

TNB HANDBOOK

dbAccess Asia Conference 2015, Singapore

18th - 20th MAY 2015



1HFY'15

AGENDA



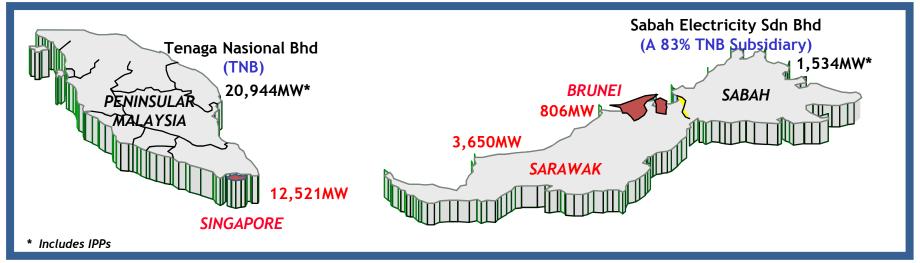
PART ONE

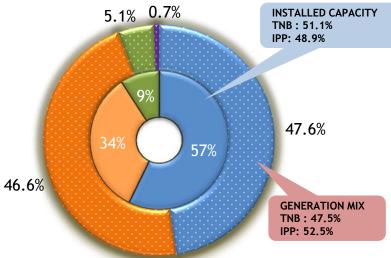
- 1. INTRODUCTION TO TENAGA
- 2. INTRODUCTION TO MESI
- 3. TARIFF
- 4. KEY PERFORMANCE INDICATORS (KPIs)
- 5. BUSINESS STRATEGY & DIRECTION
- 6. DIVIDEND POLICY

INTRODUCTION TO TENAGA



Three Major Utilities in Malaysia





	FY'11	FY'12	FY'13	FY'14	1HFY'15
TNB - Peninsula Installed Capacity (MW)	11,530	11,462	11,462	10,814	10,698
Total units sold (Gwh)	97,888	102,132	105,479	108,102	54,629
Total customers (mn)	8.11	8.36	8.35	8.64	8.79
Total employees ('000)	31.9	33.6	35.0	36.1	36.1
Total assets (RM bn)	79.1	88.5	99.0	110.7	113.8

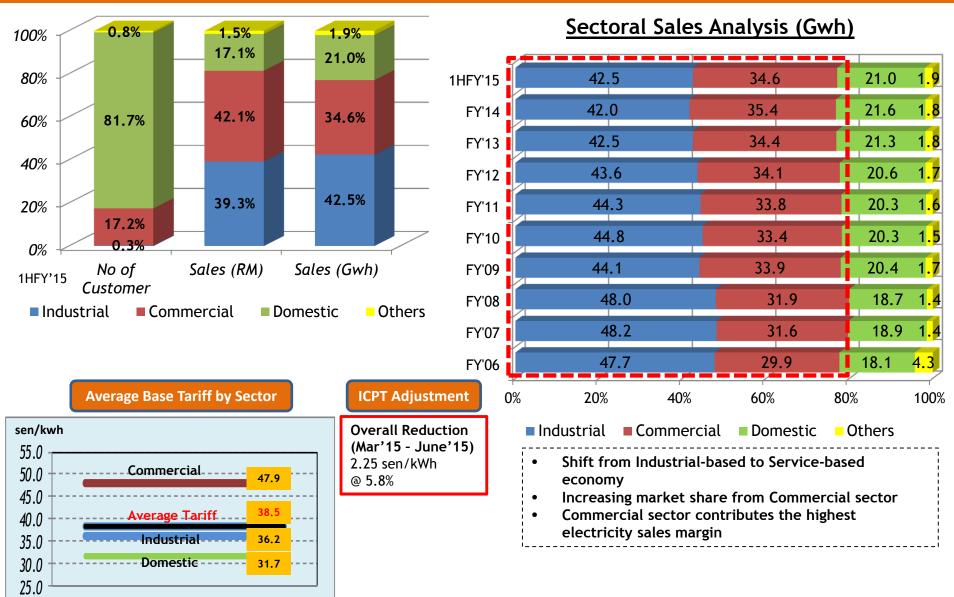
■Gas & LNG ■Coal ■Hydro & Others ■Oil & Distillate

Installed Capacity vs. Generation mix

INTRODUCTION TO TENAGA



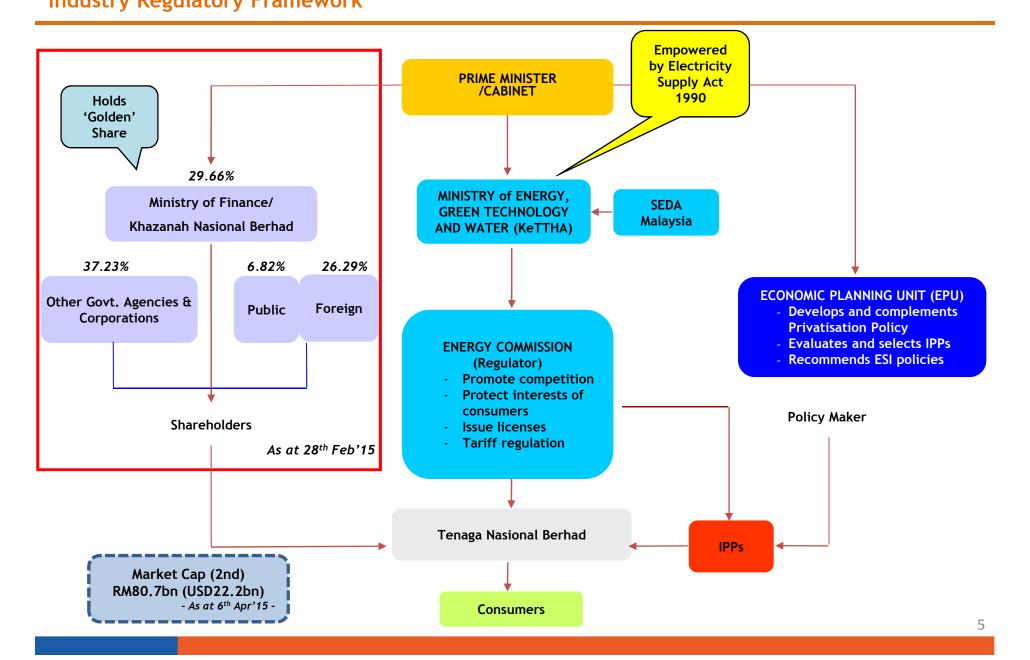
No of Customer vs. Sales Value vs. Unit Sales



INTRODUCTION TO TENAGA







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TRANSFORMATION INITIATIVES BY GOVERNMENT



Aimed at Delivering a Reliable, Transparent, Efficient and Sustainable ESI

Jun - Dec 2008 Khazanah's MESI Study Jan - Dec 2009 KeTTHA-led syndication 4 Dec 2009 Cabinet endorsement to transform ESI

Transformation Programme



A. Governance

- 1. Agency Roles
- 2. Ring-fencing



B. Market Structure

- 3. Competitive Bidding
- 4. PPA Renegotiation



C. Fuel Supply and Security

Fuel Supply and Security



D. Tariff

- 6. Value Chain Tariff
- 7. End User Tariff
- 8. Stabilization Fund
- 9. Accounts Unbundling

1st Gen IPP / Restricted Bidding Subsidy Rationalisation Programme

FCPT Mechanism

LNG Importation Nuclear Energy Capacity Building National RE Policy & Action Plan

FIT & RE Fund

Legal & Regulatory Framework Enhancement

TRANSFORMATION PLAN: TIMELINE



The New Energy Policy Addresses, Economic Efficiency, Security of Supply and Social & Environmental Objectives



2010

 Competitive **Bidding**

- Account Unbundling
- Technical & **Financial** Benchmarking
- Fuel Supply Security
- Generation Development Plan
- Tariff Analysis
- Transparency in dispatching

· Development of Regulation **Enhancement Plan**

2011

- Industry Award Program
- Energy Database
- Performance Regulation
- Activity-based licensing (G,T,D,Retail)
- Fuel Pricing
- Implementation of Operationalisation new ACP mechanism
- Development of industry codes of Practice & Guidelines
- **Enforcement of Grid** & Distribution Codes

 Effective service standard & regulatory monitoring

2012

- Issuance of RIGs
- Ring-fenced functions of Grid System Operator & Single Buyer
- Commence outsourcing of selected activities
- of a more managed market
- Implementation of new safety regime
- Collaborative framework with other parties in regulatory activities

Open access of gas • network

2013

• Implementation of IBR (Gas)

Implementation of competitive bidding & expansion plan by Single Buyer

2014

Implementation of IBR (Electricity)

2015

· Enactment of Competition Regulations

2020

- Establishment of Electricity market Authority
- Formulation of market rules
- Operationalisation of liberalised market

*Source: EC

O ENERGY PRICING - COMPETITIVE BIDDING



Track 1 to Track 3

TRACK 1	1,071 MW CCGT PRAI
COD	January 2016
LEVELISED TARIFF	34.7 sen/kWh
STATUS	TNB has signed agreements for: i. EPC - TNB Northern Energy Bhd & Samsung Engineering & Construction (M) Sdn Bhd ii. Long term Service - TNB Prai & Siemens AG iii. O&M - TNB Prai & REMACO TNB Northern Energy Sukuk has been issued out on 29 May 2013 for nominal value of RM1.625 billion.
PHYSICAL PROGRESS	94% as at 1HFY'15
TECHNOLOGY	Siemens Super Critical H-Class technology gas turbine combined-cycle efficiency of greater than 60%

TRACK 2	RENEWAL OF EXPIRING PLANTS : 2,253 MW CCGT							
PLANTS	GENTING	SEGARI	TNB PASIR GUDANG					
EXTENSION	10 years (to 2026)	10 years (to 2027)	5 years (to 2022)					
LEVELISED TARIFF	35.3 sen/kWh	36.3 sen/kWh	37.4 sen/kWh					
STATUS	Reduction rates of CP effective 1 March 2013 until expiry of current PPA							

	3	
١		

)	TRACK 3A	1 X 1,000 MW COAL-FIRED
,	COD	October 2017
	LEVELISED TARIFF	22.78 sen/kWh
	STATUS	 TNB has signed agreements on 16 August 2013 for: PPA with TNB Manjung Five Sdn Bhd "Manjung 5" to design, construct, own, operate & maintain the coal plant capacity (25 years term) SFA "Shared Facilities Agreement" between TNB, Manjung 5 & TNB Janamanjung CSTA "Coal Supply and Transportation Agreement" between TNB Fuel Services & Manjung 5. EPC contract signed on 21 August 2013 between: TNB Western Energy Bhd; a wholly owned subsidiary of Manjung 5 with Consortium of Sumitomo Corp, Daelim Industrial Co Ltd, Sumi-Power M'sia Sdn Bhd and Daelim M'sia Sdn Bhd. TNB Western Energy Sukuk has been issued out on 30 January 2014 for nominal value of RM3.655 billion.
	PHYSICAL PROGRESS	39% as at 1HFY'15
	TECHNOLOGY	Ultra Super Critical Boiler Technology OEM to EPC is Hitachi



TRACK 3B	2 X 1,000 MW COAL-FIRED
COD	November 2018 & May 2019
LEVELISED TARIFF	25.33 sen/kWh
STATUS	 TNB has signed agreements on 22 July 2014: i. PPA with Jimah East Power Sdn. Bhd., the incorporated company of the consortium of 1MDB and Mitsui & Co. Ltd, to design, construct, own, operate and maintain the coal plant (25 years term) at Mukim Jimah, Port Dickson, Negeri Sembilan. ii. CSTA "Coal Supply and Transportation Agreement" with TNB Fuel Services Sdn. Bhd.
TECHNOLOGY	2 units of IHI Ultra Super Critical Technology Steam Generator & 2 Units of Toshiba Turbo Generator





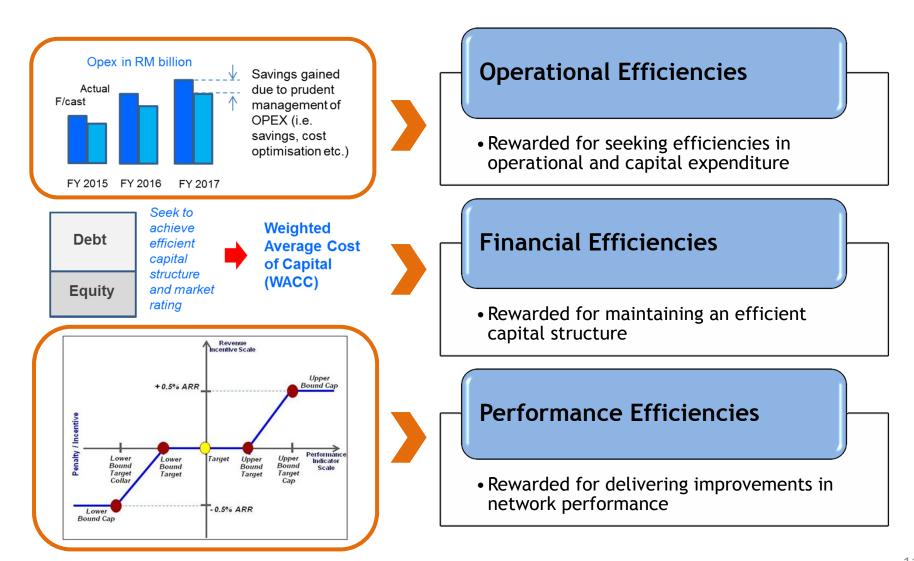
Track 4A

TRACK 4A	1,000 - 1,400 MW CCGT
COD	June 2018
STATUS	 TNB has signed heads of agreement on 24 July 2014 with: i. SIPP Energy Sdn. Bhd., signifying the principal terms of the proposed joint venture which will undertake to build, own and operate a power plant of approximately 1,000MW-1,400MW on a land in Pasir Gudang, Johor.
TECHNOLOGY	-

3 + ∅ EFFICIENCY AND GOVERNANCE

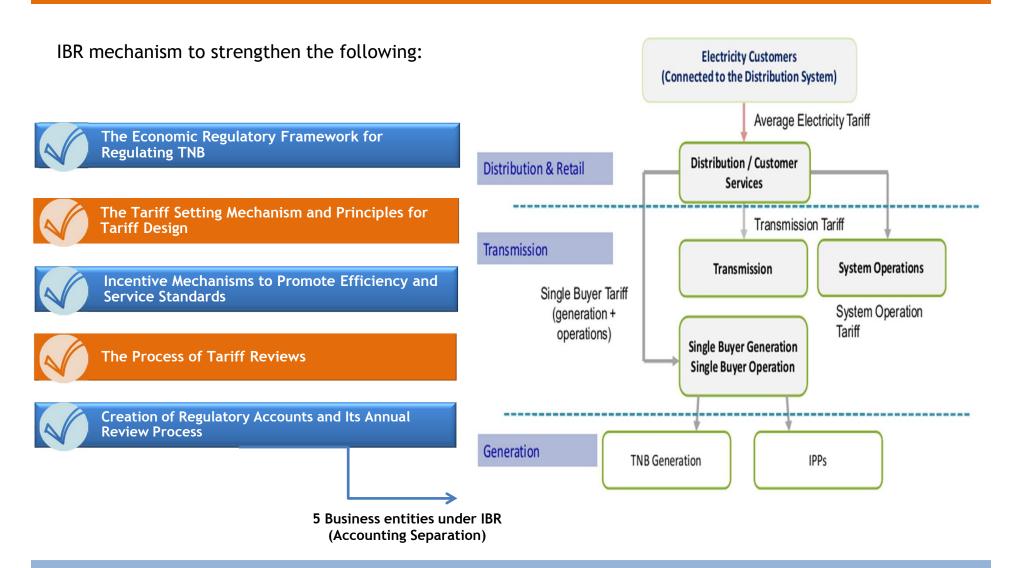


Incentive Based Regulation (IBR) - Economic Regulation Methodology to Promote Efficiency And Transparency





Incentive Based Regulation (IBR) - The Move Towards Better Regulation



11 Regulatory Implementation Guidelines (RIGS) were Developed for IBR Implementation

*Source: EC 12

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Electricity Tariff Review = Base Tariff + Imbalance Cost Pass-Through (ICPT)

Imbalance Cost Pass-Through (ICPT):

 Tariff adjustment to reflect uncontrollable fuel costs and other generation costs (difference between forecast and actual cost of procuring electricity that is beyond the control of utility)

Base Tariff under IBR framework reflects:

- a) CAPEX and OPEX of
 - transmission, distribution, system operation (SO) and single buyer operation (SB)
- b) Power purchase cost charged by generators (including base price for fuel) to the SB
- c) Return on regulated asset (rate base) of transmission, distribution, SO and SB business units

sen/kWh **Imbalance Cost** Pass-Through (ICPT) **Base Tariff of** 38.53 sen/kWh for the First **Base Tariff** Regulatory Period (FY 2014 to FY 2017) FY2014 FY2015 FY2016 FY2017 Regulatory Period

Principle for ICPT Calculation

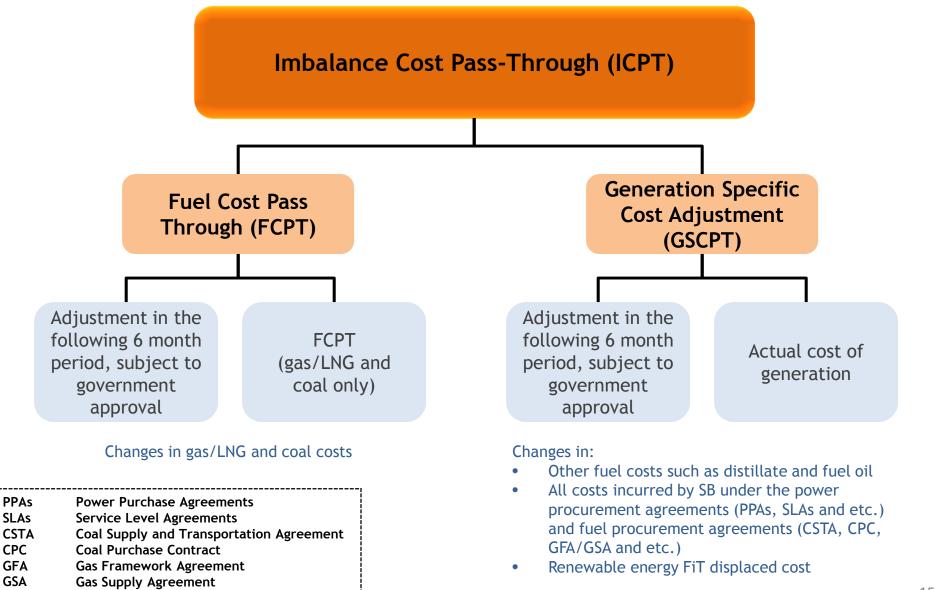
Cost components comprise of:

- · Actual vs forecast cost of fuels & other generation costs for the preceding 6-month period; and
- Piped gas price increase of RM1.50/mmBtu for the next 6-month period
 Note 1 : CAPEX = Capital expenditure
 2 : OPEX = Operational expenditure

*Source: EC



Imbalance Cost Pass-Through (ICPT) Comprises Two Components

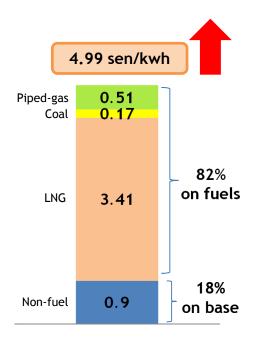






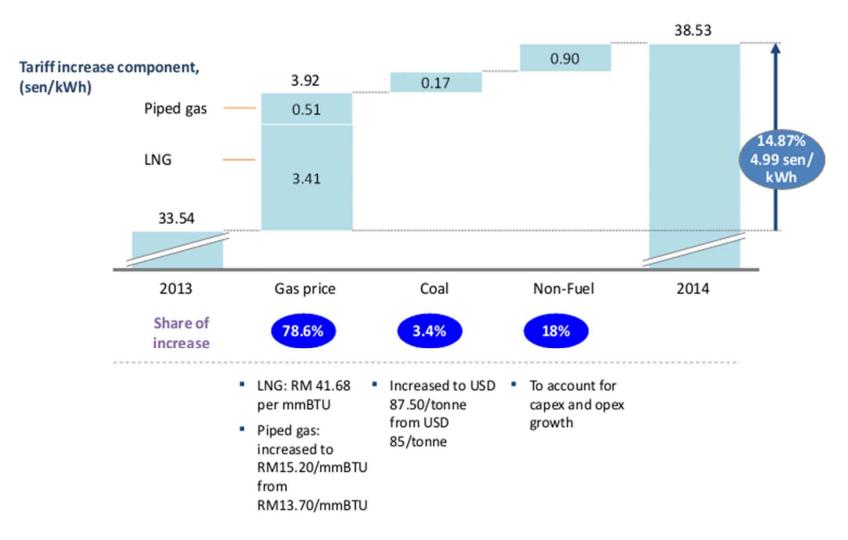
Average Base Tariff of 38.53 sen/kwh is Effective from 1st January 2014

Tariff Components	sen/kWh	% increase
Average Tariff (Jun 2011)	33.54	
Fuel Components:		
 Piped-gas regulated price (from RM13.70/mmBTU to RM15.20/mmBTU @1,000 mmscfd) 	0.51	1.52
 Coal (market price) (from USD85/tonne to USD87.5/tonne CIF@CV 5,500kcal/kg) 	0.17	0.51
 LNG RGT market price at RM41.68/mmBTU (for gas volume > 1,000 mmscfd) 	3.41	10.17
Non-fuel component (TNB Base Tariff)	0.90	2.69
AVERAGE BASE TARIFF EFFECTIVE 1st JANUARY 2014	38.53	14.89





82% of Tariff Increase in January 2014 is due to Reduction of Gas Subsidy, Introduction of LNG at Market Price and Increase in Coal Benchmark Market Price



*Source: EC

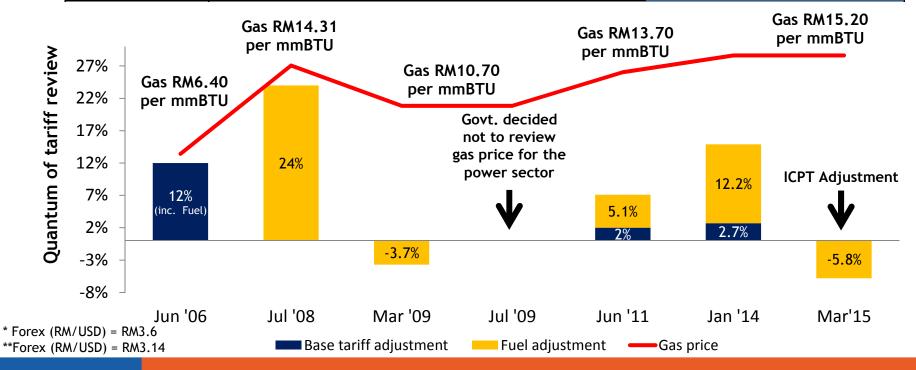
Frequency of Review & Underlying Assumptions



IBR

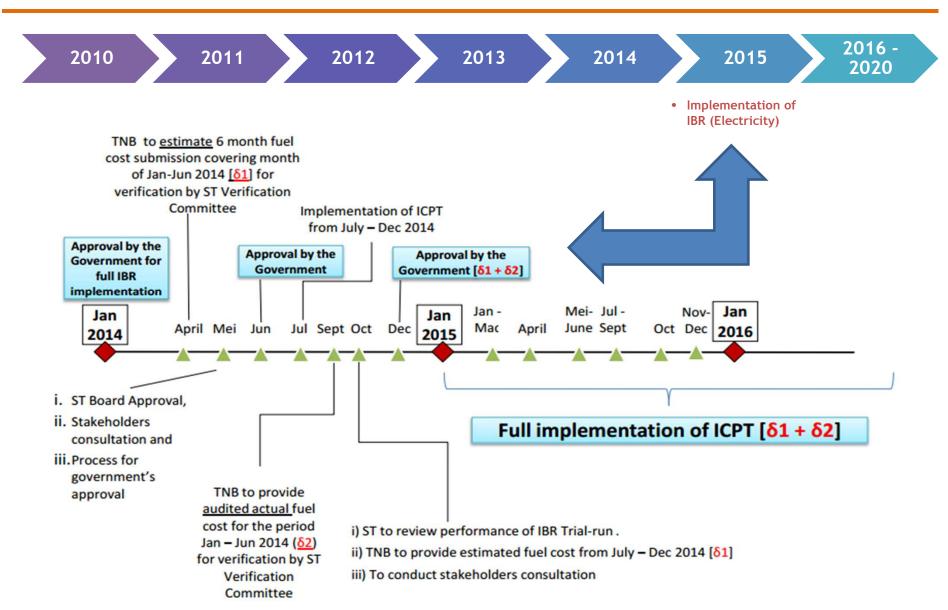
ICPT Adjustment (Jan 2014 - Dec 2014)

Approval date	May 2006	Jun 2008	Feb 2009	Jun 2009	May 2011	Dec 2013	Feb 2015
Effective date	Jun 2006	Jul 2008	Mar 2009	Jul 2009	Jun 2011	Jan 2014	Mar 2015
Quantum	12%	23 - 24%	(3.7%)	Neutral	7.1%	14.9%	(5.8%)
Gas (RM/mmbtu)	6.40	14.31	10.70	10.70	13.70	15.20	15.20
Coal (USD/MT)	45.00	75.00	85.00*	85.00*	85.00*	87.50**	87.50**
Average Tariff (sen/kWh)	26.2	32.5	31.3	31.3	33.5	38.5	38.5



IBR Timeline





*Source: EC

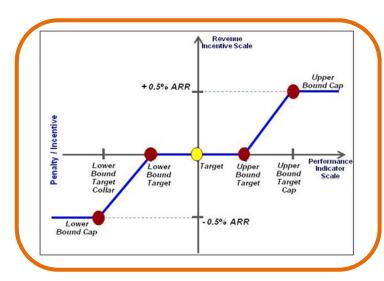
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KEY PERFORMANCE INDICATORS (KPIs)
Incentive Based Regulation (IBR) - Incentive and Penalty Mechanism Based on **Performance Targets Determined by EC**



- Incentive/penalty is capped at +/- 0.3% to 0.5% of annual revenue requirement
- No incentive/penalty if performance between upper and lower bound targets
- Any incentive/penalty to be given in the next regulatory period

PERFORMANCE KPIS

			auran Darra d	Haman David
Performance Incentive Scheme	Unit	Weightage (%)	Target	Upper Bound Target
Services				
System Average Interruption Duration Index (SAIDI)	Mins./cust./year	50	70	55
Average of Minimum Service Level Compliance Performance	%	25	84.11	94.11
Weighted Average Guaranteed Service Level (3, 4 and5)	%	25	86.32	95.50
ion				
System Minutes	Minutes	40	5.1	1.5
System Availability	%	30	99.04	99.48
Project Delivery Index	Delayed month	30	5.47	0
perator				
Wide Area Loss of Supply Event	No. of wide area system blackout incident	25	1	0
Voltage Limit Compliance	%	25	90	96
Frequency Limit Compliance	%	25	90	96
Dispatch Adjustment	%	25	0.4	0.2
ver				
Dispatch Deviation	%	25	0.4	0.2
Compliance to Timely Settlement of Generators' Invoices	%	25	99.55	99.85
Compliance to Malaysian Grid Code	%	25	98.10	100
Compliance to Single Buyer Rules	%	25	95.00	100
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*Source: EC

KEY PERFORMANCE INDICATORS (KPIs)



TNB Has Been Improving its Performances Over the Years and Now in Line with World Standards

			1 ST PHASE : HEADLINE KPIs						
	INITIATIVES	TARGET FY'10	ACTUAL FY'05	ACTUAL FY'06	ACTUAL FY'07	ACTUAL FY'08	ACTUAL FY'09	ACTUAL FY'10	
	Return on Assets (ROA) (%)	6.5	2.2	3.3	6.3	4.6	4.0	4.7	
dicators	Gearing (%)	< 60.0	64.9	58.1	49.9	46.9	46.5	42.5	
Financial Indicators	Company CPU (sen/kwh)								
Fin	Revenue from Non- Regulated Business (RM bn)								
S	Unplanned Outage Rate (UOR)(%)	No target	6.1	4.7	2.2	3.3	2.9	2.7	
Indicato	T & D Losses (%)	No target	10.5	11.0	10.0	9.5	9.7	9.5	
Technical Indicators	Transmission System Minutes (mins)	9.0	14.0	7.3	9.3	6.6	1.0	0.9	
	Distribution SAIDI (mins)	< 100.0	148.0	101.6	83.0	78.0	68.6	65.0	

Note:

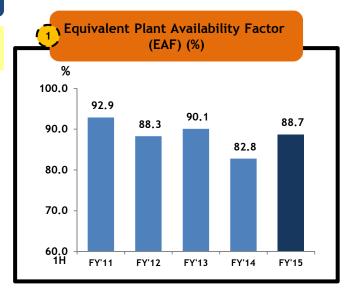
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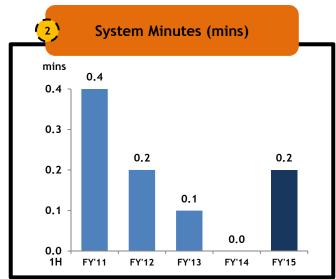


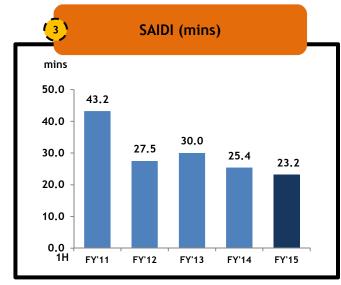
Technical Indicators

2nd PHASE: HEADLINE KPIs

Technical Indicators







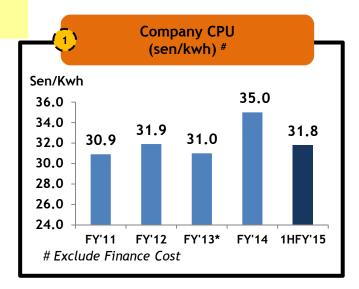
KEY PERFORMANCE INDICATORS (KPIs)

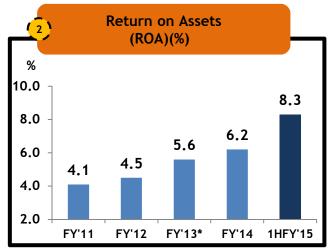


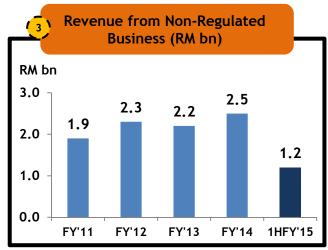
Financial Indicators

2nd PHASE: HEADLINE KPIs

Financial Indicators







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20-YEAR STRATEGIC PLAN



THE PLAN LAYS DOWN THE PATH TOWARDS
REALISING OUR VISION OF GLOBAL LEADERSHIP
It builds upon the progress of T7

LEADERSHIP 2025

- Excel in:
 - All business areas

GLOBAL

- Reputation as a strong business partner
- Ability to continue to create shareholder value
- Tenaga acknowledged as amongst the most admired companies globally

GEOGRAPHICAL EXPANSION

> Expand works and services related to the energy sector

(SERVICES) 2015

 Creation of new revenue stream leveraging on Tenaga's knowledge and competencies in the energy business

SERVICE EXCELLENCE 2010

- Improve Core Operations under T7 Strategy
- Place Tenaga as the best performing company in Malaysia by 2007 and as the Regional best by 2010

Improve financial position and human resource readiness of Tenaga

OVERSEAS

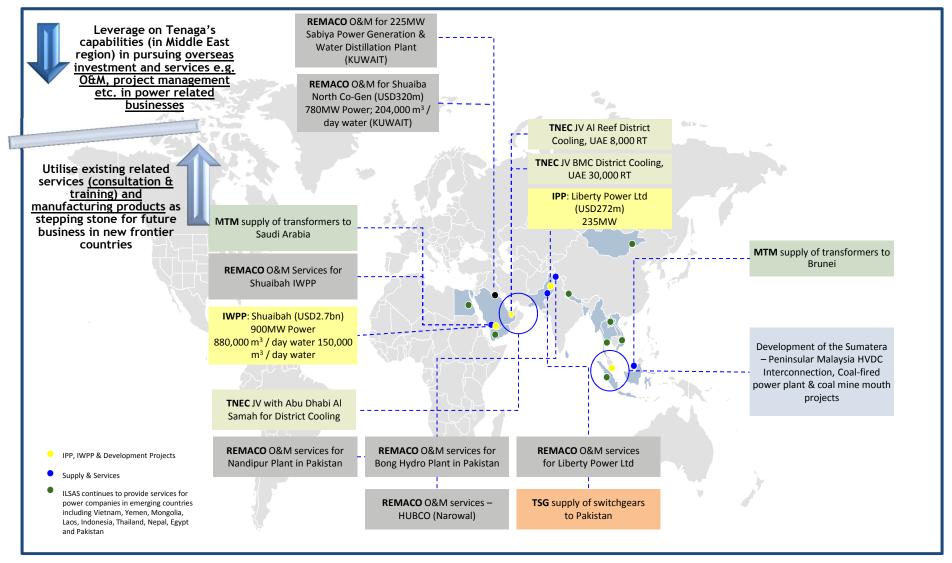
INVESTMENT 2020

Venture into power/energy related investments in the international arena

INTERNATIONAL FOOTPRINT



Business Expansion in Energy Related Businesses



Source: Company presentation; Note: REMACO is a 100% owned subsidiary with a focus on O&M; MTM is a wholly owned subsidiary manufacturing transformers; TSG is a subsidiary manufacturing high voltage switchgears; TNEC is a wholly owned subsidiary providing project services and developing energy related projects

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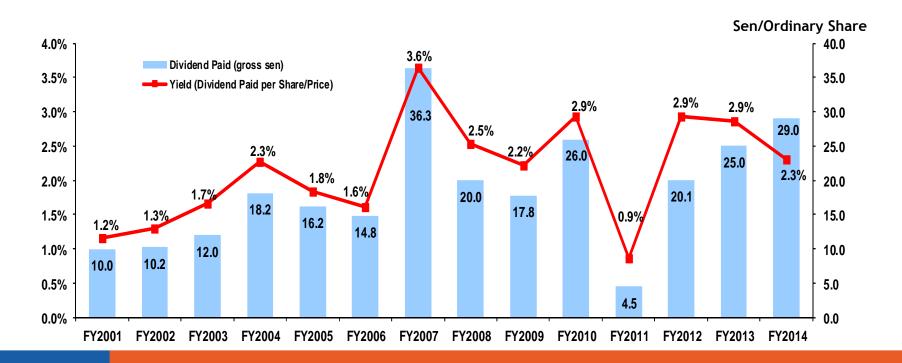
Tenaga is committed to pay out dividend based on its Dividend Policy whereby:

Dividend is paid out based on 40%-60% of its Company's Annual Free Cashflow;

Cashflow from Operations less Normalised Capex and Interest Servicing

1HFY2015

Interim Single-Tier Dividend of 10.0 sen per ordinary share





PART TWO

1HFY2015 RESULTS HIGHLIGHTS

2QFY2015 RESULTS HIGHLIGHTS

3-Month Ended 28th February 2015



	2QFY2015	1QFY2015	QoQ
Profit After Tax	RM2.13 bn	RM2.35 bn	9.2%
EBITDA Margin	37.8%	36.3%	1.5ppt
Average Coal Price	USD66.4/mt	USD70.2/mt	5.4%
Forex Translation Gain/(Loss)	(RM303.3 mn)	RM45.9 mn	>(100.0%)

1HFY2015 RESULTS HIGHLIGHTS



6 Months FY2015

	1HFY2015	1HFY2014	YoY
Profit After Tax	RM4.48 bn	RM3.47 bn	29.4%
EBITDA Margin	37.1%	27.5%	9.6ppt
Average Coal Price	USD68.4/mt	USD77.5/mt	11.7%
Forex Translation Gain/(Loss)	(RM257.4 mn)	RM133.7 mn	>(100.0%)

* FY2014 restated

GROUP PROFIT ANALYSIS



Improved Profit due to Lower Generation Costs

(RM mn)	1HFY'15	1HFY'14 (Restated)
Profit After Tax	4,484.7	3,465.7
Adjustments:		
Forex Translation (Gain) / Loss	257.4	(133.7)
Change in Corporate Tax Rate		(188.7)
Reinvestment Allowance	(771.9)	(939.2)
Adjusted Profit After Tax	3,970.2	2,204.1

QUARTERLY & YEARLY ANALYSIS



Improved EBITDA Margin Resulted from Improved Revenue & Lower Generation Costs

RM mn	1QFY'15	2QFY'15	1HFY'15	1HFY'14 (Restated)
Total Units Sold (GWh)	27,431.2	27,197.6	54,628.8	52,974.8
Revenue	11,027.1	10,610.0	21,637.1	19,569.1
Operating Expenses (before depreciation)	7,161.8	6,798.2	13,960.0	14,375.7
Operating Income	136.9	203.3	340.2	184.6
EBITDA	4,002.2	4,015.1	8,017.3	5,378.0
EBITDA Margin (%)	36.3%	37.8%	37.1%	27.5%
Depreciation and Amortisation	1,257.4	1,239.7	2,497.1	2,358.2
EBIT	2,744.8	2,775.4	5,520.2	3,019.8
EBIT Margin (%)	24.9%	26.2%	25.5%	15.4%
Finance Cost	253.9	210.3	464.2	388.4
Profit Before Tax & Forex Translation	2,574.9	2,668.8	5,243.7	2,801.1
Net Profit Before Forex Translation	2,306.0	2,459.5	4,765.5	3,350.5
Translation Gain/(Loss)	45.9	(303.3)	(257.4)	133.7
Net Profit attributable to:				
Equity Holders	2,351.9	2,156.2	4,508.1	3,484.2
Non-controlling Interest	(0.9)	(22.5)	(23.4)	(18.5)

GENERATION MIX (PENINSULA) con't

Year-on-Year Analysis



9.2% Reduction in Fuel Costs Mainly due to Lower Generation from Gas & LNG

Table 1:

Fuel Cost (RM mn)						
Fuel	1HFY'14 1HFY'15		Variar	nce		
Туре		1111 1 13	RM mn	%		
Gas	4,044.7	3,515.6	(529.1)	(13.1)		
LNG	1,410.5	993.1	(417.4)	(29.6)		
Coal	2,277.9	2,674.2	396.3	17.4		
Dist.	187.8	116.4	(71.4)	(38.0)		
Oil	229.1	100.9	(128.2)	(56.0)		
Hydro	0.0	0.0	0.0	0.0		
Total	8,150.0	7,400.2	(749.8)	(9.2)		

Units Generated (Gwh)						
Fuel	1HFY'14	1HFY'15	Variar	nce		
Туре	111111111	1111 1 13	Gwh	%		
Gas & LNG	30,888.5	26,115.5	(4,773.0)	(15.5)		
Coal	20,614.6	25,588.2	4,973.6	24.1		
Dist.	304.5	151.7	(152.8)	(50.2)		
Oil	434.9	208.0	(226.9)	(52.2)		
Hydro	2,703.9	2,803.7	99.8	3.7		
Total	54,946.4	54,867.1	(79.3)	(0.1)		

Table 2:

Average Gas Volume (mmscfd)				
1QFY'14	1,321			
2QFY'14	1,383			
3QFY'14	1,405			
4QFY'14	1,217			
1QFY'15	1,218			
2QFY'15	1,060			

Table 3:

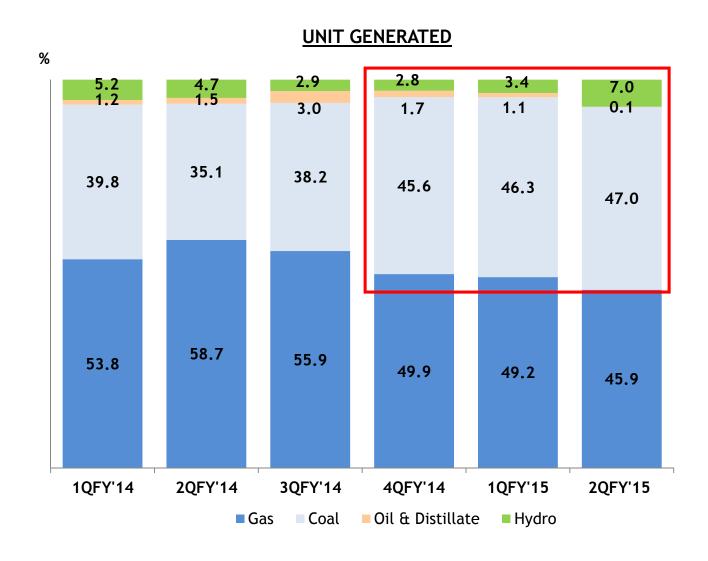
	<u>1HFY'14</u>	<u>1HFY'15</u>	<u>Var (%)</u>
Average Coal Price Consumed (USD/MT)			
FOB	67.8	59.4	-12.4%
Freight	9.1	8.4	-7.7%
Others	0.6	0.6	0.0%
CIF	77.5	68.4	-11.7%
Average Coal Price Consumed (RM/MT) (CIF)	252.6	233.2	-7.7%
Coal Consumption (mn MT)	8.7	10.9	25.3%

GENERATION MIX (PENINSULA)

Quarter-on-Quarter Analysis

Improved Hydro & Stable Coal Generation in 2QFY'15



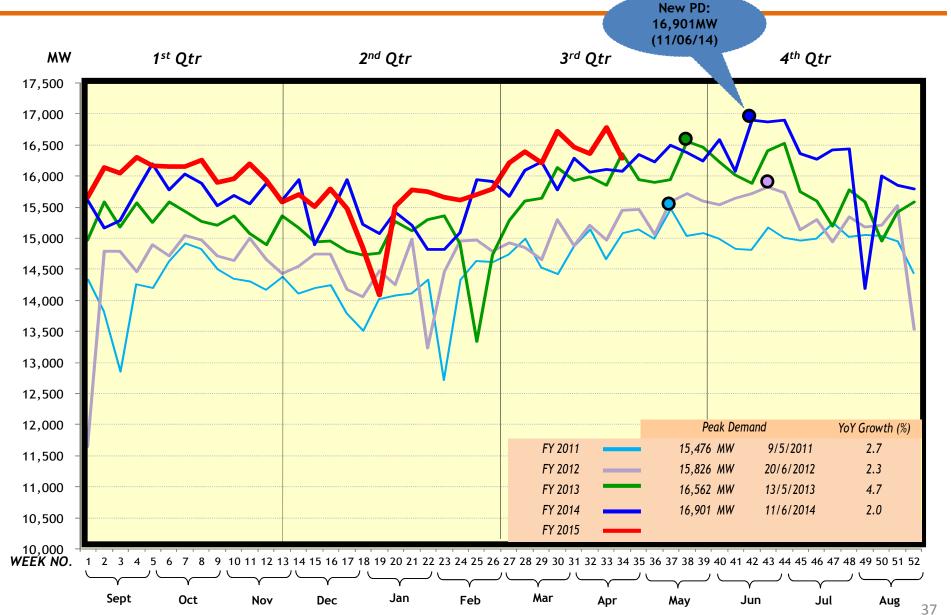


SYSTEM WEEKLY MAXIMUM DEMAND (PENINSULA)



For FY2011 to FY2015

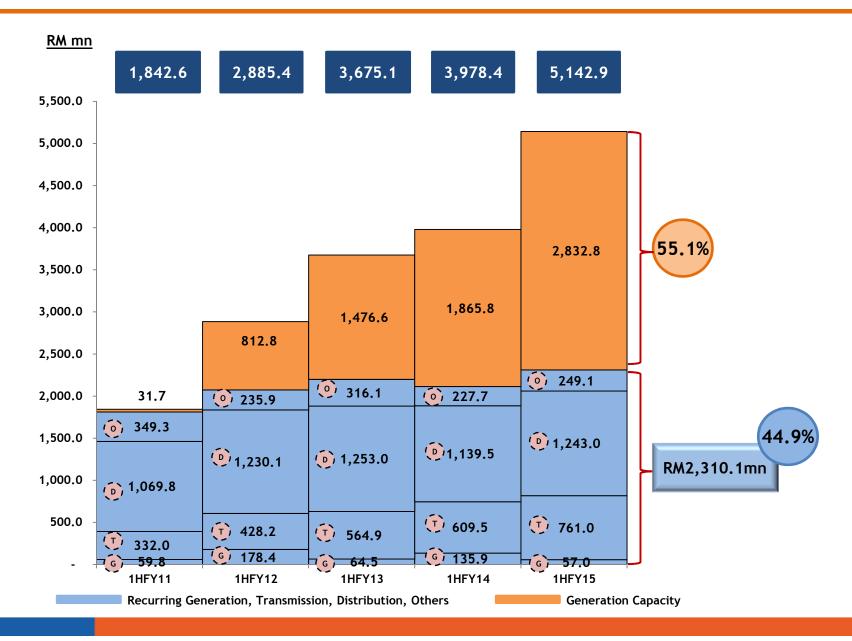
Feb 2015



CAPITAL EXPENDITURE



Major Projects Represent 55.1% of Total CAPEX

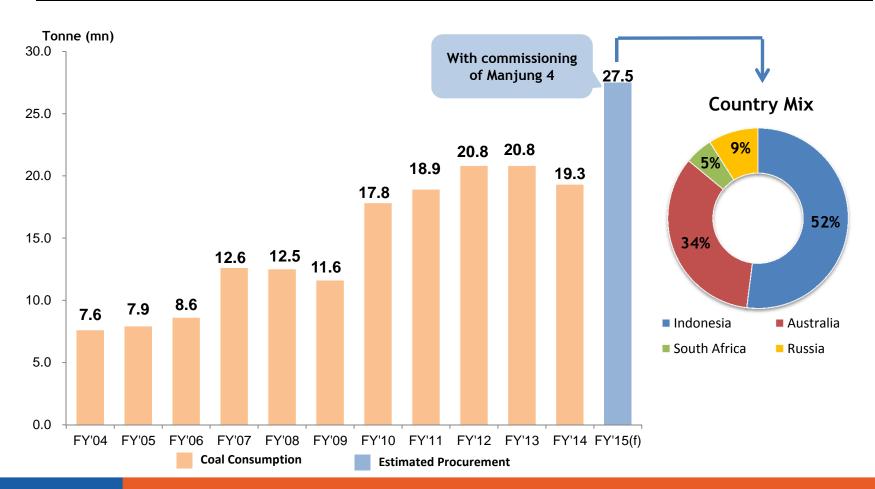


COAL REQUIREMENT



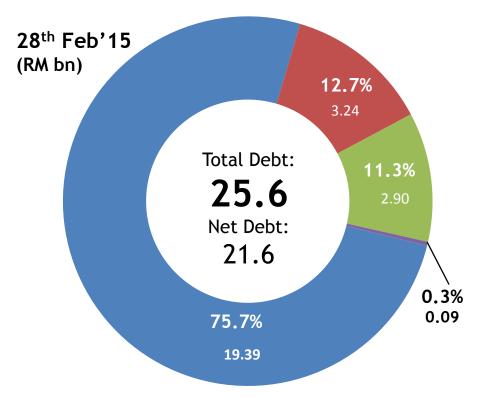
Average Coal Price for 1HFY'15 was at USD68.4/MT

	FY'05	FY'06	FY'07	FY'08	FY'09	FY'10	FY'11	FY'12	FY'13	FY'14	1HFY'15
Average Coal Price (CIF) (USD/metric tone)	49.8	52.8	45.3	76.4	90.2	88.2	106.9	103.6	83.6	75.4	68.4

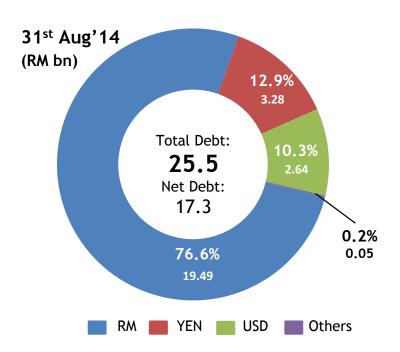


DEBT EXPOSURE & FOREX





Statistics	28th Feb'15	31st Aug'14
Gearing (%)	35.3	36.9
Net Gearing (%)	29.8	25.2
Fixed : Floating (%)	99.6 : 0.4	99.3 : 0.7
Final Exposure (%)	100.0 : 0.0	100.0 : 0.0
Weighted Average Cost of Debt (%)	4.89	4.86
Final Exposure (%)	4.93	4.92



	28 th Feb'15	31st Aug'14
USD/RM	3.62	3.15
100YEN/RM	3.03	3.04
USD/YEN	119.47	103.62

* Net Cash excludes investment in UTF

DISCLAIMER



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THANK YOU