



Updates on RE programme and efforts in Malaysia

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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

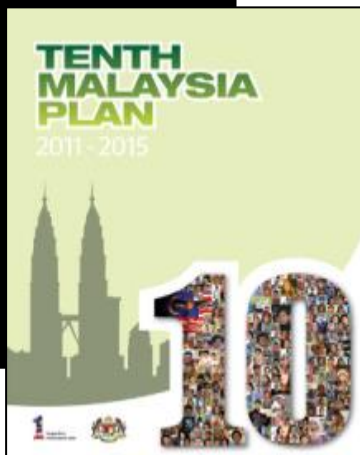
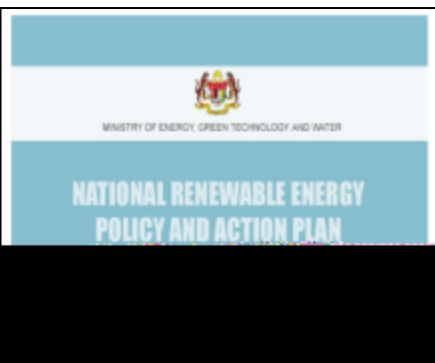
RE as of 31st
December 2011

- Connected to the utility grid (as of 2011): **68.45 MW** (20% from 9th MP target)
- Off-grid: **>430MW** (private palm oil millers and solar hybrid)

Renewable Energy: Government Policies

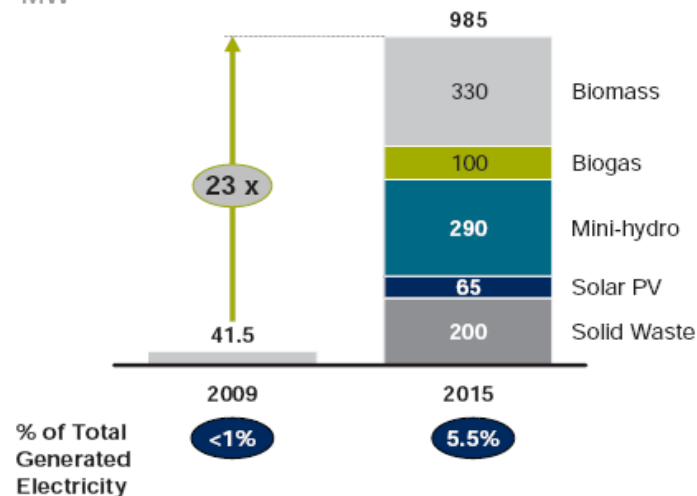
- 2nd April 2010: National Renewable Energy Policy & Action Plan approved
- 1st Dec 2011: **Renewable Energy Act, 2011 (Act 725)** was enforced

Renewable energy will increase from <1% in 2009 to 5.5% of Malaysia's total electricity generated by 2015



Moving towards renewable energy replaces the need for fossil-fuel power plants

Planned increase in renewable energy capacity
MW



RE investments will receive a huge push through FiT

- Introduction of Feed-in Tariff (FiT) of 1% to be incorporated into the electricity tariffs of consumers
- Establishment of a Renewable Energy Fund from the FiT to be administered by a special agency under KeTTHA
- This provides an annual CO₂ avoidance of 3.2 million tonnes



Malaysian National Renewable Energy Policy and Action Plan, 2010

THRUST 2:

Create Conducive Business Environment for RE

THRUST 3:

Intensify Human Capital Development

THRUST 1:

Introduce Appropriate Legal Framework

THRUST 5:

Increase Public and Stakeholder Awareness & RE Policy Advocacy

THRUST 4:

Enhance RE R & D



Malaysian National RE Targets

Year	Cumulative RE Capacity	RE Power Mix	Cumulative CO ₂ avoided
2011	68.45 MW	0.47 %	0.29 mt
2015	985 MW	6%	11.1 mt
2020	2,080 MW	11%	42.2 mt
2030	4,000 MW	17%	145.1 mt

Note: RE capacity achievements are dependent on the size of RE fund, under FiT programme only

- Assumptions: Feed-in Tariff (FiT) is successfully implemented
- ✓ To be revised in 2015 (to include other mechanisms to encourage PV), additional 1000MW of PV by 2020 under net-metering. Subjected to Cabinet's approval.



Renewable Energy Act 2011

□ RE Act: an Act to provide for the establishment & 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

Passed in Parliament: 27th April 2011

Enforced : 1 December 2011

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

Source of Fund for FiT

KETERANGAN	TARIKH	JUMLAH	KOD	TARIKH KEMASKINI
BIL AKHIR	13/05/2012	86.85	N	11/06/2012
BAYARAN AKHIR	15/05/2012	86.85		

CAJ	UNIT	KADAR	JUMLAH
BLOK KEGUNAAN ELEK.	200.00	0.218	RM 43.60
BLOK KEGUNAAN ELEK.	100.00	0.334	RM 33.40
BLOK KEGUNAAN ELEK.	25.00	0.400	RM 10.40
KUMPULAN WANG TENAGA BOLEH BAHARU			RM 0.87
JUMLAH BIL BULAN SEMASA :			RM 88.27

PELBAGAI	RM 0.00	JUMLAH BIL	RM 88.27
PENALTI	RM 0.00	PENGGENAPAN	RM -0.02
TUNGGAKAN	RM 0.00	JML PERLU DIBAYAR :	RM 88.25
CAGARAN TAMBAHAN	RM 0.00		

NO. JANGKA	DAFTAR	KOD	SEMASA	KOD	KEGUNAAN	UNIT
M MA032050479	25899	N	26225	E	326	KWH

SUBSIDI BAHAN API OLEH KERAJAAN PERSEKUTUAN	RM	65.98			
TRKH BACAAN DAHULU	13/05/2012	SEMASA	12/06/2012	BIL HARI	30
NO. TEL. ADUAN GANGGUAN BEKALAN : 15454					

1st Dec 2011 – 1% levy from electricity bills

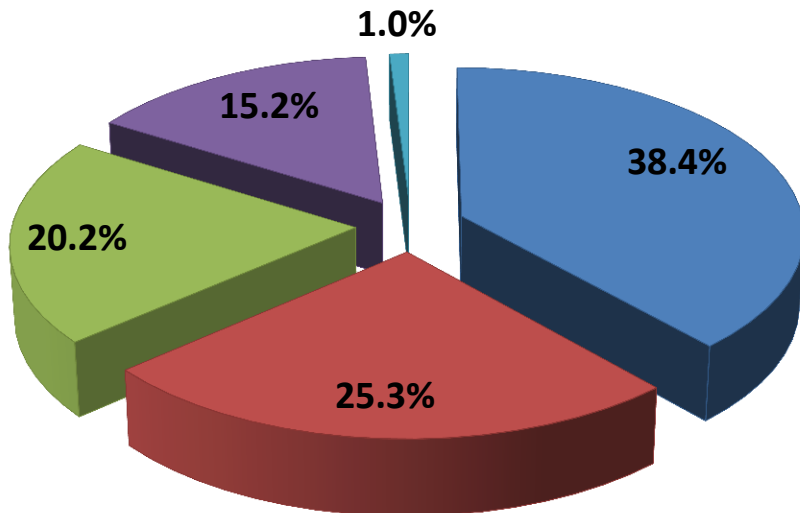
1st Jan 2014 – 1.6% since Jan 2014

- Every RM100/Month - RM1.60 for RE

The size of RE fund will determine the RE target for Malaysia

Benefits:

- polluters pay concept, encourages EE
- will not affect 75% of electricity consumers (≤ 300 kWh/mth)



- Subsidized Fuel for Power Generation
- Generation cost
- Transmission & Distribution Cost
- Customer Service Charge
- FiT levy

Feed-in Tariff Rates

Technology / Source	FiT Duration	Range of Basic FiT Rates (USD/kWh)	Annual Degression
<u>Biomass (palm oil waste, agro based)</u>	16	0.084 – 0.118	0%
<u>Biomass (Solid waste)</u>	16	0.084 – 0.148	0%
<u>Biogas (landfill / agri waste)</u>	16	0.088 – 0.145	0%
<u>Small Hydro</u>	21	0.072 – 0.075	0%
<u>Solar PV (individual)</u>	21	0.309 – 0.480	10%
<u>Solar PV (non-individual)</u>	21	0.191 – 0.427	10%
<u>Geothermal</u>	21	-	-

• USD1 = MYS3.21



SEDA Malaysia's Portal & FiT Dashboard

www.seda.gov.my

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ANNOUNCEMENTS

- ▶ New quota release for biomass and biogas on 2nd September 2014 12/08/2014
- ▶ Notice on fraud FiT promotion 12/08/2014
- ▶ Kenyataan Tender (Terbuka) : *Design, Supply, Deliver, Install, Testing, Commissioning & Maintenance of 12kWp to 48kWp of Solar Photovoltaic Systems and Ancillary Works for Selected Government Buildings under the GLBE - Solar PV Projects* 08/08/2014
- ▶ Jobs@SEDA - Assistant Administration Officer (Feed-in Tariff) 04/08/2014
- ▶ One Day Seminar on Anaerobic Digestion 21/07/2014

MORE



LATEST NEWS

FiT DASHBOARD

FiT Rates	RE Quota	RE Capacity	RE Generation
Solar PV (Community) Solar PV (Individual) Solar PV (Non-individual (≤ 500 kW)) Solar PV (Non-individual (> 500 kW))	Biogas Biogas (Landfill / Agri Waste)	Biomass Biomass (Solid Waste)	Small Hydro
FiT Rates for Solar PV (Community) (21 years from FiT Commencement Date)			
Description of Qualifying Renewable Energy Installation			FiT Rates (RM per kWh)
(a) Basic FiT rates having installed capacity of :			15-MAR-2014 ▼
(i)	up to and including 4kW		1.0184
(ii)	above 4kW and up to and including 24kW		0.9936
(b) Bonus FiT rates having the following criteria (one or more) :			
(i)	use as installation in buildings or building structures		+0.2153
(ii)	use as building materials		+0.2070



Approved applications (MW) up to 30th September 2014

No.	RE Sources	No. Applications	Capacity (MW)	Percentage
1	Biogas	67	107.69	12.27%
2	Biomass	27	269.09	30.66%
3	Small Hydro	33	249.84	28.46%
4	Solar PV	4,455	251.14	28.61%
	Individual	4,065	40.17	4.58%
	Non Individual	390	210.97	24.04%
Total		4,582	877.75	100.00%



Estimated jobs creation and CO2 Avoidance up to 30th September 2014

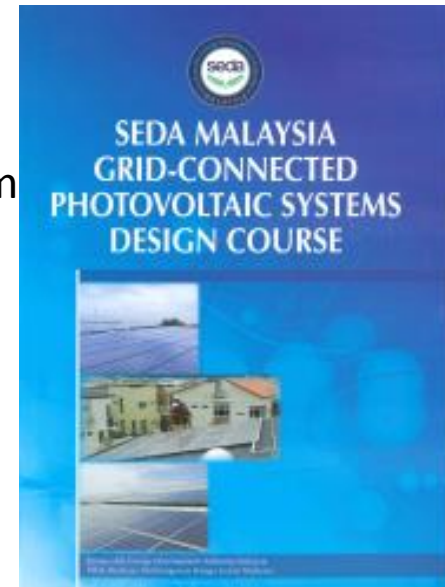
	No of jobs create	RE generation (MWh)	Installed capacity (MW)	FiTCD capacity (MW)	Co2 reduction (tonnes)	Total investment (RM)
Biogas (palm oil waste, ago based & farming)	2,255	682,281	107.69	11.73	452,212	817,881,589.63
Biomass (palm oil waste, ago based & farming)	5,463	1,209,804	269.09	52.30	699,496	1,187,637,008.84
Mini hydro	3,748	1,573,564	249.84	15.70	1,128,876	2,232,665,834.65
Solar PV	5,742	304,941	251.14	149.3	224,438	2,620,977,006.15
TOTAL	17,207	3,770,589	877.75	229.01	2,505,021	6,859,161,439.27

Human capital & trainings

Solar PV Courses

Malaysia Grid-Connected Solar PV Systems Design

- Started with Institute of Sustainable Power Quality (ISPQ) in 2007, the first country in ASEAN certified with ISPQ programme
- Training providers:
 - Universiti Teknologi MARA (UiTM), Shah Alam
 - Selangor Human Resource Development Centre (SHRDC)
- Min req: Diploma in Engineering or Degree in Physics
- Fees : RM5,500 Malaysian, International USD2,000
- Duration : 8 days (including exam both theory and practical), set a very high standard, competent person is responsible in the design of solar PV projects performance.
- Hold trainings for ASEAN, participated by 8 countries in 2013





Solar PV Courses

Malaysia Grid-Connected Solar PV for Wireman & Chargeman

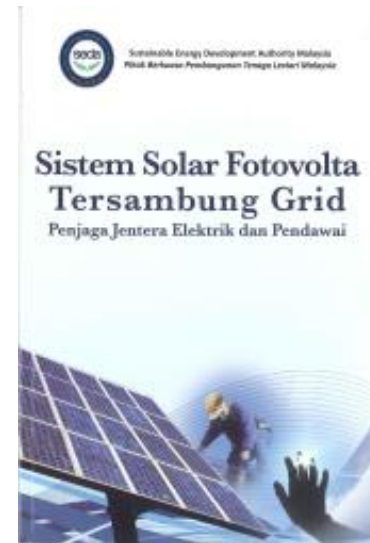
- Training providers:
 - Universiti Kuala Lumpur British Malaysia Institute (UniKL BMI)
- Min req: Wireman/chargeman cert holder
- Fees : RM2,350
- Duration : 5 days (including exam)

PM maintenance and installation of Solar PV system

- Training providers:
 - Selangor Human Resource Development Centre (SHRDC)
 - Akademi Binaan Malaysia Wilayah Utara
- Fees : RM6,500
- Min req: Secondary high school cert
- Duration : 2 mths (classroom & practical) + 2 to 4 OJT

d. Malaysia Off Grid Solar PV Systems Design

- Expected to be offered starting Q4 2014





Solar PV Courses

Grid-Connected Solar PV course – Practical and field visits



Small Hydro

- Introduction to Small Hydro Technology – Technical Design, Operation and Maintenance Issue for Engineers
- Competency Training Course on Field Acceptance Test of Small Hydro Power Plants
- Guideline for testing & commissioning and acceptance test for small hydro (end 2014)





Biomass & Biogas

- Training - Introductory Technical Training on Power Generation from Agricultural and Municipal Waste
- Guideline for Testing & commissioning and acceptance test for biomass (2014)
- Guideline for Testing & commissioning and acceptance for biogas (2014)



PV related standards and guidelines

- Power system study – determine point of connection by national utilities
- MS 1837: 2010 (1st rev)- Installation of grid-connected PV System – outlines the standards required for PV modules, inverter, electrical components, etc.
- Guideline for interconnection of PV system to LV and MV network
- IEC 61727-PV Systems Characteristics of the utility interface
- RE (Technical and Operational) rules 2011
- Procedure for Testing and Commissioning





PV Authorised representative/ Agent

- FiT was started – free market, anyone can be an installer— caused much problems ie quality of systems, closed business after secured projects, no continuity, etc.
- Started in 2014, requirements/ enhancements for 2015
- All installations under FiT programme only by PV Authorised Agent as listed at SEDA's website
- As at today, 136 registered companies, application online
- Annual renewal –expired every 31st Dec, abide by the terms & conditions and code of ethics



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 1.6% (TNB, NUR & SESB - 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.
 - Bankers acceptance, RE developers has implementation challenges, DLs need time to resolve interconnectivity & FiT payments



Way forward

- Revised RE national targets (2009) – existing target was based on FiT (limited fund), to include large scale and net-metering
- National irradiation map (updated version) – to be made available in 2015
- Net-metering proposal – to increase RE capacity beyond FiT focusing on commercial and industrial sectors
- Solar rooftops programme – target to have more solar PV rooftops beyond FiT, consider other incentives since net-metering is still not attractive for domestic sector (electricity price is highly subsidized)



Way forward

- Regulate PV service providers – to ensure companies sustain in the business for after sales/ support
- PV market to grow, not depends on the government and RE Fund (for FiT payment)
- To oversee off-grid PV projects- to collaborate with few other ministries in charged
- Update RE database - redefinition under ASEAN in May 2014 to include off-grid, all hydros except traditional biomass)
- Look for other source of RE – national wind map to be ready Dec 2015

Thank you



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