



UPDATE ON FEED-IN TARIFF IN MALAYSIA

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Background

Rationale for Moving towards Renewable Energy



- Energy Security
- Energy Autonomy
- Climate Change Mitigation



Definition of Renewable Energy

Renewable Energy (RE) is any form of primary energy from recurring and non-depleting indigenous resources.

“Renewable resources” means the recurring and non-depleting **indigenous** resources or technology as set out in the first column of the Schedule of the RE Act 2011





Renewable Energy Development in Malaysia

8TH Malaysia Plan (2001 - 2005)

- RE as the 5th Fuel
- Implied 5% RE in energy mix

9th Malaysia Plan (2006 – 2010)

- **Targeted RE capacity to be connected to power utility grid:**
 - 300 MW – Peninsular Malaysia; 50 MW - Sabah
- **Targeted power generation mix:**
 - 51 % natural gas, 26 % coal, 9 % hydro, 8 % oil, diesel 5 %, biomass 1 % (2010)
- Carbon intensity reduction target: 40% lower than 2005 levels by 2020

RE as of 31st December 2010

- Connected to the utility grid: **61.2MW** (17% from 9th MP target through Small Renewable Energy Programme (SREP))
- Off-grid: >1GW (private palm oil millers and solar hybrid)



Malaysian National Renewable Energy Policy & Action Plan

Approved by Cabinet on 2nd April 2010

Policy Statement:

Enhancing the utilisation of **indigenous renewable energy resources** to contribute towards national **electricity supply security** and **sustainable socio-economic development**.

Strategic Thrust 2:
Provide Conducive
Business Environment for
RE

Strategic Thrust 3:
Intensify Human Capital
Development

Strategic Thrust 1:
Introduce Legal and
Regulatory Framework

Strategic Thrust 5:
Create Public Awareness &
RE Policy Advocacy
Programmes

Strategic Thrust 4:
Enhance RE Research and
Development



Renewable Energy Act 2011

□ RE Act: an Act to provide for the establishment and implementation of a special tariff system to catalyze the generation of renewable energy and to provide for related matters.

□ Comprises of 9 Parts and 65 Clauses

- Part I: Preliminary
- Part II: FiT System
- Part III: Connection, Purchase and Distribution of RE
- Part IV: Feed-in Tariff
- Part V: Renewable Energy Fund
- Part VI: Information Gathering Powers
- Part VII: Enforcement
- Part VIII: General
- Part IX: Savings and Transitional

RENEWABLE ENERGY BILL 2010	
ARRANGEMENT OF CLAUSES	
PART I PRELIMINARY	
Clause	
1.	Short title and commencement
2.	Interpretation
PART II FEED-IN TARIFF SYSTEM	
3.	Establishment of feed-in tariff system
4.	Eligibility for participation in feed-in tariff system
5.	Application for feed-in approval
6.	Additional information or documents
7.	Grant or refusal of feed-in approval
8.	Conditions of feed-in approval
9.	Power to impose additional conditions and to vary or revoke conditions
10.	Revocation of feed-in approval
11.	Appeal
PART III CONNECTION, PURCHASE AND DISTRIBUTION OF RENEWABLE ENERGY	
12.	Renewable energy power purchase agreement
13.	Connection to supply line
14.	Priority of purchase and distribution
15.	Technical and operational requirements
PART IV FEED-IN TARIFF	
16.	Payment and duration of feed-in tariff
17.	Depreciation of feed-in tariff

Passed in Parliament: 27th April 2011

Concept of FiT



Concept of the Feed-in Tariff (FiT)

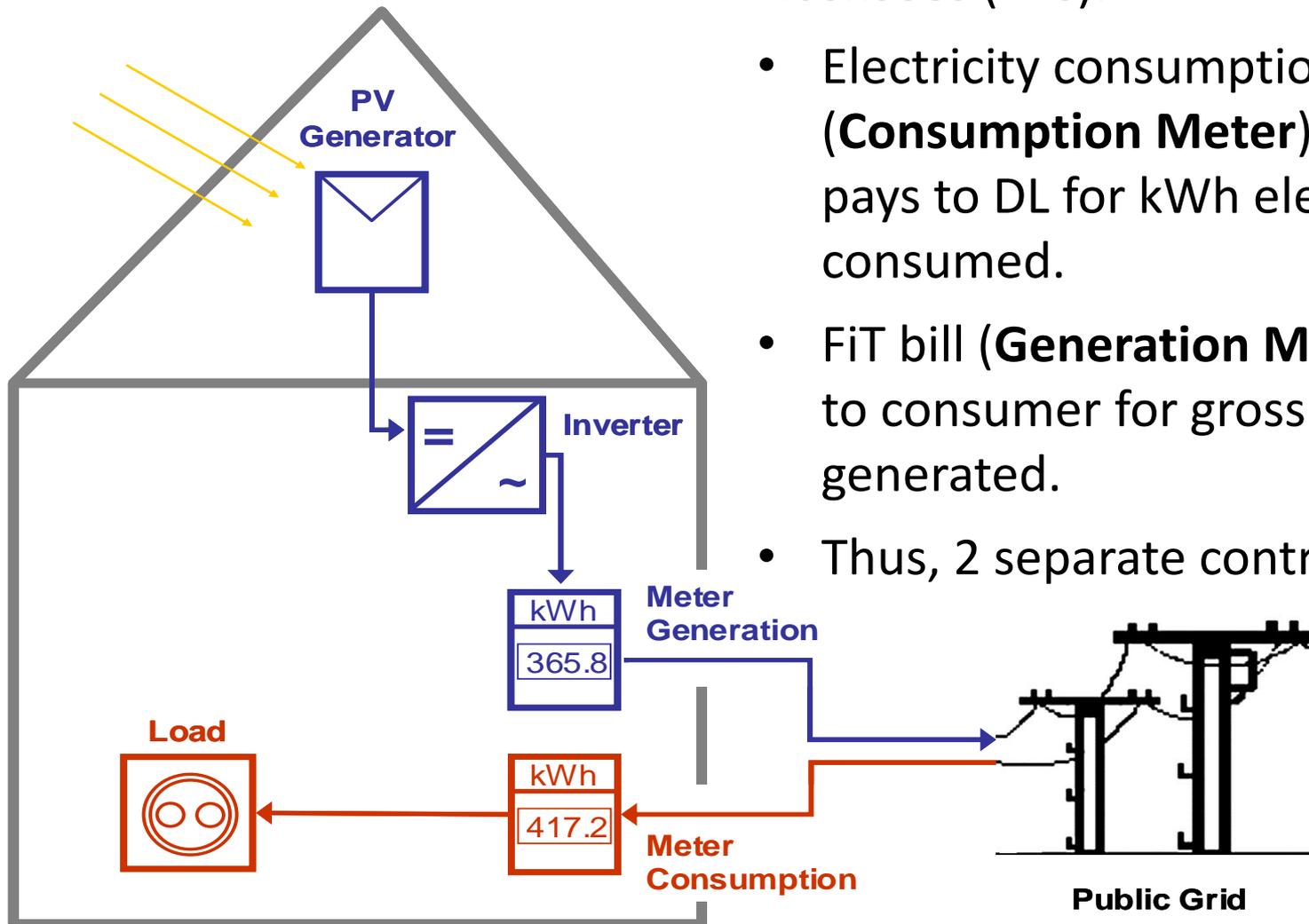
- ❑ A mechanism that allows electricity that is produced from indigenous RE resources to be sold to power utilities at a fixed premium price and for specific duration.

- ❑ Provides a conducive and secured investment environment which will make financial institutions to be comfortable in providing loan with longer period (>15 years).
 - Provides fixed revenue stream for installed system
 - Only pays for electricity produced: promotes system owner to install good quality and maintain the system
 - With suitable degression rate, manufacturers and installers are promoted to reduce prices while enhancing quality

FiT Implementation: Accounts & Payments

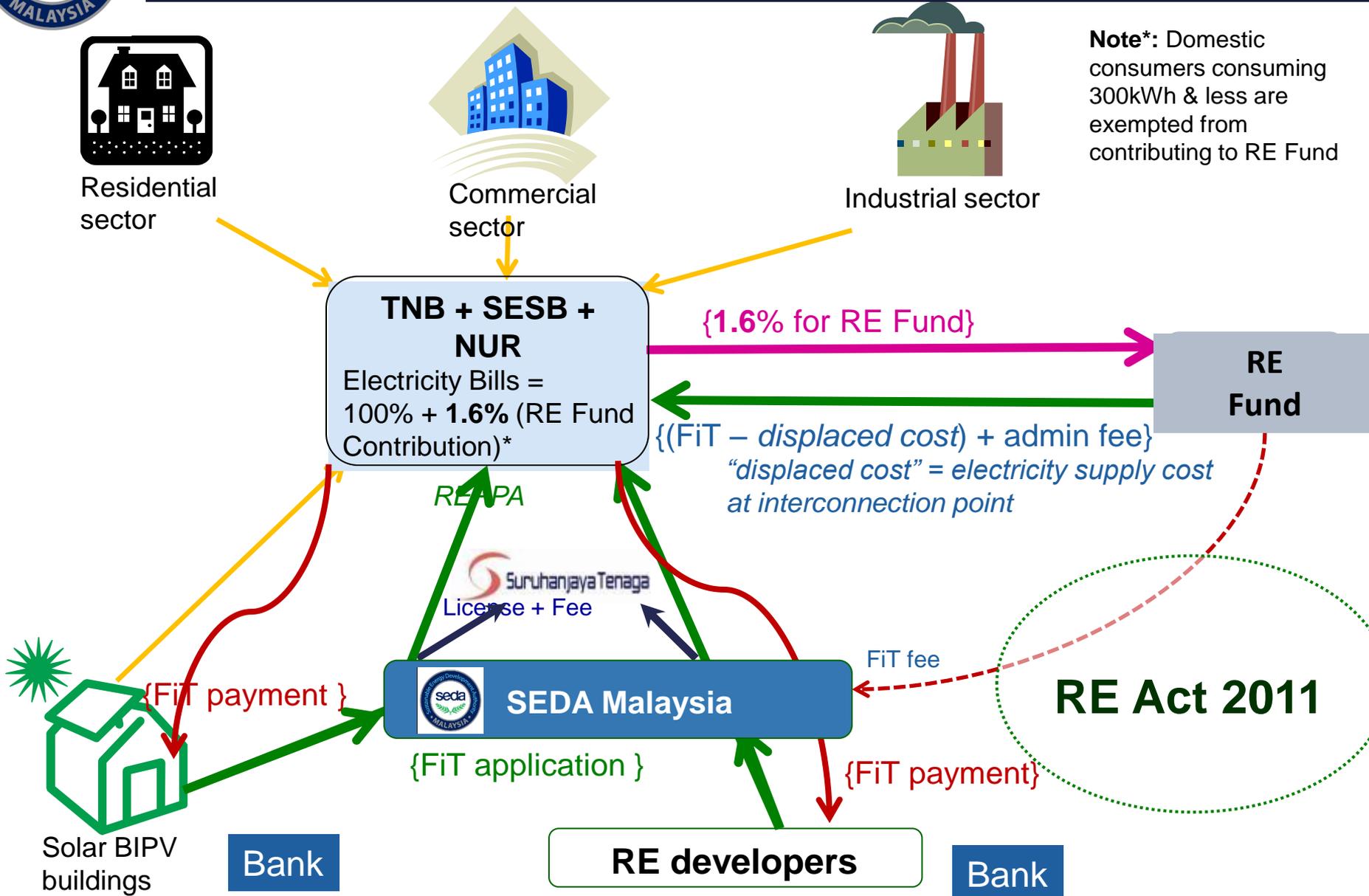
2 separate accounts with Distribution Licensees (DLs):

- Electricity consumption bill (**Consumption Meter**): consumer pays to DL for kWh electricity consumed.
- FiT bill (**Generation Meter**): DL pays to consumer for gross kWh electricity generated.
- Thus, 2 separate contracts with DL.



Conceptual Framework for FiT

Note*: Domestic consumers consuming 300kWh & less are exempted from contributing to RE Fund





National RE Goals (excl EPP-10)

- Solar PV
- Solid Waste
- Mini Hydro
- Biogas
- Biomass

Technical Potential:

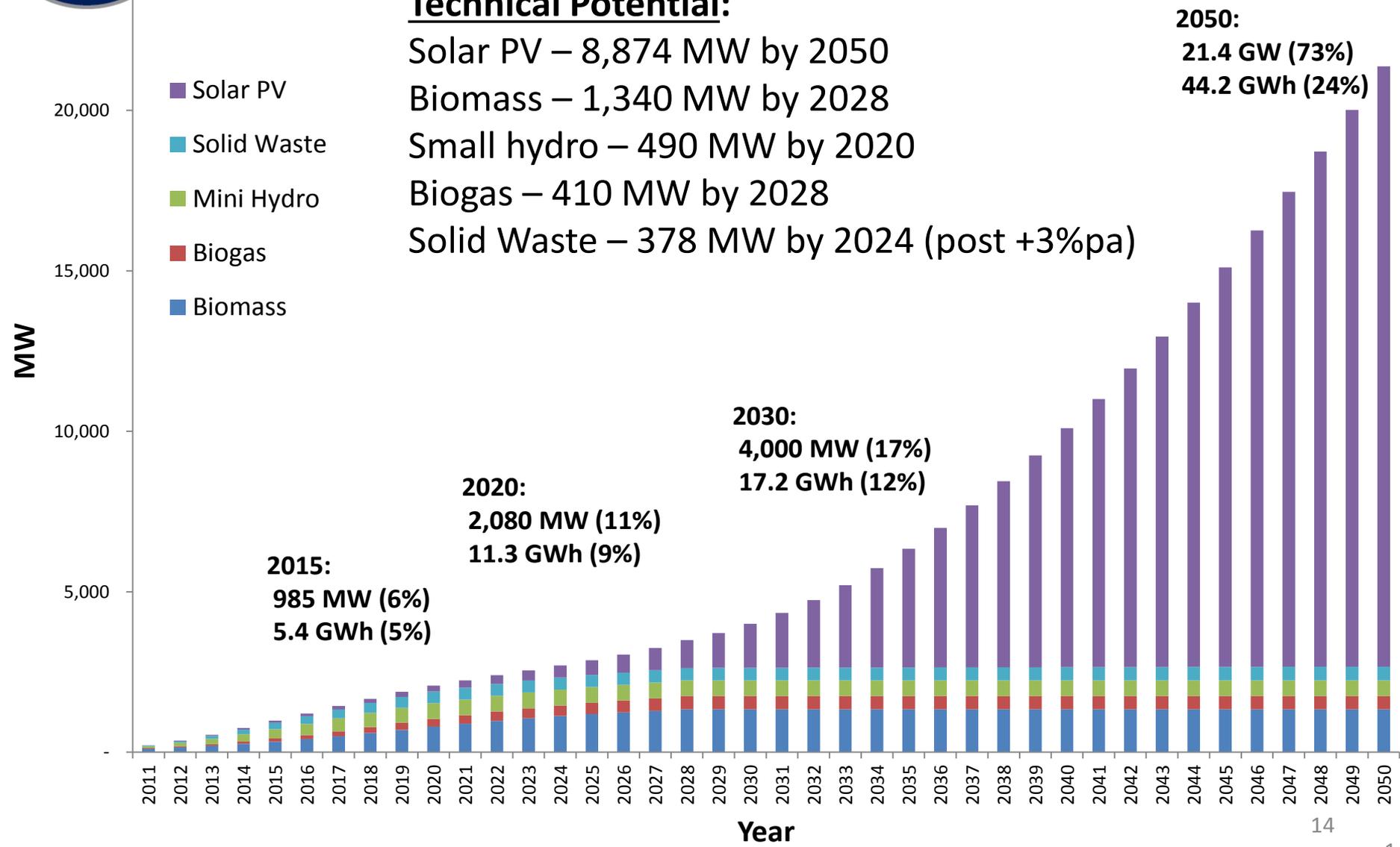
- Solar PV – 8,874 MW by 2050
- Biomass – 1,340 MW by 2028
- Small hydro – 490 MW by 2020
- Biogas – 410 MW by 2028
- Solid Waste – 378 MW by 2024 (post +3%pa)

2050:
21.4 GW (73%)
44.2 GWh (24%)

2015:
985 MW (6%)
5.4 GWh (5%)

2020:
2,080 MW (11%)
11.3 GWh (9%)

2030:
4,000 MW (17%)
17.2 GWh (12%)



Design of FiT & Degression Rates



RE Law Schedule: Biogas

First Column	Second Column	Third Column	Fourth Column	Fifth Column	
Renewable resource	Description of qualifying renewable energy installation	Feed-in tariff rate (in ringgit per kilowatt hour)	Effective period (commencing from the feed-in tariff commencement date)	Annual degression rate	
Biogas	(a) Renewable energy installation having an installed capacity of:	<i>Basic feed-in tariff rate</i>			
	(i) up to and including 4 megawatts	0.32	16 years	0.5 %	
	(ii) above 4 megawatts, and up to and including 10 megawatts	0.30	16 years	0.5 %	
	(iii) above 10 megawatts, and up to and including 30 megawatts	0.28	16 years	0.5 %	
	(b) Renewable energy installation having any one or more of the following criteria in addition to (a) above:	<i>Bonus feed-in tariff rate in addition to basic feed-in tariff rate</i>			
	(i) use of gas engine technology with electrical efficiency of above 40%	+ 0.02	16 years	0.5 %	
	(ii) use of locally manufactured or assembled gas engine technology	+ 0.01	16 years	0.5 %	
(iii) use of landfill or sewage gas as fuel source	+ 0.08	16 years	1.8 %		

Rates valid until 31st December 2013



RE Law Schedule: Biomass

First Column	Second Column	Third Column	Fourth Column	Fifth Column
Renewable resource	Description of qualifying renewable energy installation	Feed-in tariff rate (in ringgit per kilowatt hour)	Effective period (commencing from the feed-in tariff commencement date)	Annual degression rate
Biomass	(a) Renewable energy installation having an installed capacity of:	<i>Basic feed-in tariff rate</i>		
	(i) up to and including 10 megawatts	0.31	16 years	0.5 %
	(ii) above 10 megawatts, and up to and including 20 megawatts	0.29	16 years	0.5 %
	(iii) above 20 megawatts, and up to and including 30 megawatts	0.27	16 years	0.5 %
	(b) Renewable energy installation having any one or more of the following criteria in addition to (a) above:	<i>Bonus feed-in tariff rate in addition to basic feed-in tariff rate</i>		
	(i) use of gasification technology	+ 0.02	16 years	0.5 %
	(ii) use of steam-based electricity generating systems with overall efficiency of above 14%	+ 0.01	16 years	0.5 %
	(iii) use of locally manufactured or assembled gasification technology	+ 0.01	16 years	0.5 %
	(iv) use of municipal solid waste as fuel source	+ 0.10	16 years	1.8 %

Rates valid until 31st December 2013



RE Law Schedule: Small Hydropower

First Column	Second Column	Third Column	Fourth Column	Fifth Column
Renewable resource	Description of qualifying renewable energy installation	Feed-in tariff rate (in ringgit per kilowatt hour)	Effective period (commencing from the feed-in tariff commencement date)	Annual degression rate
Small hydropower	Renewable energy installation having an installed capacity of up to and including 10 megawatts	0.24	21 years	0 %
	Renewable energy installation having an installed capacity of above 10 megawatts, and up to and including 30 megawatts	0.23	21 years	0 %



RE Law Schedule: Solar PV

First Column	Second Column	Third Column	Fourth Column	Fifth Column
Renewable resource	Description of qualifying renewable energy installation	Feed-in tariff rate (in ringgit per kilowatt hour)	Effective period (commencing from the feed-in tariff commencement date)	Annual degression rate
Solar photovoltaic	(a) Renewable energy installation having an installed capacity of:	<i>Basic feed-in tariff rate</i>		
	(i) up to and including 4 kilowatts	1.23	21 years	8.0 %
	(ii) above 4 kilowatts, and up to and including 24 kilowatts	1.20	21 years	8.0 %
	(iii) above 24 kilowatts, and up to and including 72 kilowatts	1.18	21 years	8.0 %
	(iv) above 72 kilowatts, and up to and including 1 megawatt	1.14	21 years	8.0 %
	(v) above 1 megawatt, and up to and including 10 megawatts	0.95	21 years	8.0 %
	(vi) above 10 megawatts, and up to and including 30 megawatts	0.85	21 years	8.0 %

Rates valid until 27th March 2013



RE Law Schedule: Solar PV .. cont

First Column	Second Column	Third Column	Fourth Column	Fifth Column
Renewable resource	Description of qualifying renewable energy installation	Feed-in tariff rate (in ringgit per kilowatt hour)	Effective period (commencing from the feed-in tariff commencement date)	Annual degression rate
	(b) Renewable energy installation having any one or more of the following criteria in addition to (a) above:	<i>Bonus feed-in tariff rate in addition to basic feed-in tariff rate</i>		
	(i) use as installations in buildings or building structures	+ 0.26	21 years	8.0 %
	(ii) use as building materials	+ 0.25	21 years	8.0 %
	(iii) use of locally manufactured or assembled solar photovoltaic modules	+ 0.03	21 years	8.0 %
	(iv) use of locally manufactured or assembled solar inverters	+ 0.01	21 years	8.0 %

Rates valid until 27th March 2013



Biogas Revised Degression : Basic Rate

Description	Rate (RM per kWh)	Previous Degression 1 Dec 2011	Revised Degression 1 Jan 2014
(a) Basic FiT rates having installed capacity of:			
• up to and including 4 MW	0.3184	0.5%	0%
• above 4 MW up to and including 10 MW	0.2985	0.5%	0%
• above 10 MW up to and including 30 MW	0.2786	0.5%	0%
(b) Bonus FiT rates having the following criteria (one or more) :			
• use of gas engine technology with electrical efficiency of above 40%	+0.0199	0.5%	0%
• use of locally manufactured or assembled gas engine technology	+0.0500	0.5%	0%
• use of landfill ,sewage gas or agricultural waste including animal waste as fuel source	+0.0786	1.8%	0%



Biomass Revised Degression : Basic Rate

(a) Basic FiT rates having installed capacity of :	Rate (RM/kWh)	Previous Degression 1 Dec 2011	Revised Degression 1 Jan 2014
• up to and including 10 MW	0.3085	0.5%	0%
• above 10 MW up to and including 20 MW	0.2886	0.5%	0%
• above 20 MW up to and including 30 MW	0.2687	0.5%	0%
(b) Bonus FiT rates having the following criteria (one or more) :			
• use of gasification technology	+0.0199	0.5%	0%
• use of steam-based electricity generating systems with overall efficiency of above 20%	+0.0100	0.5%	0%
• use of locally manufactured or assembled boiler or gasifier.	+0.0500	0.5%	0%
• use of solid waste as fuel source	+0.0982	1.8%	0% 22



Solar PV Revised Degression : Basic Rate

Renewable energy installation having an installed capacity of	Basic rate	Previous Degression (28 March 2013)	Revised Degression (15 March 2014)
1. up to and including 4 kilowatts	RM 1.0184	8%	10%
2. above 4 kilowatts, and up to and including 24 kilowatts	RM 0.9936	8%	10%
3. above 24 kilowatts, and up to and including 72 kilowatts	RM 0.8496	20%	10%
4. above 72 kilowatts, and up to and including 1 megawatts	RM 0.8208	20%	10%
5. above 1 megawatts kilowatts, and up to and including 10 megawatts	RM 0.6840	20%	10%
6. above 10 megawatts kilowatts, and up to and including 30 megawatts	RM 0.6120	20%	10%



Solar PV Revised Degression: Bonus Rate

Renewable energy installation having any one or more of the following criteria in addition to basic rate	Bonus rate	Previous Degression (28 March 2013)	Revised Degression (15 March 2014)
1. use as installation in building or building structures	+RM 0.2153	8%	10%
2. use as building materials	+RM 0.2070	8%	10%
3. use as locally manufactured or assembled solar photovoltaic module	+RM 0.0500	0%	0%
4. use of locally manufactured or assembled solar inverters	+RM 0.0500	0%	0%

FiT Funding Mechanism



Source of Fund for FiT

Source of Funding - additional charge imposed on electricity bills

Cabinet in 2011 principally approved **2%** additional charge on electricity bills

- 1st December 2011- **1.0%**
- 1st January 2014 – **1.6 %**
- The size of the RE fund will determine the RE target for Malaysia
- The 1.6% surcharge will result in RM633 million collection per annum from TNB (RM600m), SESB (RM25m) & NUR (RM8m)

Benefits

- Partial “polluters pay” concept
- will not affect 70.67% of domestic electricity consumers of TNB, 62% of SESB, 80.51% of NUR & (≤ 300 kWh/mth)
- encourages EE and DSM



Surcharge Imposed in Other countries

- Australia – 2.4%, China – 3%, Germany – 19%, Italy – 8%, Japan – 3%, Portugal – 5.6% (industrial), 6.2% (residential), UK – 2 to 3%, Thailand - 2% (2013) and estimated 8 - 10% once the 7 GW of RE projects are operational in a few years time.
- Malaysia's 1.6% surcharge is well below the surcharge implemented in all other countries.
- In most of the above countries, the electricity tariff is unsubsidized and therefore a 1.6% surcharge imposed on a subsidized electricity tariff is a small financial responsibility imposed on polluter-pay basis.

FiT Implementation & Outcome

RECURRING Resource



ANNOUNCEMENTS

- ASEAN ENERGY AWARDS 2014 - ASEAN Renewable Energy (RE) Project Competition 06/01/2014
- TAWARAN SEBUT HARGA KERJA –KERJA PENGUBAHSUAIAN RUANG PEJABAT LOW ENERGY DEMONSTRATION PIHAK BERKUASA PEMBANGUNAN TENAGA LESTARI (SEDA MALAYSIA) CAWANGAN NEGERI SABAH 13/12/2013
- NOTICE TO RE INDUSTRY DIRECTORY LIST – SERVICE PROVIDER CATEGORY: To all companies listed under the RE Industry Directory – Service Provider Category 12/12/2013
- Surcharge on Electricity Bills for Renewable

FIT DASHBOARD

FIT Rates	RE Quota	RE Capacity	RE Generation						
Solar PV (Individual) Solar PV (Non-individual (≤ 500 kW)) Solar PV (Non-individual (> 500 kW))	Biogas Biogas (Landfill / Sewage)	Biomass Biomass (Solid Waste)	Small Hydro						
<p>FIT Rates for Solar PV (Non-individual (≤ 500 kW)) (21 years from FIT Commencement Date)</p> <table border="1"> <thead> <tr> <th>Description of Qualifying Renewable Energy Installation</th> <th>FIT Rates (RM per kWh)</th> </tr> </thead> <tbody> <tr> <td>(a) Basic FIT rates having installed capacity of :</td> <td>01-JAN-2014 ▾</td> </tr> <tr> <td>(i) up to and including 4kW</td> <td>1.0411</td> </tr> </tbody> </table>				Description of Qualifying Renewable Energy Installation	FIT Rates (RM per kWh)	(a) Basic FIT rates having installed capacity of :	01-JAN-2014 ▾	(i) up to and including 4kW	1.0411
Description of Qualifying Renewable Energy Installation	FIT Rates (RM per kWh)								
(a) Basic FIT rates having installed capacity of :	01-JAN-2014 ▾								
(i) up to and including 4kW	1.0411								



e-FiT Online System

Applicant Category : INDIVIDUAL

INSTRUCTIONS : * This is MANDATORY fields.
* Please specify at least one.

PERSONAL INFORMATION

Full Name : *

MyKad No./Passport No : *

Gender : [SELECT] *

Nationality : MALAYSIA *

CONTACT INFORMATION

Address : *
 *
 *

Postcode : *

City : *

State : [SELECT] *

Telephone No. : - *

Mobile No. : - *

Email : *

VERIFICATION

CAPTCHA Verification

Please enter the text from the image

I hereby declare that all information contained in this application are true and correct. I understand that false or inaccurate information in the application will be the basis for termination and any action may be taken against me.



- FiT quota is dynamically displayed in SEDA's website



Quota Release Schedule 2014-2017 (2nd May 2014)

Resources	Category	Release Capacity (MW)				Total
		2014	2015	2016	2017 ¹	
Solar PV	Individuals	10				10
	Non-Individuals	25				25
	Community	5				5
Biogas		10	15	15	15	55
Biomass		15	18	20	20	73
Small Hydro				50	100	150
Total		65	33	85	135	318

¹ Quota available from 1st July 2014 onwards



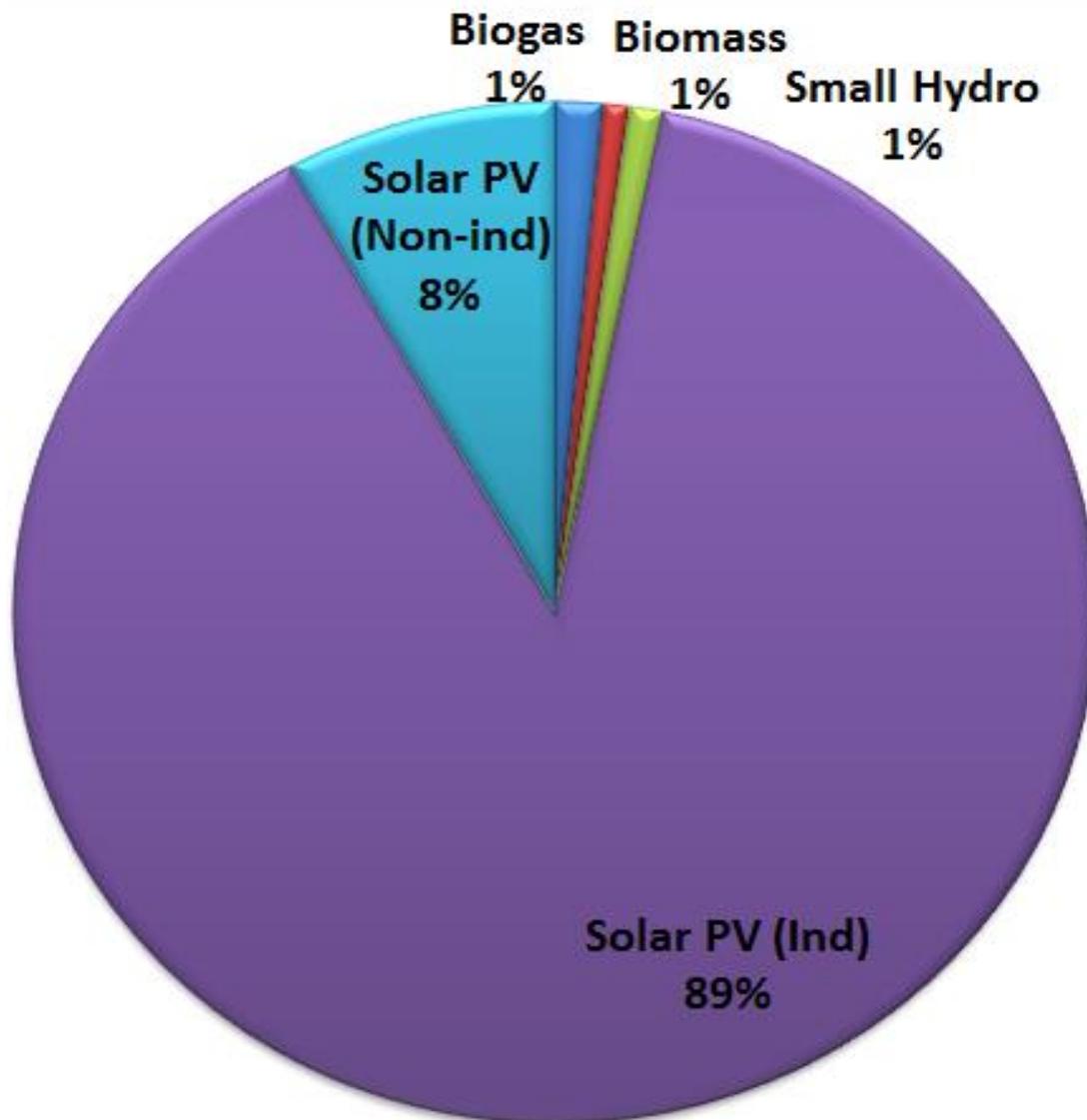
Remaining Quota 2014-2017 (7th June 2014)

Resources	Category	2014	2015	2016	2017	Total
Solar PV	Individuals	0				0
	Non-Individuals	25				25
	Community	5				5
Biogas		0.86	1.79	3.17	15	20.82
Biomass				7.66	20	27.66
Small Hydro				27.94	100	127.94
Total		30.86	1.79	38.77	135	206.42



Number of Approved Applications 2012-2016 (31 May 2014)

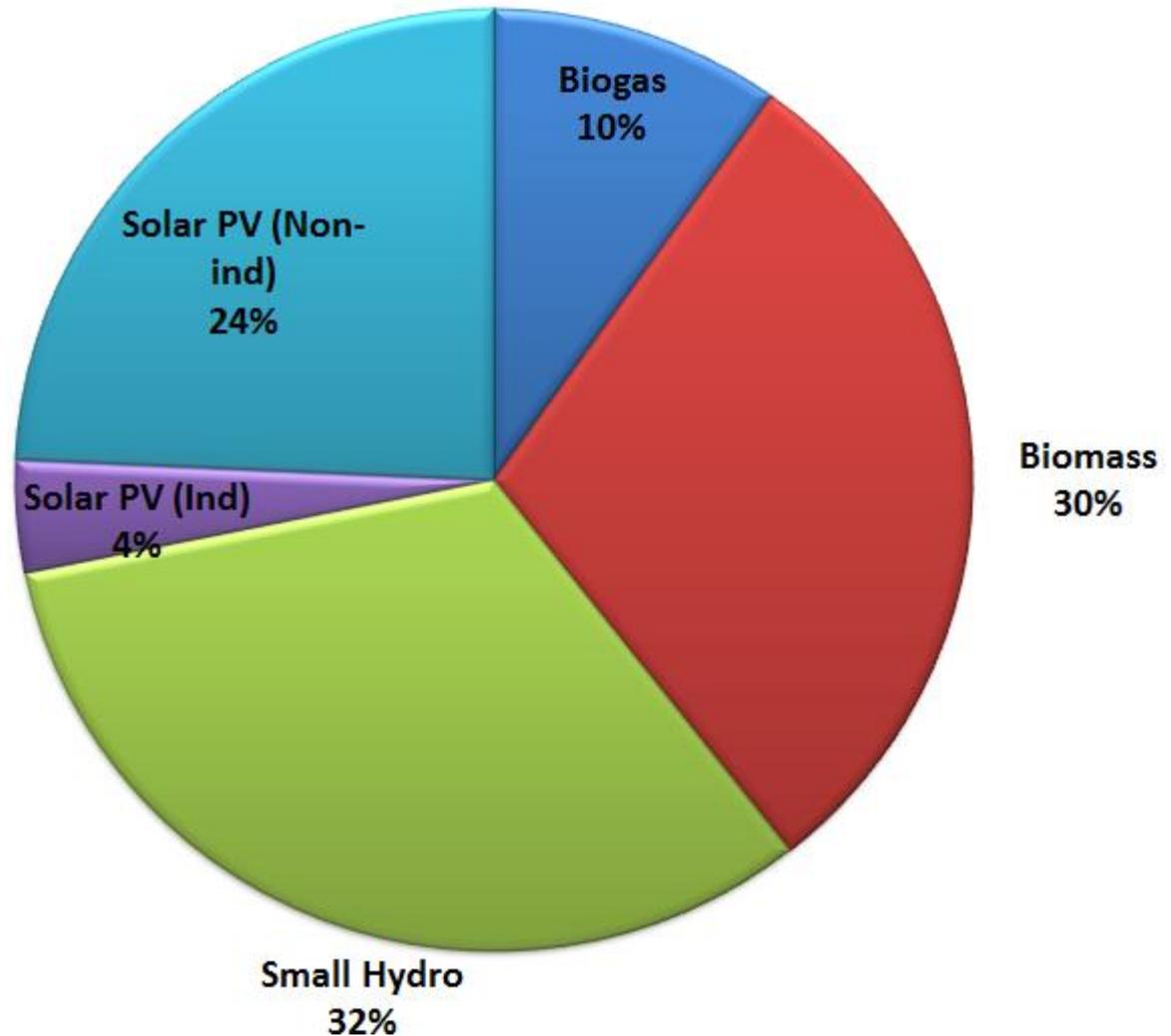
Renewable Sources	No.
Biogas	45
Biomass	23
Small Hydro	31
Solar PV (Ind)	2,756
Solar PV (Non-ind)	252
Total	3,107





Approved Capacities (MW) 2012-2016 (31 May 2014)

Renewable Sources	Capacity (MW)
Biogas	73.99
Biomass	222.14
Small Hydro	244.09
Solar PV (Ind)	29.17
Solar PV (Non-ind)	182.78
Total	752.17





Operational RE Projects (31 May 2014)

Renewable Sources	No.	No. %	Capacity (MW)	Capacity %
Biogas	6	0.3%	11.73	6.0%
Biomass	5	0.2%	52.3	26.8%
Small hydro	5	0.2%	15.7	8.1%
Solar PV (Ind)	2,174	92.6%	23.88	12.3%
Solar PV (Non-ind)	157	6.7%	91.24	46.8%
Total	2,347		194.86	



Challenges faced in FiT implementation

- Electricity tariff in Malaysia is highly subsidized and the low electricity tariff is one of the biggest barriers towards RE & EE implementation (Sovacool 2012, IRENA 2013).
- RE quota is limited by availability of RE fund, currently only 1% contribution by electricity consumers (TNB - 1st December 2011) and 1.6% (TNB, SESB & NUR - 1st January 2014).
- The urgency for implementing RE is not well understood and appreciated by some sectors.
- In order for RE to achieve significance in the country's energy mix, it has a long gestation period for market and industry to reach maturity.
 - DLs need time to resolve interconnectivity & FiT payments
 - RE developers has implementation challenges,



Benefits of implementing the FiT

- Economic
 - Creates a more resilient economy that relies less on fossil fuel as energy source
 - Creates green jobs
- Social
 - Encourages the public to engage in activities protecting climate and environment
 - Fairer form of wealth distribution and empowerment
- Environmental
 - Reduces carbon emission and pollutions
 - Reduces dependency on fossil fuels which are depleting resources
- Political
 - Increases energy security & autonomy
 - Promotes a democratized form of electricity generation

Renewable Resources (FiT)

1.1 MW, biogas plant FELDA, Negeri Sembilan



2 MW biomass plant, Bell Eco Power Sdn Bhd, Batu Pahat



6MW Small Hydro site, Amcorp Perting, Bentong Pahang



BIPV Bungalow, Shah Alam 4.8 kWp



1.01 MW, Kemuning Sumikin Bussan Sdn Bhd, Selangor



Largest PV Installations on Shopping Centre Rooftop

685 kW, PETRONAS @ KLCC Tower, Malaysia



Ground-mounted PV application, 8 MW, Cypark Resources Bhd, Pajam, Malaysia



Thank you



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Presint 4, 62100 **Putrajaya.**

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Unit 32, Level 1 , Lorong
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88400 Kota Kinabalu, **Sabah**

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