

# The need for carbon impact analysis

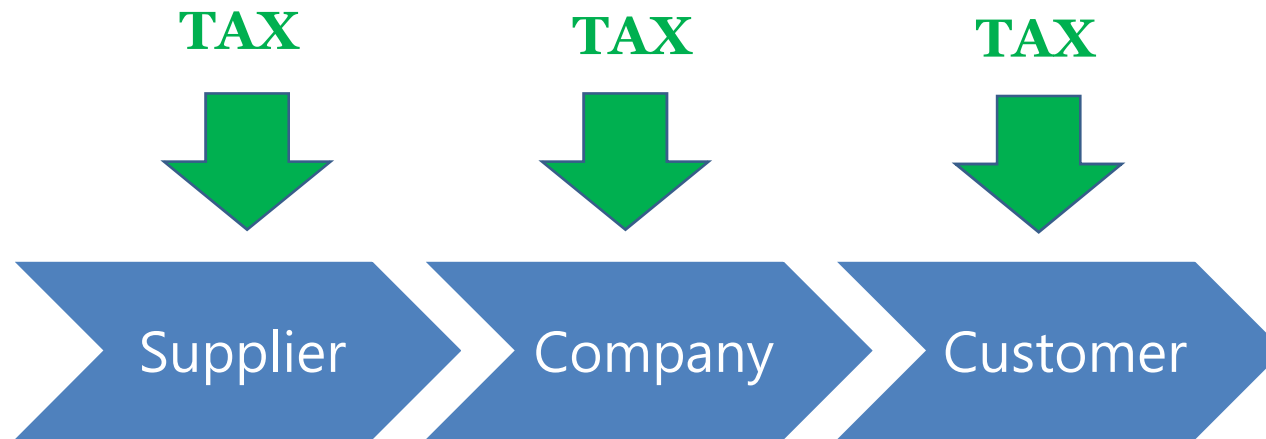
September 2013

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**Case Study 1 :**  
**Marginal Abatement Cost Analysis**

# Carbon tax in the name of ETS

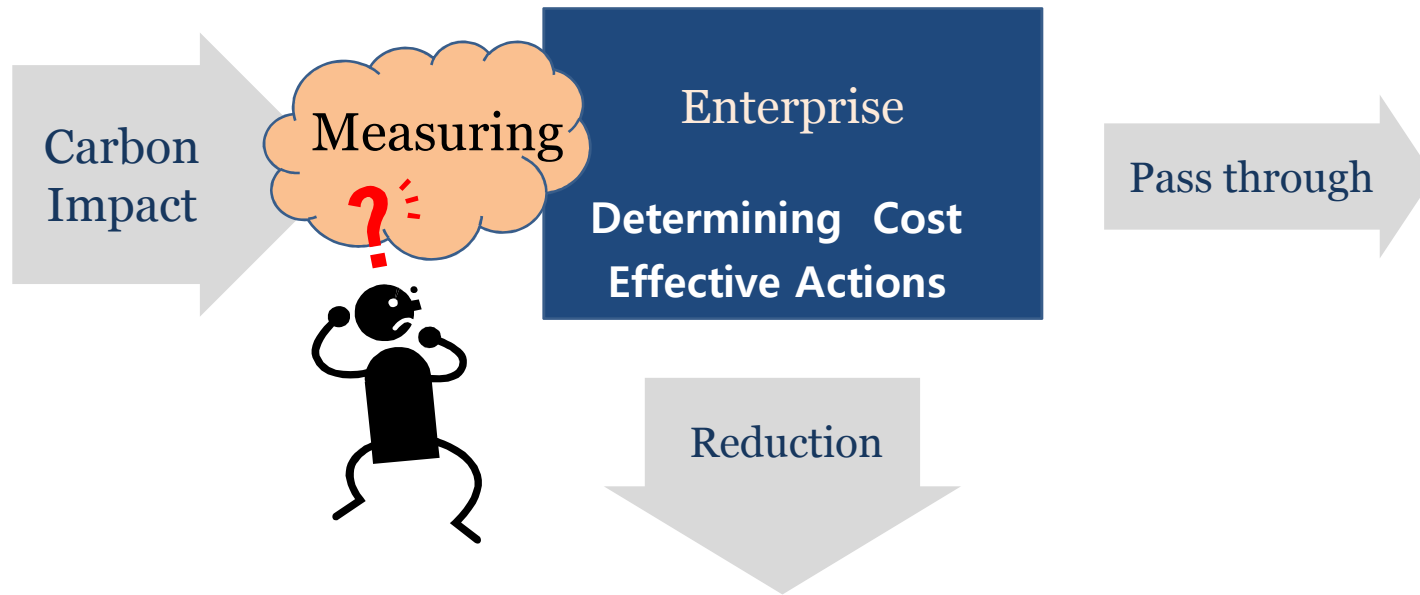
## Key Issues



- Cost pass through issue
- Internal variable rate VS external fixed rate

# Cost effective action to preserve margin

## Key Issues



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# Analysis of Carbon Impact is Crucial

## Key Issues

**Emission  
Trading  
Strategy**

**Carbon  
Accounting**



**Allocation of  
Budget for  
Emission  
Reduction**

**IR for  
investors/  
CDP/DJSI**

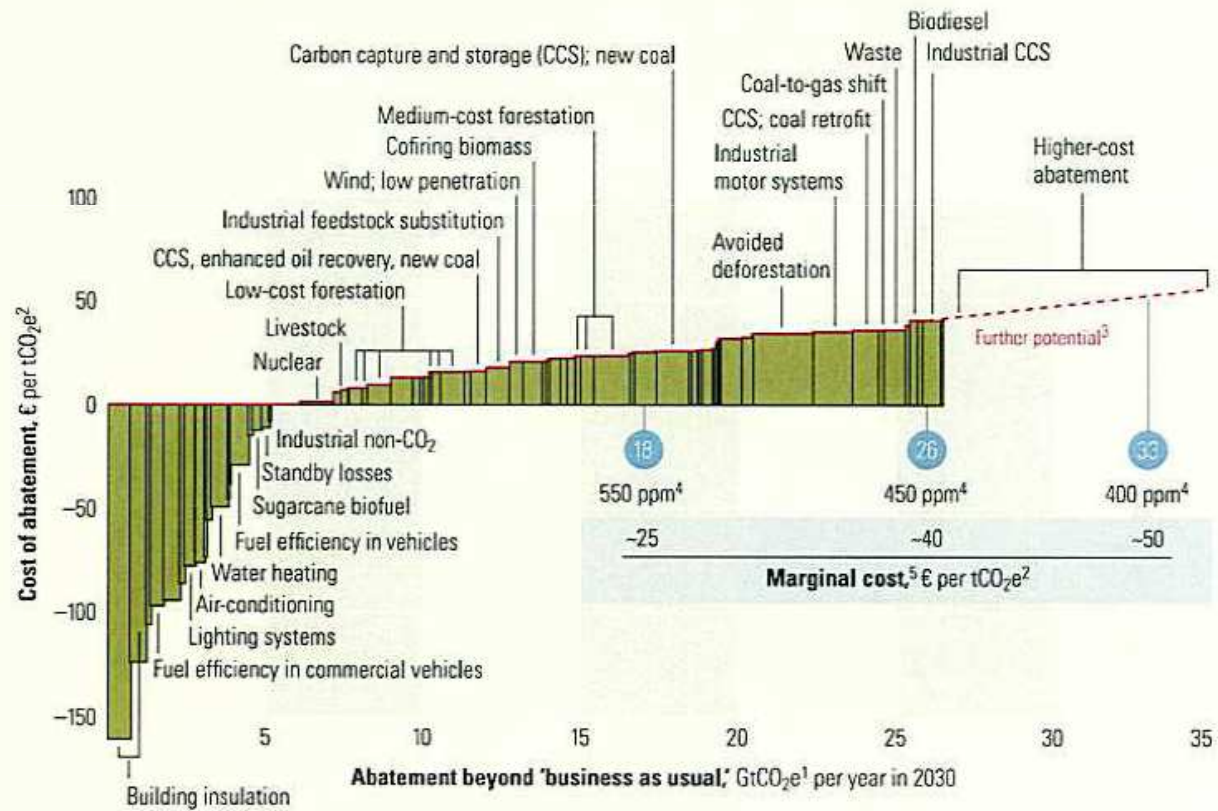
# MACC is an useful tool for Trading Strategy

## Example

### What might it cost?

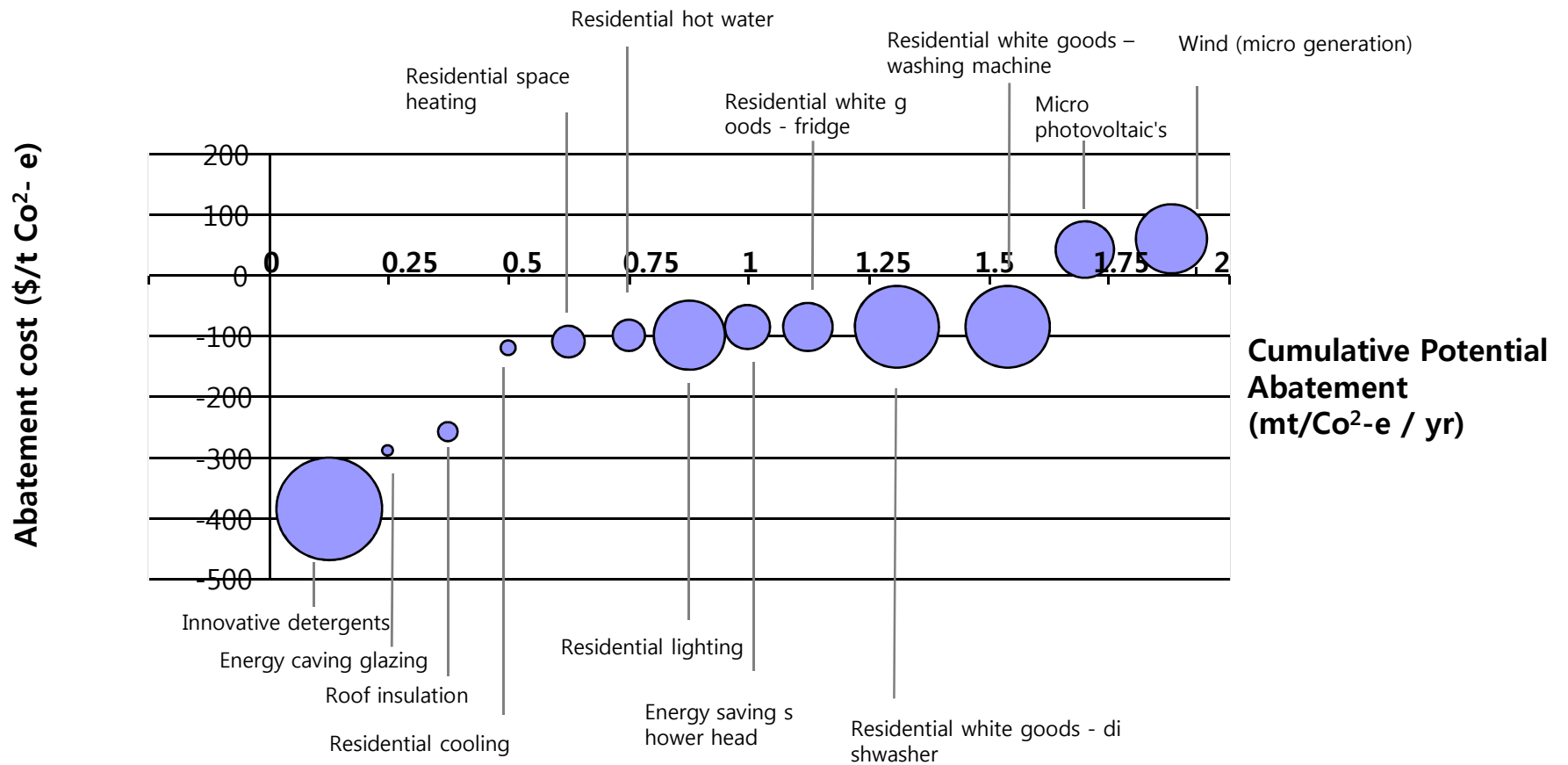
Global cost curve for greenhouse gas abatement measures beyond 'business as usual'; greenhouse gases measured in GtCO<sub>2</sub>e<sup>1</sup>

● Approximate abatement required beyond 'business as usual,' 2030



# ...Especially For Corporate

## PwC Example



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MACC is an useful tool for Trading Strategy

What is a MACC?

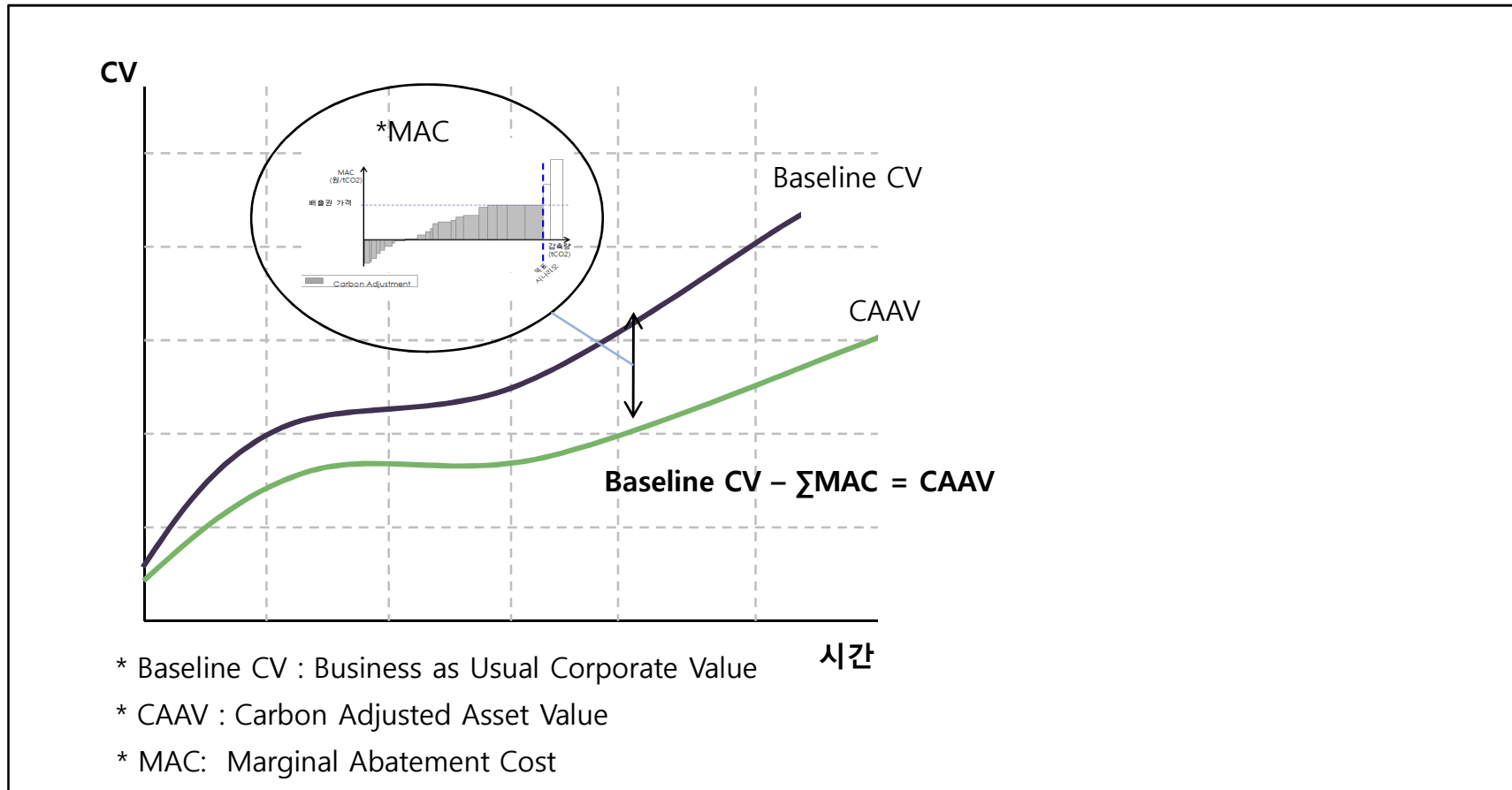
Marginal abatement cost curve

- ✓ is a tool
- ✓ for prioritising and quantifying
- ✓ abatement opportunities
- ✓ on the basis of cost and emissions reduction potential
- ✓ used by governments, industry sectors or companies



# Corporate Value can be Impacted by ETS

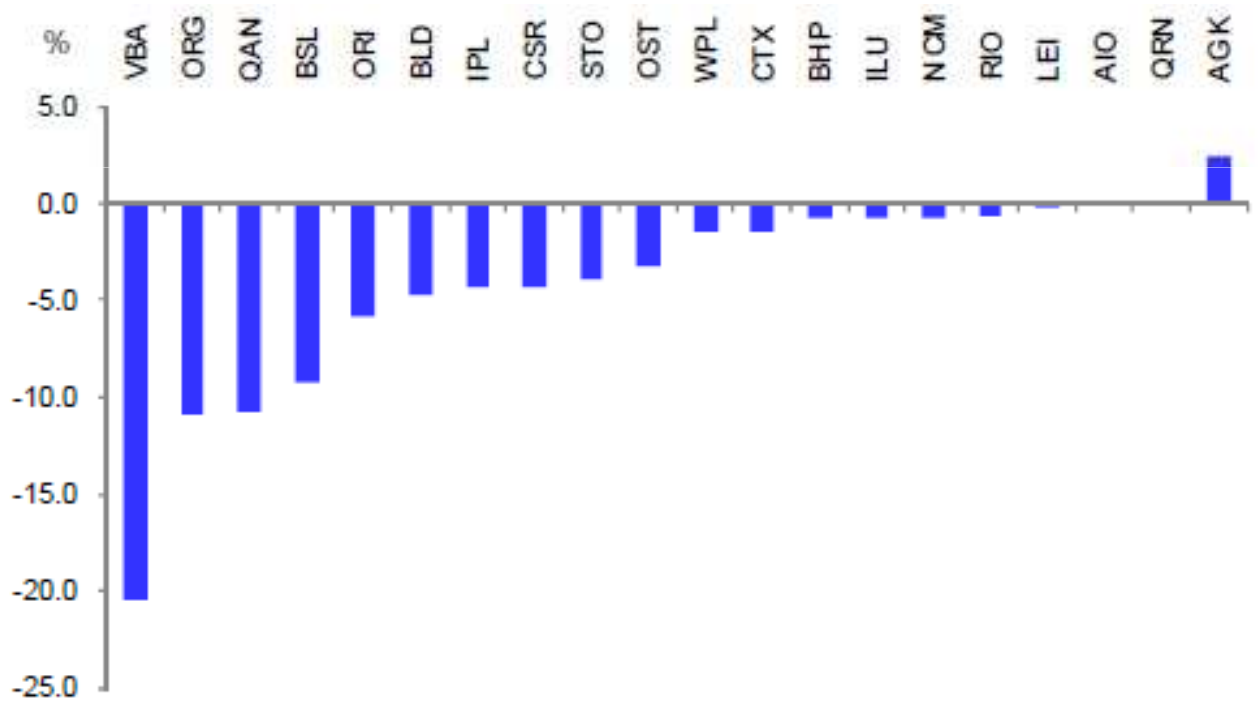
## Carbon Adjusted Value



# Corporate Value can be Impacted by ETS

## Australian example

Estimated FY13 NPAT impact of \$23/t carbon price

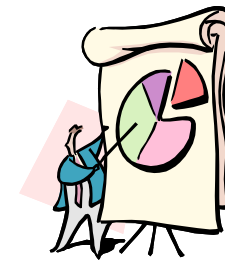
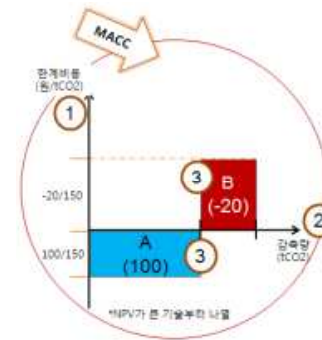
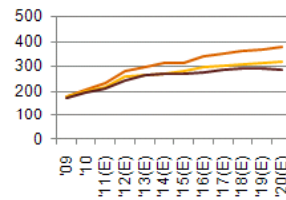


# How to build a MACC

## Methodology

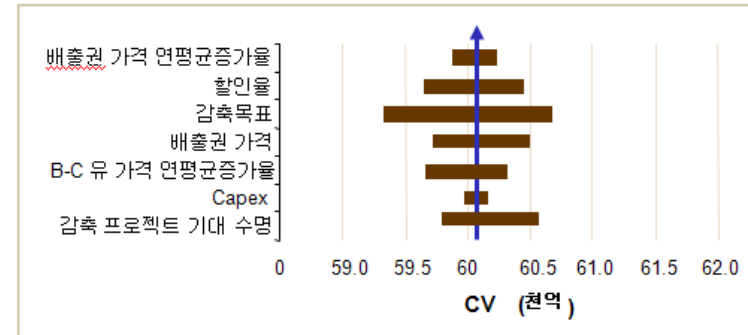


연도	정확		정확도(%)				정확도(%)				비고
	정확	정확	정확	정확	정확	정확	정확	정확	정확		
'09	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'10	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'11(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'12(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'13(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'14(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'15(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'16(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'17(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'18(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'19(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확
'20(E)	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확	정확



# What can be measured can be managed

## Analysis example

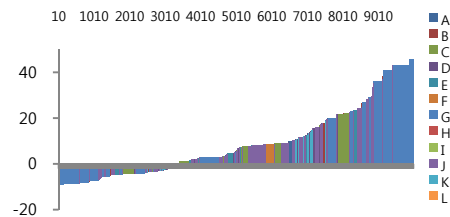


	2015	2016	2017	2018
BAU	424,500 t	418,000 t	431,000 t	441,000 t
배출허용량	369,000 t	365,000 t	375,000 t	386,000 t
<b>목표감축량</b>	<b>55,500 t</b>	<b>53,000 t</b>	<b>56,000 t</b>	<b>55,000 t</b>
배출권가격	KRW 20,000			

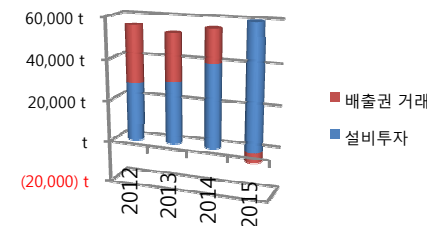
Project @FY 2015	NPV	CO2감축	MAC	의사결정
Installation	60,000,000	20,000 t	(3,000)	설비 투자
Heat recovery	100,000,000	25,000 t	(4,000)	설비 투자
Source Change	(500,000)	500 t	1,000	외부감축 투자
Replace	(42,000,000)	2,000 t	21,000	투자안 기각

Project @FY 2015	설비투자비	절감에너지	절감량	내용연수
Installation	1,940,000	Fuel Oil	124	15 년
Heat recovery	3,800,000	전기	90	3 년
Source Change	4,330,000	HP Steam	274	5 년
Replace	196,000	CNG	1,066	7 년

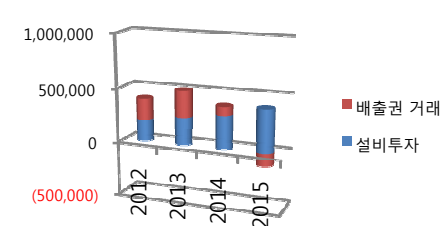
	2015	2016	2017	2018
설비 투자	(45,000) t	?	?	?
외부 감축 투자	(500) t	?	?	?
배출권 거래	(10,000) t	?	?	?
<b>총 감축량</b>	<b>(55,500)t</b>	<b>(53,000)t</b>	<b>(56,000)t</b>	<b>(55,000)t</b>



√ 년도별 목표 감축량 달성 분석

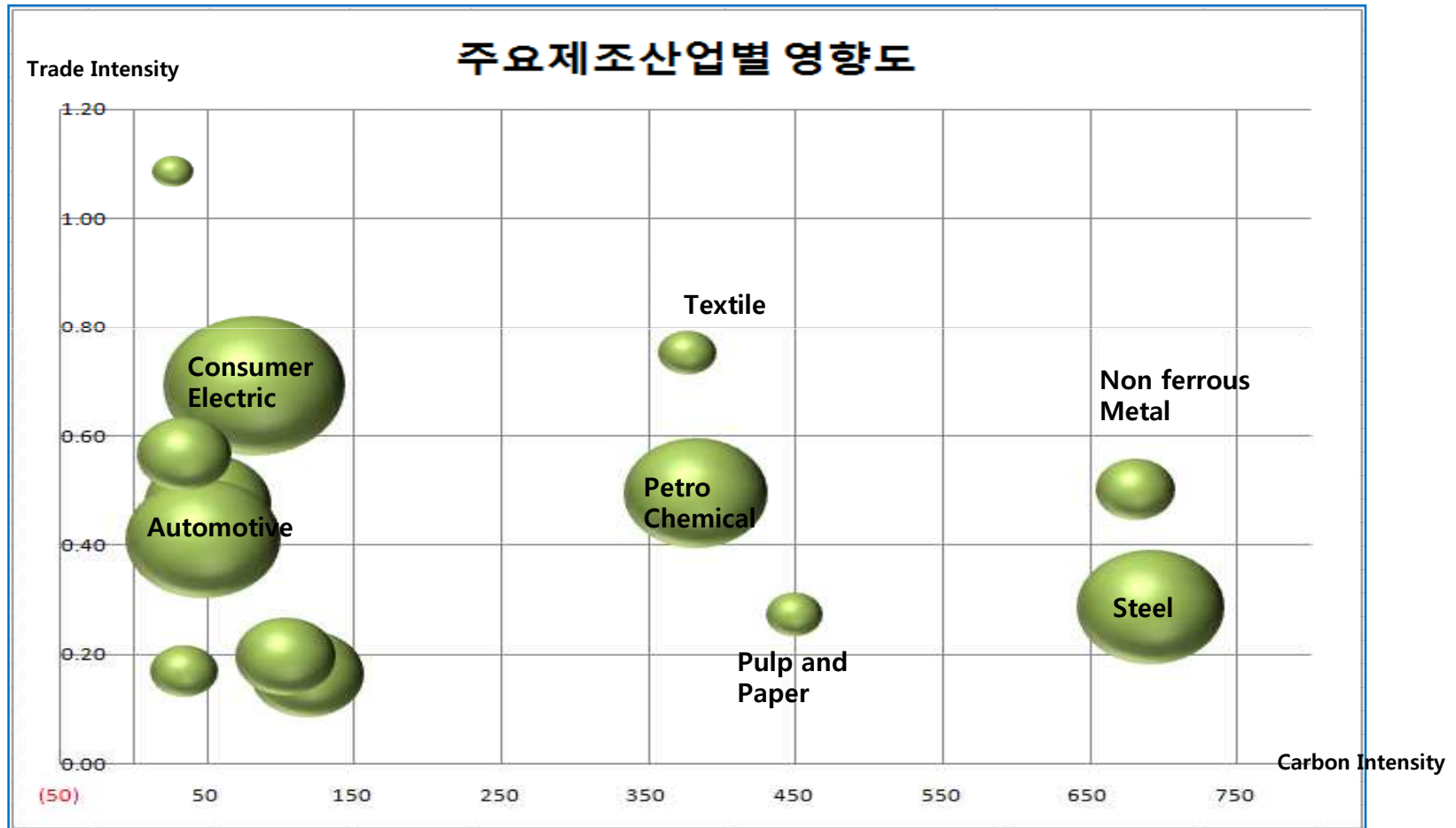


√ 년도별 재무적 효과 분석



# Energy Intensive Trade Exposed Industries in Korea

## Carbon Leakage Risk Assessment



**Case Study 2 :**  
**Lean and Green Supply Chain**

# Sustainable Supply Chain Management

## Key Business Drivers

### 1. Product Brand

- ✓ Informing overall **sustainability strategy for a brand orientated** Consumer Product Goods

### 2. Transparency

- ✓ Increased **demand for transparency and accountability in** supply chains by governments, NGOs and donors

### 3. Regulatory Changes

- ✓ **U.S. Lacey Act,**
- ✓ **EU Procurement Policies,**
- ✓ **US Conflict Mineral regulation**
- ✓ **EU-ETS on aviation and shipping**

### 4. Reputation

- ✓ **Risk / reputation management from institutional investors (e.g. NPS in Korea)**

# Driving Forces

## Walmart example

Top-down command and control approach



Key areas with 15 questionnaires



### Energy and Climate

*Reduce energy costs and greenhouse gas emissions*



### Material Efficiency

*Reduce waste and enhance quality*



### Nature and Resources

*High quality, responsibly sourced raw materials*



### People and Community

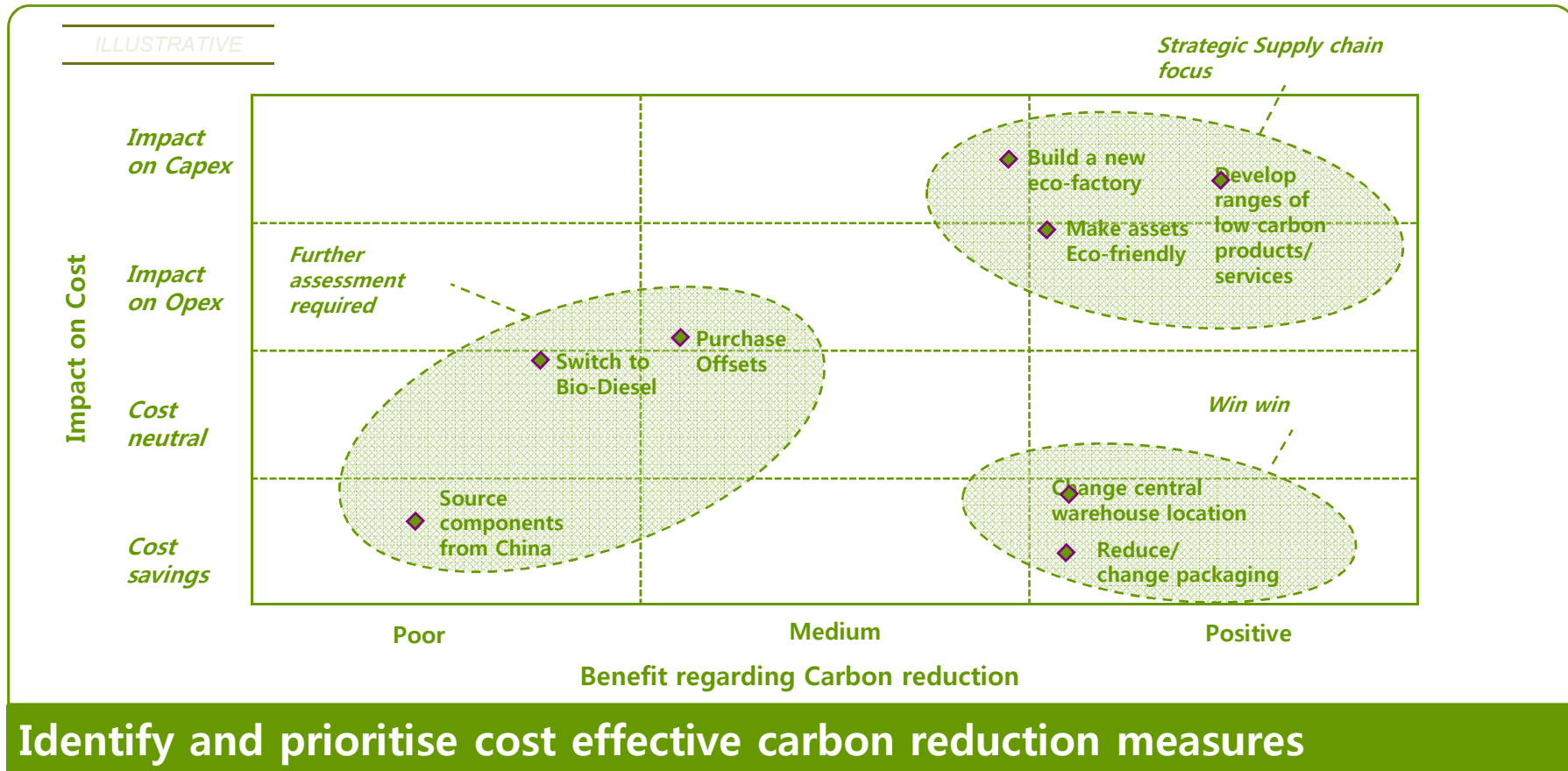
*Vibrant, productive workplaces and communities*

Product from highly scored suppliers get better exposure on the Walmart shelf



# Lean and Green Supply Chain

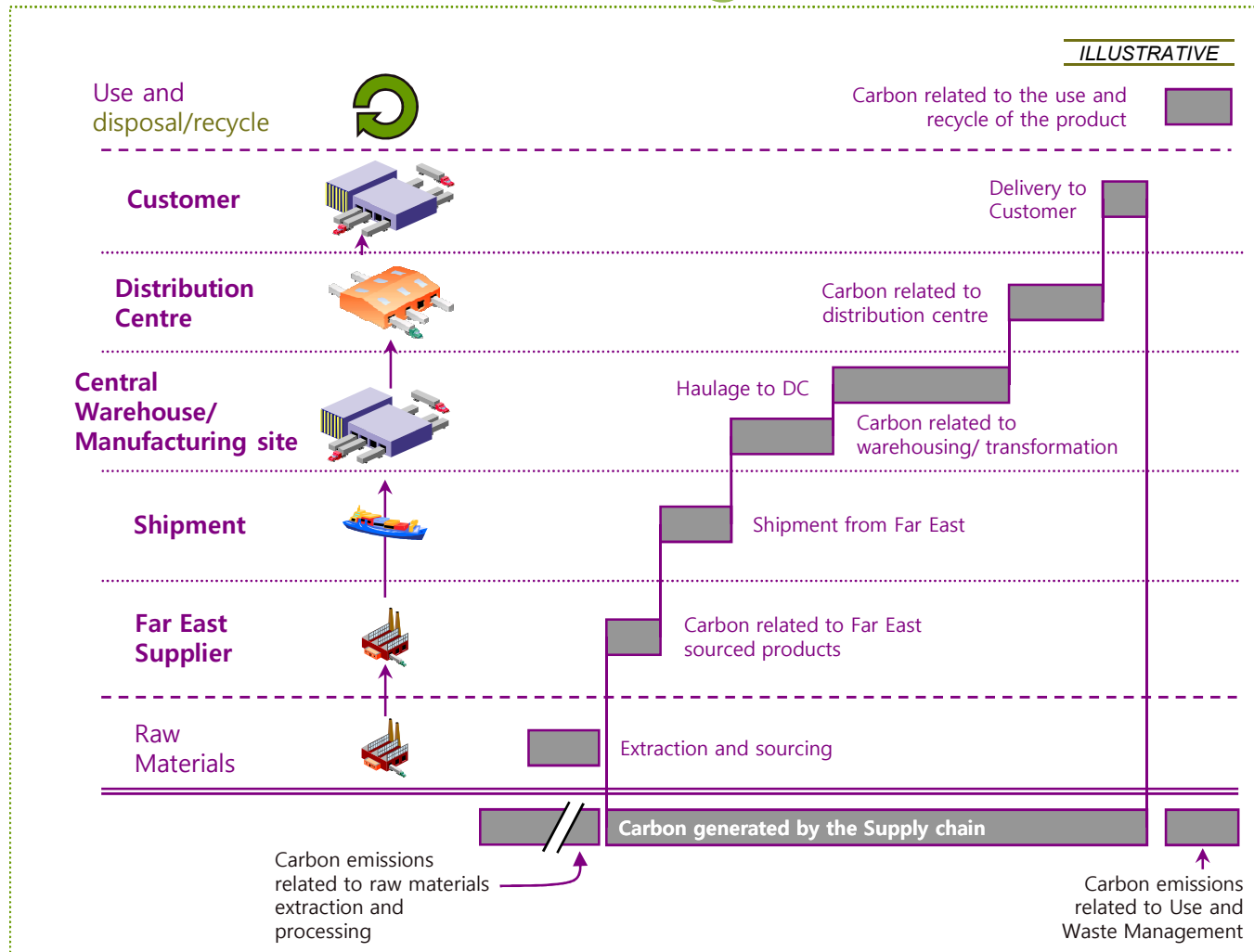
Identify Cost reduction and emission reduction opportunities



Identify and prioritise cost effective carbon reduction measures

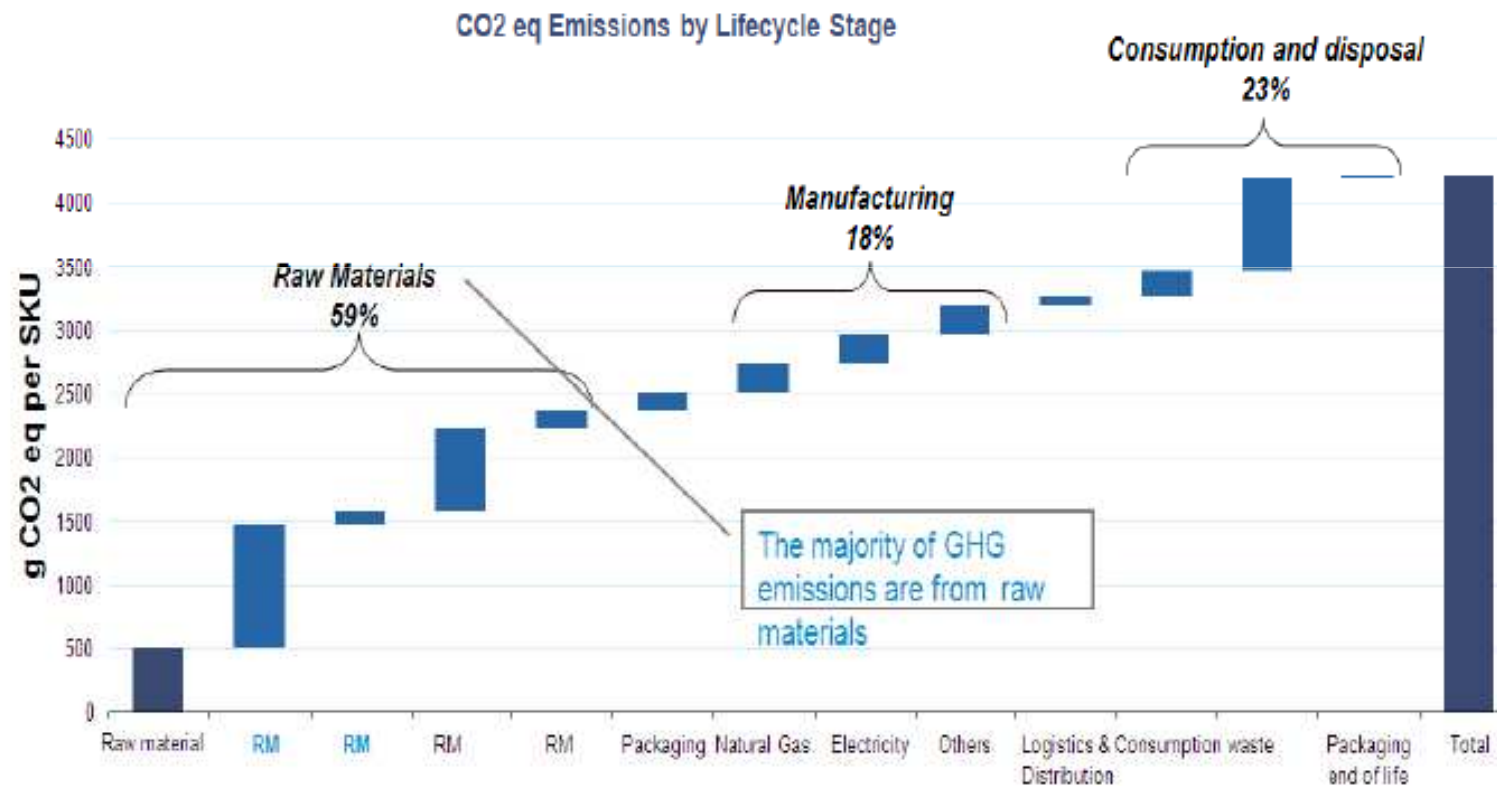
# Sustainability issue along the value chain

## Carbon cost throughout value chain



# Sustainability issue evaluation example

## Mapping GHG emissions across the value chain



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*Q&A*



**pwc**