

# Renewable Energy Bill & SEDA Bill

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# - RE Bill -

RE Bill: 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.

- 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

# RE Bill - Part I: Key Interpretation

- “renewable energy” means electricity generated or produced from renewable 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 Bill;
- “renewable energy installation” means an installation which generates renewable energy and includes any technical facility of that installation which converts mechanical, chemical, thermal or electromagnetic energy directly into electricity;
- “feed-in approval holder” means a person who holds a feed-in approval;
- “distribution licensee” means the holder of a license to distribute issued by the Commission under section 9 of the Electricity Supply Act 1990;
- “Authority” means the Sustainable Energy Development Authority of Malaysia established under the Sustainable Energy Development Authority Act 2010;
- “displaced cost” means the average cost of generating and supplying one kilowatt hour of electricity from resources other than the renewable resources through the supply line up to the point of interconnection with the renewable energy installation;
- “grid parity” means, in relation to a particular renewable energy installation, the time at which the feed-in tariff rate applicable to that renewable energy installation is equal to or cheaper than the displaced cost.

# Context: National Renewable Energy Policy

**Approved by Cabinet on 2<sup>nd</sup> April 2010**

## **Policy Statement:**

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

## **Objectives:**

1. To increase RE contribution in the national power generation mix;
2. To facilitate the growth of the RE industry;
3. To ensure reasonable RE generation costs;
4. To conserve the environment for future generation;
5. To enhance awareness on the role and importance of RE.

# Renewable Energy Development in Malaysia

## **8<sup>th</sup> Malaysia Plan (2001 - 2005)**

RE as the 5<sup>th</sup> Fuel

Implied 5% RE in energy mix



## **9<sup>th</sup> Malaysia Plan (2006 - 2010)**

**Targeted RE capacity to be connected to power utility grid:**

300 MW in Peninsular Malaysia, 50 MW in Sabah

**Targeted power generation mix:**

56% NG, 36% coal, 6% hydro, 0.2% oil, 1.8% RE

**RE capacity as of 31<sup>st</sup> December 2010:**

Connected to power utility grid: 62.3 MW (0.4%)

# Key Issues Affecting RE in Malaysia

## 1. Market failure exists:

The RE market “fails” due to misuse of monopsony power and information asymmetries; the RE market is also constrained by financial and technological factors.

## 2. Constraints:

Inherent factors that constrain the performance of the market: Economic, Financial, Technological.

## 3. Arbitrary price setting:

RE prices set arbitrarily.

## 4. Tensions and trade-offs:

The predicament of expecting that the utility will bear the higher costs of RE power (due to the higher RE price).

## 5. Absence of Regulatory Framework:

Market failure compounded by absence of a proper regulatory framework, which prevents proper and legal action from being taken.

## 6. Poor governance:

Poor governance affects the participation of stakeholders and legitimacy of the action.

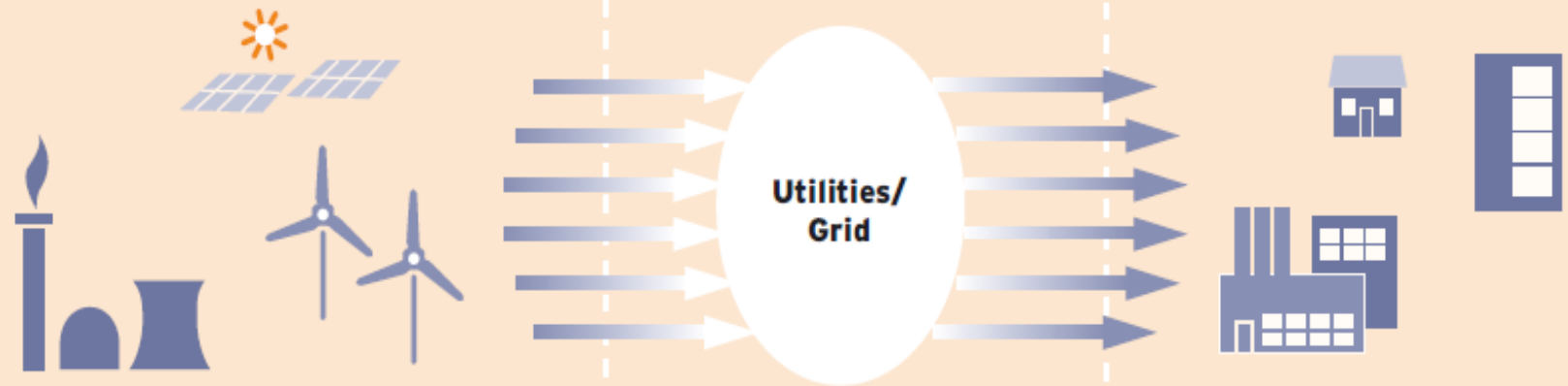
## 7. Limited Oversight:

No concerted oversight of implementation problems.

## 8. Lack of institutional measures:

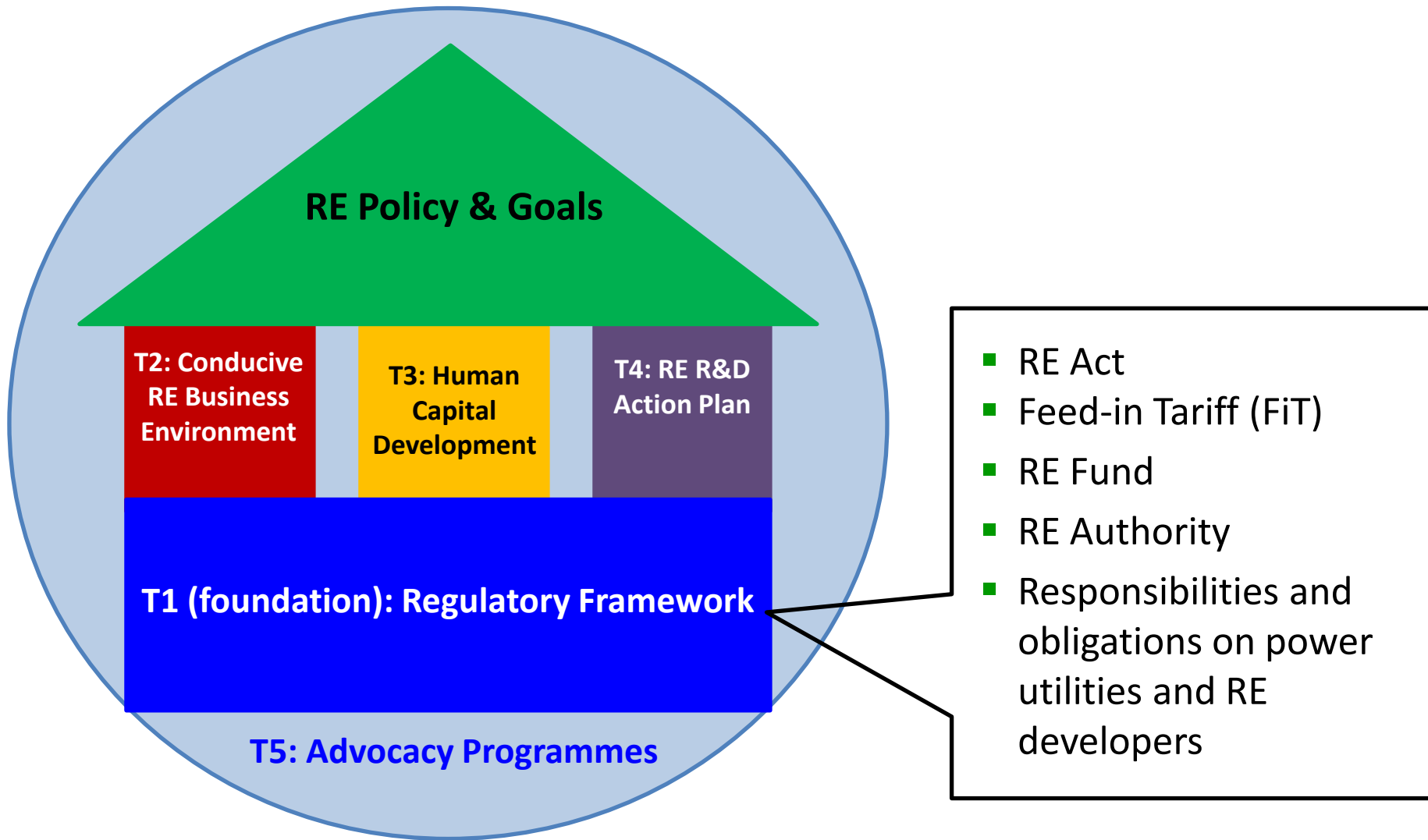
Lack of proper institutional measures to meet informational and technological needs.

# Choice of RE Support Mechanisms



Target group	Investors for power production systems (create access to this market for private and commercial investors)	Utilities	Electricity consumers Aim: Reduce consumption
Concept	Investment in PV system becomes financially attractive; guaranteed prices for the sale of solar electricity are established	Obligated to produce/purchase a certain amount of solar electricity	Create incentives to produce electricity for own consumption and reduce the usage of conventional electricity
Scheme	Feed-in tariff	Quotas/Certificates	Grants and tax incentives
Funding	Redistribution of additional costs => all electricity consumers are charged (no state subsidies required)		State budget => all taxpayers

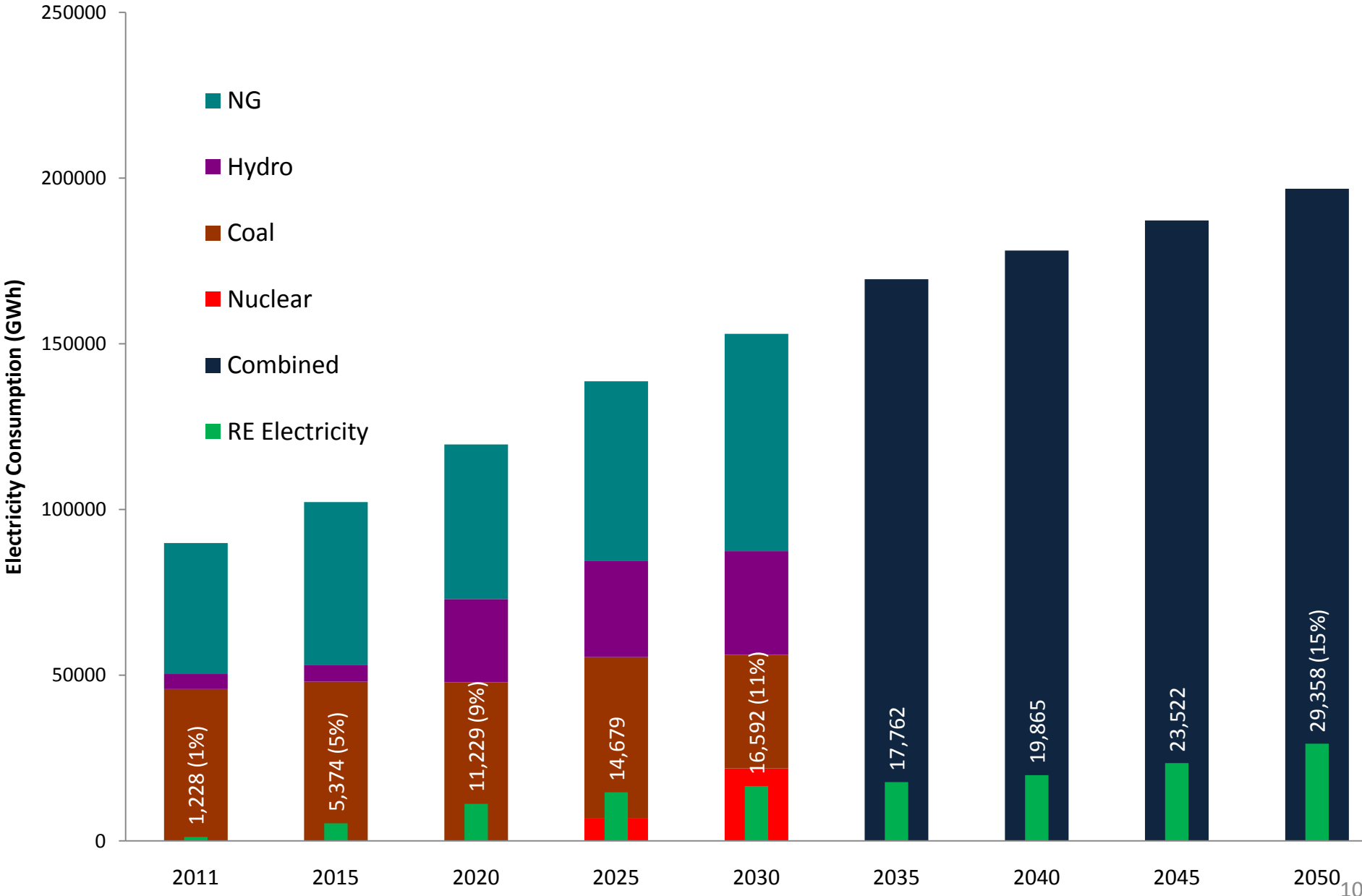
# National RE Policy: Strategic Thrusts (Action Plan)



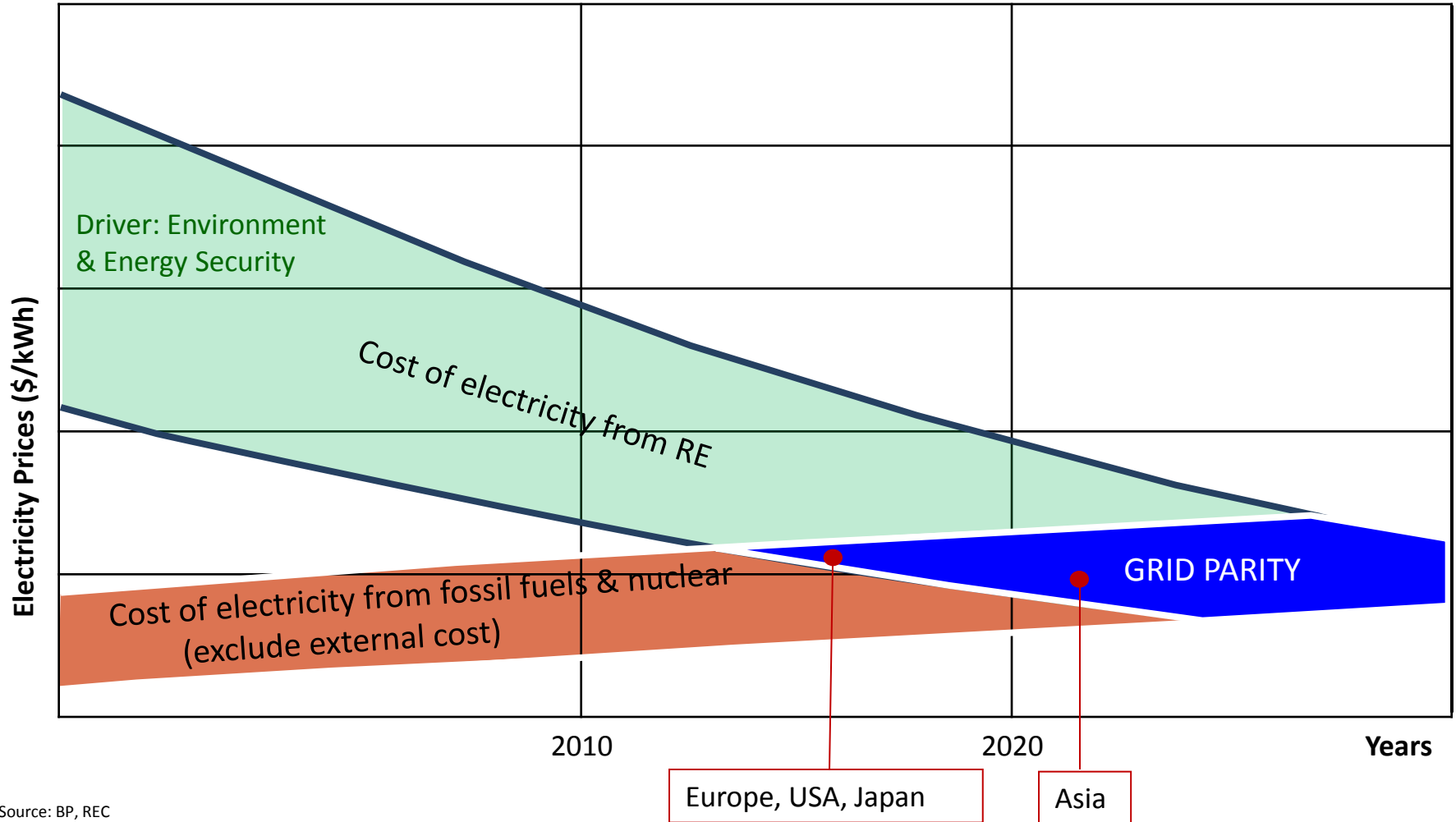
## Potential Impact of National RE Policy by Year 2020

- Minimum **RM 2.1 billion savings of external cost** to mitigate CO2 emissions (total 42 million tonnes avoided from 2011 to 2020, on the basis of RM 50 per tonne of external cost);
- Minimum **RM 19 billion of loan values** for RE projects, which will provide local banks with new sources of revenues (at 80% debt financing for RE projects);
- Minimum **RM 70 billion of RE business revenues** generated from RE power plants operation, which can generate **tax income of minimum RM 1.75 billion to Government** (on basis of 10% profit value where income tax is 25% on profit);
- Minimum **52,000 jobs created** to construct, operate and maintain RE power plants (on the basis of 15-30 job per MW).

# Potential Impact to Electricity Demand & Supply



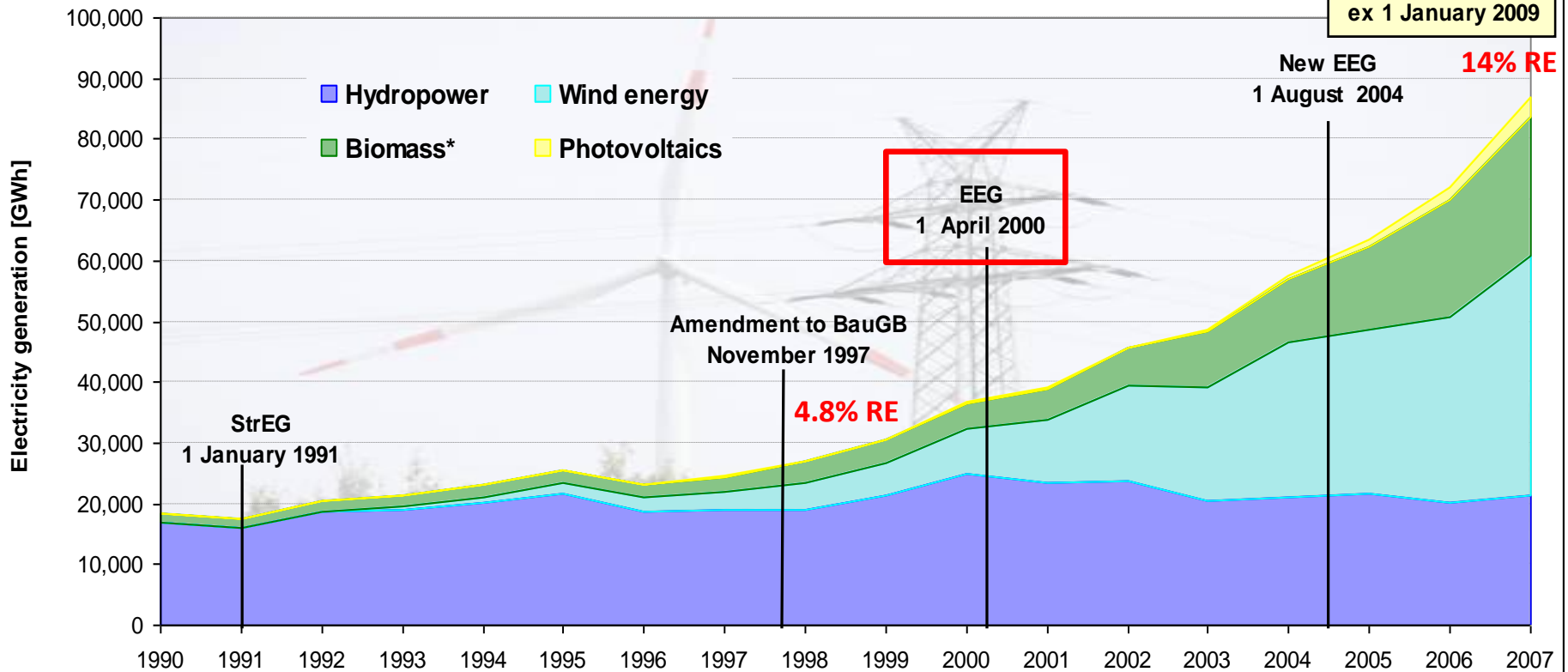
# FiT Facilitates Grid Parity for RE



Source: BP, REC

# FiT: Proven Effectiveness (Germany)

Development of electricity generation from renewable energies  
in Germany, 1990 - 2007



\*Solid, liquid, gaseous biomass, biogenic share of waste, landfill and sewage gas;

StrEG: Act on the Sale of Electricity to the Grid; BauGB: Construction Code; EEG: Renewable Energy Sources Act;

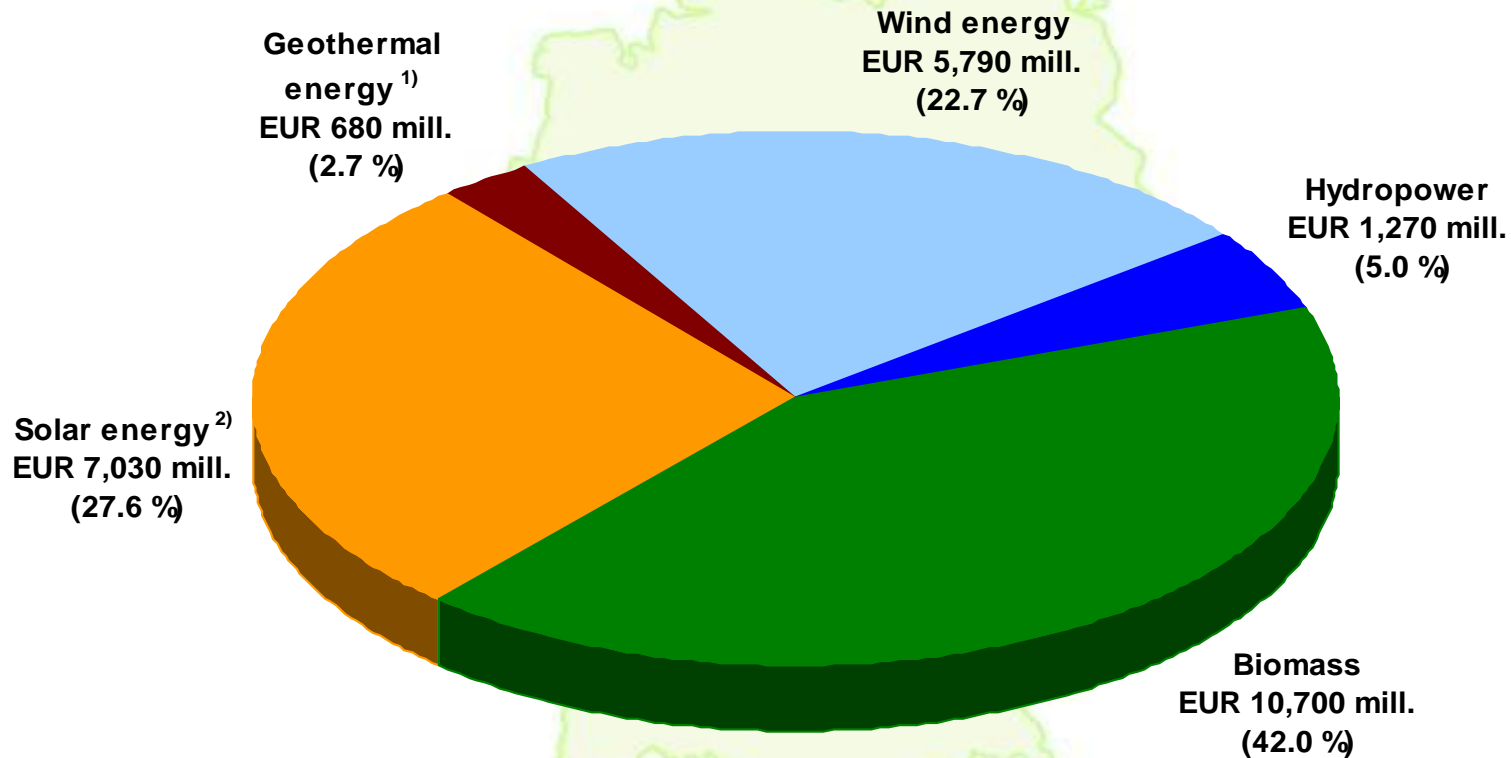
Electricity from geothermal energy is not presented due to the negligible quantities of electricity produced;

Source: BMU-Brochure: "Renewable energy sources in figures – national and international development", Internet Update, KI III 1; Version: 15.12.2008; provisional figures

# Germany's RESA: Impact to Industry

## Total Turnover from Renewable Energy Sources in Germany, 2007

Total: approx. € 25.5 billion



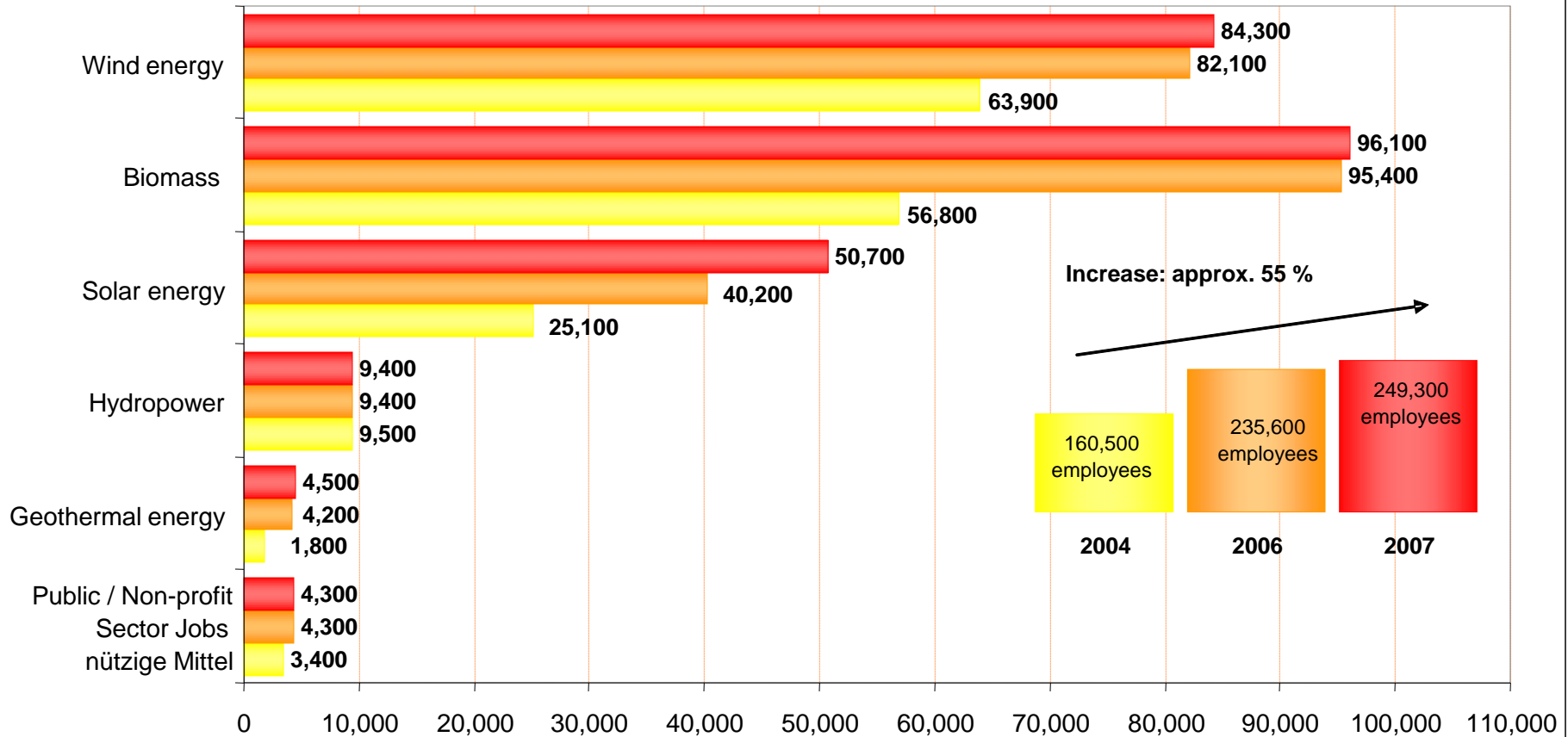
<sup>1)</sup> Large plants and heat pumps

<sup>2)</sup> Photovoltaics and solar thermal energy;

Source: BMU-Brochure: "Renew able energy sources in figures – national and international development", Internet Update, KI III 1; Version: 15.12.2008; provisional figures

# Germany's RESA: Employments

Employees in the German renewable energy sector  
2004, 2006 and 2007



Figures for 2006 and 2007 are provisional estimate

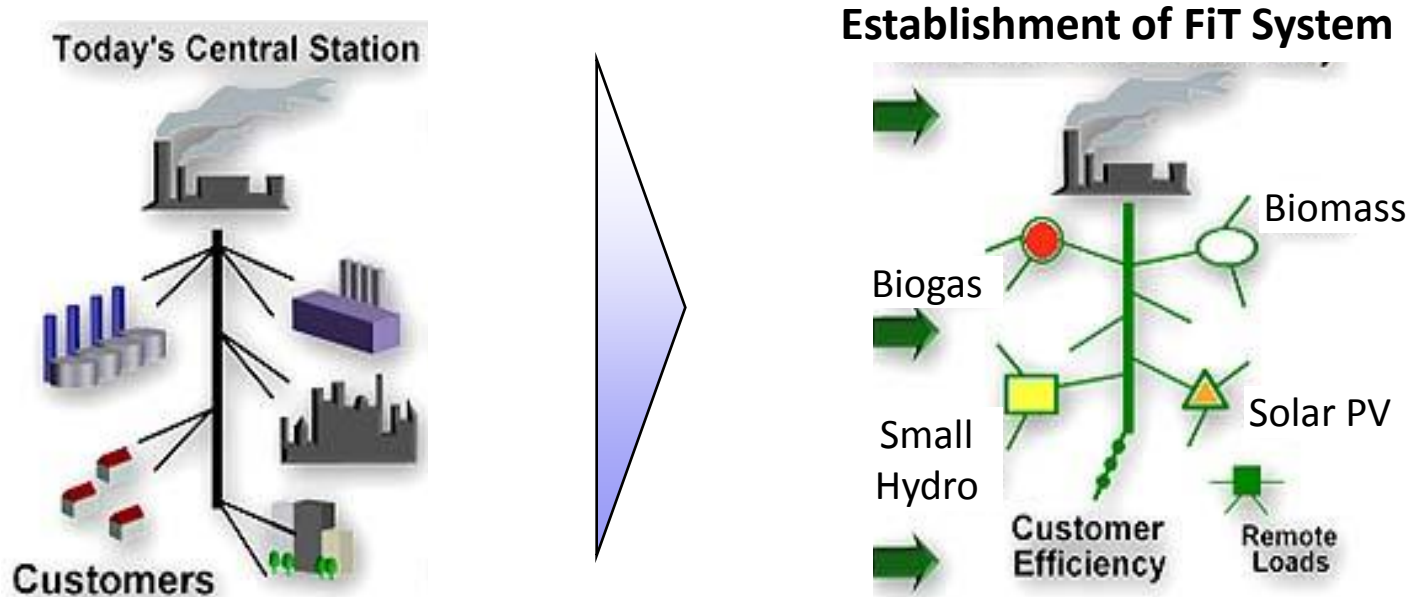
Source: BMU Projekt "Kurz- und langfristige Auswirkungen des Ausbaus der erneuerbaren Energien auf den deutschen Arbeitsmarkt", KI III 1; interim report March 2008

# Critical Factors for Effective FiT Mechanism

Must be guaranteed via the **RE Act**, whereby:

- Access to the grid is **guaranteed** – utilities legally obliged to accept all electricity generated by RE private producers. **S12, S13, S14**
- Local approval procedures are **streamlined and clear**. **Part II, S15**
- FiT rates must be **high enough** to produce a ROI plus reasonable profit (not excessively) to act as an incentive. **S16, Schedule**
- FiT rates will be **fixed for a period** (typically 20 years) to give certainty and provide businesses with clear investment environment. **S16, Schedule**
- Adequate "**degression**" for the FiT rates to promote cost reduction to achieve "grid parity" **S17, S18, Schedule**
- Adequate **fund** is created to pay for the FiT rates (incremental cost) and guarantee the payment for the whole FiT contract period. **S23, S24, S25, S19**
- The design of the FiT must be **customized** to suit contextual conditions of the country. **REA**
- Implementation by a competent body in a professional manner that includes constant **monitoring, progress reporting and transparency**. **SEDA, S28, S56**

## Part II – S.3: Feed-in Tariff System



### Feed-in Tariff (FiT) system provides:

- Connection to supply line by RE installations
- Priority of purchase and distribution by DL
- Payment by DL to FIAH according to FiT rates

## Part II – S.4: FiT Eligibility

- Application to SEDA
- RE  $\leq$  30MW

### Subsidiary Legislation:

#### 1) Individuals

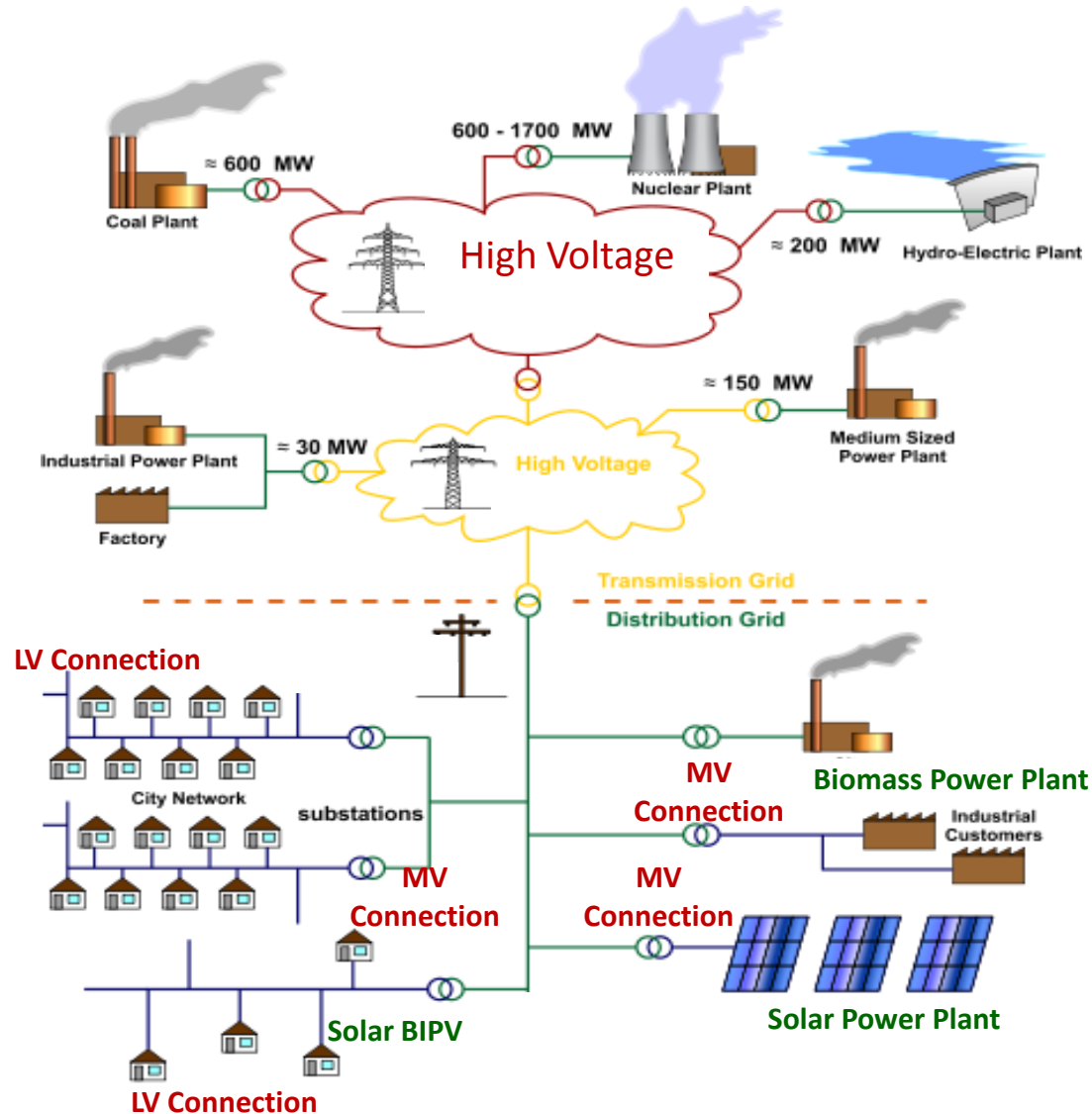
- Malaysians
- Foreign individuals: limited to solar  $\leq$  72 kWp
- Direct ownership

#### 2) Companies

- All legally registered companies and businesses
- Direct ownership
- Shareholding limitations:
  - 1) DL:  $\leq$  49% within its distribution area
  - 2) Foreign companies:  $\leq$  49%

#### 3) Other entities

# Part III: Connection, Purchase & Distribution (& Subsidiary Legislations)



## Part IV – S.16: FiT Payment & Duration

RE installations	Biogas	Biomass	Small Hydro	Solar PV
RE installed capacity	4 MW	10 MW	10 MW	6 kW
RE generation/month	2,044 MWh/month	5,110 MWh/month	4,166.67 MWh/month	600 kWh/month
FiT rate	RM 0.34 per kWh	RM 0.33 per kWh	RM 0.24 per kWh	RM 1.46 per kWh
FiT duration	16 years	16 years	21 years	21 years
FiT payment by TNB to FIAH per month = [C x B]	RM 694,960 per month	RM 1,686,300 per month	RM 1,000,000 per month	RM 876 per month
Capex	RM 40 mil	RM 90 mil	RM 90 mil	RM 90,000
Simple Payback Period	4.8	4.5	7.5	8.6

## 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 %

## 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 %	

# 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 %

## 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 %
	(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 %

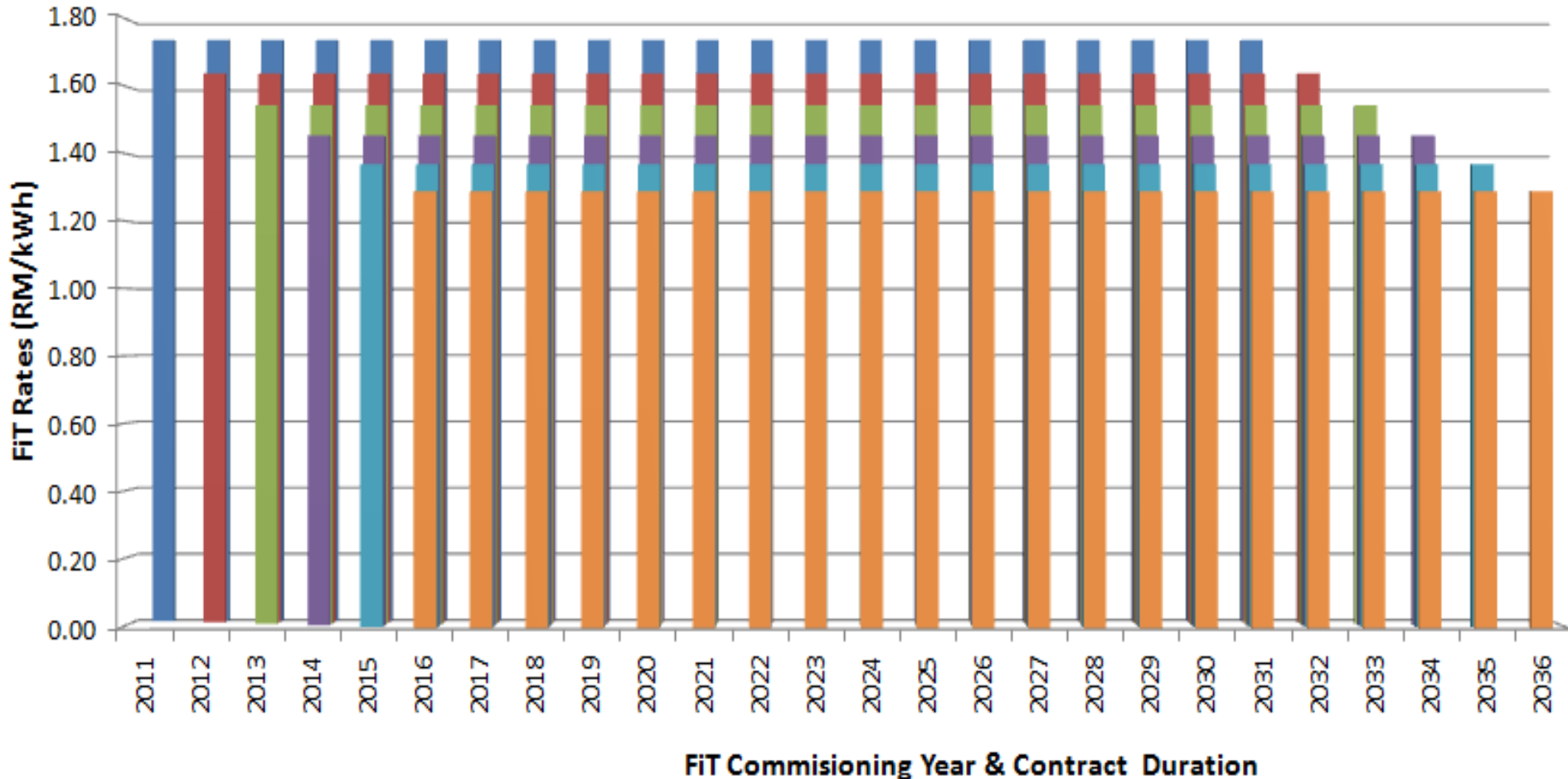
## Case Study for Solar PV: Financial Returns from FiT

	BIPV System (Residential)	PV Rooftop (Commercial)
System capacity (kW)	4.00	1,000
System price (RM)	72,000	13,500,000
Down payment/ equity (RM)	7,200	3,375,000
Loan amount	64,800	10,125,000
Total loan repayment - 15 years (RM)	95,904	15,957,000
Insurance, O&M - 21 years (RM)	23,907	6,041,204
Total cost of ownership - 21 years (RM)	119,865	21,998,204
FiT rates - 2011 (RM)	1.74	1.44
Energy yield (kWh/kWp/year)	990	1,093
Total revenues - 21 years (RM)	144,698	33,037,200
<b>IRR</b>	<b>5.4%</b>	<b>7.6%</b>
<b>Simple payback period (years)</b>	<b>11.3</b>	<b>9.3</b>

## Case Study for Other RE: Financial Returns from FiT

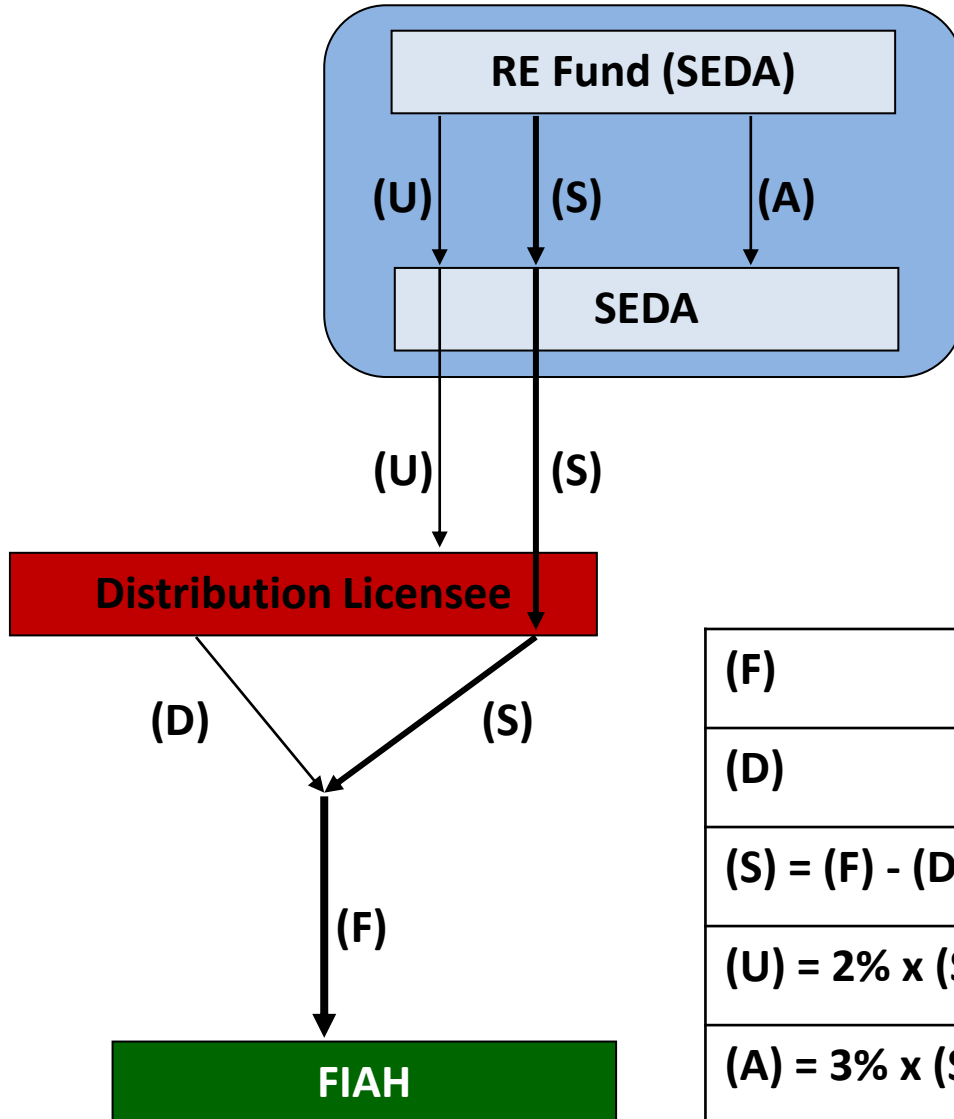
	Biomass	Solid Waste
System capacity	10 MW	10 MW
System price (RM)	90 mil	192 mil
Down payment/ equity (RM)	18 mil	38 mil
Loan amount	72 mil	154 mil
Total loan repayment - 15 years (RM)	123 mil	262 mil
Insurance, O&M – 16 years (RM)	188 mil	483 mil
Total cost of ownership – 16 years (RM)	310 mil	744 mil
FiT rates - 2011 (RM)	0.34	0.44
Capacity Factor (%)	70%	70%
Total revenues - 16 years (RM)	366.9 mil	817 mil (475 mil + 342 mil)
<b>IRR</b>	<b>10.6%</b>	<b>9.2%</b>
<b>Simple payback period (years)</b>	<b>4.3</b>	<b>7</b>

## Part IV – S.17: FiT Degression



- Degression rate to commence on 1<sup>st</sup> January every year
- Revision: at least once every 3 years

# Part IV – S.19: Recovery of Moneys & S.20: Admin Fees



Grid Connection Point	Displaced Cost (Subsid)
Medium voltage $\geq 1\text{kV}$ (2.2kV, 6.6kV, 11kV, 33kV)	0.2047
Low voltage $< 1\text{kV}$ (0.23kV, 0.4kV)	0.3131

(F)	FiT payment	<b>IV - S.16 + REPPA</b>
(D)	Displaced Cost	<b>IV - S.19 + Subsid</b>
$(S) = (F) - (D)$	Recovery of Money	<b>IV - S.19 + Subsid</b>
$(U) = 2\% \times (S)$	Admin fee to DL	<b>IV - S.20 + Subsid</b>
$(A) = 3\% \times (S)$	Admin fee to SEDA	<b>IV - 20 + Subsid</b>

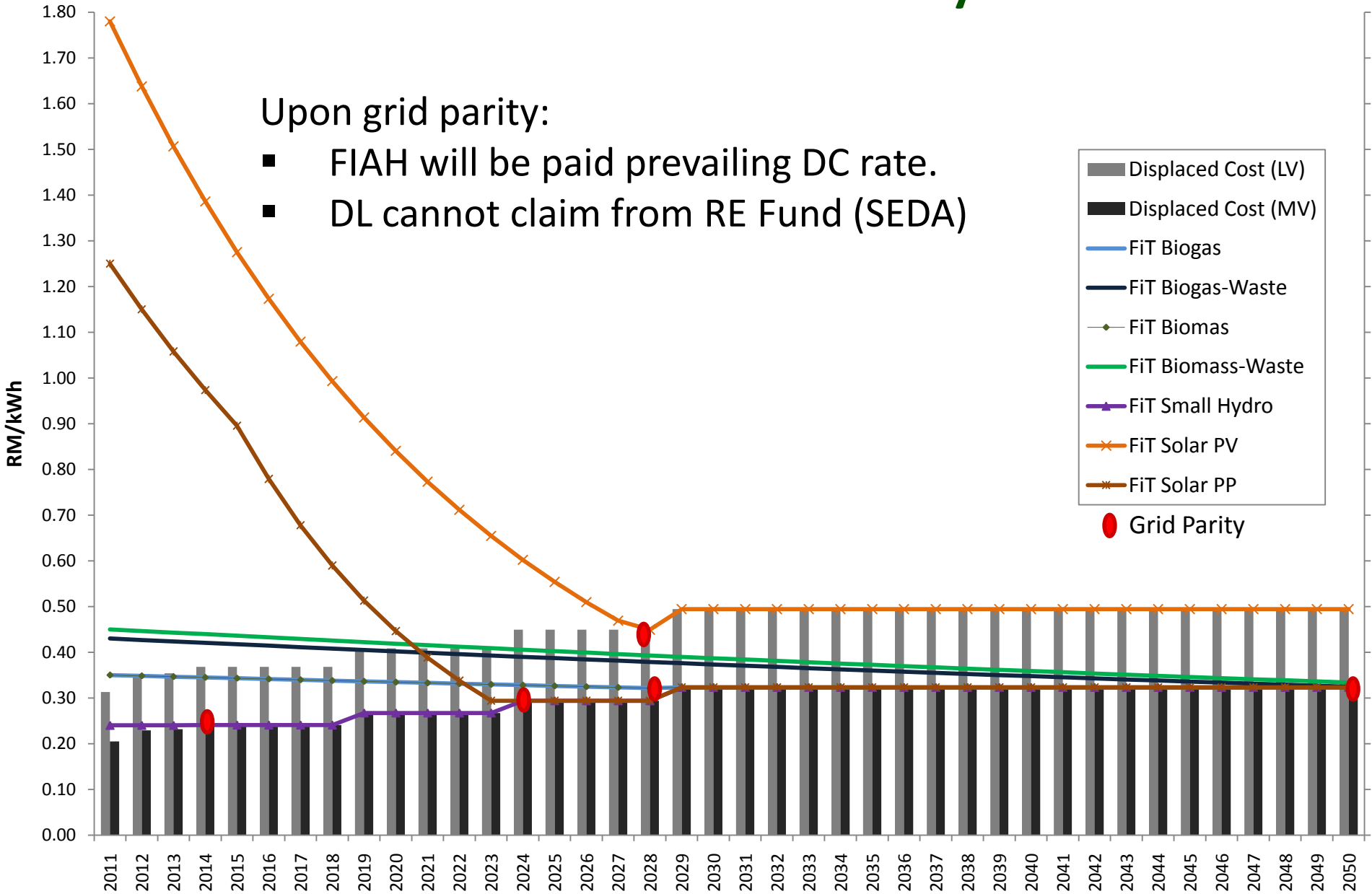
## Part IV – S.16: Payment, S.19: Recovery, S.20: Admin Fees

RE installations	Biogas	Biomass	Small Hydro	Solar PV
RE installed capacity	4 MW	10 MW	10 MW	6 kW
RE generation/month	2,044 MWh/month	5,110 MWh/month	4,166.67 MWh/month	600 kWh/month
FiT rate	RM 0.34 /kWh	RM 0.33 /kWh	RM 0.24 /kWh	RM 1.46 /kWh
FiT duration	16 years	16 years	21 years	21 years
Displaced cost	RM 0.2047 /kWh	RM 0.2047 /kWh	RM 0.2047 /kWh	RM 0.3131 /kWh
<b>FiT payment by TNB to FIAH = [C x B]</b>	<b>RM 694,960</b>	<b>RM 1,686,300</b>	<b>RM 1,000,000</b>	<b>RM 876</b>
<b>Simple Payback Period</b>	<b>4.8 years</b>	<b>4.5 years</b>	<b>7.5 years</b>	<b>8.6 years</b>
<b>Recovery of money by TNB from RE Fund via SEDA = [(C – D) x B]</b>	<b>RM 276,553.20</b>	<b>RM 640,283.00</b>	<b>RM 147,083.33</b>	<b>RM 688.14</b>
<b>Value of 2% Admin Fee paid to TNB = [2% x F]</b>	<b>RM 5,531.06</b>	<b>RM 12,805.66</b>	<b>RM 2,941.67</b>	<b>RM 13.76</b>
SEDA payment to TNB = [F + G]	RM 282,084.26	RM 653,088.66	RM 150,025.00	RM 701.90
<b>Value of 3% Admin Fee paid to SEDA = [3% x F]</b>	<b>RM 8,296.60</b>	<b>RM 19,208.49</b>	<b>RM 4,412.50</b>	<b>RM 20.64</b>
Total cost to RE Fund (per month) = [F + G + I]	RM 290,380.86	RM 672,297.15	RM 154,437.50	RM 722.55
<b>Ratio of TNB's cost against FiT payment = [D / C]</b>	<b>60.2%</b>	<b>62.0%</b>	<b>85.3%</b>	<b>21.4%</b>

# Part IV – S.21: Grid Parity

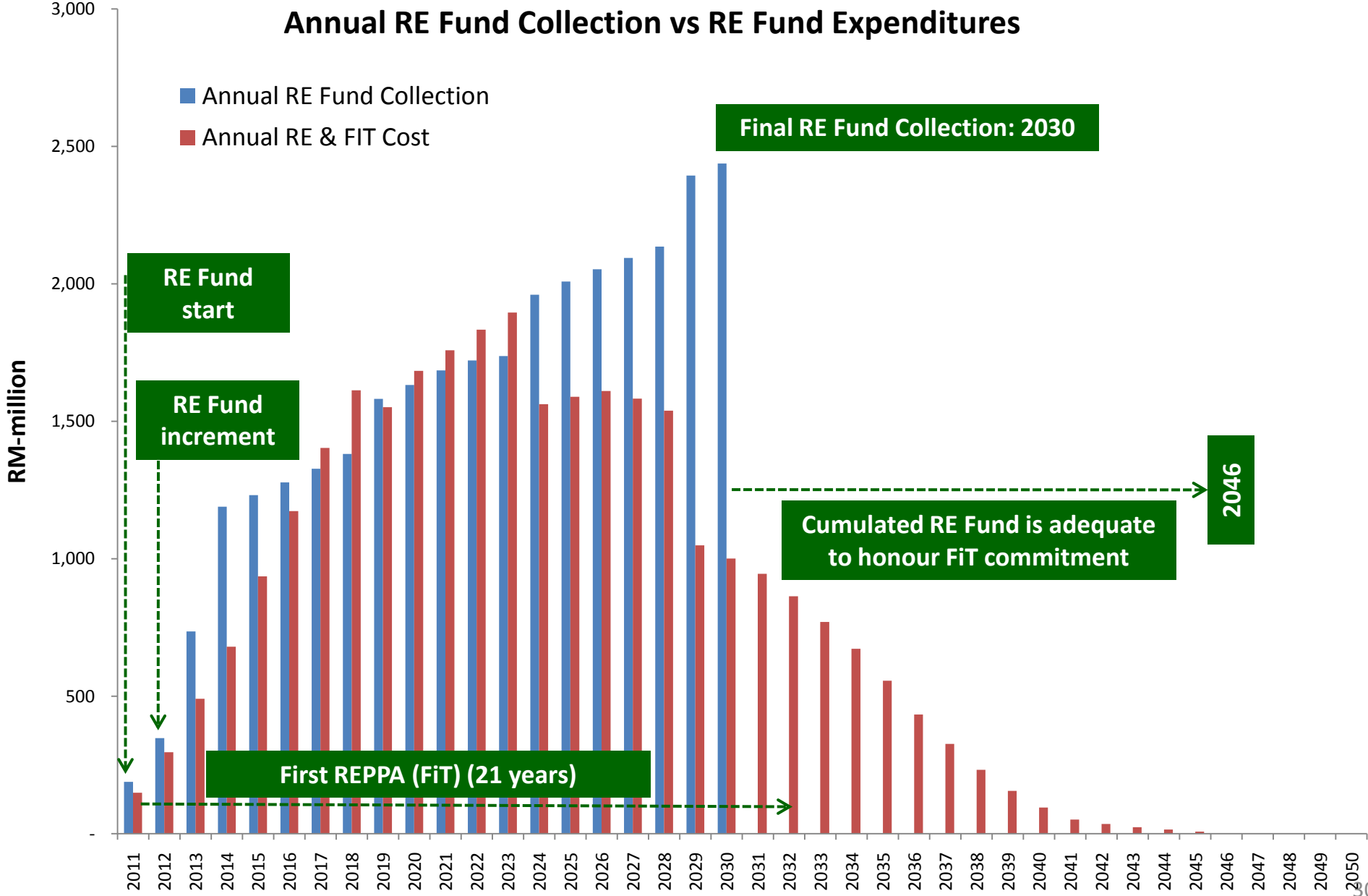
Upon grid parity:

- FIAH will be paid prevailing DC rate.
- DL cannot claim from RE Fund (SEDA)



# Part V – S.23: RE Fund

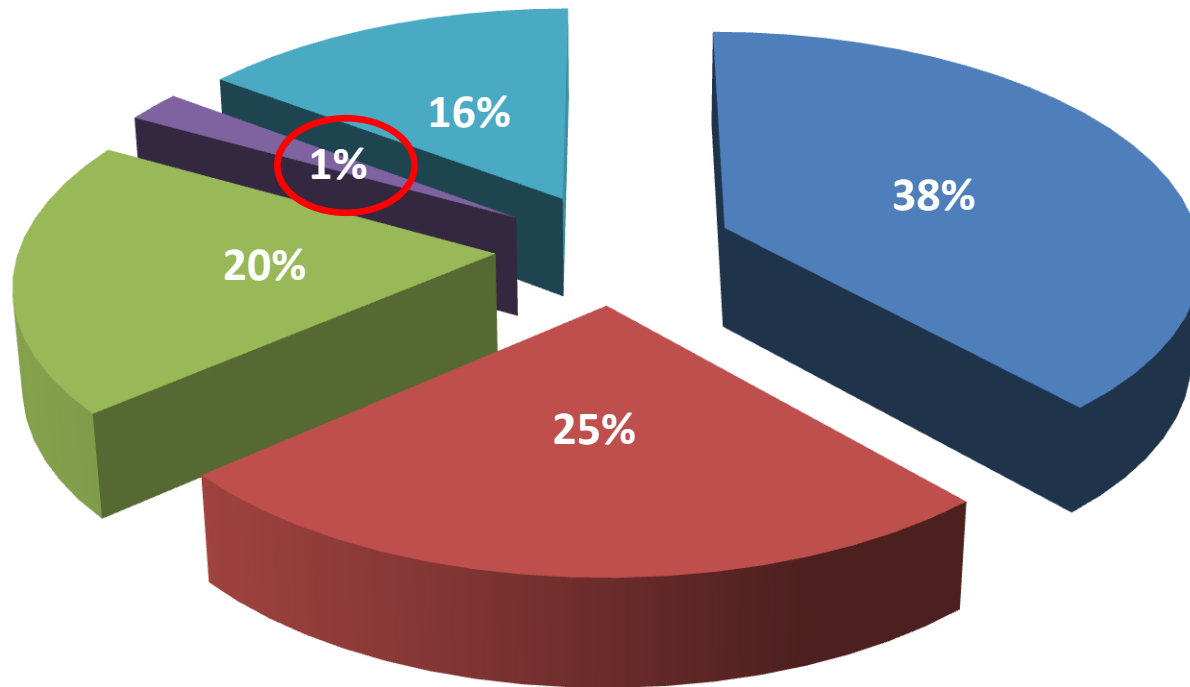
## Annual RE Fund Collection vs RE Fund Expenditures



# Part V – S.24: Allocation from Tariff (& Subsid)

## Cost Breakdown for Average Domestic Electricity Tariff

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



### RE Fund:

- **After tariff revision: 1% of TNB's electricity sales revenue** (eg. 1% of RM28 billion = RM 280 mil)
- **In 2010, 1% = 0.31 sen/kWh**
- For every RM100 per month, RM1 goes to RE
- **Exempted consumers: <200 kWh/month**
- Polluters pay concept
- Encourages EE and DSM

Note: Additional 1% (for RE target) + 1% (for ETP target) in subsequent tariff reviews = 2% + 1%

# Annual RE Capacity Target (Quota, MW/Year)

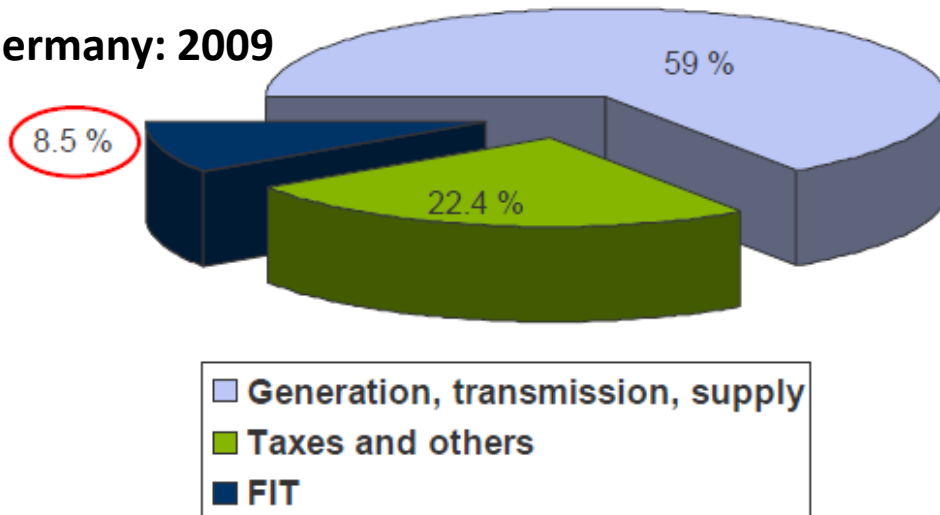
## [RE Policy + EPP10]

Year	Biogas	Biogas-Sewage	Biomass	Biomass-Waste	Small Hydro	Solar PV ≤1MWp	Solar PP (EPP10)	Quota MW/Year	Cum. MW
2011	20	5	90	15	60	9	20	219	154
2012	15	10	50	20	50	11	35	191	370
2013	15	10	60	30	60	13	50	238	643
2014	25	10	60	40	60	15	80	290	933
<b>2015</b>	<b>25</b>	<b>10</b>	<b>70</b>	<b>50</b>	<b>60</b>	<b>17</b>	<b>110</b>	<b>342</b>	<b>1,275</b>
2016	25	10	80	30	60	19	130	354	1,634
2017	30	10	90	30	50	21	145	376	2,010
2018	30	10	100	20	40	24	155	379	2,389
2019	30	10	100	20	30	28	165	383	2,772
<b>2020</b>	<b>25</b>	<b>10</b>	<b>100</b>	<b>10</b>	<b>20</b>	<b>33</b>	<b>170</b>	<b>368</b>	<b>3,140</b>
2021	25	-	90	6		37	30	188	3,328
2022	25	-	90	5		41	80	241	3,569
2023	20	4	80			47	130	281	3,850
2024	20	3	70			60	250	403	4,253
<b>2025</b>	<b>20</b>		<b>60</b>			<b>80</b>	<b>250</b>	<b>410</b>	<b>4,663</b>
2026	20		50			105	250	425	5,088
2027	20		50			135	250	455	5,543
2028	20		50			175	250	495	6,038
2029						220	250	470	6,508
<b>2030</b>						<b>280</b>	<b>300</b>	<b>580</b>	<b>7,088</b>

# RE Fund (FiT Cost Pass Through): Examples

	Germany 2007	Italy 2009	Thailand 2008	Malaysia 2009/2010
Retail Electricity Tariff (average)	0.28 US\$/kWh	0.24 US\$/kWh	0.09 US\$/kWh	0.09 US\$/kWh
<b>FiT cost to consumers (% of retail tariff)</b>	<b>4.8%</b>	<b>7.3%</b>	<b>Incorporated in tariff</b>	<b>1% + 1% (+1%)</b>

Germany: 2009



## Part V – S.24: Allocation from Tariff Possible Impact to Consumers

Sectors	Annual Electricity Sales (2009)	%	Annual 1% Contribution to RE Fund	No. of Consumers	RE Fund Cost per Consumer per Annum	RE Fund Cost per Consumer per Month
Industrial	RM -mil 11,028.60	41%	RM-mil 110.29	28,502	RM 3,869.41	RM 322.45
Commercial	RM-mil 11,053.20	41%	RM-mil 110.53	1,229,261	RM 89.92	RM 7.49
Domestic	RM-mil 4,924.90	18%	RM-mil 49.25	6,283,166 (34% = 2.14 mil)	34%: RM 23.05	34%: RM 1.92 (RM 0 if ≤200 kWh)
<b>Total</b>	<b>RM-mil 27,006.70</b>	<b>100 %</b>	<b>RM-mil 270.07</b>	<b>7,540,929</b>	<b>Average</b>	<b>Average</b>

## Part V – S.24: Allocation from Tariff (& Subsid)

### Example:

Year	TNB (P.M.) Electricity Sales	Avg. Tariff	Example Tariff Increment	TNB Electricity Sales Revenue	RE Fund % of TNB Sales Revenue	Annual RE Fund Collection
Unit	GWh	RM/kWh	%	RM-mil	%	RM-mil
2010	100,000	0.3131	0%	31,310	0%	0.00
2011	100,000	0.3131	0%	31,310	0%	189.00
2012	100,000	0.3505	11% + 1%	35,045	1%	350.45
2013	100,000	0.3505	0%	35,045	1%	350.45
2014	100,000	0.3680	5%	36,797	1%	367.97
2015	100,000	0.3680	0%	36,797	1%	367.97

### Procedures (Eg):

Jan	Feb	Mar	Apr	May	Jun	N month
Tariff increment to TNB	1st billing to TNB consumers of new tariff	1 <sup>st</sup> payment of new tariff by consumers to TNB	1 <sup>st</sup> payment by TNB to SEDA	2 <sup>nd</sup> payment by TNB to SEDA	3 <sup>rd</sup> payment by TNB to SEDA	N <sup>th</sup> payment by TNB to SEDA
1 <sup>st</sup> Jan	By 1 <sup>st</sup> Feb	By 1 <sup>st</sup> Mar	By 1 <sup>st</sup> Apr	By 1 <sup>st</sup> May	By 1 <sup>st</sup> Jun	By 1 <sup>st</sup> of N

## Others

- **S.56.** (1) The Authority shall monitor all significant matters relating to the implementation and performance of the feed-in tariff system and submit a report thereof to the Minister after the end of each financial year of the Authority.
- **S.60.** The Minister may make regulations for all or any of the following purposes:
- **S.61.** The Authority may make such rules for all or any of the following matters
- **S.63.** The Minister may, by order published in the *Gazette*, amend the *Schedule*.

To be read together with:

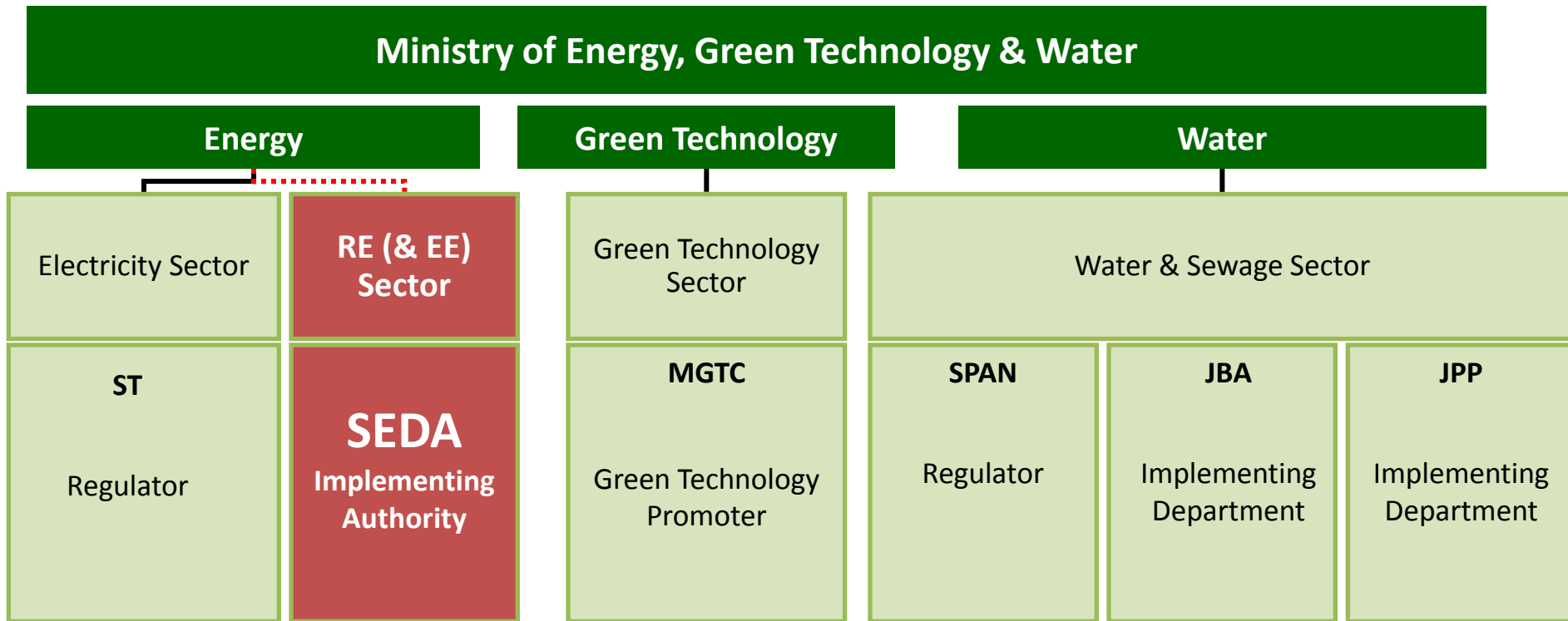
**S.18.** (1) The Authority shall review the degression rates in respect of any category of renewable energy installation at least once every three years after the date this Act comes into operation for the purposes of improving the overall performance of the feed-in tariff system to better achieve the objective of this Act.

- **S.64.** Existing renewable energy generators
- **S.65.** Existing licences

## - SEDA Bill -

- SEDA Bill: an Act to provide for the establishment of the Sustainable Energy Development Authority of Malaysia and to provide for its functions and powers and for related matters.
  - Part I: Preliminary
  - Part II: The Authority
  - Part III: Functions and Powers of the Authority
  - Part IV: Employee of the Authority
  - Part V: Finance
  - Part VI: General
- “**sustainable energy**” means energy which, in its generation, provision and use, is such that it meets the needs of the present without compromising the ability of future generations to meet their needs, and includes renewable energy.

# Sustainable Energy Development Authority of Malaysia (SEDA Malaysia)

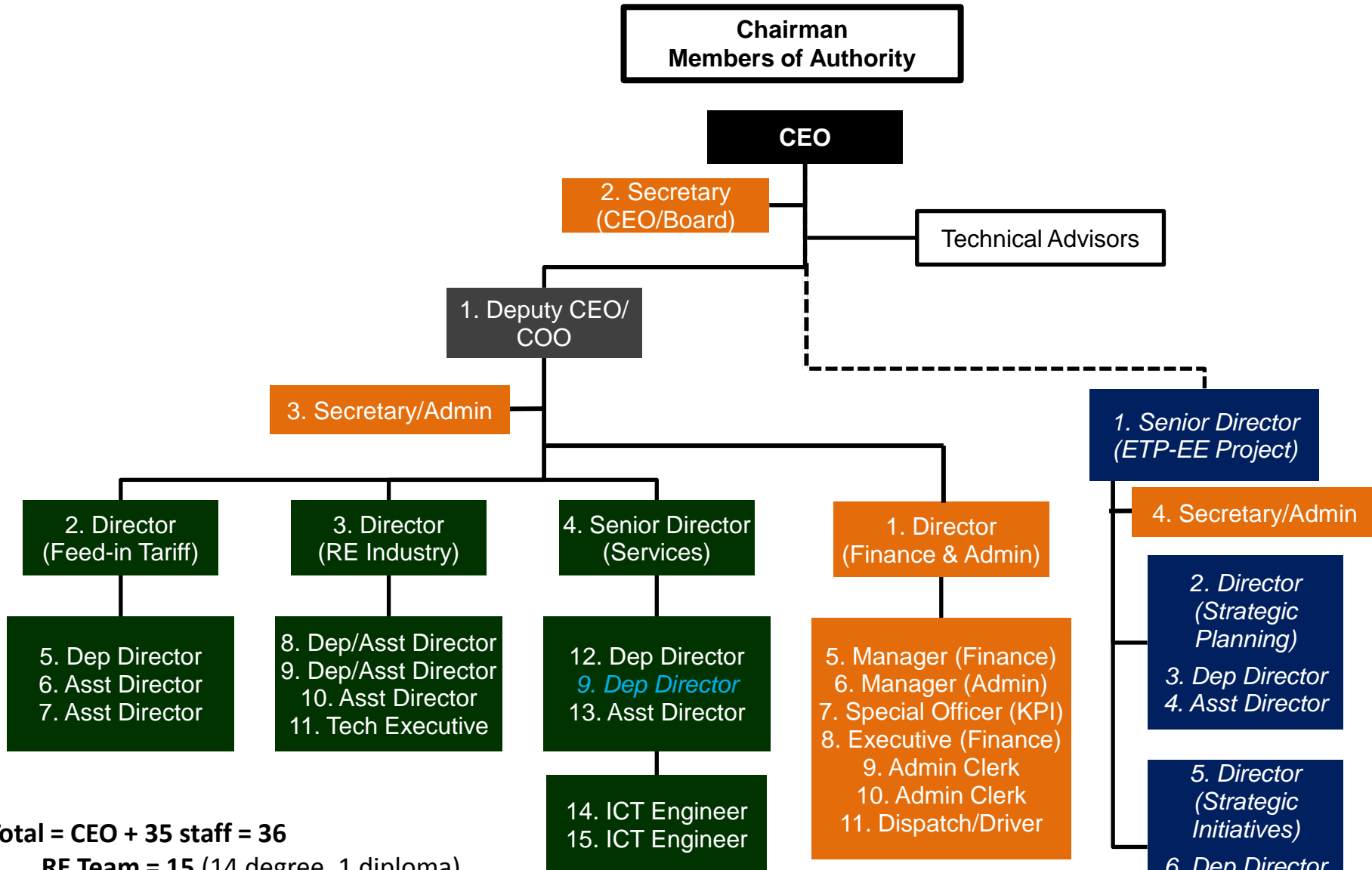


## Part II – S.5: Membership of Authority

- 1 Chairman;
- 2 to 4 representatives of Federal Government;
- 3 to 5 other members
- 1 Chief Executive Officer.

- Shall be persons who have experience and shown capacity and professionalism in matters relating to sustainable energy, finance, engineering, business or administration, or are otherwise suitable for appointment because of their special knowledge, experience or academic qualifications.
- Office term: 2 years, and eligible for reappointment for maximum 3 consecutive terms.

# SEDA: Staff Complements (Initial Setup: 2011)



**Total = CEO + 35 staff = 36**

- **RE Team = 15** (14 degree, 1 diploma)
- **Support Team = 11** (5 degree, 6 non-degree)
- **+ EE Project Team = 9**

## Part III – S.15: Functions of SEDA Malaysia

- a) Advise the Minister & Government entities on all matters relating to sustainable energy;
- b) Promote & implement national policy objectives for renewable energy;
- c) Promote, stimulate, facilitate & develop sustainable energy;
- d) Implement, manage, monitor & review the Feed-In Tariff system;
- e) Implement sustainable energy laws including the Renewable Energy Act & recommend reforms;
- f) Promote private sector investment in sustainable energy sector;
- g) Carry out / arrange research, advisory services & disseminate information;
- h) Conduct, promote & support sustainable energy researches & innovations;
- i) Conduct, promote & support sustainable energy training and human capacity development;
- j) Implement measures to improve public awareness;
- k) Act as focal point to assist the Minister on matters relating to sustainable energy & climate change matters relating to energy;
- l) Other function under sustainable energy law.

# SEDA: Immediate Functions (Initial Setup: 2011)

Division		Functions		
Chief Executive Officer	Deputy Chief Executive Officer / COO	Renewable Energy	<ul style="list-style-type: none"> <li>RE Act &amp; regulations, RE Fund, RE policy &amp; action plan</li> <li>FiT procedures, management, administration, enhancements</li> <li>RE targets, statistics, impact assessments, performance monitoring</li> <li>NKEA EPP10, Clinton Initiative</li> <li>National budget incentives and assessments</li> </ul>	
		RE Industry	<ul style="list-style-type: none"> <li>RE technologies systems, operations, market development</li> <li>RE industry development, service providers, SME support</li> <li>RE financing, services</li> <li>RE R&amp;D, centres of excellence, standards, codes &amp; quality</li> <li>RE interconnection, enforcements, T&amp;Cs</li> <li>Tax exemption assessment</li> <li>Suria programme, Green Schools, technical support</li> </ul>	
		External Services	<ul style="list-style-type: none"> <li>RE &amp; EE: media/public relations, advocacy, communication, publication</li> <li>ISPQ trainings, capacity development, education programmes</li> <li>International cooperation, CDM</li> <li>FiT ICT system, website</li> </ul>	
		Support	Finance	<ul style="list-style-type: none"> <li>KPIs, Internal audits, SEDA fund, budget, opex, invoices, payments</li> </ul>
			Administration	<ul style="list-style-type: none"> <li>Internal procedures, terms and conditions, HRMS, trainings, utilities</li> </ul>
			ICT	<ul style="list-style-type: none"> <li>Internal ICT hardwares, softwares, systems, intranet, internet, emails</li> </ul>
	Energy Efficiency (NKEA-ETP Project)	Strategic Planning	<ul style="list-style-type: none"> <li>NKEA EPP9, co-generation, EE Masterplan</li> <li>Statistics, data collection &amp; analysis, impact assessments</li> </ul>	
		Strategic Initiatives	<ul style="list-style-type: none"> <li>NKEA EPP9: appliances rebates, buildings insulations, Government/commercial sectors, industrial sector</li> </ul>	

## Part IV – S.22: The Chief Executive Officer

- (1) The **Minister shall appoint** a Chief Executive Officer on such terms and conditions, and who shall be paid such remuneration and allowances, as he thinks desirable.
- (2) The person appointed as the Chief Executive Officer under subsection (1) shall be a person who, **in the opinion of the Minister**, has experience and shown capacity and professionalism in matters relating to sustainable energy, finance, engineering, business or administration, or are otherwise suitable for appointment because of their special knowledge, experience or academic qualifications.
- (3) The Chief Executive Officer shall be **responsible for the overall administration and management** of the functions and the day-to-day affairs of the Authority.
- (6) In discharging his duties, the Chief Executive Officer shall **act under the general authority and direction of the Authority**.
- (7) The Chief Executive Officer shall be an employee of the Authority.

## Others

- S.37. The financial year of the Authority shall begin on 1 January and end on 31 December of each year.
- S.38. (1) The Authority shall cause proper accounts of the Fund and reports of its activities to be kept and shall, as soon as practicable after the end of each financial year, cause to be prepared for that financial year.  
(2) The Authority shall, as soon as possible, send a copy of the statement of accounts certified by the auditors, a copy of the auditors' report and a copy of the reports of its activities to the Minister and the **Minister shall cause the same to be laid before both Houses of Parliament.**

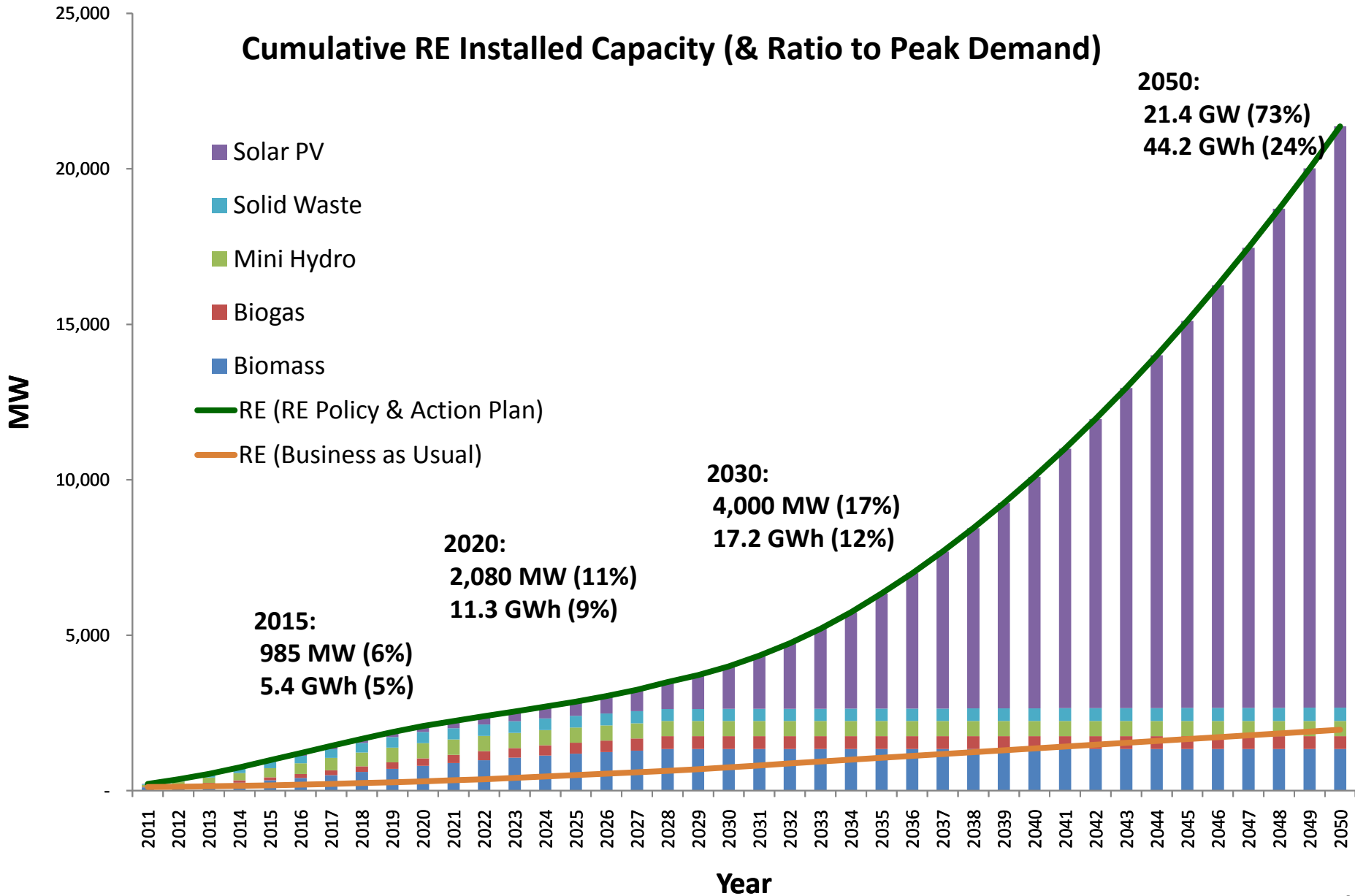
## **Part – S.49: Things done in anticipation of the enactment of this Act**

- All acts and things done on behalf of the Authority in preparation for or in anticipation of the enactment of this Act and any expenditure incurred in relation thereto shall be deemed to have been authorized under this Act, provided that the acts and things done are consistent with the general intention and purposes of this Act, and all rights and obligations acquired or incurred as a result of the doing of those acts or things including any expenditure incurred in relation thereto shall upon the coming into operation of this Act be deemed to be the rights and obligations of the Authority.

# RE Policy & Action Plan: Goals

[Exclude EPP10]

## Cumulative RE Installed Capacity (& Ratio to Peak Demand)



# Comparison of RE Targets

- 85 countries in the world with targets for renewables!
- Majority (45!) in developing countries and emerging economies!

Country	Status Quo	Short-term
<b>Malaysia</b>	<b>&lt;1% in 2009</b>	<b>11% capacity, 9% energy by 2020</b>
China	8% in 2009	15% by 2020 (final energy consumption)
Egypt	13% in 2007	20% by 2020 (incl. 12% wind)
Ecuador	45% in 2009	90% by 2020
Spain	29% in 2009	40% by 2020
Germany	16% in 2009	35% by 2020 (80% by 2050)
Singapore	<1% in 2009	???

Source: Kettha 2010; REN21 2010, and laws from other countries

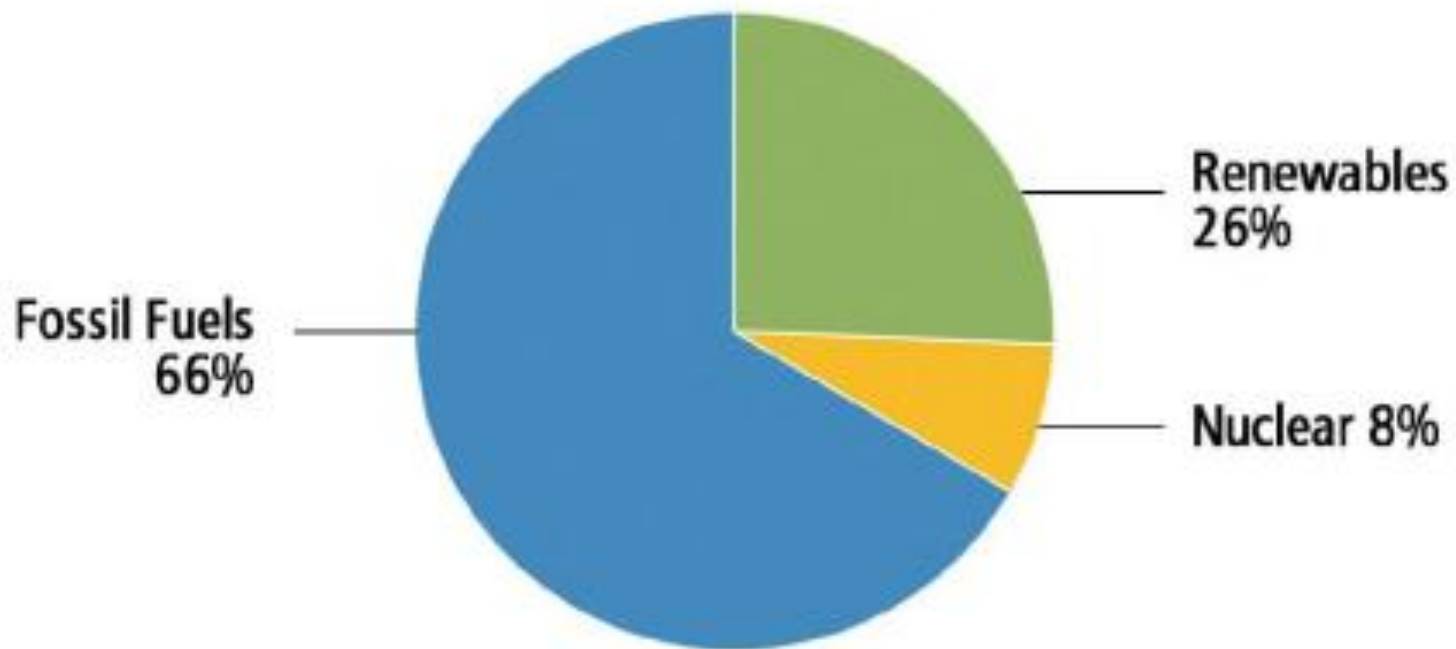
- IEA: 50% of electricity by 2050 (IEA 2008)
- EREC/Greenpeace: 80 of energy by 2050 (EREC/Greenpeace 2010).

**Thank You**

**More info on feed-in tariff is available from  
[www.mbipv.net.my](http://www.mbipv.net.my)**

# Shares of Renewable Energy World-Wide

Figure 16. World Generating Capacity by Source, 2009

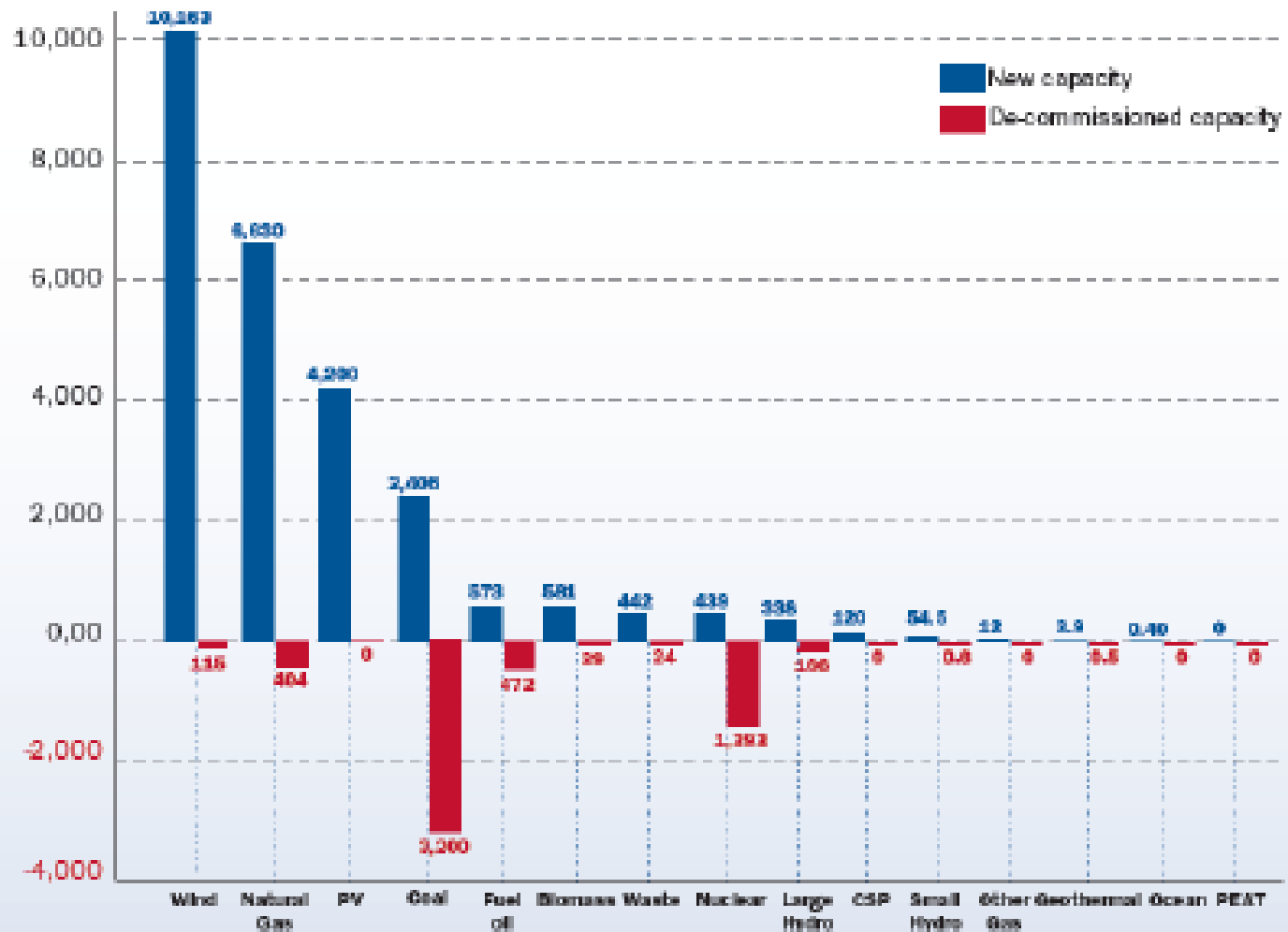


Source: REN 21 (2010)

# New Power Generation Installed Capacity (EU: 2009)

NEW INSTALLED CAPACITY AND DE-COMMISSIONED CAPACITY IN EU 2009 IN MW. TOTAL 25,963 MW

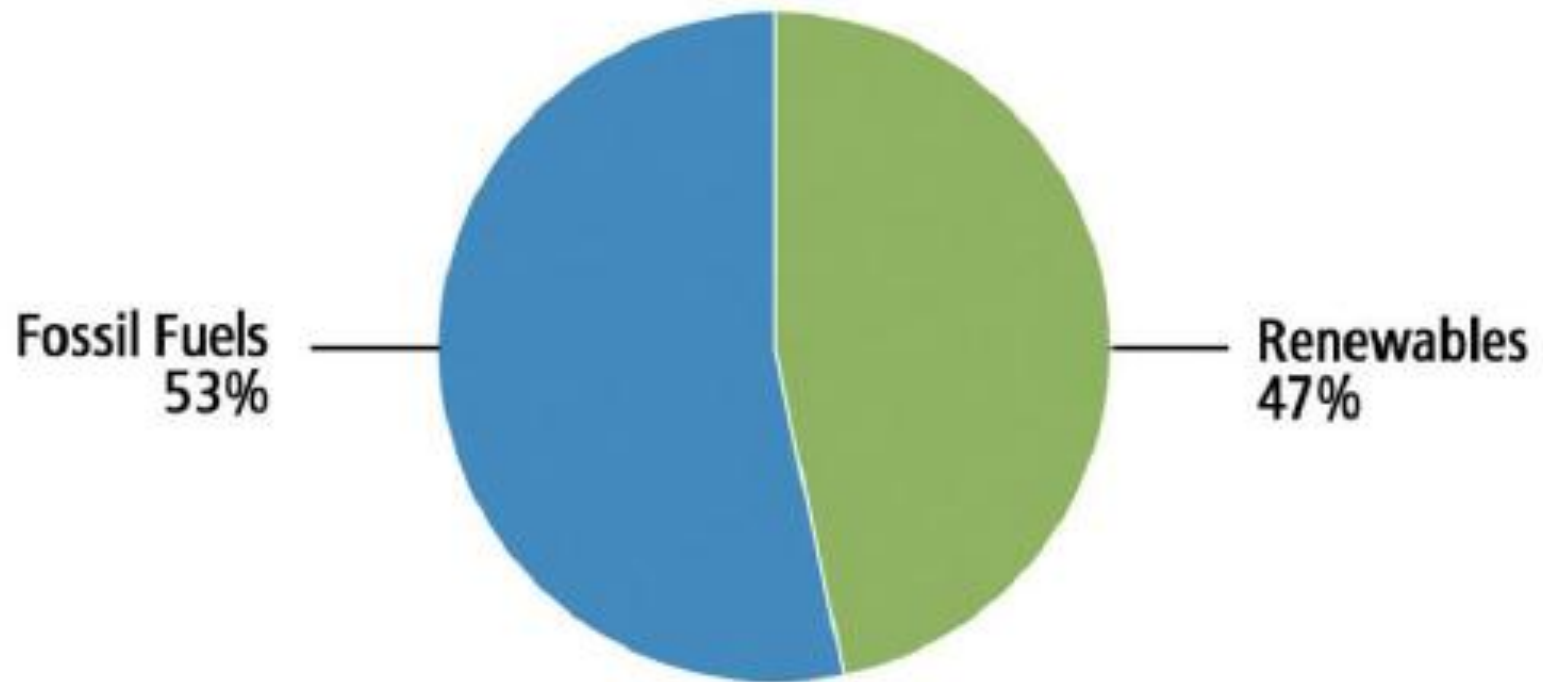
FIGURE 1.2



Source: EWEA 2010

# Global Investment in Renewable Energy (2008-2009)

Figure 17. New Power Capacity Added Worldwide by Source, 2008–2009



Source: REN21 2010

# External Cost: Expected Carbon Price in IEA BLUE Map Scenario

<b>USD / t CO<sub>2</sub></b>	<b>2020</b>	<b>2030</b>	<b>2050</b>
OECD	50	110	175
Non-OECD	0	65	175

<b>Grid System</b>	<b>Carbon Emission Factor [t-CO<sub>2</sub>/MWh]</b>	<b>What does this mean?</b>
Peninsular Malaysia	0.63	<p><b>Peninsular Malaysia (2009)</b>            = 82.3 TWh x 0.63 t-CO<sub>2</sub>/MWh            = 51.8 mt-CO<sub>2</sub> x <b>USD10/t-CO<sub>2</sub></b>            = USD 518.3 million            = <b>RM 1.6 billion</b></p>
Sarawak	1.12	
West of Sabah	0.65	
East of Sabah	0.80	
Malaysia (average)	0.69	

# Where to get latest updates?

[www.mbipv.net.my](http://www.mbipv.net.my)

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## ANNOUNCEMENTS

- Workshop on REPPA Discussion, 27th January 2011
- Feed-in Tariff Updates  
We have relocated our office to the Ministry of Energy, Green Technology and Water, Malaysia (KeTTHA). Please check web page on contact us
- BIPV Tender of 3 kWp at a Private Residence in Sungai Penchala
- Renewable Energy Bill 2010 was first read by YB Minister in Dewan Rakyat on 15th December 2010

## LATEST PV SYSTEM INSTALLATIONS



**Sek. Men, Keb. St. John**  
**5.04 kWp**

KANEKA GEA060 ( Thin Film)

60 Wp x 84 units

SMA SB1700 and SB3300

## LATEST NEWS

- 1,400 megawatts solar power annually by 2013 15 Dec 2010
- Renewable Energy Bill 2010 was first read by YB Minister in Dewan Rakyat on 15th December 2010
- Inauguration of AUO SunPower in Malaysia 15 Dec 2010
- Electricity price increase. if any. likely to be 1%-2% 10 Dec



**Private Bungalows, Bandar Eco Setia**  
**10.29 kWp**

Mitsubishi PV-AD 180MF5  
(Polycrystalline)