

# **ASEM SMEs Eco-Innovation Consulting Project :**

- Eco-Innovation Guideline for F&B Nutrition Sdn Bhd -



## Contents

- **1. Introduction to ASEM Eco-innovation Project**
- 2. F&B Overview
- 3. Assessment & Recommendations
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# **Introduction to ASEM Eco-innovation Project**

 The green marketplace is worth trillions of dollars and against this backdrop, Asian and European countries under ASEM established ASEIC as a cooperative mechanism with the principal mandate of enhancing eco-innovation of SMEs in both regions.

• The Project aims to facilitate innovation in the corporate strategy of SMEs at any stage of the product or service lifecycle, while developing global green growth opportunities.

 The consulting services provide SMEs with the implementation of a holistic and multifaceted approach to strengthening eco-innovation, from sharing core environmental regulations, innovative techniques and practices, to providing related educational program.

 The main goal of Eco-innovation consulting is to strengthen the "green competitiveness" of SMEs by disseminating and utilizing green management and technology in their various businesses.



# **Introduction to ASEM Eco-innovation Project**

1<sup>st</sup> ASEM Eco-innovation Project was launched September 2011 and finalized in December 2011. Four countries and a total of 33 companies participated in this Project.



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# **F&B Nutrition Overview**

Company Overvie	W				
Company Name	F&B Nutrition Sdn. Bhd.				
Project Manager	Mr. Tan Eam Lee				
Address	Lot 2234, Jalan Rajawali batu 9, Kampung Kebun Baru, 42500 Telok Panglima Garang, Kuala Langat, Selangor, Malaysia				
No of Employees	225				
Main Products	Sweetened creamer and evaporated creamer				
Production Process	cookingPanningDepositingExtrusionPacking• Mixing • Cooking• Coating• Deposited• Formation• Packing				
Global Network	Africa, Middle East				
Certification	• ISO 9001-2001 • ISO 22000 • Health Mark (VHM)				

# **F&B** Overview

Initial visit	<ul> <li>Date: 7<sup>th</sup> October 2011</li> <li>Objective: <ul> <li>Introduction to ASEM Eco-innovation Project</li> <li>Conduct an interview and a site tour to assess the company's environmental management and process activities</li> <li>Based on findings, provide short-term cleaner production recommendations</li> </ul> </li> <li>Participating Consultants: <ul> <li>Eco-Frontier, OWW, ERE</li> </ul> </li> <li>F&amp;B representatives: <ul> <li>Mr. Tam Eam Lee</li> </ul> </li> </ul>
Interim visit	Objective: • Assist F&B to implement the short-term cleaner production options recommended during the initial visit Participating Consultants: • Eco-Frontier , ASEIC F&B representatives • Mr. Tam Eam Lee
Final visit	Date: 10 <sup>th</sup> November 2011 Objective: • Review of preliminary findings • Comprehensive education on environmental management • Development of long-term eco-innovation strategy for F&B Participating Consultants: • Eco-Frontier, OWW, ERE F&B representatives: • Mr. Tam Eam Lee

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# **Environmental Management Assessment & Recommendations**

## **Environmental Management Assessment Tool**

Environmental management is a way of managing an organization by using energy, and resources efficiently, reducing GHG emissions and reducing both health and environmental impact.

Environmental Management Assessment Tool used in this Project was based on 5 criteria:

- (1) Environmental Management Strategies
- 2 Environmental Management System
- ③ Energy & Resources Management
- (4) GHG Emissions and Environmental Pollution Management
- **(5)** Environmental Responsibility



## **Preliminary Findings**

- 1. Environmental Strategy & Policies
- No environmental strategy; only informal form of communication
- · Conducts energy saving activities
- No guidelines for green procurement
- 2. Environmental Management System
- Environmental issues are verbally communicated
- No environmental management representative or committee
- Monitoring is not systematic
- 3. Energy & Resources
- Environmental data is not managed using indicators
- 4. GHG Emissions and Environmental Pollution
- Does not calculate GHG emissions and has not established GHG emissions reduction target
- 5. Environmental CSR
- Does not disclose organization's environmental performance and activities
- Complies to environmental regulations



\*Refer to the initial report for detailed analysis.

# **Cleaner Production Assessment & Recommendations**

#### Case 1



Low use of natural light

#### > Cleaner Production Recommendations:

- · Optimize the use of natural lights to reduce the use of electric lights and improve working conditions.
- (60W\*20=1.2kW) is used 11hrs/day, 250 days/yr = 300 \$/yr in cost reduction





Inefficient lighting

#### > Cleaner Production Recommendations:

- · Replace fluorescent lights with high-efficiency lights, and reduce electricity consumption
- (60W\*100ea) is used 11hrs/day, 250days/yr = 720 \$/yr in cost reduction

# **Cleaner Production Assessment & Recommendations**

## Case 3



•Waste management (i.e. storage) is not efficiently implemented. The collected sludge is not stored within a sheltered area resulting to weather element (i.e. rain) exposure.

- > Cleaner Production Recommendations:
- Designate a sheltered area for sludge storage to minimize water content prior to disposal.
- Appropriate labeling to avoid improper management of the waste

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# **Environmental Strategy Establishment**

## Establishment of Corporate Environmental Strategy (Policy, Objectives, Targets)

Environmental	Qualitative	Quantitative
Policy	Objectives	Targets
Environmental policy is your eclaration of commitment to the hvironment as well as to health & safety your employees. To develop an environmental policy, ake a list of general environmental oncerns that could be addressed in our company. The environmental policy should serve is the framework for setting	<ul> <li>Environmental objectives are established environmental vision and policy.</li> <li>Environmental targets are established for measure change in improvement.</li> <li>Implementation plan should be develope and relevant targets.</li> <li>Environmental objectives and targets sho medium and long-term goals as well as a s performance results of the implementation</li> </ul>	I based on the company's r each environmental objective to d for each environmental objective puld be included in the company's system for monitoring the plan.

# **Environmental Strategy Establishment**

## SAMPLE Environmental Policy for F&B Nutrition

**F&B NutritionSdn Bhd** aims to promote and maintain environmentally responsible practices to benefit our customers, employees, clients and community as whole. To realize this vision, we will commit to the following:

- Establish and review our environmental objectives and targets.
- Comply with legal regulations and standards pertinent to our industry.
- Minimize emissions to contribute to climate change mitigation.
- Purse efficient use of energy and water.
- Practice safe treatment and disposal of wastes.
- Strengthen our green competitiveness.
- Cooperate and communicate with all relevant stakeholders including employees, suppliers, government agencies and our client.

As a responsible manufacturer, **F&B Nutrition Sdn Bhd** is committed to design, manufacture, handle and distribute our products to ensure that this policy is met at all times.

SAMPLE

[Name of Managing Director] [Signature] [Date]

# **Environmental Strategy Establishment**

## SAMPLE Environmental Objective and Targets for F&B Nutrition

Environmental Management Objective	Targets (By Year 2015 with Baseline of Year 2010)
Transparency in environmental management	<ul> <li>Post environmental management policy on the company's website</li> <li>Set up an internal bulletin board that discloses the company's environmental management status</li> </ul>
Develop eco-friendly packaging	<ul> <li>Increase the use of recyclable products by 5%</li> <li>Increase the use of recycled materials by 5%</li> <li>Use soy ink for labeling</li> </ul>
Increase green procurement (purchase of eco- friendly products)	<ul> <li>Increase green procurement by 20%</li> <li>Don't use paper cups in the office</li> <li>Increase the use of scrap paper</li> </ul>
Reduce waste and expand recycling	<ul> <li>Reducing food waste by 5%</li> <li>Reduce waste generation by 5%</li> <li>Achieve 100% waste separation and recycling</li> </ul>
Reduce energy-use and GHG emission level	<ul> <li>Reduce energy-use by 5%</li> <li>Reduce GHG emissions (scope 1 &amp; 2) by 5%</li> <li>Conduct a detailed energy audit every 3 months</li> </ul>
	SAM

# **Environmental Management Organization Establishment**

• An environmental management organization should be established to manage the company's overall environmental performance.

 Appoint an environmental management representative to manage your company's environmental performance

 Establish an environmental management committee or team

#### Establishing an Environmental Management Organization

#### Who should be the environmental management representative?

- The Environmental Management Representative is the top plant manager responsible for the functioning of the organization's environmental management system (EMS).
- It is his or her job to ensure that all tasks relating to EMS are identified and completed in a timely manner.
- He or she is also responsible for reporting periodically to the President Director of the organization on the progress and results of the company's EMS.

#### Establishing an Environmental Management Organization

- Before establishing your environmental management organization, consider the following.
- Who is/should be our EMS Management Representative?
- Does this individual have the necessary authority to carry out the responsibilities of this job?
- How will we divide EMS roles and responsibilities?
- How do we ensure that adequate resources have been allocated for environmental management?
- How will we keep this information up-to-date?

# **Environmental Management Organization Establishment**

**SAMPLE Environmental Committee for F&B** – At least one environmental management representative should be selected to implement the company's environmental management

#### Responsibilities of F&B's Environmental Management Representative

- Establish environmental strategy and objectives
- Manage environmental data (energy, resources, GHG emissions)
- Monitoring and set reduction targets (energy, resources, GHG emissions), and compare with actual performance
- Foster green production processes by practicing cleaner production
- Prepare a guideline for eco-friendly purchasing



# **Environmental Data Management**

Environmental data should be managed in relative terms to compare your environmental targets (e.g.: reduction in energy use by 5% by year 2012) and your performance outcome (energy use in year 2012 compared to baseline year)

# Why should you manage your environmental data?

#### Absolute indicators

- Measure basic data in a given time frame, typically one year
- **e.g.)** tons of CO<sub>2</sub> emitted annually, tons of wastes generated annually
- Relative indicators (normalized indicators)
- Measurement of absolute consumption or emission figures relative to reference data
- Used to measure productivity and intensity ratios
- e.g.) waste generated per unit of production(kg)

# \*Relative indicators provide accurate information → better management

Track, analyze and compare monthly & annual environmental performance

## Environmental Data Management Tool

• The Project provided all participating SMEs with a tool that automatically calculates the organization's environmental data including:

Electricity consumption
 Fuel consumption
 Water use
 Use of materials (resources)
 Waste generation
 Emissions of harmful substances

\* The environmental data management excel tool is available on ASEIC's portal site. < http://www.aseic.org/main.do>

# **Environmental Data Management**

Using the excel tool  $\rightarrow$  Electricity Use (Example)

	(Company A) Indicator					
		Electricity Use Indicator			Criteria for Comparison	
	Total Price/Sales(%)	Use/Sales (kwh/1,000RM)	Total Price(RM)	Electricity Use (kwh)	Sales/1,000RM	Month(2010)
	0.5	70.35	2,307,390	32,642	464	1
	0.9	110.84	2,527,930	32,254	291	2
	0.5	62.99	2,203,710	29,102	462	3
	0.4	64.45	1,851,810	33,902	526	4
>	0.4	60.17	1,670,230	26,894	447	5
	0.3	36.44	1,806,190	23,832	654	6
	0.4	50.73	2,212,550	26,076	514	7
	0.6	69.43	2,181,980	24,163	348	8
	0.6	69.23	2,047,000	24,509	354	9
	0.5	42.08	2,054,190	17,549	417	10
	0.5	53.17	2,233,310	22,649	426	11
	0.6	<mark>64.03</mark>	2,468,170	25,675	401	12
	0.48	60.19	25,564,460.00	319,247	5,304.00	yr2010

Step 1: Input the amount of your monthly sales volume.

Step 2: Input monthly electricity use in kWh indicated in your energy bill.

Step 3: Input the monthly electricity rate indicated in your energy bill.

# **Environmental Data Management**

#### Using the excel tool $\rightarrow$ Electricity Use (Example)



Types of GHGs	Global Warming Potential
CO <sub>2</sub>	1
CH <sub>4</sub>	21
N <sub>2</sub> O	310
HFCs	140 ~ 11,700
PFCs	6,500 ~ 9,200
SF <sub>6</sub>	23,900

GHG calculation tool include

What are GHG Emissions? Where do they come from?

- GHG Emissions are gases in Earth's atmosphere that prevent heat from escaping into space. GHGs increase the Earth's surface temperature resulting in climate change and global warming.
- There are 6 types of GHGs.

• The 6 types of GHGs can come from 3 different scopes of emissions.

## Scope 1

- **Definition:** GHG emissions from sources that are owned or controlled by a Federal agency
- Examples:
- · Vehicles and equipment
- Stationary Sources
- On-site landfills & wastewater treatment
- Fugitive emissions

## Scope 2

- **Definition:** GHG emissions resulting from the generation of electricity, heat, or steam purchased by the company.
- Examples:
  - Purchased electricity
  - · Purchased Heating / Cooling
  - Purchased Steam

## Scope 3

- **Definition:** GHG emissions from sources not owned or directly controlled by the company but related to the company's activities.
- Examples:
  - Business travel
- Employee commuting
- Contracted solid waste disposal
- Contracted wastewater treatment
- Others

\* The GHG emissions data management tool is available on ASEIC's portal site. < http://www.aseic.org/main.do>

## 1. Station Combustion (Scope 1 Emission)



the facility uses more than one type of fuel

## 2. Mobile Combustion (Scope 1 Emission)



## 3. Electricity (Scope 2 Emission)





Total GHG emissions automatically calculated – A table is constructed showing accumulated GHG emissions for scopes 1 & 2

Emission Type		Emission total Amount	Emission Subtotal Amount	CO <sub>2</sub>	CH4	N <sub>2</sub> O	Types o HFCs	f GHGs PFCs	SF <sub>6</sub>	
	Stationary combustion	Fuel	0	0.0	0.0	0.0	0.0	-	-	-
SCOPE 1	Mobile combustion	Vehicle	93	92.8	91.3	0.1	1.4	-	-	-
Sub total		93	92.8	91.3	0.1	1.4	0.0	0.0	0.0	
SCODE 2	Electricity	Purchasing Electricity	7,566	7,566.2	7,555.5	1.5	9.1	-	-	-
Score 2 Sub total		7,566	7,566.2	7,555.5	1.5	9.1	0.0	0.0	0.0	
GH	IG Total Emission (Sco	pe 1 + 2)	7,659	7,659.0	7,646.8	1.7	10.6	0.0	0.0	0.0

# **Managing Environment Data**

How to use the environmental data management excel tool : The tool automatically calculates your monthly and yearly ratio of electricity use to your sales volume.

			) Indicator	(Company A		
		se Indicator		Comparison	Criteria for Comparison	
	Total Price/Sales(%)	Use/Sales (kwh/1,000RM)	Total Price(RM)	Electricity Use (kwh)	Sales/1,000RM	lonth(2010)
	0.5	70.35	2,307,390	32,642	464	1
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	0.5	53.17	2,233,310	22,649	426	11
	0.6	64.03	2,468,170	25,675	401	12
	0.48		25,564,460.00	319,247	5,304.00	yr2010

**Step 1:** Input the amount your monthly sales volume.

**Step 2:** Input monthly electricity use in kWh indicated in your energy bill.

**Step 3:** Input the monthly electricity rate indicated in your energy bill.



# **Cleaner Production**

"Cleaner production is the continuous application of an integrated preventative environmental strategy to processes, products and services to increase inefficiency and reduce risks to humans and the environment" (United Nations Environment Programme, 1991)



■ Good housekeeping: appropriate provisions to prevent leaks and spills and to achieve proper, standardized operation and maintenance procedures and practices. → Lowest cost and most basic form of cleaner production

• Input material change: replace hazardous or non-renewable inputs with less hazardous or renewable materials or by materials with a longer service life-time

• Better process control: modification of the working procedures, machine instructions and process record keeping for operating processes at higher efficiency and lower rates of waste and emission generation

• Equipment modification: modification of the production equipment so as to run the processes at higher efficiency and lower rates of waste and emissions generation

• Technology change: replacement of technology processing sequence and/or synthesis pathway in order to minimize the rates of waste and emissions generation during production

• On-site recovery / reuse: reuse of wasted materials in the same process or for another useful application within the company

• **Production of useful by-products:** transformation of previously discarded wastes into materials that can be reused or recycled for another application outside the company

• **Product modification:** modification of product characteristics in order to minimize the environmental impacts of the product during or after its use (disposal) or to minimize the environmental impacts of its production (e.g.: automatic control)

# **Cleaner Production**

 To foster greener industrial processes, many nations have developed national programs to foster cleaner production.

In Malaysia, the Cleaner Production Virtual Centre (CPVC) Malaysia is responsible for fostering cleaner production initiatives of companies.

• Enterprises that need assistance with cleaner production should contact CPVC for training and support.

#### Website:<u>http://cp.doe.gov.my/cpvc/</u>

• CPVC Malaysia is hosted by the Cleaner Technolgoy Unit, Department of Environment Malaysia, to help inform and educate Malaysian SMEs about cleaner production opportunities.

CPVC provides workshops, roadshows and case studies for SMEs.

• CPVC also provides "cleaner production implementation tool" <u>http://cp.doe.gov.my/cpit/login.php</u>, which is a webbased tool developed by Department of Environment to assist Malaysian SME / SMI in conducting qualitative and quantitative audits to determine opportunities of waste reduction potential.

#### Rainwater harvesting by MM Vitaoils Sdn Bhd



## Efficient Lighting by MM Vitaoils Sdn Bhd



# **Cleaner Production – Resource Efficiency**

- Material flow analysis is a systematic approach aiming at:
  - Presenting an overview of materials used in a company
  - Identifying the point of origin, the volumes as well as the causes of waste and emissions
  - Creating a basis for an evaluation and forecast of future developments
  - Defining strategies to improve the overall situation
- There are 7 steps to completing the material flow analysis:
  - 1) Define the objective of the material flow analysis and parameters to be monitored
  - 2) Define the balance scope
  - 3) Define the balance period
  - 4) Identify and define process steps
  - 5) Draw a flowchart: qualitative approach
  - 6) Draw up balances: quantitative approach
  - 7) Interpretation of the results
  - 8) Conclusion



# **Resource Efficiency Example 1. Process Simulation Tool**

- Improve metal mold design to save costs on materials and energy

CAD/CAM system used to design metal molds

**BEFORE** 





- $\ensuremath{\cdot}$  The design is too big, or too small for the product
- Unnecessary material input, high waste generation

#### Use metal mold design simulation tool





• The simulation program provides solutions for optimal metal mold designs

**AFTER** 

• Minimize waste and material input

- Improvement result: Save 14,500 USD / yr
- Reduce purchasing costs of raw materials from less input
- Reduce utility costs (electricity, gas, etc)
- Reduce working hours and equipment costs

# **Resource Efficiency Example 2. Jig Reuse**



# **Resource Efficiency Example 3. Efficient use of PVC using MFA**



- Minimize the use of materials & reduce waste

## **Resource Efficiency Example 4. Minimize the use of packaging materials**



- Avoid unnecessary time consumption and costs from packaging

# **Cleaner Production - Energy Efficiency**

• Energy efficiency aims to increase efficiency in terms of conversion, distribution and utilization of energy and heat recovery.

- The company's energy system covers six areas:1) Data collection
  - Collect data on type, number and characteristics of equipment/machines;
  - Types of energy consumed
- 2) Energy purchase
  - Analyze energy consumption
- 3) For all areas:
  - Interpret the data in comparison with benchmarks
  - Suggest possible solutions for efficient use of energy



# **Energy Efficiency Example 1. Energy audit**



## Improvement result: Save 3,460 USD/yr

- Reduce energy use by maintaining appropriate pressure level of the air compressor

## **Energy Efficiency Example 2. Additional installation of pipe hangers**



> Improvement result: Save (20.46 USD/hr\*616 hr – 10.68 USD/hr\*616 hr) \* 0.47 = 2,831.51 USD/yr

# **Energy Efficiency Example 3. Optimize drying process**



# **Cleaner Production - Waste Management**

• Avoiding waste is more economical and environmentally friendly than collecting and recycling wastes.

• Waste consists of costly raw materials that have not been transformed into products and for which one pays additional disposal costs.

 Integrating waste management into the company's environmental management is crucial to saving resources and costs:

Good waste management practice should include the following:

1) Familiarize employees with relevant waste management regulations

2) Ensure that the legal requirements for waste management are observed and initiated

3) Designate a specific area for different types of wastes

4) Collect data on waste volume and disposal costs

5) Evaluate and identify areas of improvement for waste management

6) Implement specific measures for proper waste management



# Waste Management Example 1. Waste separation



# **Environmental Transparency**

Global companies are disclosing their environmental management practices.

- $\Rightarrow$  WHY: Interested stakeholders (investors, consumers, buyers, suppliers) pressure companies to measure their sustainability.
- $\Rightarrow$  HOW: Transparency is the first step to environmental responsibility of companies

#### Sample 1 Sample 2 What and how to disclose environmental information? Information Content Use of Electricity, Fuel, Materials Waste and Toxic Substance Generation Carbon footprint **Environmental Management Strategies & Environmental policy Environmental management** Targets on website bulletin board Methods Sample 3 Disclose environmental management information on company's website Publish a sustainability report Use **bulletin boards** to share information on the company's environmental management status and sustainability to employees & clients

Sustainability report

# **Environmental Transparency**

#### How to write a sustainability report

Sustainability Report

#### Contents

Managing Director's Message Company Overview Report Overview

- 1.Environmental Management Strategy & System
- Environmental Management Performance & Targets
- Environmental Management System
- 2. Environmental Management Practices
- Green Procurement
- Education & Training Activities
- Environmental Certification
- Others
- 3. Energy & Resources
- Energy efficiency
- Resource efficiency
- 4. GHG Emissions & Environmental Pollution
- GHG Emissions & Reduction Target
- -Environmental Compliance

#### Appendix

#### **Energy & Resources**

Energy-saving activities:

- Schedules adjusted for cooling, heating, and air filtration
- Heat exchangers installed
- Hot water supplied on ground floors
- Floor lamps replaced with highefficient lights

	Unit	2009	2010	
LNG	Nm3	265,626	275,319	
Diesel	ł	106,947	80,947	
Gasoline	ł	221,330	242,368	
Electricity	kWh	55,314	59,767	
Heating System	Gcal	1,059	1,192	
		5	SAMPLE	

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# **Eco-innovation Strategy**

- Eco-innovation is innovation that results in a reduction of environmental impact, no matter whether or not that effect is intended.
- Eco-innovation can be analyzed along three dimensions:
- 1) Targets: the focus areas of eco-innovation such as products, processes, marketing methods, organizations and institutions
- 2) Mechanisms: the ways in which changes are made in the targets (modification, redesign, alternatives and creation)
- 3) Impacts: effects of eco-innovation on the environment

#### The following eco-innovation strategy was identified as most suitable for F&B Nutrition.

Sustainable Business Management				
Strategy	<ul> <li>Establish EM strategy, objectives and quantitative targets</li> </ul>			
System	<ul> <li>Appoint an EM representative</li> <li>Establish an EM committee</li> </ul>			
Energy & Resources	<ul> <li>Monitor the use of energy &amp; set reduction targets</li> <li>Foster greener industrial process activities</li> </ul>			
GHG Emissions / Environmental Compliance	<ul> <li>Calculate GHG emissions &amp; set reduction targets</li> </ul>			
Environmental CSR	<ul> <li>Disclose organization's environmental activities on website or publish a sustainability report</li> </ul>			



F&B Nutrition Eco-innovation Strategy

# **Sustainable Business Management**

## **Sustainable Business Management Recommendations**

#### 1. Environmental Strategy & Policies

- Establish an environmental management strategy
- Set qualitative objectives and quantitative targets based on your EM strategy
- Increase green procurement such as purchase of eco-friendly office supplies and recycled materials
- Increase efficiency of equipments for energy efficiency

#### 2. Environmental Management System

- Appoint an environmental management representative and establish an environmental management committee
- Establish an internal bulletin board to share EM information with employees & visitors
- Conduct an internal energy audit (twice a year)
- Attend EM & cleaner production training sessions provided by governmental organizations or global corporations

#### 3. Energy & Resources

- Monitor energy consumption using relative indicators (use environmental data management tool provided by Eco-Frontier)
- Set quantitative reduction targets
- Annually compare environmental performance and targets

#### 4. GHG Emissions and Environmental Pollution

- Calculate GHG emissions (Scope 1 & 2) from total energy use using GHG calculation excel tool provided by Eco- Frontier
- Set GHG emissions reduction target

#### 5. Environmental CSR

- Disclose company's environmental management status on website (start with a simple environmental management policy)
- Publish a sustainability report

# **Eco-design**

## What is Eco-design?

• Eco-design is the systematic integration of environmental aspects into the product design with the aim to improve the environmental performance through it whole life cycle .



**Question:** Which packaging method is more eco-friendly?

**Answer:** Neither is more eco-friendly than the other. Eco-design is a **relative-term.** Choose a method most suitable for your product.

E.g.: If you can't use recycled materials, you can reduce excess space.

# **Eco-design**

## What are some criteria for eco-friendly design?

Eco-friendly design reduces production costs and environmental burden.

#### Use uni-material Coca-cola



- Do not use toxic color paint
- Only uses aluminum, which can be fully recycled
- Benefits:
- Save energy & production costs

## Use modularized parts in packaging Food City\_



Uses eco-friendly cardboard

#### Benefits:



- Modular system can meet a large number of packaging combinations and achieve maximum usability of packaging and save costs

### Reduce weight and volume of packaging 「PUMA」



- Uses 65% less cardboard than standard shoe box
- No laminated printing, no tissue paper
- Benefits:
  - Save energy & production costs

### Use recyclable materials for packaging [L'OCCITANE]



- Uses 100% recyclable materials
- Reduce weight of packaging
- Uses materials that come from sustainably managed forests
- Uses already recycled products and least harmful to the environment
- Benefits:
  - Save energy & production costs

# **Eco-design : Eco-friendly Packaging**

## **Benefits of Eco-design**

- Eco-friendly packaging need to be well-designed, streamlined, biodegradable and easily recycled or reused.
- Businesses can reduce cost and increase long-term profit
- e.g.: reduce excess space or weight of packaging material = reduce costs in transportation
- e.g.: green consumers seek eco-friendly products = increase long-term profit margin

STEP 1: Identify major products & determine the applicability of eco-design.

STEP 2: Use the eco-friendly packaging checklist to rate the "eco-friendliness" of the existing packaging design.

*Eco_friendly	nackaging	decian	checklist
Eco-menuly	раскаушу	uesign	CHECKIST

	EM Representative:		
	Designer:		
	Product Name:		
No	Criteria for Eco-friendly Packaging	Yes / No	Comments
1	Do not use environmentally regulated substances. (e.g.: Pb, Cd, Cr+6, Hg)		
2	Do not use metallic materials.		
3	Reduce or minimize weight of packaging per content (g of packaging / g of chocolate).		
4	Use modularized parts.		
5	Use recyclable materials (please refer to the "recycling grade of materials" document).		$\sim$
6	Reduce number of material types used (use of uni-material).		2,10
7	Reduce the number of part types.		A PORT
8	Label recycling information.		InnSU
9	Apply eco-friendly surface treatment.	0	0000
10	Reduce excess or dead space for transportation efficiency and cost reduction.		
11	Use recycled materials.		
12	Use same material for both packaging and labelling.		

checklist, develop an improved eco-

friendly design





## **ASEM SMEs Eco-Innovation Consulting Project :**

- Eco-Innovation Guideline for F&B Nutrition Sdn Bhd -

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