



MALAYSIA RE PROGRAMME (STATUS AND UPDATES AND SMART GRID INITIATIVES)

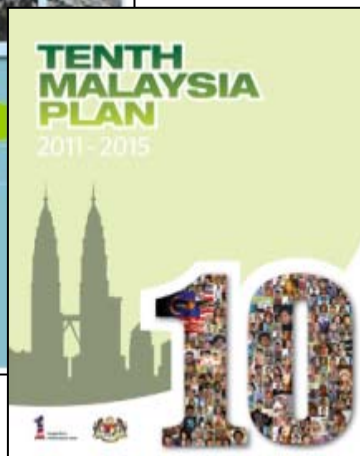
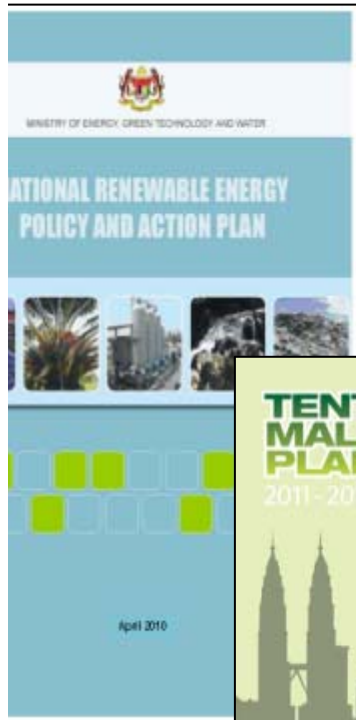
Azah Ahmad
Sustainable Energy Development Authority Malaysia
2nd April 2013

Malaysian National RE Policy & Action Plan



Renewable Energy: Government Policies

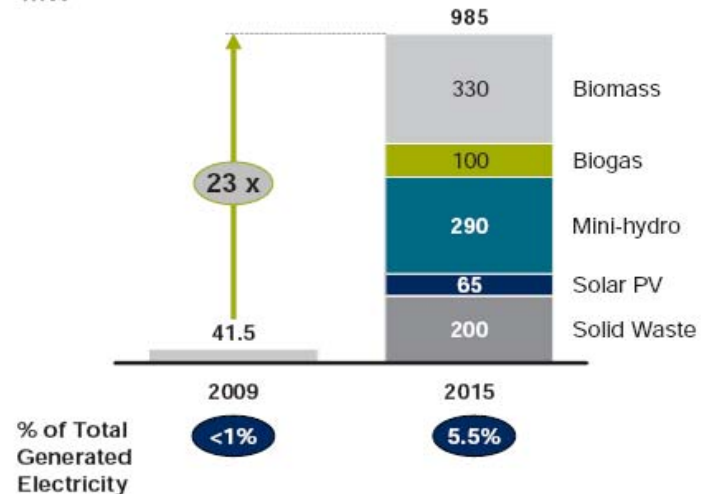
- 2nd April 2010: National Renewable Energy Policy & Action Plan approved by GOM
- 10th Jun 2010: 10th Malaysia Plan (chapter 6)
- 15th Oct 2010: National Budget 2011 (paragraph 34)
- 25th Oct 2010: Economic Transformation Programme (chapter 6) April 2011: Bill was passed in the Parliament, gazetted in June 2011
- 1st Dec 2011: RE Act 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

THRUST 1

- **Introduce Appropriate Legal Framework**
- Feed-in Tariff (FiT)
- RE Fund
- SEDA Malaysia - FiT Implementing Agency

THRUST 2

- **Create Conducive Business Environment for RE**
- Promote RE businesses – SME and manufacturing
- Long term low interest financing
- Fiscal Incentives
- Special Incentives for Locally Developed R&D
- Incentives to Promote Local Content
- RE Centre for SMEs

THRUST 3

- **Intensify Human Capital Development**
- RE in Technical and Tertiary Curricula
- RE Training Institutes
- Centres of Excellence
- Experts to fulfil local and overseas market
- Fiscal relief for RE courses
- Financial incentives for training programmes

THRUST 4

- **Enhance RE R & D**
- Focus R&D – reduce cost of technology & promote wider application
- Coordination & co-operation in technology & economic research bet Government & private sector
- Strong linkages bet local & international research institutes
- Development of RE innovations

THRUST 5

- **Increase Public and Stakeholder Awareness & RE Policy Advocacy**
- Effective & continuous information dissemination
- Relationship with media, NGOs & private entities
- Demonstration & awareness programmes in primary & secondary schools
- Periodic monitoring & evaluation of RE



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

- Assumptions:
 - ✓ Feed-in Tariff (FiT) is successfully implemented



RE Policy: Projected RE Growth

Year	Cumulative Biomass (MW)	Cumulative Biogas (MW)	Cumulative Mini-Hydro (MW)	Cumulative Solar PV (MW)	Cumulative Solid Waste (MW)	Cum Total RE, Grid-Connected (MW)
2011	110	20	60	9	20	219
2015	330	100	290	65	200	985
2020	800	240	490	190	360	2,080
2025	1,190	350	490	455	380	2,865
2030	1,340	410	490	1,370	390	4,000
2035	1,340	410	490	3,700	400	6,340
2040	1,340	410	490	7,450	410	10,100
2045	1,340	410	490	12,450	420	15,110
2050	1,340	410	490	18,700	430	21,370

Assumptions, RE Technical potential:

Biomass (EFB, agriculture): 1,340 MW will be reached by 2028.

Biogas (POME, agriculture, farm): 410 MW will be reached by 2028.

Mini-hydro (not exceeding 30 MW): 490 MW will be reached by 2020.

Solar PV (grid-connected): unlimited.

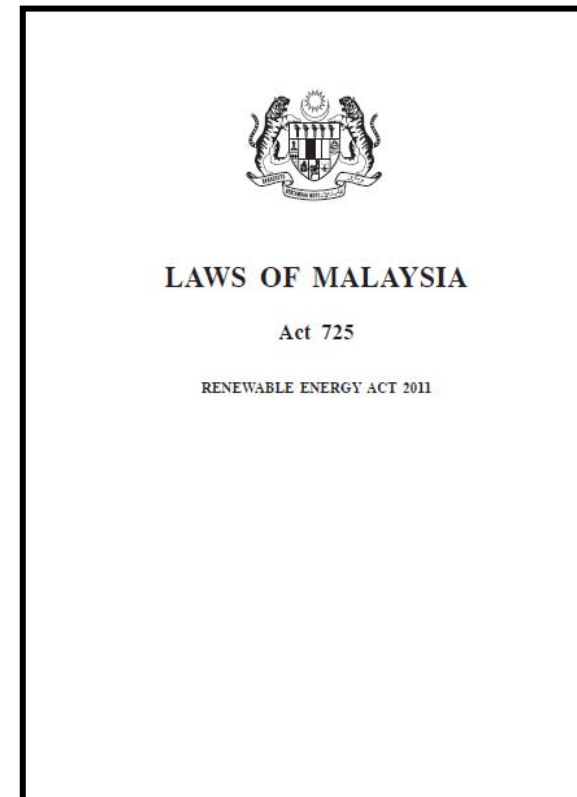
Solid waste (RDF, incineration, sanitary landfill): projection of 30,000 tonne/day of Solid Waste as projected by KPKT, followed by 3% annual growth post 2024

Malaysia Feed-in Tariff (FiT)



Renewable Energy Act 2011

- RE Act: an Act to provide for the establishment and implementation of a special tariff system to catalyse the generation of renewable energy and to provide for related matters.
- RE \leq 30MW per project
- Outlines provisions for:
 - ✓ FiT mechanism's implementation
 - ✓ Establishment of RE Fund
 - ✓ SEDA Malaysia as implementing agency
- Enforced on 1st December 2011





SEDA Malaysia Act 2011 (formed 1st Sept 2011)

Part	Section	Detail	Purpose
3	Section 15: Functions of SEDA Malaysia	<ul style="list-style-type: none"> ✓ advise the Minister & Government Entities on all matters relating to sustainable energy ✓ to <u>promote & implement national policy objectives for RE</u> ✓ to promote, facilitate & develop sustainable energy ✓ <u>implement, manage, monitor & review the Feed-In Tariff system</u> ✓ implement sustainable energy laws including the Renewable Energy Act & recommend reforms ✓ promote private sector investment in sustainable energy sector ✓ measures to improve public awareness ✓ act as focal point on matters relating to sustainable energy & climate change matters 	To refine SEDA Malaysia function and responsibility to the Minister



e-FiT Online – Open & Transparent Platform

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ANNOUNCEMENTS

- ▶ International Climate Protection Scholarship by the Alexander von Humboldt-Foundation 24/08/2011
- ▶ New Distance Learning Program (MBA in Renewable Energy and Energy Efficiency) 01/07/2011
- ▶ Passing of RE & SEDA Bills at Dewan Rakyat on 4th & 5th April 2011 02/04/2011
- ▶ Workshop on Subsidiary Legislation Discussion, 21 Apr 2011 01/03/2011

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LATEST NEWS

FIT DASHBOARD

FIT Rates	RE Quota	RE Capacity	RE Generation
Biogas	Biomass	Small Hydro	Solar PV
FIT Rates for Biogas (16 years from FIT Commencement Date)			
Description of Qualifying Renewable Energy Installation	FIT Rates (RM per kWh)		
	2011	2012	2013
(a) Basic FIT rates having installed capacity of :			
(i) up to and including 4MW	0.3200	0.3200	0.3184
(ii) above 4MW and up to and including 10MW	0.3000	0.3000	0.2985
(iii) above 10MW and up to and including 30MW	0.2800	0.2800	0.2786
(b) Bonus FIT rates having the following criteria (one or more) :			
(i) use of gas engine technology with electrical efficiency of above 40%	+ 0.0200	+ 0.0200	+ 0.0199
(ii) use of locally manufactured or assembled gas engine	+ 0.0100	+ 0.0100	+ 0.0100

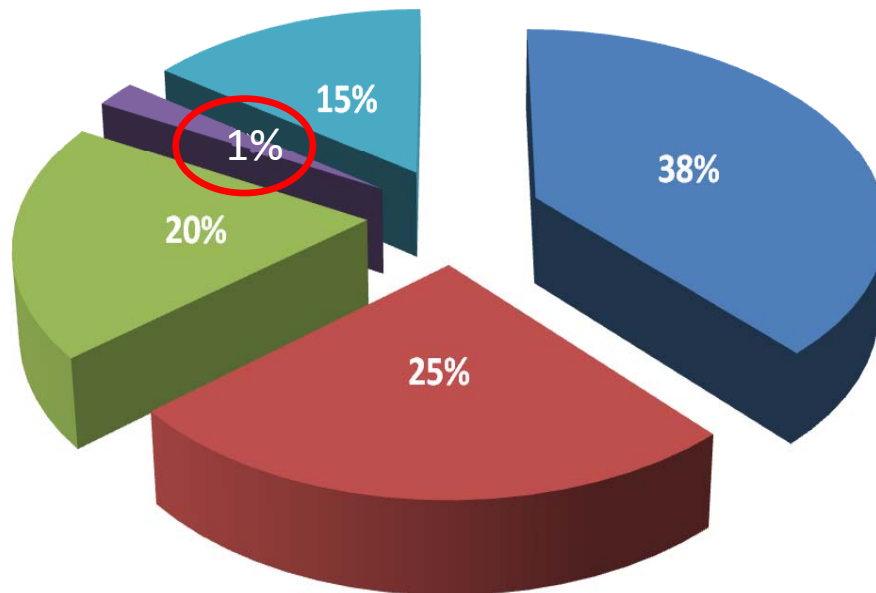
- FiT quota is dynamic.
- E-FiT – system enables FiT quota approvals on ‘first come, first served basis’
- upon submission of complete application with supporting documents.



Source of Fund for FiT

Cost Breakdown for Average Domestic Electricity Tariff

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



Source of Funding

- Starting Dec 2011 - additional tariffs collection from electricity bills
 - Every RM100/Month - RM1 for RE
- Additional 1% (proposed in 2013)

The size of RE fund (RM300million (US100mil) per annum) will determine the RE target for Malaysia

Benefit

- polluters pay concept
- will not affect 75 % of electricity consumers (\leq 300 kWh/mth)



Feed-in Tariff Rates

Technology / Source	FiT Duration	Range of FiT Rates (RM/kWh)	Annual Degression
Biomass (palm oil waste, agro based)	16	0.27 – 0.35 <i>US 0.09 – 0.11</i>	0.5%
Biogas (palm oil waste, agro based, farming)	16	0.28 – 0.35 <i>US 0.09 - 0.11</i>	0.5%
Mini Hydro	21	0.23 – 0.24 <i>US 0.08</i>	0%
Solar PV & PP	21	0.85 – 1.78 <i>US 0.28 – 0.6</i>	8%
Solid waste & Sewage	16	0.37 – 0.45 <i>US 0.12 – 0.15</i>	1.8%



Fiscal Incentives to Promote RE&EE

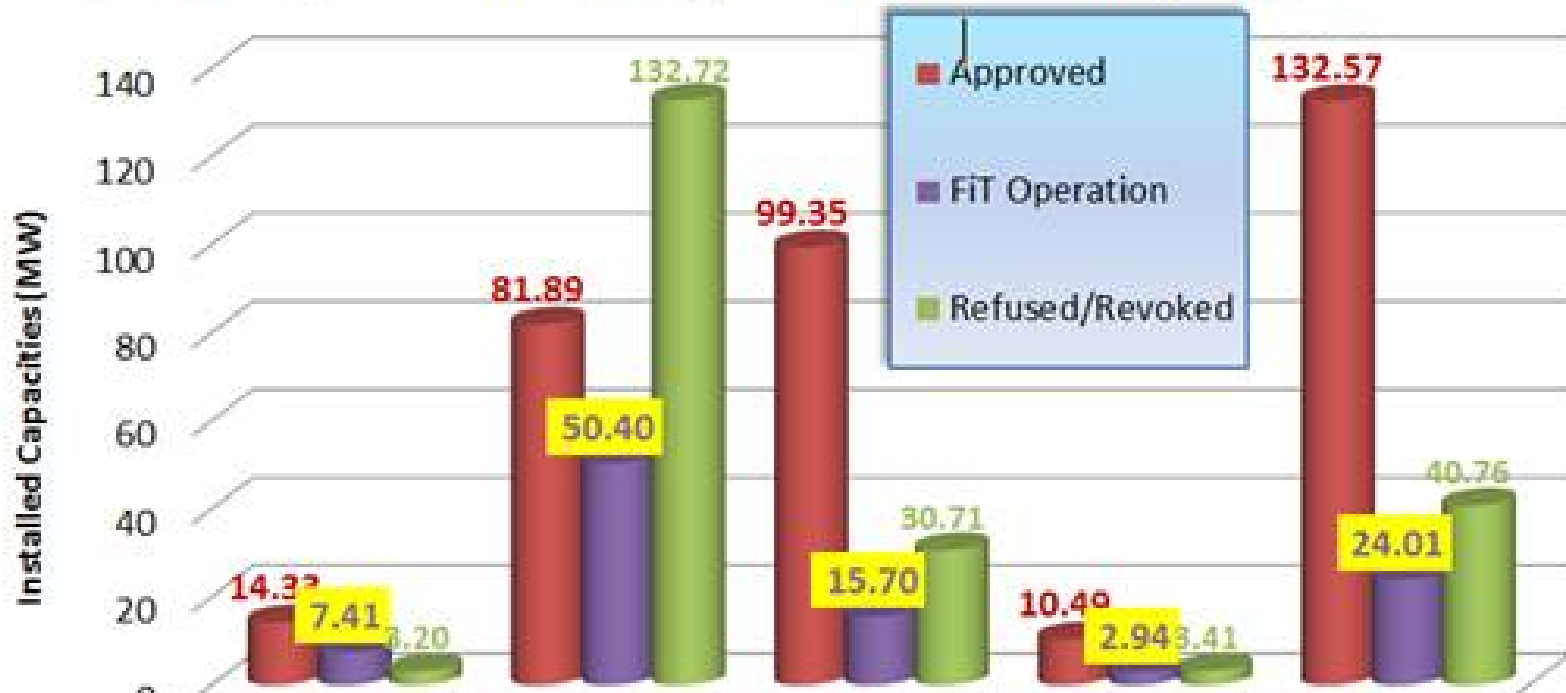
- **Pioneer Status (PS)** - Exemption from income tax on 100% of statutory income for 10 years
- **Investment Tax Allowance (ITA)** - 100% of qualifying capital expenditure incurred within a period of 5 years can be utilised against 100% of the statutory income for each year of assessment
- **Import Duty** - imported machinery, equipment, materials, spare parts and consumables
- **Sales Tax Exemption** - locally purchased machinery, equipment, materials, spare parts and consumables

All incentives are valid until 31st Dec 2015.



Status as at 28th February 2013 (under FiT – grid connected)

Installed Capacities of Feed-in Approvals up to 28 February 2013



	BioGas	BioMass	Small Hydro	Solar PV (Individual)	Solar PV (Non-Individual)
Approved	14.33	81.89	99.35	10.49	132.57
FIT Operation	7.41	50.40	15.70	2.94	24.01
Refused/Revoked	3.20	132.72	30.71	3.41	40.76

RE Technology

Smart Grid initiative

Malaysia smart grid initiatives

- Smart Grid development comes under Ministry of Energy, Green Technology and Water
- Ministry has entrusted the utility, TNB, to plan and implement the Smart Grid
- TNB initiatives in establishing the Smart Grid
 - TNB held Smart Grid stake holder workshop in 12/2009
 - TNB Smart Grid Steering Committee (SGSC) was formed 08/2010 (chaired by TNB's Chief Operating Officer/Executive Director)
 - Management of TNB gave a directive (08/2010) for SG pilot project to implemented at 3 sites

Pilot projects by National utility (TNB)

Time scale / theme	Target of improvement	Enabling facilities to be added	Examples of results
Phase 1: Short Term (June 2011) “Reliability”	Improved supply reliability (up to 11kV network)	Distribution Management System (DMS) Distribution automation (DA)	Auto fault location, isolation and supply restoration (FLIR) Optimized operation of distribution network Reduce SAIDI
Phase 2: Long term (2012 ~ 2015) “Operation & energy efficiency”	Reduce T&D capex	DA & DMS	Operation on “Group Firm”
	Improve customer service Raise customer awareness Support customer participation Reduce T&D opex	ICT systems integration (eCIBS, CGIS, MFFA, TOMS, etc) High speed communications and network Smart meter (AMI)	On-line customer support (e.g. auto notification, email, etc). Provide trend data on their own electricity consumption Demand response (similar to demand side management) Reduced spinning reserve*
Phase 3: Longer Term (post 2015) “Renewable Energy & Reduce CO2	Enabler of renewable energy (RE), energy efficiency and electric vehicle (EV)vehicle	Customers’ in-home display/device Customers’ energy management system Vehicle to grid control Active grid	Home solar PV Building solar PV Solar farm Home & building automation Electric car & charging

TNB's pilot project (cont)

TNB has embarked on a Smart Grid Pilot Project at the following places:

- Bukit Bintang (Kuala Lumpur)---shifted to Melaka
- Bayan Lepas (Pulau Pinang)
- Medini (Islandar Johor)

Smart Grid can bring about the following benefits to TNB upon system wide roll out:

- Improve SAIDI
- Reduce Non Technical Losses
- Improve Asset Optimization and Service Efficiency – Reduce CAPEX
- Reduce operation cost
- Improve Customers' Satisfaction

Phase 1 has been completed. Phase 2 is ongoing and will be completed by mid 2014. Phase 3 will commence in 2015.

*

Scaled down version of AMI & ICT





Way Forward...contd

- **Other RE resources and geothermal**
 - establishing a wind map and initial geothermal map
- **RE Financing**
 - Dialogues with financial institutions regarding opportunities for RE Financing (soft loans)
 - Facilitate & assists banks in providing technical references and capacity building (2013)
- **Awareness & Advocacy**
 - To have roadshows with State Governments & Local Authorities on RE development opportunities and facilitation
 - To collaborate with institutions for increasing awareness in RE subjects in primary & secondary schools
- **Capacity building**
 - Design & Installation Grid-Connected PV System, including off-grid PV
 - Identified an institute for Small Hydro capacity building
 - Identifying an institute for Biomass and biogas as technology partner and capacity building



Thank you

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