RMK 11 ENERGY EFFICIENCY PROJECT

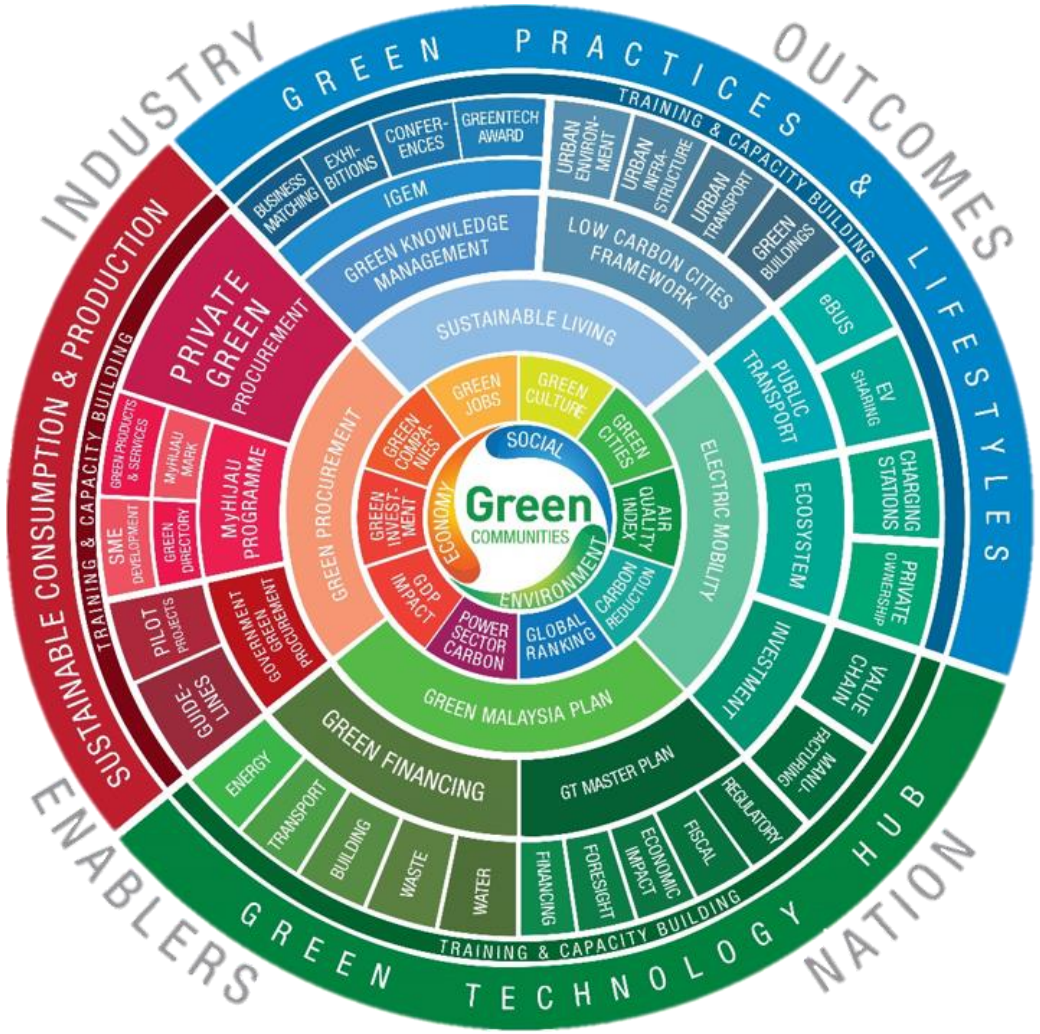
- ENERGY AUDIT CONDITIONAL GRANT

Hotel Bangi Putrajaya

28 March 2017

OUTLINE

- About GreenTech Malaysia
- National Green Technology Policy
- 11th Malaysia Plan 2016-2020 (RMK11)
  - About Energy Audit Conditional Grant
  - Requirements
  - Application Process & Forms
  - Energy Audit Methodology
  - Energy Audit Report Format
  - Implementation Reporting Format
  - How to Apply



ABOUT GREENTECH MALAYSIA

- First established as Malaysia Energy Centre (PTM) on **12th May 1998** and then restructured as Malaysian Green Technology Corporation on **7th April 2010**.
- Registered under the Companies Act 1965 as a company limited by guarantee and not having a share capital. Under the purview of Ministry of Energy, Green Technology & Water (KeTTHA)
- GEO building in Bandar Baru Bangi officiated by YAB PM on **24th July 2009**. As the first GBI certified building in Malaysia with BEI = **30 kWh/m²/year**.

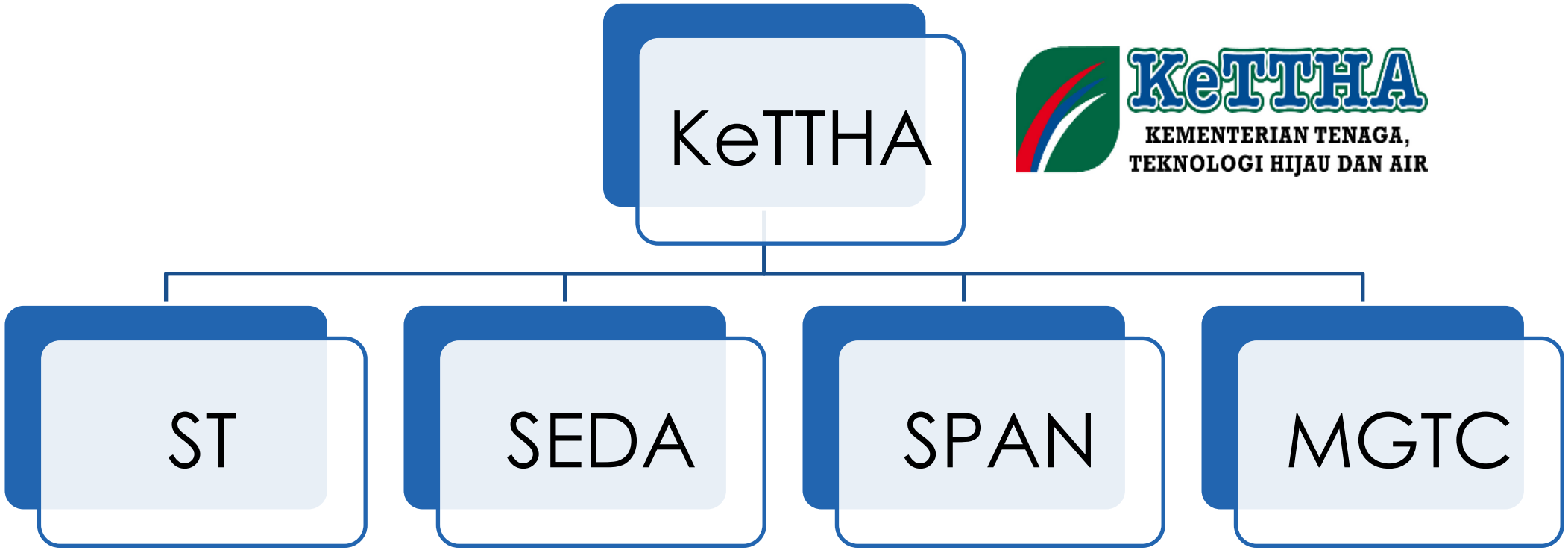
Purpose: To catalyse Green Technology deployment as Malaysia's strategic engine for socio-economic growth

Goal: Establish Malaysia as a world hub for Green Technologies

Strategic Focus Areas:

- Developing sustainable and widespread Green Technology **markets**
- Strengthening local Green Technology **industry**
- Enhancing **human competency and capacity** in Green Technology.
- Formulating **support policies and financing frameworks** to promote Green Technology growth.
- Promoting and creating **awareness** on Green Technologies.

OVERVIEW OF GREEN TECHNOLOGY IN MALAYSIA



KeTTHA
KEMENTERIAN TENAGA, TEKNOLOGI HIJAU DAN AIR

Suruhanjaya Tenaga
Energy Commission

Sustainable Energy Development Authority
seda
MALAYSIA

SPAN
Suruhanjaya Perkhidmatan Air Negara

Green Tech
MALAYSIA

GREEN TECHNOLOGY - DEFINITION

The development and application of products, equipment and systems used to conserve the natural environment and resources, which minimises negative impact of human activities

Criteria

- Minimises the degradation of the environment
- Emits zero or low greenhouse gas (GHG) emission
- Safe for use and promotes healthy and improved environment for all forms of life
- Conserves the use of energy and natural resources
- Promotes the use of renewable resources

NATIONAL GREEN TECHNOLOGY POLICY (NGTP)

POLICY STATEMENT

Green Technology shall be a driver to accelerate the national economy and promote sustainable development.

NATIONAL GREEN TECHNOLOGY POLICY - GOALS

Short-Term Goals:
- Increase public awareness and commitment for GT adoption and application => advocacy programmes;
- Widespread availability and recognition of GT => standards, rating and labelling programmes;
- Increase FDIs and DDIs in GT;
- Expansion of local RDIs.
- Key sectors: energy, buildings, water & waste, transport.

ENERGY EFFICIENCY INITIATIVE

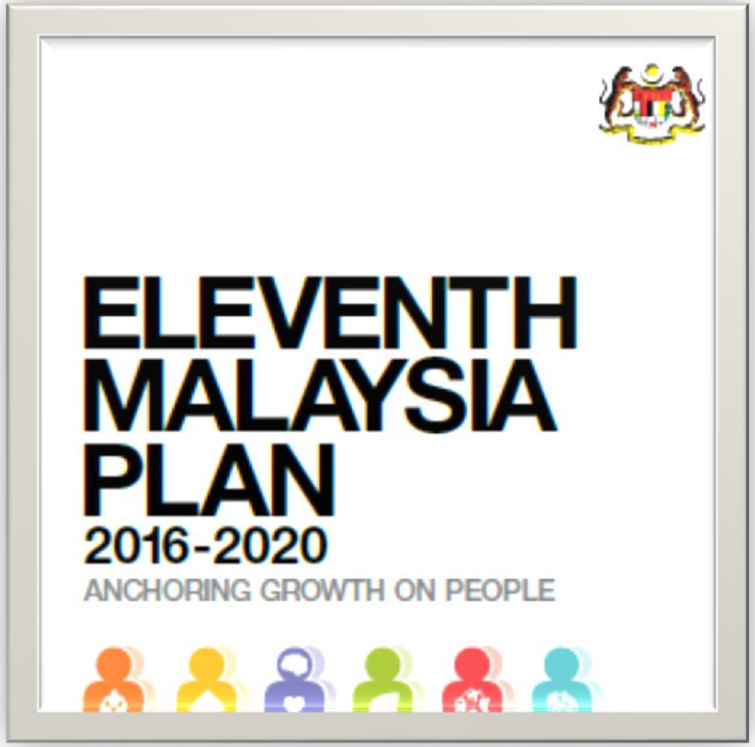
Mid-Term Goals:
- GT becomes the preferred choice in procurement;
- Increase GT's local market share and contribution to regional markets;
- Increase production of local GT products;
- Increase of GT RDICs by industry and MNCs;
- SMEs and SMIs ventures in global GT markets;
- GT expands to include most economic sectors.

Long-Term Goals:
- Inculcate GT in Malaysian culture;
- Reduce overall resource consumption via widespread adoption of GT while sustaining national economic growth;
- Significantly reduce national energy consumption;
- Improve Malaysia's ranking in environmental ratings;
- Position Malaysia as a major producer of GT in global market
- Expand international collaborations between local RIs and GT industries.

10th Malaysia Plan | 11th Malaysia Plan | 12th Malaysia Plan & Beyond

2009 | 2011 | 2016 | 2021

RMK 11 – ELEVENTH MALAYSIA PLAN 2016-2020



Strategic Thrusts

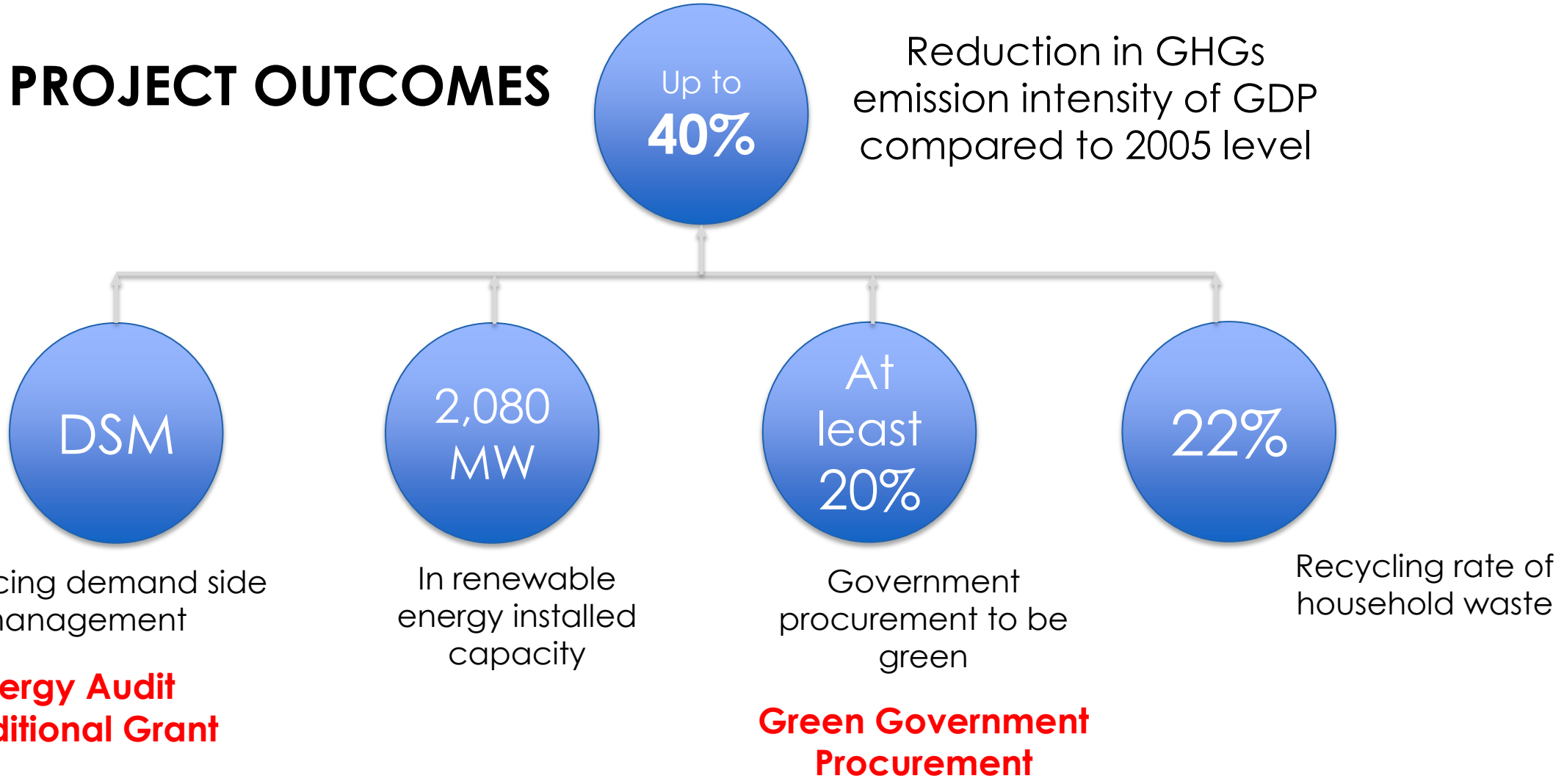
1. Enhancing inclusiveness towards an equitable society
2. Improving wellbeing for all
3. Accelerating human capital development for an advanced nation
4. Pursuing green growth for sustainability and resilience
5. Strengthening infrastructure to support economic expansion
6. Re-engineering economic growth for greater prosperity

Strategic Thrust No. 4
Pursuing green growth for sustainability and resilience

1. Strengthening resilience against climate change and natural disasters
2. Strengthening the enabling environment for green growth
3. Adopting the sustainable consumption and production concept
4. Conserving natural resources for present and future

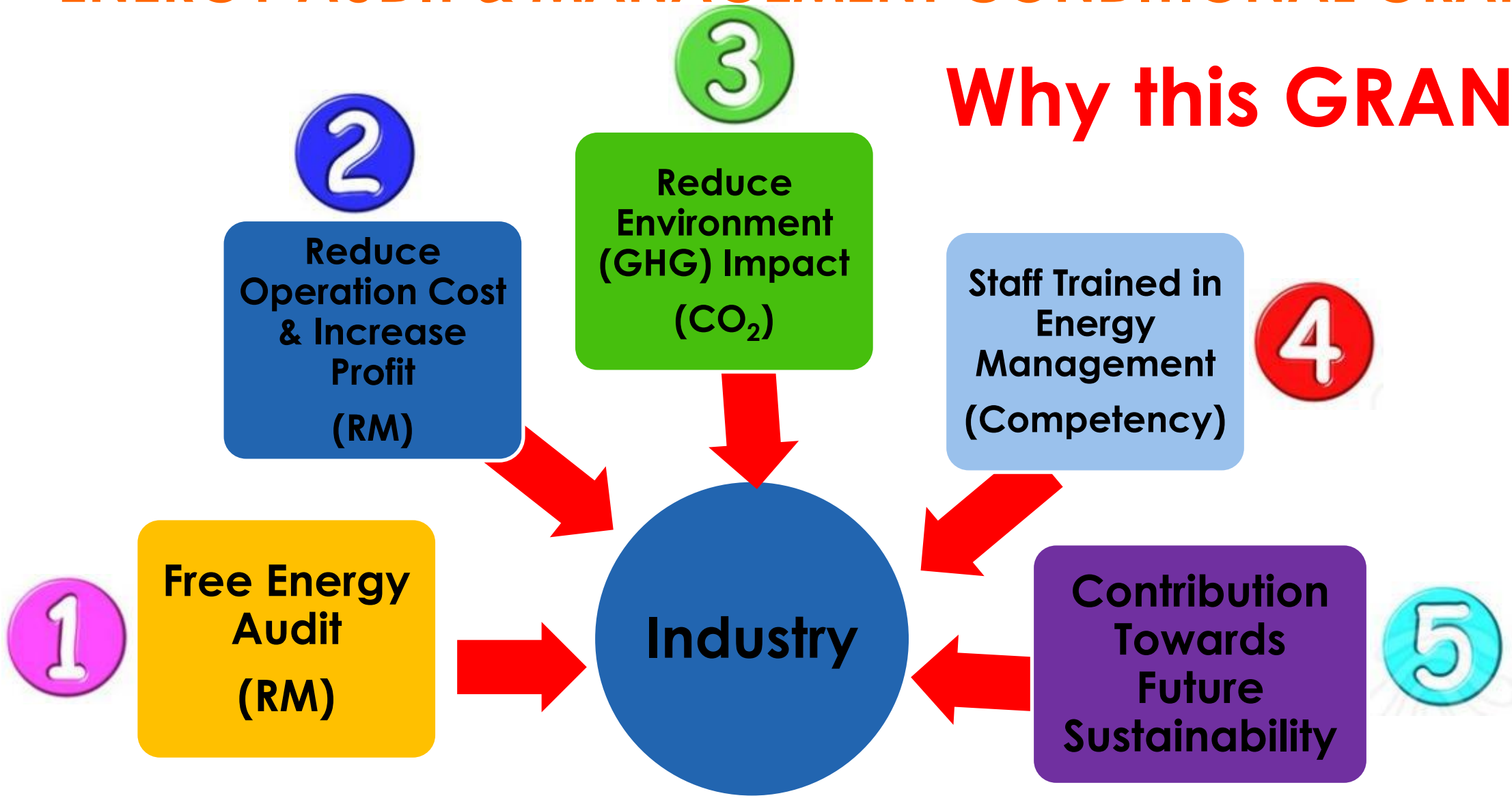
RMK 11 MALAYSIA PLAN 2016-2020

PROJECT OUTCOMES



ENERGY AUDIT & MANAGEMENT CONDITIONAL GRANT

Why this GRANT?



ABOUT TMK11 EACG (ENERGY AUDIT CONDITIONAL GRANT)

This Energy Efficiency Project is a program under RMK-11 approved by the Economic Planning Unit of Prime Minister Dept

2-years project from May 2016 to April 2018 and open to any industrial comply with *EMEER 2008* or qualified Small and Medium Industry

RMK11 EACG - INDUSTRY

KeTTHA & ST are the joint executing organisations to ensure the implementation of the project hence reduce energy consumption.

GreenTech has been appointed as the implementing agency to promote, facilitate and process the application & to monitor the project.

PROJECT OBJECTIVES

1 RMK-11: Pursuing green growth for sustainability & resilience

Strategy A
- Strengthening governance to drive transformation
- Enhancing awareness to create shared responsibility
- Establishing sustainable financing mechanisms

Strategy B
- Creating green markets
- Increasing share of renewables in energy mix
- Enhancing demand side management (DSM)
- Promoting low carbon mobility
- Managing waste holistically

2 Green Technology Policy & GTMP

KeTTHA KEMENTERIAN TENAGA, TEKNOLOGI HIJAU DAN AIR

Four Pillars of GT Policy
- Seek to attain energy independence & promote efficient utilization
- Conserve and minimize the impact on the environment
- Enhance the national economic development through the use of technology
- Improve the quality of life for all

Green Tech Malaysia

Key Enablers
- Green Financing
- Green Procurement
- Low Carbon Cities
- MyHIJAU Mark
- GT Exchange

3 PROJECT OBJECTIVES & BUDGET 2016

- To create awareness on the importance of implementing energy audits as part of energy efficiency and conservation program. Energy audit is a systematic process to understand how and where the energy is being used, to explore on how to manage it and identify the energy savings potential.
- To provide financing assistance to the eligible applicants through grant, as a catalyst for the implementation of energy audit, so that current energy consumption pattern, baseline and energy savings potential can be identified.
- To attract financial institutions to provide financing mechanism for energy efficiency projects through energy performance mechanism, to reduce financial burden to the applicants.
- To develop capacity building in energy services industry.

Contribute to Malaysia's Carbon Emissions Target*:

45% reduction in GHG emission by 2030

Compared with 2005 baseline

*Announced by the Prime Minister in 2015

PROJECT IMMEDIATE IMPACT

COP 2009: 40% reduction in emissions by 2020

COP 2015: 45% reduction in GHG emission by 2030

OUTCOME under RMK 11 EE Projects
ENERGY & ECONOMY
1. Reduction of energy consumption in the industrial sector by 2.6 million GkWh
2. Create savings in industrial operation which leads to cost effectiveness in production by RM947 million
3. Economic growth for Energy Performance Contracting (EPC) to ESCOs in Energy Efficiency

OUTCOME under RMK 11 EE Projects
ENVIRONMENT
4. Contribute to the overall environmental quality.
5. Reduce GHG emission and contribute to 40% intensity reduction by 1,942.01 $ktCO_2$ eq.
SOCIAL
6. Job creation
7. Improve the quality of life

CONDITIONAL GRANT REQUIREMENTS

1. Any industry which takes electricity from TNB/NUR/SESB/ SESCO at Medium/High/ Low Voltage & energy consumption at least **100,000 kWh** a month are eligible to apply.

2. 1.Applicant shall appoint a ***REEM*** for installation under EMEER 2008 or an *Energy Manager (EM)* to drive the energy management program.

3. Applicant shall appoint an *Energy Service Company* ***(ESCO)*** registered with ST before submitting the grant application to GreenTech Malaysia

4. Energy audit exercise must be completed within **2 months** from the date of contract signing.

5. Successful applicants are required to provide **matching funding** with the audit grant provided, to implement energy saving measures as recommended in the audit report.

6. The implementation of the energy saving measures shall be according to the energy audit report, and shall be within 3 years after the energy audit is completed. However, the **No Cost Energy Saving Measures should be implemented immediately** after acceptance of the energy audit final report for the benefits of the applicant.

7. The expected energy saving shall be **15% within 3 years** by implementing the potential energy saving measures recommended in the final audit report.

TERMS OF REFERRENCE - GreenTech Malaysia Roles and Responsibilities

1. 1.To provide the **application form, application requirements and criteria, process workflow, conditional grant agreement, scope of work and grant disbursement** to the applicant;
2. To **manage the conditional energy audit grant;**
3. To assist KeTTHA and ST in **promotional activities and technical training;**
4. To **review, process and approve** the conditional energy audit grant application
5. To **process and disburse the grant** according to progress of works;
6. To **provide facilitation and advice** to applicants on the overall project exercise, and to ensure that the project direction is according to the objectives. This includes advisory activities related to energy management.

TERMS OF REFERRENCE - GreenTech Malaysia Roles and Responsibilities

7. The expected energy saving shall be **15% within 3 years** by implementing the potential energy saving measures recommended in the final audit report.

8. To **provide facilitation and advice** to applicants on the overall project exercise, and to ensure that the project direction is according to the objectives. This includes advisory activities related to energy management.

9. To **organise energy management trainings**.

10. To **coordinate and monitor** the implementation of the project from time to time

11. To **monitor and verify** the implementation of the energy saving measures recommended in the energy audit final report.

TERMS OF REFERRENCE - Industry Roles and Responsibilities

1. 1.Fill-up the relevant forms and submit official application to GreenTech Malaysia.
2. Nominate the focal person / person-in-charge for the project.
3. Appoint its own Energy Services Companies (ESCO) who is registered with the Energy Commission to conduct the energy auditing exercise. GreenTech Malaysia and government will not be responsible for the selection and appointment of the ESCO. The appointment and service charges payment to the ESCO is under the responsibility of the applicant.
4. Notify GreenTech Malaysia of the actual commissioning date of energy audit project timeline once application approved.
5. Ensure the ESCO execute energy audit exercise according to the methodology, quality and reporting format outlined in the Energy Audit requirements. GreenTech Malaysia has the right to reject any energy audit exercise and reports that are not meeting its requirements. GreenTech Malaysia will not be held responsible for any additional cost arising from the delay in complying with the requirements.

TERMS OF REFERRENCE - Industry Roles and Responsibilities

Provide weekly progress report, draft and final reports to GreenTech Malaysia according to the agreed timeline; GreenTech Malaysia will make comments and revert for improvement.

Provide 3 final reports in hard copy and a soft copy (MS Office) to GreenTech Malaysia.

Submit 2 invoices (upfront and final payment) to GreenTech Malaysia for payment purposes. Applicant is responsible to pay for the additional charges such as GST and/or other taxes.

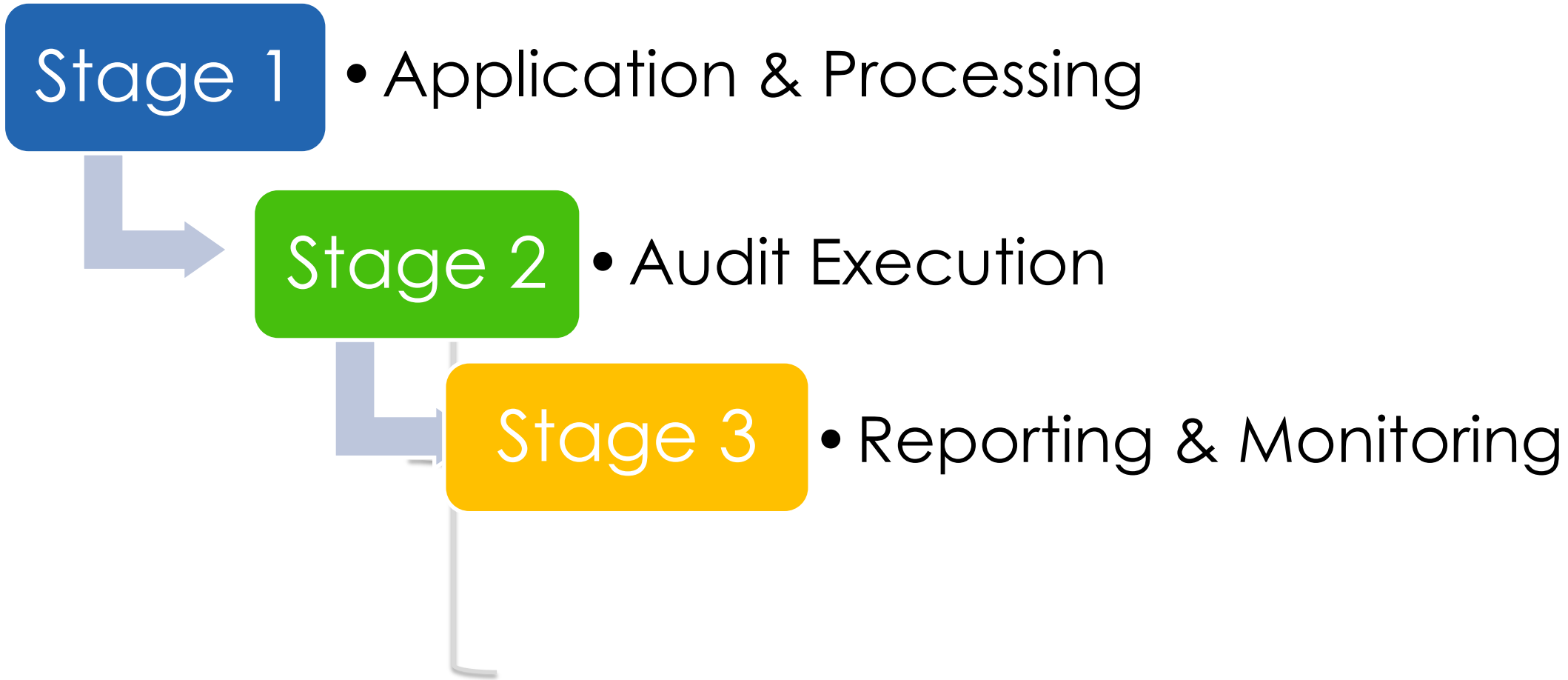
Attend the energy management training conducted by GreenTech Malaysia under the project.

TERMS OF REFERRENCE - Industry Roles and Responsibilities

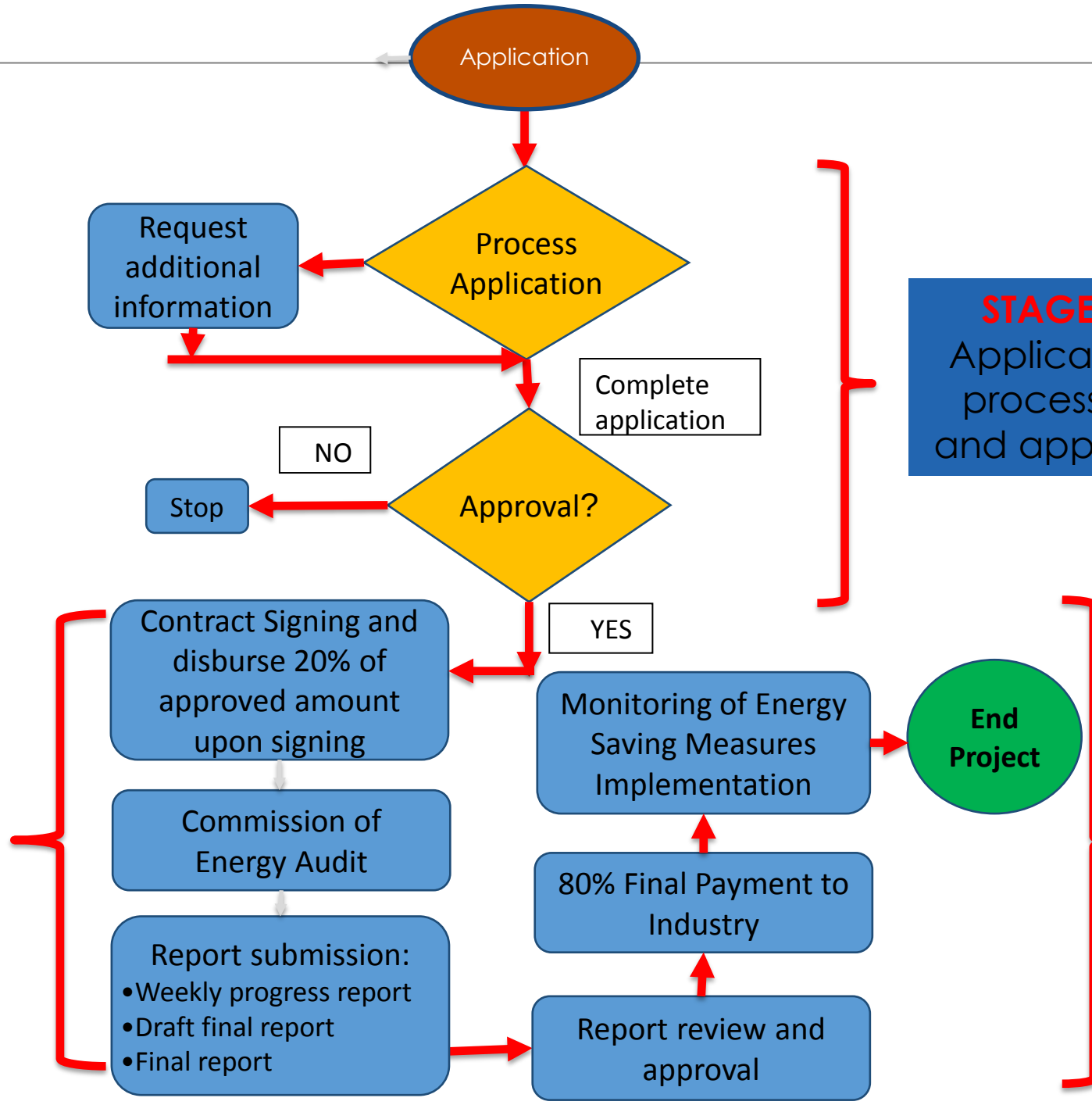
Implementation of the Energy Saving Measures Phase

1. 1.To comply with EMEER requirements issued by Energy Commission (if applicable).
2. To achieve the expected energy savings of 15% within 3 years.
3. To implement the energy saving measures recommended in the energy audit report submitted by the ESCO in this project.
4. The implementation cost could be borne by the applicant or using the energy performance contracting (EPC) financing.
5. To communicate with GreenTech Malaysia to ensure the implementation of energy saving measures.
6. To submit monitoring and evaluation report to GreenTech Malaysia every 6 months during the 3-year period..

RMK11 EACG APPLICATION PROCESS FLOW



RMK11 EACG APPLICATION PROCESS FLOW



STAGE 1: Application, processing and approval

STAGE 2: Signing of agreement, energy audit, payment according to progress and presentation of report

STAGE 3: Approval of report, full payment and monitoring

APPLICATION FORM - Energy Audit Conditional Grant Checklist

MALAYSIAN GREEN TECHNOLOGY CORPORATION

No. Dokumen Permohonan : Industry Name/GL/EACG/2016-000

Tarikh Penerimaan :

Senarai Semak untuk Dana Audit Tenaga Bersyarat di Bawah Projek Kecekapan Tenaga RMK 11

Maklumat Pemohon

Bil	Perkara	Status (Ada - √, Tiada – X) *
1	Surat permohonan yang lengkap dari pemohon	☐
2	Dokumen yang perlu disertakan: a) Maklumat Syarikat – Pemohon (**Lampiran A**) b) Pendaftaran syarikat (SSM) c) Sijil pepasangan yang di pohon d) Sijil Pengurus Tenaga Berdaftar e) Surat Lantikan Syarikat Perkhidmatan Tenaga f) Senarai Skop Kerja Audit Tenaga (**Lampiran F**)	☐ ☐ ☐ ☐ ☐ ☐

Maklumat Syarikat Perkhidmatan Tenaga

Bil	Perkara	Status (Ada - √, Tiada – X) *
1	Dokumen yang perlu disertakan a) Maklumat Syarikat – ESCO (**Lampiran B**) b) Pendaftaran syarikat (SSM) c) Pendaftaran ESCO dengan Suruhanjaya Tenaga d) Cadangan Harga kerja Audit Tenaga (**Lampiran C**) e) Pengalaman syarikat bagi kerja Audit Tenaga dan Senarai pegawai yang terlatih (**Lampiran D**) f) Pendekatan dan Metodologi Audit Tenaga (**Lampiran E**)	☐ ☐ ☐ ☐ ☐ ☐

Di Semak oleh:
Nama: **Tarikh:**

APPLICATION FORM - Energy Audit
Conditional Grant Checklist

- Maklumat Syarikat
- Pendaftaran syarikat
- Sijil pepasangan yang dipohon dan bil elektrik
- a)Sijil Pengurus Tenaga Berdaftar
- Surat Lantikan Syarikat Perkhidmatan Tenaga
- Senarai Skop Kerja Audit Tenaga

APPLICATION FORM - Energy Audit
Conditional Grant Checklist

- Maklumat ESCO
- Pendaftaran syarikat ESCO
- Pendaftaran ESCO dengan ST
- a)Cadangan Harga kerja Audit Tenaga
- Pengalaman syarikat bagi kerja Audit Tenaga dan Senarai pegawai yang terlatih
- Pendekatan dan Metodologi Audit Tenaga

APPLICATION FORM

About the Industry

Information Needed from Industry

1. Company information
2. Appointment of Registered Electrical Energy Manager (REEM) or Energy Manager (EM)
3. Technical Staff related to Energy Management
4. Annual energy consumption
5. Declaration of information

LAMPIRAN A

MALAYSIAN GREEN TECHNOLOGY CORPORATION

MAKLUMAT SYARIKAT (PEMOHON)

1. Semua maklumat yang diperlukan (kecuali dinyatakan sebaliknya) hendaklah diisi dengan terang, jelas dan tepat sama ada secara bertulis atau ditaip.
2. Penggunaan kertas tambahan adalah dibenarkan sekiranya ruang yang disediakan tidak mencukupi.
3. Syarikat dikehendaki menyertakan salinan fotostat bagi menyokong butiran yang dinyatakan.
4. Lampiran ini hendaklah dikembalikan bersama-sama dengan tawaran.

A. MAKLUMAT SYARIKAT

1.	Nama Syarikat	:	
2.	Alamat Syarikat	:	
3.	No Telefon	:	
4.	No Faks	:	
5.	No Pendaftaran Syarikat	:	
6.	Tarikh Pendaftaran (mula & tamat)	:	

B. PELANTIKAN PENGURUS TENAGA ELEKTRIK YANG BERDAFTAR

APPLICATION FORM

About the Energy Service Company (ESCO)

Information Needed from Industry for the ESCO

1. Company information
2. Services Offered
3. Experiences in Energy Management and Audit
4. Pricing
5. Technical Staff and Competency
6. Methodology and Project Schedule
7. Declaration of information

LAMPIRAN B

MALAYSIAN GREEN TECHNOLOGY CORPORATION

MAKLUMAT SYARIKAT (ESCO)

1. Semua maklumat yang diperlukan (kecuali dinyatakan sebaliknya) hendaklah diisi dengan terang, jelas dan tepat sama ada secara bertulis atau ditaip.
2. Penggunaan kertas tambahan adalah dibenarkan sekiranya ruang yang disediakan tidak mencukupi.
3. Syarikat dikehendaki menyertakan salinan fotostat bagi menyokong butiran yang dinyatakan.
4. Lampiran ini hendaklah dikembalikan bersama-sama dengan tawaran.

A. MAKLUMAT SYARIKAT (ESCO)

1.	Nama Syarikat	:	
2.	Alamat Syarikat	:	
3.	No. Telefon	:	
4.	No. Faks	:	
5.	No. Pendaftaran Syarikat	:	
6.	Tarikh Pendaftaran (mula & tamat)	:	
7.	No. Pendaftaran Suruhanjaya Tenaga	:	
8.	Tarikh Tamat Pendaftaran	:	
9.	Kod Bidang Pendaftaran	:	

APPLICATION FORM

About the Energy Service Company (ESCO)

LAMPIRAN C

MALAYSIAN GREEN TECHNOLOGY CORPORATION

CADANGAN HARGA

(PERINCIAN SEMUA KOS MESTILAH DINYATAKAN. SILA GUNAKAN KERTAS YANG BERASINGAN JIKA RUANGAN YANG DISEDIAKAN TIDAK MENCUKUPI)

JADUAL KOS CADANGAN (KEWANGAN)

NAMA CADANGAN / PROJEK : _____

NAMA PERUNDING : _____

A.YURAN PERUNDINGAN

NAMA	JAWATAN	PENGALAMAN (TAHUN)	GAJI (RM)	MAN-MONTHS	JUMLAH
IKHTISAS					
1.					
2.					
JUMLAH YURAN IKHTISAS					

RINGKASAN KOS PERKHIDMATAN PERUNDING DIPOHON (KEWANGAN)

BIL	HURAIAN	JUMLAH KOS (RM)
A	**YURAN PERUNDING** Ikhtisas Separa ikhtisas	
	YURAN PERUNDINGAN	
	Cukai perkhidmatan 6%	
	JUMLAH YURAN PERUNDINGAN	
B	**KOS IMBUHAN BALIK**	
JUMLAH KOS PERKHIDMATAN PERUNDINGAN		

Saya/kami mengaku bahawa saya/kami faham mengenai semua terma dan syarat berkaitan dengan penawaran harga tersebut di atas.

Tanda tangan : _____

Nama : _____

No. Kad Pengenalan/Pasport : _____

Jawatan : _____

Tarikh : _____

Cop Syarikat

APPLICATION FORM

About the Energy Service Company (ESCO)

LAMPIRAN D

MALAYSIAN GREEN TECHNOLOGY CORPORATION

PELANGGAN UTAMA DAN PENGALAMAN TERDAHULU DALAM MENJALANKAN ACARA YANG SEUMPAMA

(SILA GUNAKAN KERTAS YANG BERASINGAN JIKA RUANGAN YANG DISEDIAKAN TIDAK MENCUKUPI)

A. PELANGGAN UTAMA DAN PENGALAMAN TERDAHULU

BIL.	PELANGGAN	SKOP KERJA	TEMPOH KONTRAK
1.			
2.			
3.			
4.			
5.			
6.			

LAMPIRAN D

B. PERKHIDMATAN PERUNDINGAN PERSONEL (SILA LAMPIRKAN RESUME)

BIL.	NAMA	JAWATAN	TANGGUNGJAWAB
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

APPLICATION FORM

About the Energy Service Company (ESCO)

LAMPIRAN E

MALAYSIAN GREEN TECHNOLOGY CORPORATION

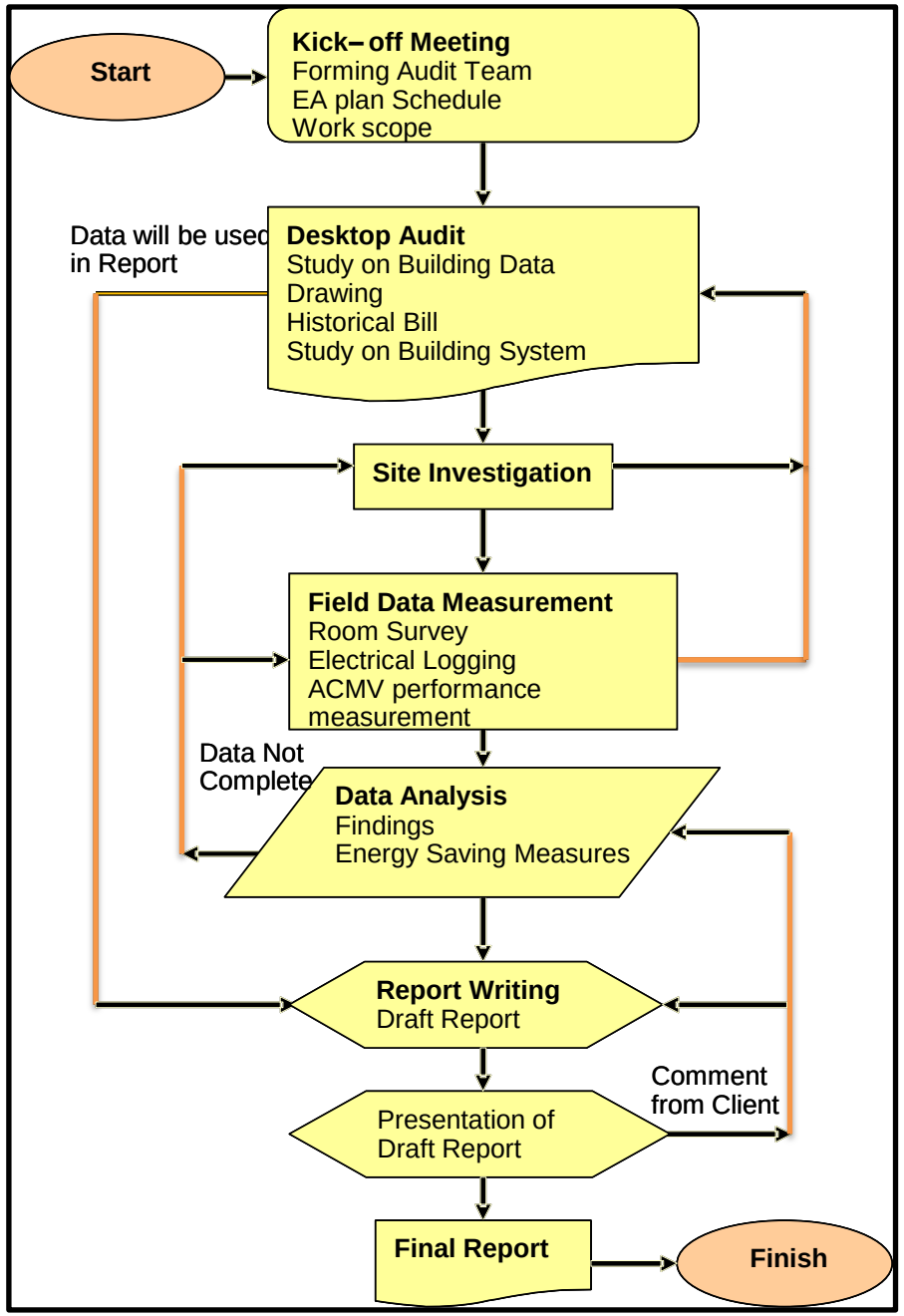
PENDEKATAN DAN METODOLOGI

(SILA JELASKAN SECARA TERPERINCI)

1. Dokumen ini mesti mengandungi maklumat yang diperlukan seperti mana dinyatakan dalam terma rujukan (*Technical Specification*)
2. Nyatakan dengan jelas metodologi dan proses untuk menjalankan tugas (menyediakan aliran proses yang jelas dan terperinci, pendekatan dan metodologi dalam melaksanakan aktiviti)
3. Pelan pelaksanaan yang dikemukakan mesti mengandungi pembangunan kandungan program (developing the content of the programs).

JADUAL PELAKSANAAN *(TIMELINE)*

KOMPONEN	BULAN							
	MINGGU 1	MINGGU 2	MINGGU 3	MINGGU 4	MINGGU 5	MINGGU 6	MINGGU 7	MINGGU 8



APPLICATION FORM

About the Energy Service Company

Proposed Scope of Work

i. Overall Site
ii. Specific system

LAMPIRAN F

MALAYSIAN GREEN TECHNOLOGY CORPORATION

SKOP KERJA

(SILA JELASKAN SECARA TERPERINCI)

1. Dokumen ini mesti mengandungi maklumat yang diperlukan seperti mana dinyatakan dalam terma rujukan (*Presentation on Energy Audit Conditional Grant for Industry*).
2. Nyatakan dengan jelas skop kerja yang dicadangkan.

Keseluruhan Tapak

Sistem yang Terpilih

ENERGY AUDIT METHODOLOGY

1. Kick-off Meeting
2. Desktop Audit
3. Field Data Measurement
4. Data Analysis
5. Report Writing
6. Presentation Draft Report
7. Submission Final Report
8. Energy Saving Measures (ESM) Implementation Action Plan

SCOPE OF WORK

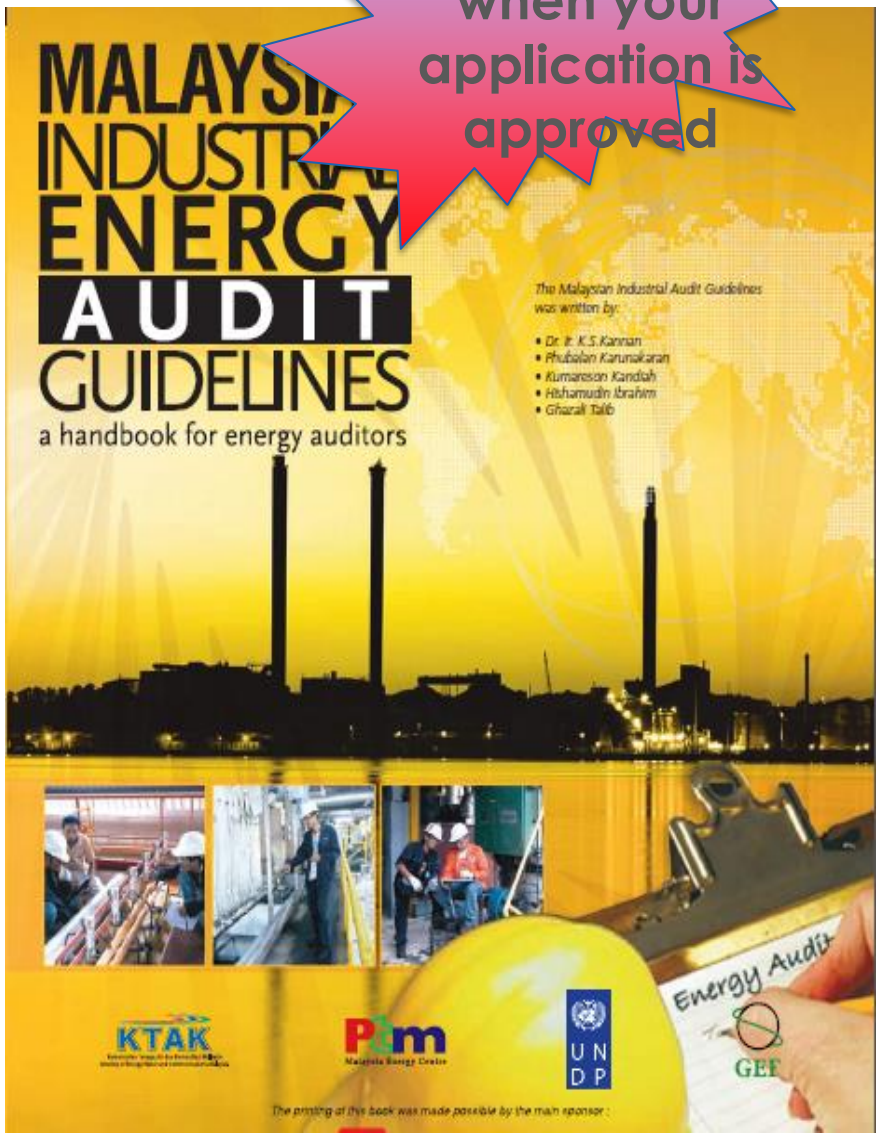
1. Energy Management Practices
2. Electricity Supply and Consumption

Compulsory Scope of Work

3. Compressed Air System
4. Electric Motors as Drives of Machines
5. Fans and Blowers
6. Ventilation
7. Pumps
8. Air Conditioning System
9. Lighting
10. Furnace
11. Steam Generation and Distribution

Selected Scope of Work and subject to type of industry

Complimentary when your application is approved



ENERGY AUDIT EQUIPMENT

1. Portable Power Meter
2. Portable AC Clamp Meter
3. Portable Temperature Meter
4. Portable Pressure Meter
5. Portable Strabo-Tacho Meter
6. Portable Combustion Analyser
7. Portable Air Leak Tester
8. Portable Steam Trap Tester
9. Portable Illuminance Meter
10. Portable Temperature/Humidity Meter
11. Portable Ultrasonic Flow Meter

ENERGY AUDIT REPORT FORMAT

Chapter 0 : Executive Summary synthesises the findings of the audit and energy saving measures recommended. It includes a priority list of the measures, which have been found to be cost effective and are recommended for implementation. This chapter is mainly addressed to the top management and the decision-makers and is therefore the most important chapter with regard to follow-up and implementation.

The executive summary must be a stand-alone document. It is brief, yet it provides a complete picture of the entire auditing work without making any reference to the main part of the report. It is advisable that this chapter does not contain, or refer to tables or figures from the main report.

Chapter 0 : Executive Summary

In Chapter 1 : Introduction and Scope of Work, the name and address of the audited company is written along with the names of the audit team members. It also contains a list of the metering equipment used during the on-site survey. This chapter is common in all audit reports with minimal changes involving details of the audited companies. The scope of work with regards to which sections of the plant were audited must be given.

Chapter 1 : Introduction and Scope of Work

Chapter 2 : Operational Review of the Factory contains a brief outline of the companies' profile and products as well as the energy consumption for the base-year. The overall objective of this section is to present the specific energy consumption figures, to compare them with benchmarks and to make a first rough assessment of the energy savings potential as a whole. Energy profiles and breakdown are also included.

Chapter 2 : Operational Review of the Factory

ENERGY AUDIT REPORT FORMAT

Chapter 3 : Technological Description of the Processes contains the process flow diagram and a description of the individual stages of the process. The overall objective is description of the process and identification of inefficient energy usage. This is done by evaluating observations during the on-site inspection, discussions with the operating staff, analysing data obtained by records of the companies and sub-metering.

Chapter 3 : Technological Description of the Process

In Chapter 4, the energy supply and demand structures of all the energy-related facilities of the factory are investigated and evaluated with regard to the inefficient practices as outlined above.

Chapter 4 : Energy Supply and Demand

Chapter 5 : Technical-financial Framework and Constraints is also common in all the audit reports. Tables are presented with the main technical parameters and pricing for energy and fuels and utilities and a brief description of the evaluation scheme for energy saving measures. The prices must of course be adjusted for each individual audited company.

Chapter 5 : Technical-Financial Framework and Constraints (Findings)

Chapter 6 : Energy Saving Measures contains a technical description and evaluation of the savings for each of the identified energy saving opportunities. The calculations for the evaluation of the measures are conducted in excel sheets, which contain all the necessary base data and parameters that are necessary for the calculation.

Chapter 6 : Energy Saving Measures (ESMs)

ENERGY AUDIT REPORT FORMAT

The industry need to priorities and plan the implementation of the Energy Saving Measures (ESM) propose under the final Energy Audit Report within three (3) years implementation.

← Chapter 7 : Three (3) years action plan

The industry need to plan a proper system or establish new system or integrate with existing system using Energy Management System (EnMS) or Sustainable Energy Management System (SEMS).

← Chapter 8 : Sustainability plan

The industry need to plan how to finance their implementation of recommended ESM within 3 years using internal or external funding.

← Chapter 9 : Financial plan

IMPLEMENTATION MONITORING REPORTING FORMAT

List of ESM Activities/Project Proposed in Energy Audit Report

No	ESM Activities/ Projects	Brief description	Investment cost (RM)	Status (Completed/ Rejected/In progress)	Remark/Comment(s)

IMPLEMENTATION MONITORING REPORTING FORMAT

Summary of ESM Activities/Project Savings

No	ESM Activities/ Projects	Brief description	Baseline Consumption	Current Consumption	Investment Cost	Saving			Return Of investment	Duration of measurement	Remark/ Comment (s)
			kWh	kWh	RM	kWh	RM	%	year	day/week/ month	
						Estimate: Actual:	Estimate: Actual:	Estimate: Actual:	Estimate: Actual:		
						Estimate: Actual:	Estimate: Actual:	Estimate: Actual:	Estimate: Actual:		
						Estimate: Actual:	Estimate: Actual:	Estimate: Actual:	Estimate: Actual:		

IMPLEMENTATION MONITORING REPORTING FORMAT

New ESM Activities/Projects to be Implemented

No	Proposed ESM Activities/ Projects	Brief description	Estimated savings			Estimated Investment cost	Return of investment	Remark/ Comment(s)
			kWh	RM	%	RM	year	

A. JUMLAH PERMOHONAN

99 Permohonan Diterima Setakat 28/3/2017

- 37/90 MoA signed
- 17/90 companies done kick-off meeting
- 4 pending
- 2 complete reports
  90 approved JKT

Pending : Dokumen diterima tidak lengkap - ie Surat Permohonan, Sijil Pendaftaran Syarikat, Sijil Pepasangan, Sijil REEM, Surat Lantikan ESCO, Sijil Pendaftaran ESCO dengan Suruhanjaya Tenaga dan Skop Kerja

COMPLETED ACTIVITIES

Energy Audit Conditional Grant Seminar and Launching at Central, Southern and Northern Zone

COMPLETED ACTIVITIES

Energy Auditor Training Course (EATC)

Example of findings during Energy Audit at Company R

Table 5-4 Tariff E2 STR Transform Analysis

No	Item	Amount
	Current Tariff-E2	
1	Annual Energy Consumption (kWh/year)	7,590,777.00
2	Annual Energy Cost (RM/year)	2,814,133.07
	New Suggested Tariff-E2 with STR	
3	Annual Energy Saving (kWh/year)	2,408.00
4	Annual Energy Cost Saving (RM/year)	79,504.37
5	Investment Cost (RM) Instalment cost to TNB	10,000.00
6	Payback Period (year)	0.13

Figure 4-22 Ducting Line Leakage

Figure 4-23 Corroded Motor at Etching Line

Table 5-7 Potential Saving by Increment of Compressed Air Cycle Time

No	Item	Amount
1	Annual Energy Consumption (kWh/year)	2,201,325.33
2	Annual Energy Cost (RM/year)	634,877.41
3	Annual Energy Saving (kWh/year)	88,053.01
4	Annual Energy Cost Saving (RM/year)	25,395.10
5	CO_2 saving (tonCO_2/year)	52.50
6	Investment Cost (RM)	50,000.00
7	Payback Period (year)	1.97

Annual Energy Saving (kWh/year)	321,564.79
Annual Energy Cost Saving (RM/year)	203,703.37
Annual MD Saving (kW/year)	608.74
CO_2 saving (tonCO_2/year)	191.72
Investment Cost (RM)	680,000.00

Annual Energy Saving (kWh/year)	11,612.16
Annual Energy Cost Saving (RM/year)	3,111.59
CO_2 saving (tonCO_2/year)	6.92
Investment Cost (RM)	2180
Payback Period (year)	0.70

CONTACT PERSON

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