

Environmental Accounting Towards A Sustainable Future

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Outline of Presentation

- Introduction
- Environmental Accounting
- Environmental Reporting
- Environmental Management Accounting (EMA)
- Material Flow Cost Accounting (MFCA)
- Examples
- Empirical studies
- Conclusion
- A reminder





What is Happening to our Environment?

Habitat destruction

- Logging

Air, water, noise pollution

- Dumping of toxic waste
- Dumping of animal waste
- Carbon emission

Global warming and climate change

Depletion of ozone layer





Environmental Disaster

Extreme weather and global warming are causing severe floods and droughts, globally.



China's Drought: The worst in 65 years (2014)





Water shortage puts Kelantan rice crop at risk





Environmental Disaster: Closer to Home

In Malaysia, three days of heavy downpour caused severe flooding in eight states.



Environmental Disaster: Closer to Home



Malaysia (2021)



Environmental Disaster: Closer to Home

“There's nowhere to run”

- CNN Report (Sept 23, 1997)
- Smoky haze hits dangerous levels in some parts of Southeast Asia





Environmental Disaster: Closer to Home

Air pollution levels:

- Between 100 and 200 = **"UNHEALTHY"**
- Between 201 and 300 = **"VERY UNHEALTHY"**
- Between 301 and 500 = **"HAZARDOUS"**



Exposure to a level between 200 and 300 for a day is equivalent to smoking 20 cigarettes



Environmental Disaster: Closer to Home



In Kuching, Sarawak

IT WAS 839



In Sri Aman, Sarawak

**IT WAS 395
(2019)**



Environmental Disaster: Closer to Home



History repeats itself!

**Air Pollution Index (API)
hit 750 in the town of
Muar, Johor**

A 16-year high for
Malaysia (2013)



Air Pollution Index

Index Value	Name	Color	Advisory
0 to 50	Good	Green	None
51 to 100	Moderate	Yellow	Unusually sensitive individuals should consider limiting prolonged outdoor exertion
101 to 150	Unhealthy for sensitive groups	Orange	Children, active adults and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion
151 to 200	Unhealthy	Red	Children, active adults and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else should limit prolonged outdoor exertion
201 to 300	Very unhealthy	Purple	Children, active adults and people with respiratory disease, such as asthma, should avoid outdoor exertion; everyone else should limit outdoor exertion
301 to 500	Hazardous	Maroon	Everyone should avoid all physical activity outdoors



Environmental Disaster: Closer to Home

> JOHOR

The ever-changing colours of a river



Raban showing the colour of the water in the Sungai Perling tributary. — NST picture by Roslan Khamis

JOHOR BARU: The water in the Sungai Perling tributary here changes from scarlet to blue and on some days, it is tinted gold.

But to residents of Tanjung Indah, it is a common occurrence.

"The water looks like *teh tarik* sometimes, but on most days it is dark red," said Mahmood Samiran, 41, a resident of the Seri Indah flats nearby.

Mahmood, who highlighted the matter to the *New Straits Times* yesterday, said he had reported this to the state Department of Environment (DOE) twice.

"I was told that the matter was not under the jurisdiction of the DOE by one of the officers," he added.

"Numerous 'Love Your River' campaigns have been held but when we want to show our love, the relevant authorities tell us they cannot do anything about it," said Mahmood, who together with a friend, Raban Daing Pelalau, 51, have tried to trace the source of the pollution by heading upstream.

Raban Daing, a taxi driver, said they suspected a cottage industry in Taman Johor may be the culprit.

"However, we would like the DOE to check on the factory and maybe collect water samples before the coloured water pollutes the Tebrau Straits, which Sungai Perling flows into," he added.

The DOE could not be reached for comment.



What Do Businesses Need To Do?



People, Planet and Profit (3Ps)



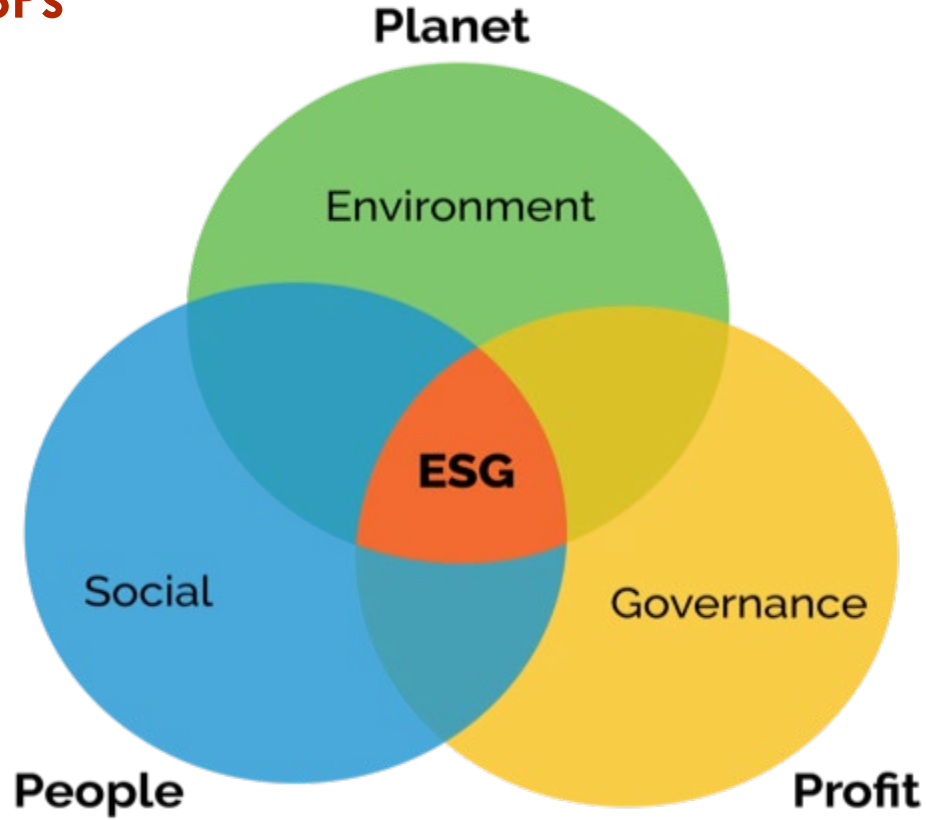


Environmental, Social and Governance (ESG)



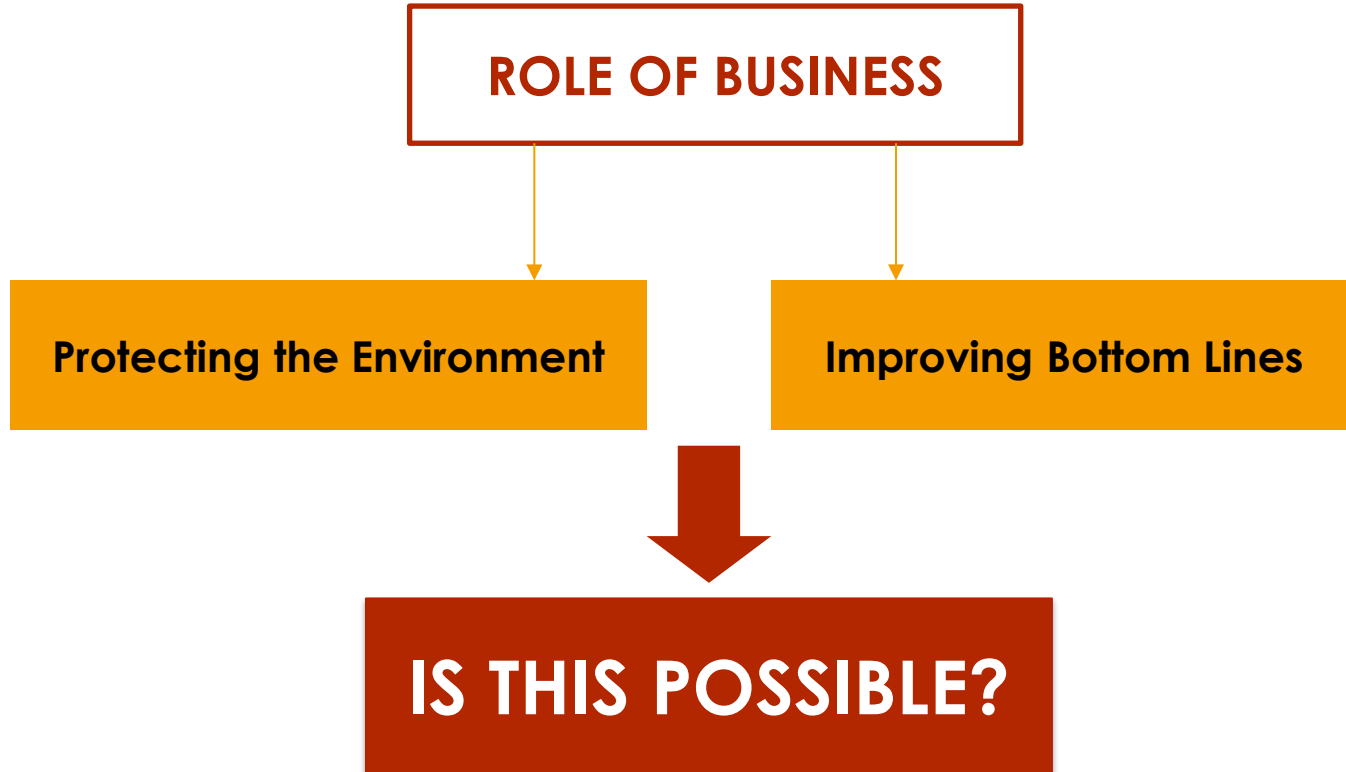


ESG and 3Ps



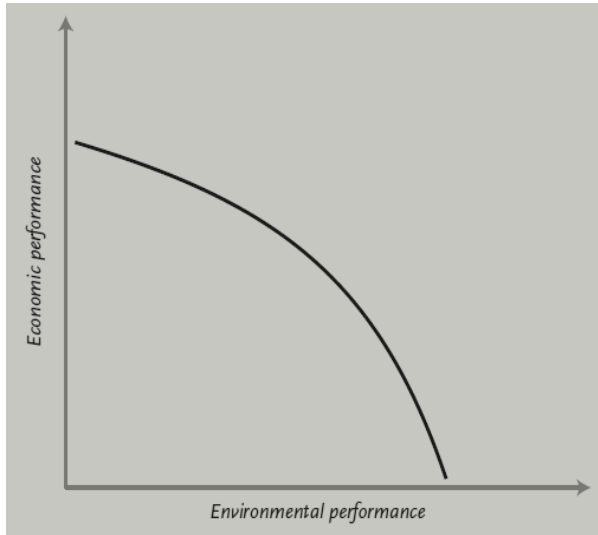


Businesses

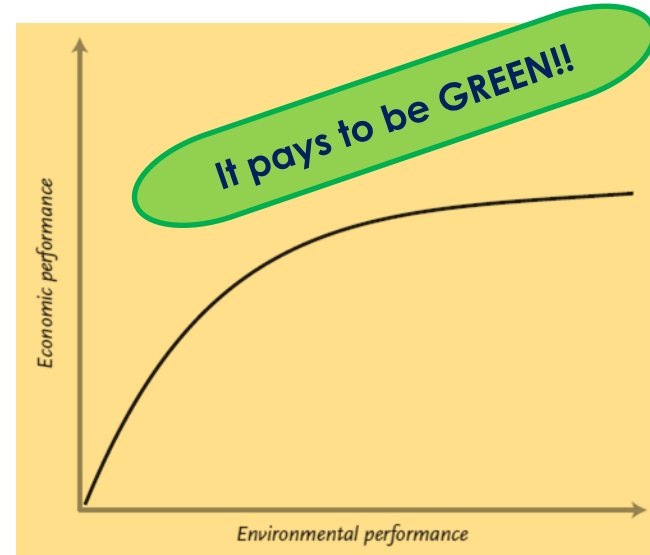




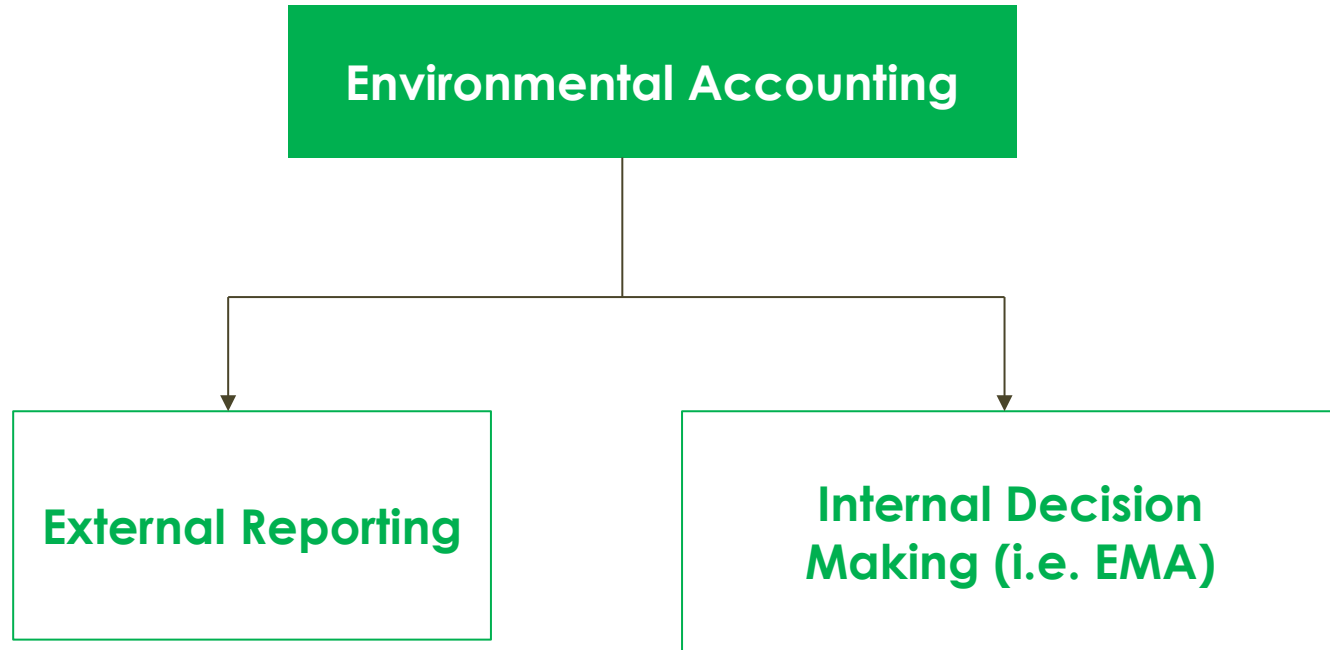
Environmental Management (EM), Environmental Performance (EP) and Economic Performance (EcP) Interrelationships



Traditionalist view



Revisionist view





External Reporting



Corporate Reporting Journey

Financial Reports

- Financial information
- Backward looking
- Short term focus
- Compliance with regulations and standards to inform investors
- Financial Accounting Standards Board; General Accepted Accounting Procedures (IASB, IFRS)
- Mandatory for publicly listed companies

Sustainability Reports

- Primarily non-financial information
- Backward and forward looking
- Long term focus
- Global Reporting Initiative (GRI)
- Voluntary and mandatory
- ESG

Integrated Reports

- Financial and non-financial information
- Backward and forward looking
- Short-medium-long term
- Support more informed capital allocation
- International Integrated Reporting Council (IIRC), Sustainability Accounting Standards Board
- Voluntary and mandatory



Sustainability Reporting

GRI (1997)

- (Global Reporting Initiative)

IIRC (2010)

- (International Integrated Reporting Council)

SASB (2011)

- (Sustainability Accounting Standards Board)
- Released the framework in 2013

CDP (2000)

- (Carbon Disclosure Project)

CDSB (2007)

- (Climate Disclosure Standards Board)



Sustainability Reporting



Moving Forward In 2014

“ Perhaps it is time that the leaders of the IIRC, GRI and SASB meet together at a Complementarity Retreat (no MOU necessary) and emerge with a set of agreed actions that will recognize the different value propositions of each framework, while ensuring a synergistic approach which will move us forward inclusively rather than driving more debate competitively. “

Elaine Cohen

CEO, Beyond Business Ltd



Sustainability Reporting

July 2020

- GRI and SASB announced a collaborative workplan.
- A Practical Guide to Sustainability Reporting using GRI and SASB Standards (2021).

September 2020

- CDP, CDSB, GRI, IIRC and SASB announced a shared vision for a comprehensive corporate reporting system that includes both financial accounting and sustainability disclosure, connected via integrated reporting.

June 2021

- SASB and IIRC merged to form the Value Reporting Foundation



Sustainability Reporting in Malaysia

In 2006

- Bursa Malaysia launched its CSR Framework for PLCs
.....a set of voluntary, flexible guidelines that outline key focal areas and CSR initiatives covering 4 main aspects:
 - Environment
 - Community
 - Workplace
 - Marketplace

In 2007

- Included prov 29 in its listing requirements
- All PLCs **must** include a description of the CSR activities



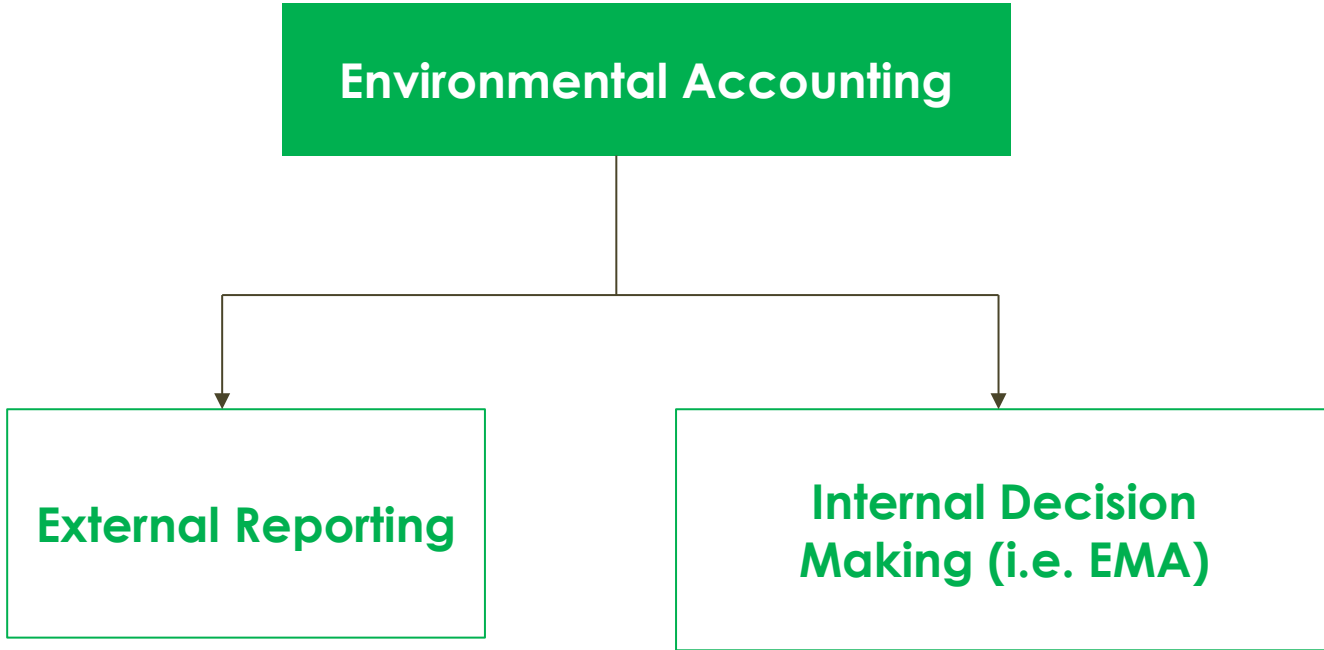
Sustainability Reporting in Malaysia

In 2015

- Sustainability statement is now mandatory in the annual report of all listed companies in Malaysia.
- Companies must demonstrate environment, social and governance practices.
- The sustainability statement **should be produced** separately by the board of directors in the annual report (cannot be part of chairman's statement)
- Bursa Malaysia Sustainability Reporting Guide 2015
- Bursa Malaysia Sustainability Reporting Guide (2nd Edition) (2018)



Environmental Accounting





Environmental Management Accounting (EMA)



EMA

The management of environmental and economic performance through the development and implementation of appropriate environment related accounting systems and practices.

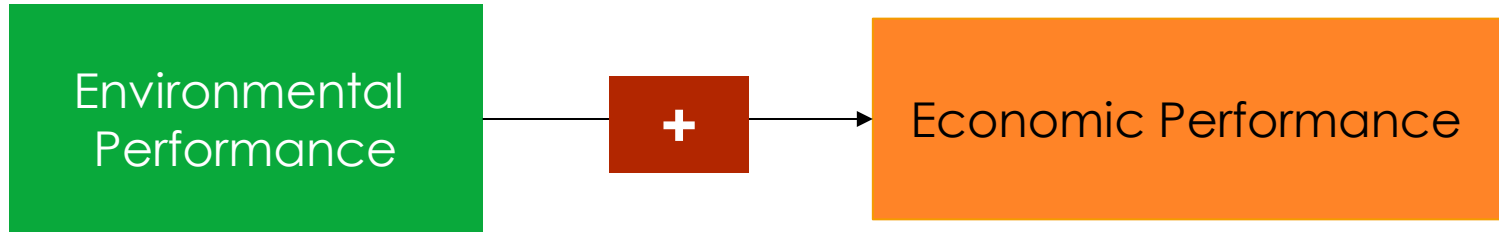


IFAC (1998)



EMA

- Improved environmental and economic performance
- POSSIBLE

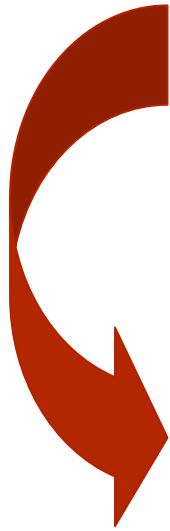




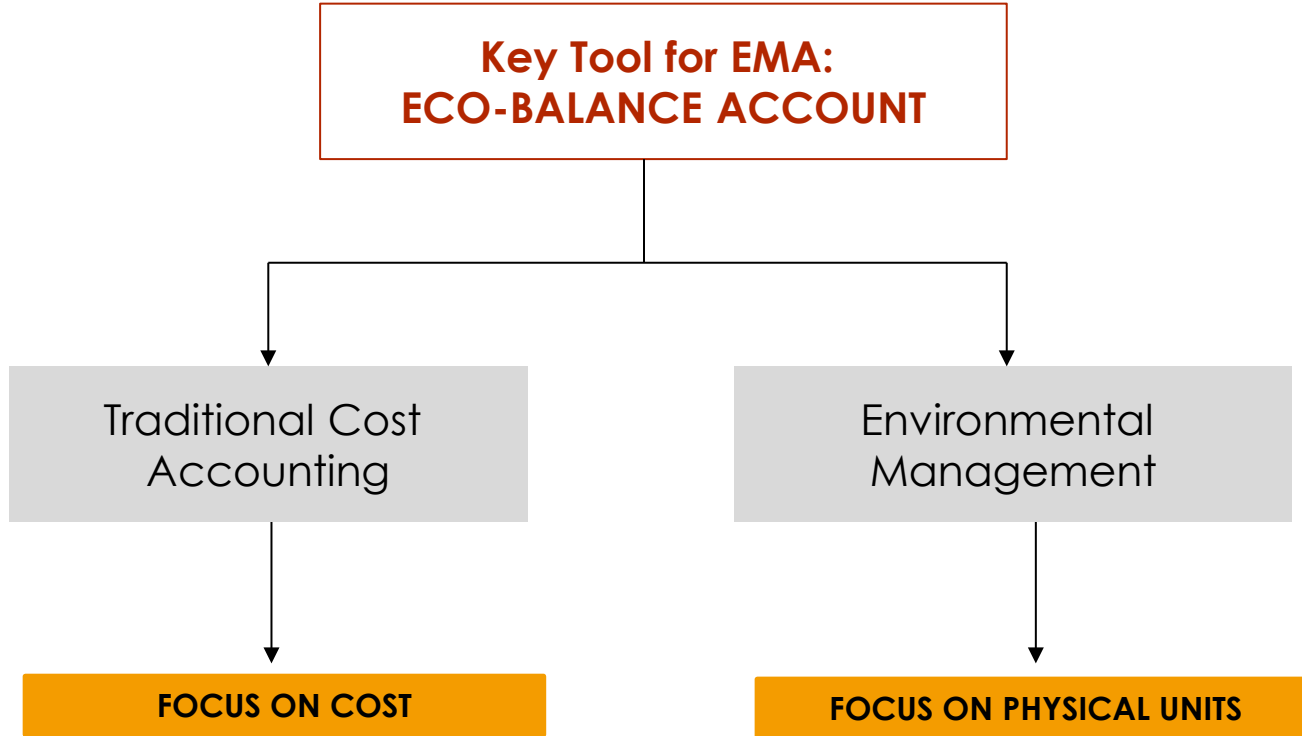
EMA

Waste Minimisation

**Energy Efficiency
Scheme**



**Substantial Economic Benefits
to the Company**





EMA

EMA procedures include both physical procedures for material and energy consumption, flows and final disposal, and monetarised procedures for costs, savings and revenues related to activities with a potential environmental impact.

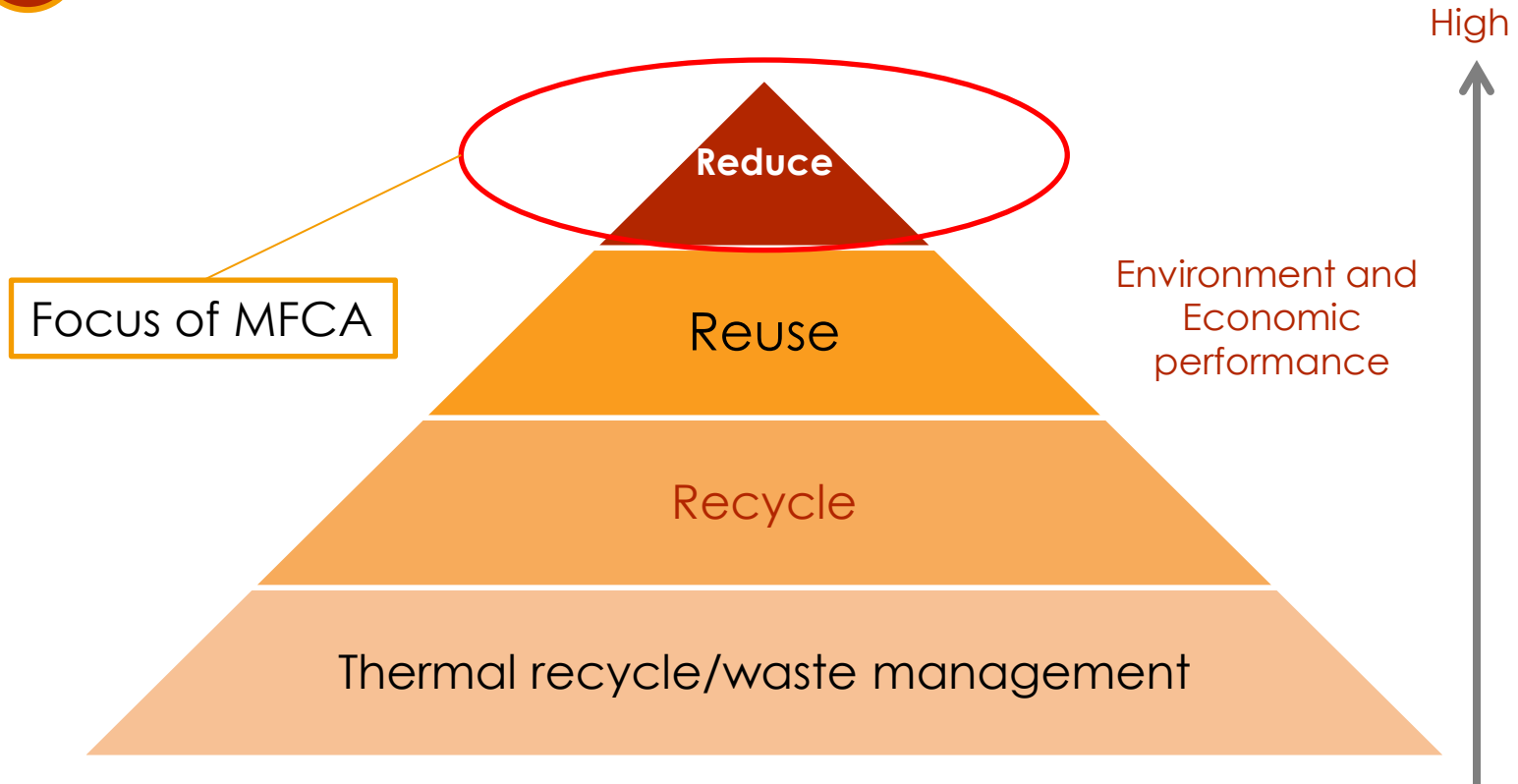




Material Flow Cost Accounting (MFCA)



MFCA and Environmental Performance



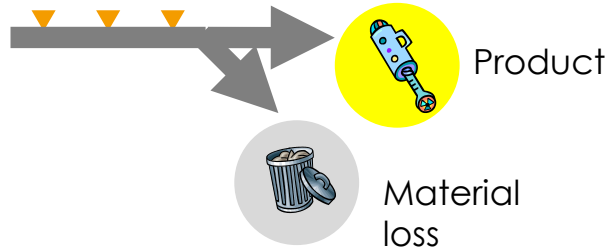
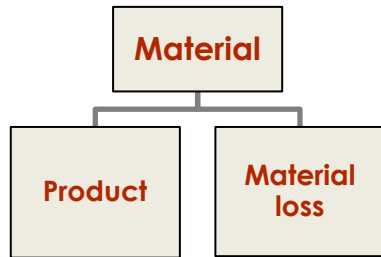


MFCA

- Tool for quantifying the flows and stocks of materials in processes or production lines in both physical and monetary units
- Originated in Germany
- Strong uptake in Japan
- Being formalised
 - ISO 14051: 2011 MFCA
 - ISO 14052: 2017 MFCA and Supply chain
 - ISO 1405?: ?? MFCA and SMEs



What is MFCA?



3 elements MFC(A) constitutes Material Flow Cost Accounting



MFCA

- Converting quantitative data to an eco-balance account;



- In MFCA, the focus is on waste
- Costs of material waste is not merely waste disposal costs; others are mostly hidden



Waste costs

- Identifying 'hidden' environmentally induced costs



Transparent and hidden costs related to waste flows (GIZ, 2008)



Environmental Costs are Often Underestimated

Research Findings:

- Companies typically underestimate how much waste really costs them
- This applies even to big, well-managed companies



The Cost of Waste Ink at the Southwire Company

The cost of a drum of hazardous waste ink was estimated as
\$50 – the average disposal cost per drum

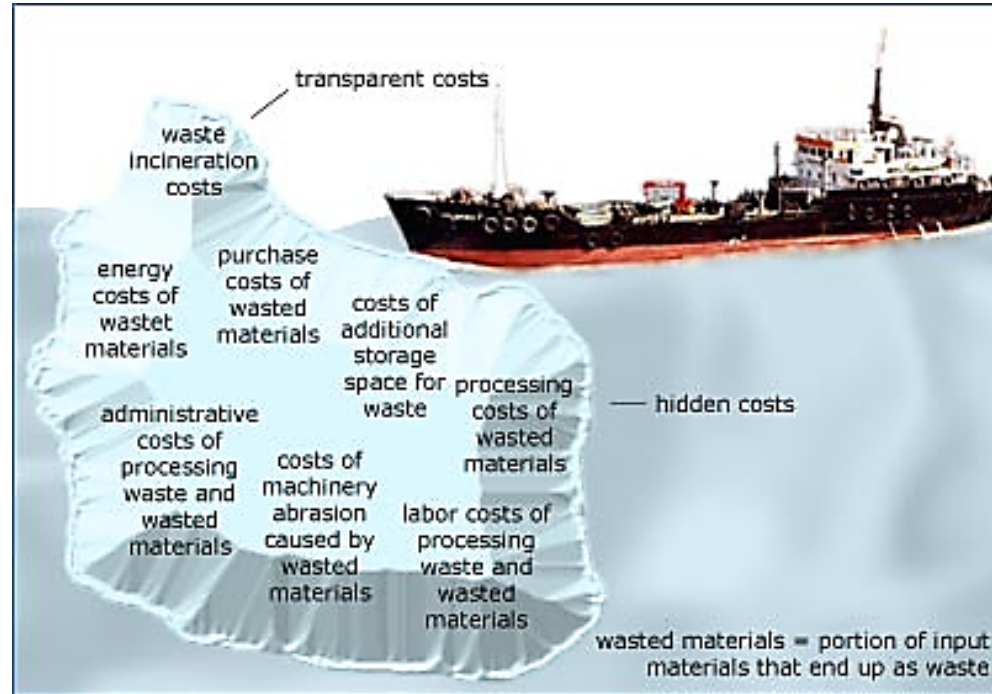
The true cost of waste was actually \$1300 per drum:

- \$819 in lost raw materials (ink, thinner)
- \$369 for corporate waste management activities
- **\$50 for disposal**
- \$47 for internal waste handling activities
- \$16 to pay a hazardous waste tax



Waste costs

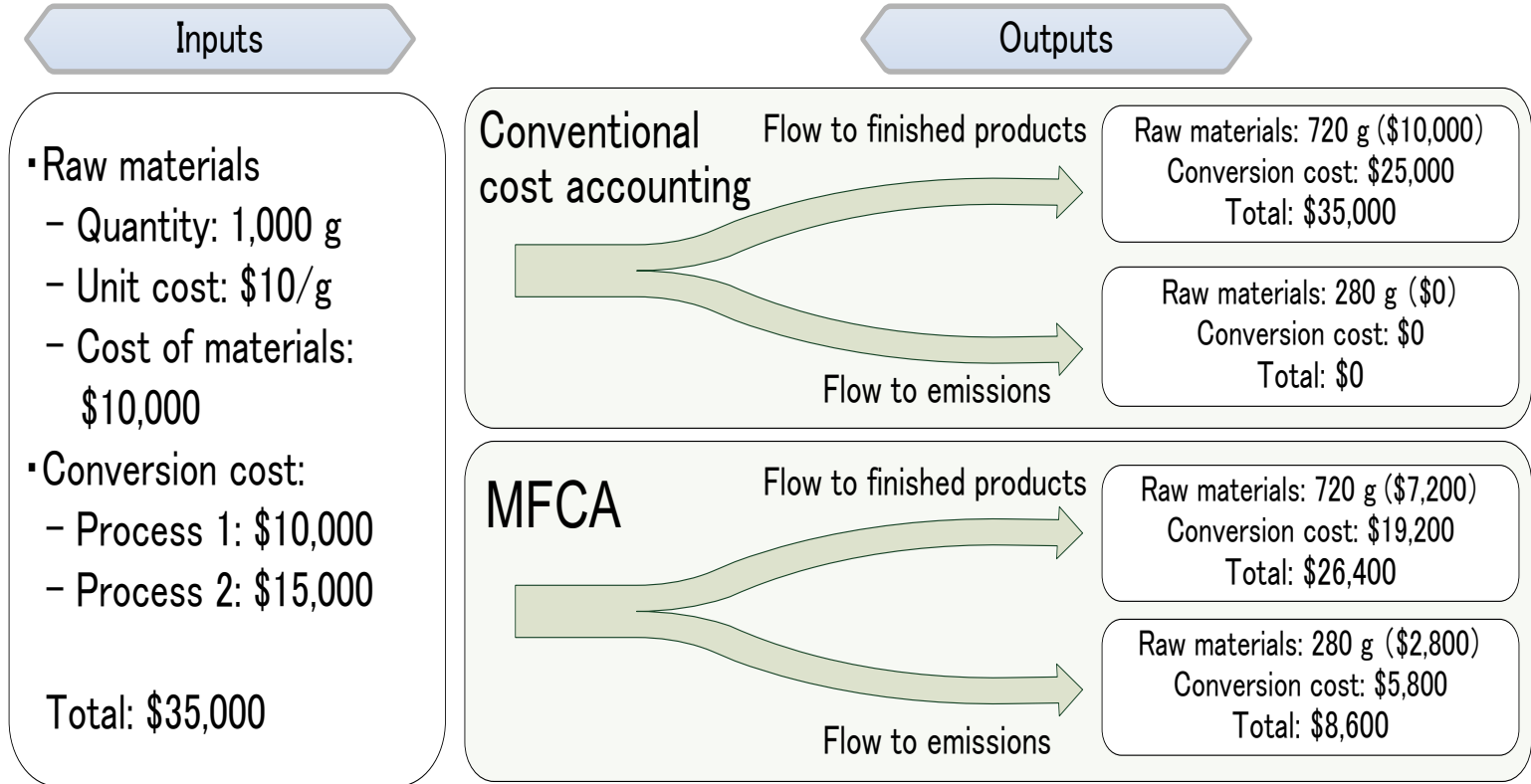
- Identifying 'hidden' environmentally induced costs



Transparent and hidden costs related to waste flows (GIZ, 2008)



MFCA vs Conventional CA





Conventional Cost Accounting

Material Inputs Conversion costs 100gm (\$35,000)	Product Outputs 720gm (\$35,000)
	Non-product Outputs (Waste + Emissions) 280gm (\$0)



MFCALogoinc

Material Inputs Conversion costs 100gm (\$35,000)	Product Outputs 720gm (\$26,400)
	Non-product Outputs (Waste + Emissions) 280gm (\$8,600)



Costs

MC: Material Cost

- Expense for the materials that are used and/or consumed in a quantity centre

EC: Energy Cost

- Expense for the energy used to enable operations

SC: System Cost

- All expenses incurred in the course of in-house handling of the material flows except for material costs, energy costs and waste management costs

Waste management costs



MFCA - Contribution to Sustainable Development

For the company



For others
(Environment)



Improvement of material efficiency

What you can potentially achieve through MFCA

For others
(Environment)



For you

Improvement of energy efficiency
CO2 emissions

Reduction of cost
(reduced input cost per product)

For the company





MFCA and Sustainable Development

Japan

- Introduced MFCA into domestic industry since 2000
- Regards MFCA as an effective Kaizen tool which contributes to the environment and the economy;

Malaysia

- 20 MFCA projects in manufacturing companies in various sectors (initially, it was 5).



Japanese Success Stories

Nitto

Innovation for Customers

NITTO DENKO CORPORATION

...first company to embark on MFCA in 2000.

Material loss in 2000 was 32%

In 2004 it was 22%

In 2010 it was 10%



Japanese Success Stories

SEKISUI

SEKISUI CHEMICAL CO LTD

The company's group-wide target was set to reduce loss costs by 5 billion yen from 2006 to 2008.

The target was achieved in 2007 and losses were reduced by 5.3 billion yen (Total amount of waste was reduced by 11%).



Company	
EM Enterprise	High Precision Engineering for Oil and Gas Components
Kiwi	Automotive Component – Tier 2
Alif Enterprise	Automotive Component Manufacturer- Tier 1
Tiger	Industrial Plastic Magnets
Tetra	Transmission Cables



Malaysia

Alif Enterprise

- Small & medium size metal stamping for the automotive industry
- RM7.2 million worth of metal scrap annually

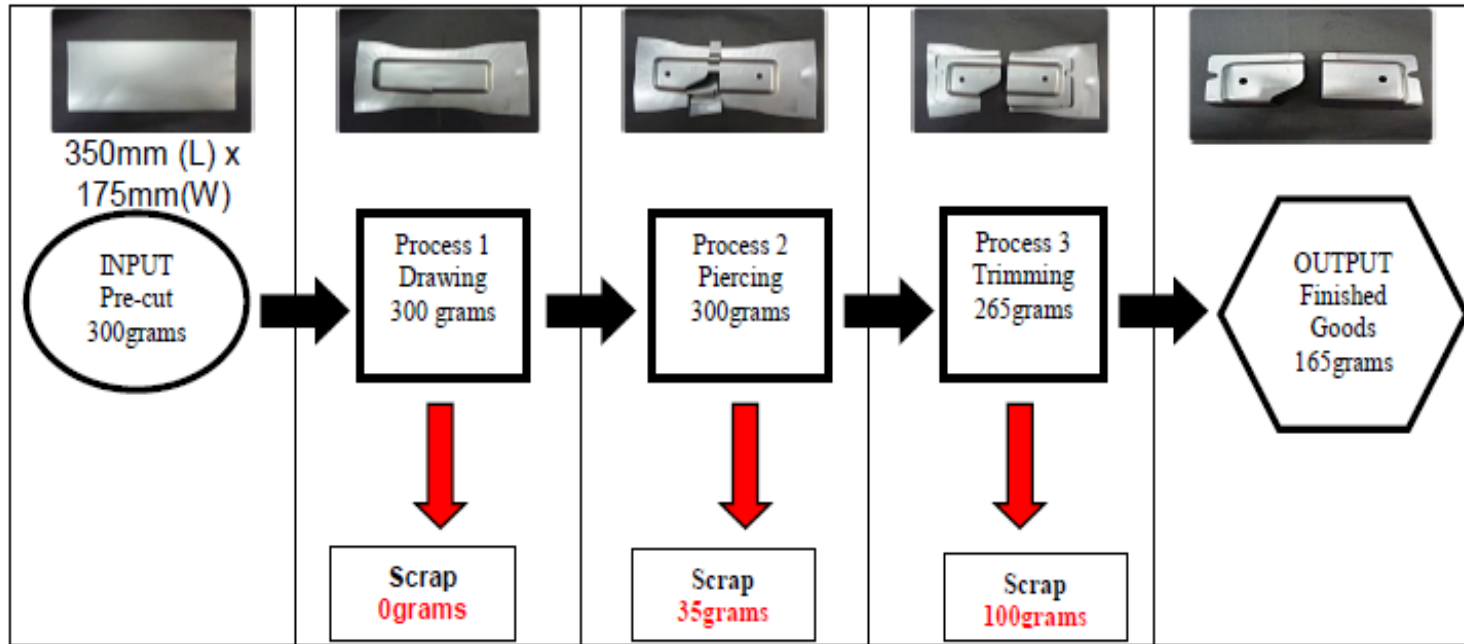
EM Enterprise

- Manufactures small & precision metal parts for the oil & gas, electronics, medical and precision machinery industries



Alif Enterprise

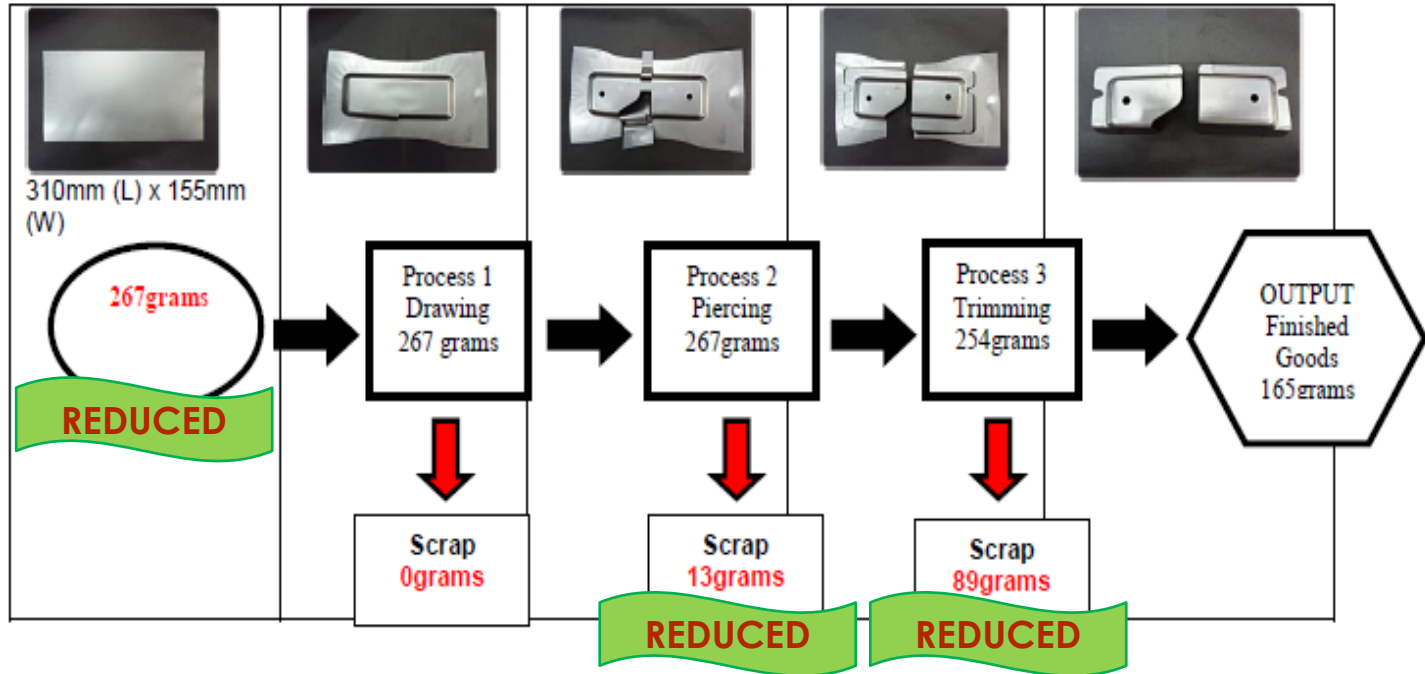
- Before MFCA activity





Alif Enterprise

- After MFCA activity





Alif Enterprise

- Summary of cost savings per month on small press stamping:

Cost	BEFORE	AFTER	SAVINGS
Product	1 485 kg	1 485 kg	
	RM 3800	RM 3800	
Material Loss	1 215 kg	918 kg	297 kg
	RM 3000	RM 2300	RM 700
Total	2700 kg	2403 kg	
	RM 6800	RM 6100	



Cost Savings

Company	RM
EM Enterprise	40,000
Kiwi	40,000
Alif	1,500,000
Tiger	6,000
Tetra	50,000
Total Savings	1,636,000



Empirical Research on MFCA



Objectives of The Study

Examine:

- Benefits of implementing MFCA
- Challenges that SMEs face in adopting MFCA.



Economic Performance

	Mean	Rank
MFCA improves decision making	3.82	4
MFCA improves the level of productivity	3.73	
MFCA improves production process	3.73	
MFCA improves levels of products sales	3.09	
MFCA decreases product costing	4.00	1
MFCA increases profit making	3.73	
MFCA increases stakeholder overall satisfaction	3.82	4
MFCA improves corporate image	4.00	1
MFCA improves product image	3.91	3
MFCA improves in company's reputation	3.64	



Environmental Performance

	Mean	Rank
MFCA reduces solid waste	3.91	1
MFCA reduces use of energy	3.73	4
MFCA reduces recycling	3.73	4
MFCA reduces use of water	3.27	
MFCA reduces soil contamination	3.64	
MFCA reduces use of natural resources	3.64	
MFCA increases environmental-friendly products	3.91	1
MFCA increases energy and material efficient use	3.73	
MFCA encourages better support from top management for R&D on environmental issues	3.91	1
MFCA integrates environmental issues into long term strategic planning	3.73	4



Challenges in Adopting MFCA

	Mean	Rank
Relatively expensive to adopt MFCA	2.27	
Environmental costs are not considered significant	2.64	
Difficulties in allocating environmental costs	2.82	
Low physical environmental uncertainty	2.73	
Lack of management support to environment objectives	2.18	
Lack of integrating the environment into strategic planning	2.55	
Lack of training in implementing MFCA	3.18	1
Lack of company's evaluation in terms of the readiness to implement MFCA	2.82	
Lack of employees cooperation in implementing MFCA	2.36	
Lack of performance appraisal system for those involved in MFCA	2.60	
Employees lack motivation in implementing MFCA	2.36	
Problems with vendors in supplying suitable material	2.91	3
Lack of management support to modify the manufacturing process involved in MFCA	2.82	
Lack of communication among departments involved in MFCA	2.45	
Management control system (e.g. departmental and employee performance evaluation) used to support continual waste reduction activity using MFCA	3.18	1
Lack of displaying environmental information in the company's annual report	2.82	



Summary of Findings

MFCA

- Implementing MFCA is not expensive
- SMEs adopt MFCA because of potential cost savings....not because they are environmentally responsible
- Push factor...MPC
- Improved corporate
- Improved product image

To implement MFCA

- Needs proper training
- Should include in performance evaluation
- Vendors must supply suitable materials....
- for MFCA to be successfully implemented, the whole supply chain should be involved

Better support from top management if material losses made visible in terms of quantity and cost



Summary of Findings

Attitude of the manager crucial...

Manager needs to have perseverance, creativity, innovativeness, positivity and great interpersonal skills

top management commitment is critical to the success of any environmental initiatives



What Next



The Government

What can the government do?

- Educate and create awareness amongst SMEs on this very important tool,
- Include MFCA as a topic in the management accounting curriculum in institutions of higher learning would greatly enhance the dissemination of MFCA, and
- Enforce the provisions in the environmental act on scheduled waste.



SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

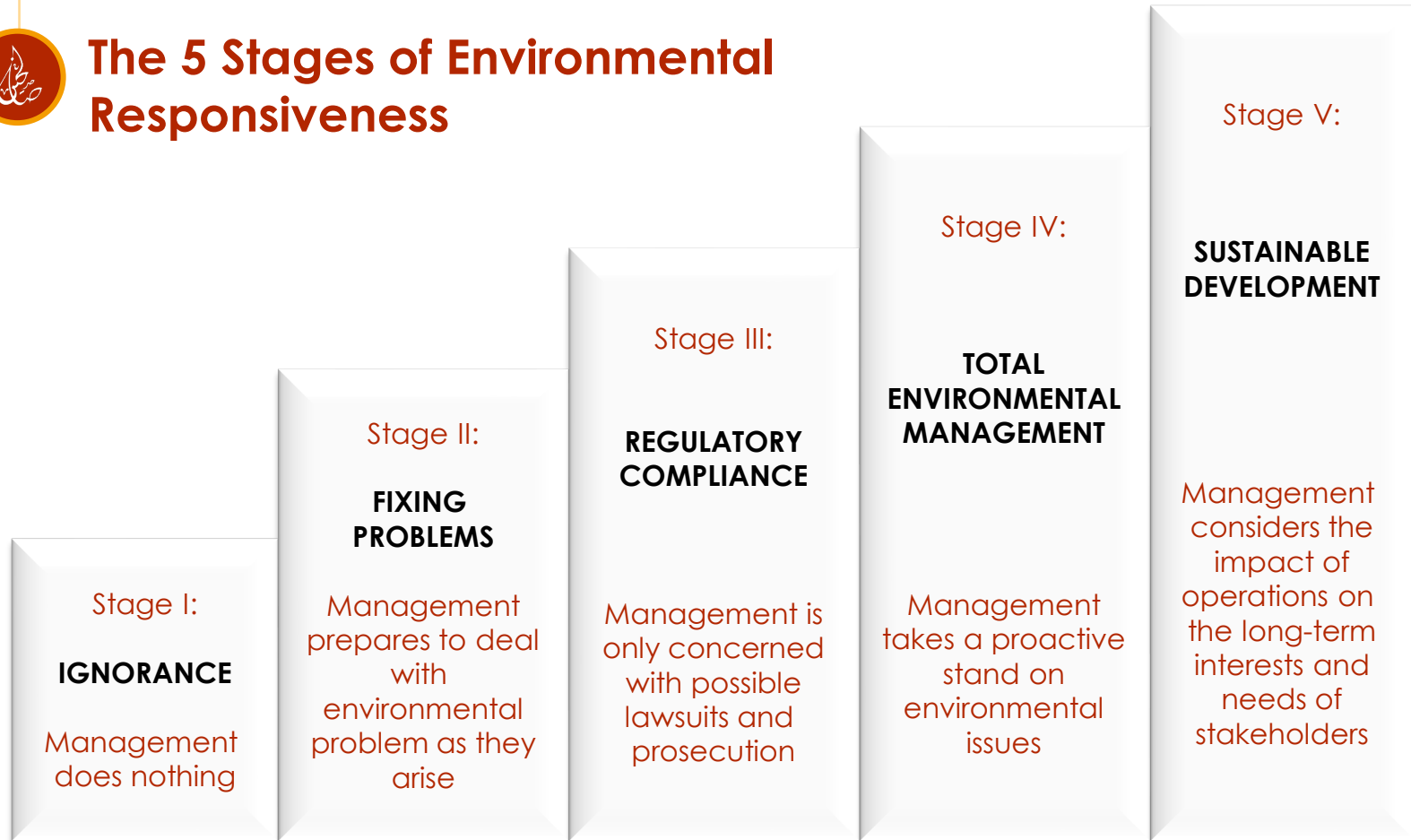
15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

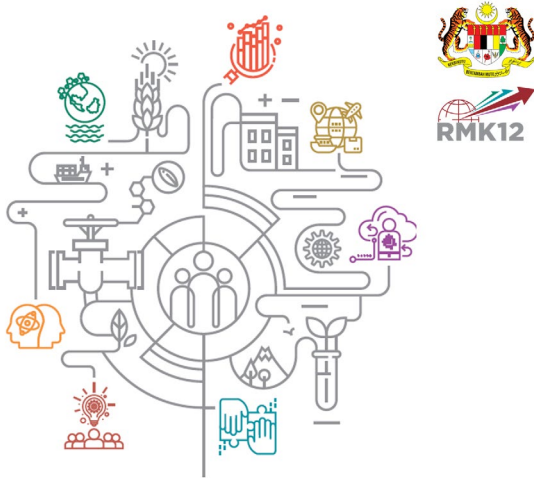


The 5 Stages of Environmental Responsiveness





12th Malaysia Plan



TWELFTH MALAYSIA PLAN

2021-2025

A PROSPEROUS, INCLUSIVE, SUSTAINABLE MALAYSIA

Malaysia will:

- Reduce greenhouse gas emissions to 45% of GDP by 2030 in line with Paris Agreement and that become a carbon-neutral nation as early as 2050.



Budget 2022



To reduce carbon footprint, government is encouraging the use of electronic vehicles (EVs)

For manufacturers and importers of EVs,

- 100% import duty exemption on imported components for locally assembled EVs
- Full excise duty and sales tax exemption on locally manufactured EVs and
- 100% import duty exemption as well as excise duty exemption on imported CBU (completely built up) EVs

For individuals

- personal tax relief of up to RM 2500 to resident individuals on the cost of installation, lease and purchase (including HP) of equipment and subscription fees for EV charging services



Budget 2022



Carbon market

- Voluntary carbon market on Bursa Malaysia will be launched

For SMEs

- Bank Negara Malaysia (based on the matching fund arrangement with participating financial institutions) will assist SMEs to adopt sustainable and low carbon practices (RM 1 billion)

RHS

- The green technology incentives to include Rainwater Harvesting Systems (RHS)
- Green Investment Tax Allowance of 100% on capital expenditure for qualifying RHS activities



What Else Needs to be Done?

Follow State Govt of Quebec:

EVs are to be adopted by certain sectors as follows:

- Taxi industry....40% of EV taxis by 2030
- School buses...65% of EVs by 2030
- State government of Quebec...25% of the fleet should be evs by 2030.
- Ban on sale of new gasoline vehicles from 2035 onwards (carbon neutral by 2050)



A Reminder



“We simply can't protect the interest of the shareholders unless we do our part to protect the environment”.

Ed Artz

Former Chairman and CEO Procter and Gamble (P&G)

“No matter how competitive you are and how globally you trade, if you are environmentally irresponsible someone can and will - and should – padlock your door.”

Frank Popoff

CEO, Dow Chemical





Islam and the Environment

Most importantly, Allah warns us in
Surah Al-Rum

سُورَةُ الرَّوْمِ

Corruption has flourished on land and sea as a result of people's actions and He will make them taste the consequences of some of their own actions so that they may turn back (30:41).



Conclusion

- Companies need to be **PROACTIVE**
- **REDUCE** is the focus now
- Embark on strategic EMA & Performance evaluation
- Integrate environmental matters into daily and major corporate decisions
- Manage environmental costs
- Implement waste minimisation schemes
- Possible to reduce waste (increase profit!) only if you classify and quantify
- **Use MFCA**



Conclusion

- Environmental initiatives are not necessarily financial burdens but can contribute financial value
- Personnel from various disciplines need to work together to tackle environmental issues generally difficult for a company's accounting group to make informed decisions on environmental matters because of the technical aspects involved
- Top management commitment is critical to the success of any environmental initiative









Thank You

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