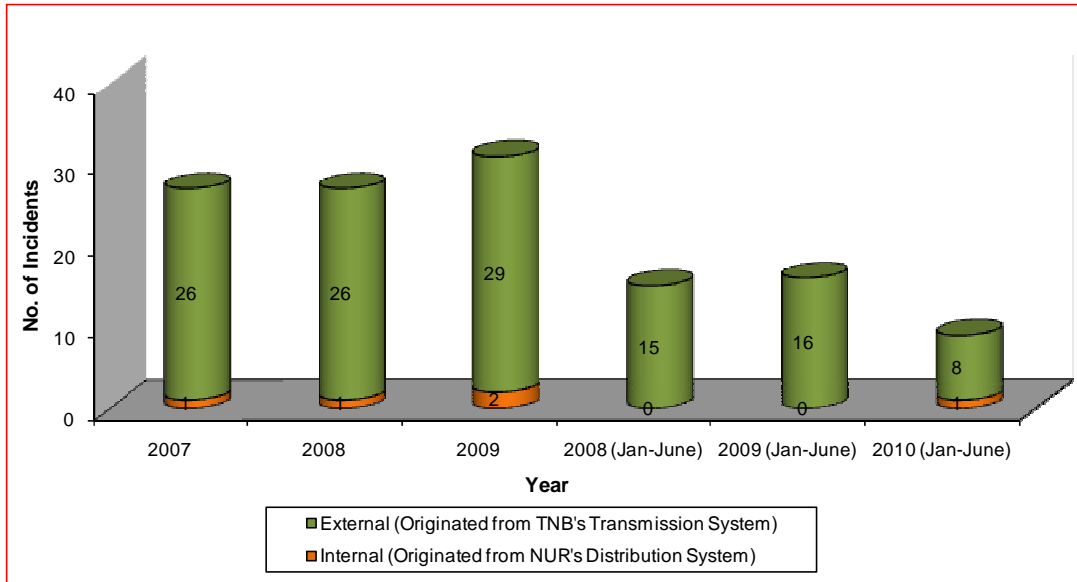
**5.0 KUALITI BEKALAN
(POWER QUALITY)**

Gambarajah 43 : Insiden *Voltage Dips* yang dilaporkan Menjejaskan Bekalan Kepada Pengguna di KHTP untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2007 Hingga 2009

Figure 43 : Incidents of Voltage Dips Affecting Consumers in KHTP for :

- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2007 to 2009*

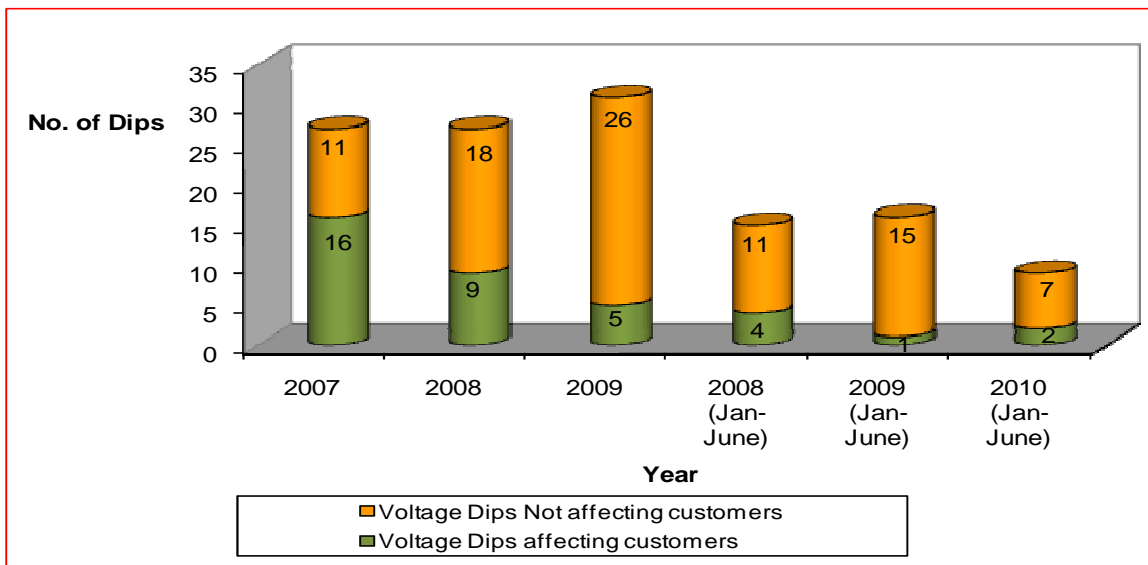


Gambarajah 44 : Pecahan Bilangan Insiden *Voltage Dips* yang Melibatkan Pengguna untuk :

- i) Separuh Tahun Pertama 2008, 2009 dan 2010
- ii) Sepanjang Tahun 2007 Hingga 2009

Figure 44 : Number of Voltage Dips Incidents Affecting Customers and Not Affecting Customers in KHTP for :

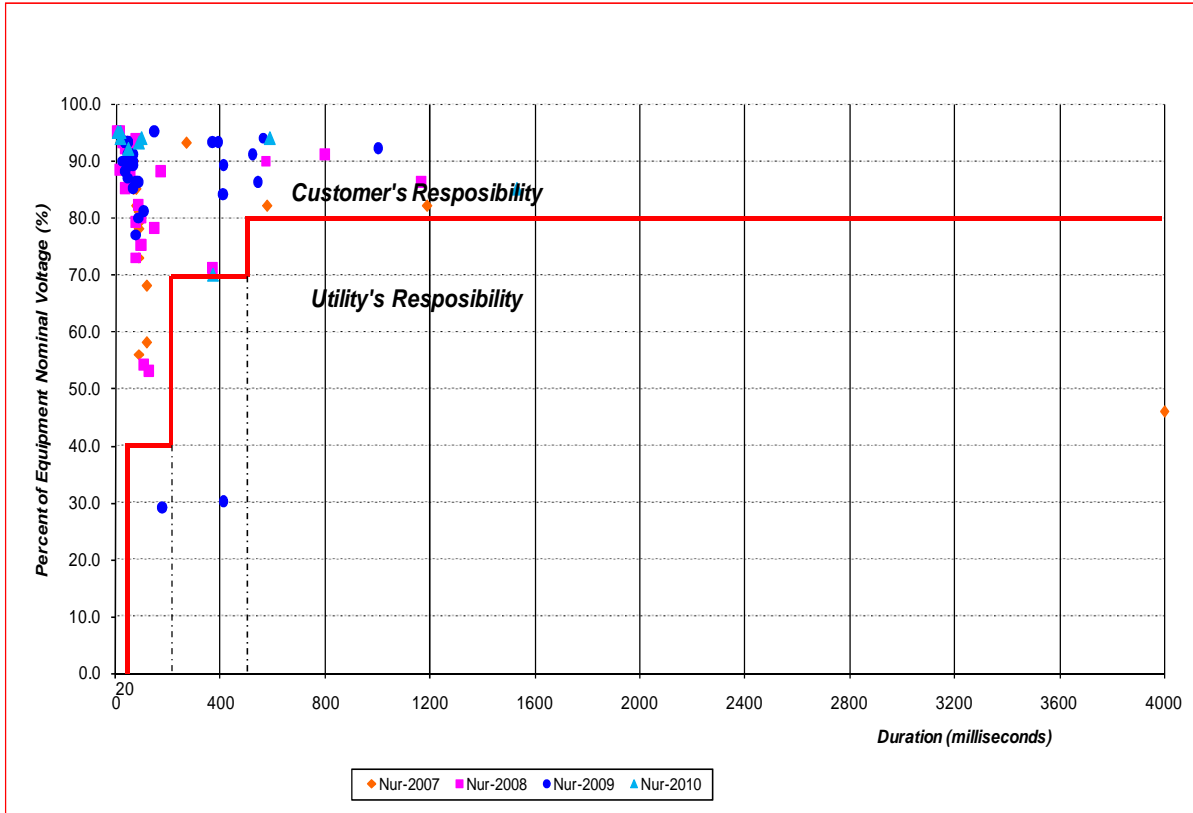
- i) First Half Year of 2008, 2009 and 2010*
- ii) In the Year 2007 to 2009*



**5.0 KUALITI BEKALAN
(POWER QUALITY)**

Gambarajah 45 : Taburan Insiden *Voltage Dips* di KHTP Pada Tahun 2007 Hingga 2010
(Sehingga Jun) Berdasarkan Standard IEC 61000-4-11 (Class 3)

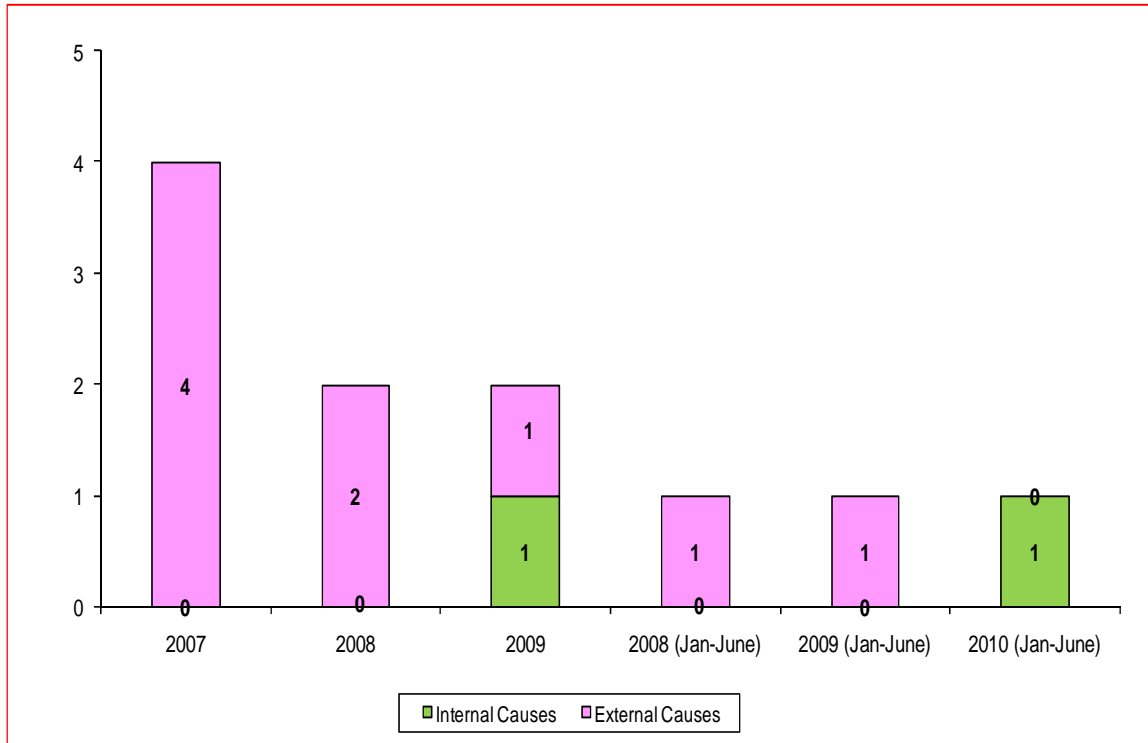
Figure 45 : Incidents of *Voltage Dips* in KHTP for Year 2007 to 2010 (as at June) Plotted Base on
IEC 61000-4-11 (Class 3)



**5.0 KUALITI BEKALAN
(POWER QUALITY)**

Gambarajah 46 : SARFI₇₀ Bagi NUR untuk :
i) Separuh Tahun Pertama 2008, 2009 dan 2010
ii) Sepanjang Tahun 2007 Hingga 2009

*Figure 46 : SARFI₇₀ of NUR for :
i) First Half Year of 2008, 2009 and 2010
ii) In the Year 2007 to 2009*



**Disediakan oleh : Jabatan Kawal Selia Pembekalan dan Pasaran Elektrik
Suruhanjaya Tenaga**

***Prepared by : Electricity Supply and Market Regulation Department
Energy Commission***