Challenges and Opportunities in Achieving Resource Efficient Economies in Asia

Regional 3R Forum in Asia, Tokyo, Japan
11 November 2009

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What is Resource Efficiency?

"Resource efficiency is the amount of resources – materials, energy and water – consumed in producing a unit of product or service."

Asian Development Bank, Institute for Global Environmental Strategies, 2008

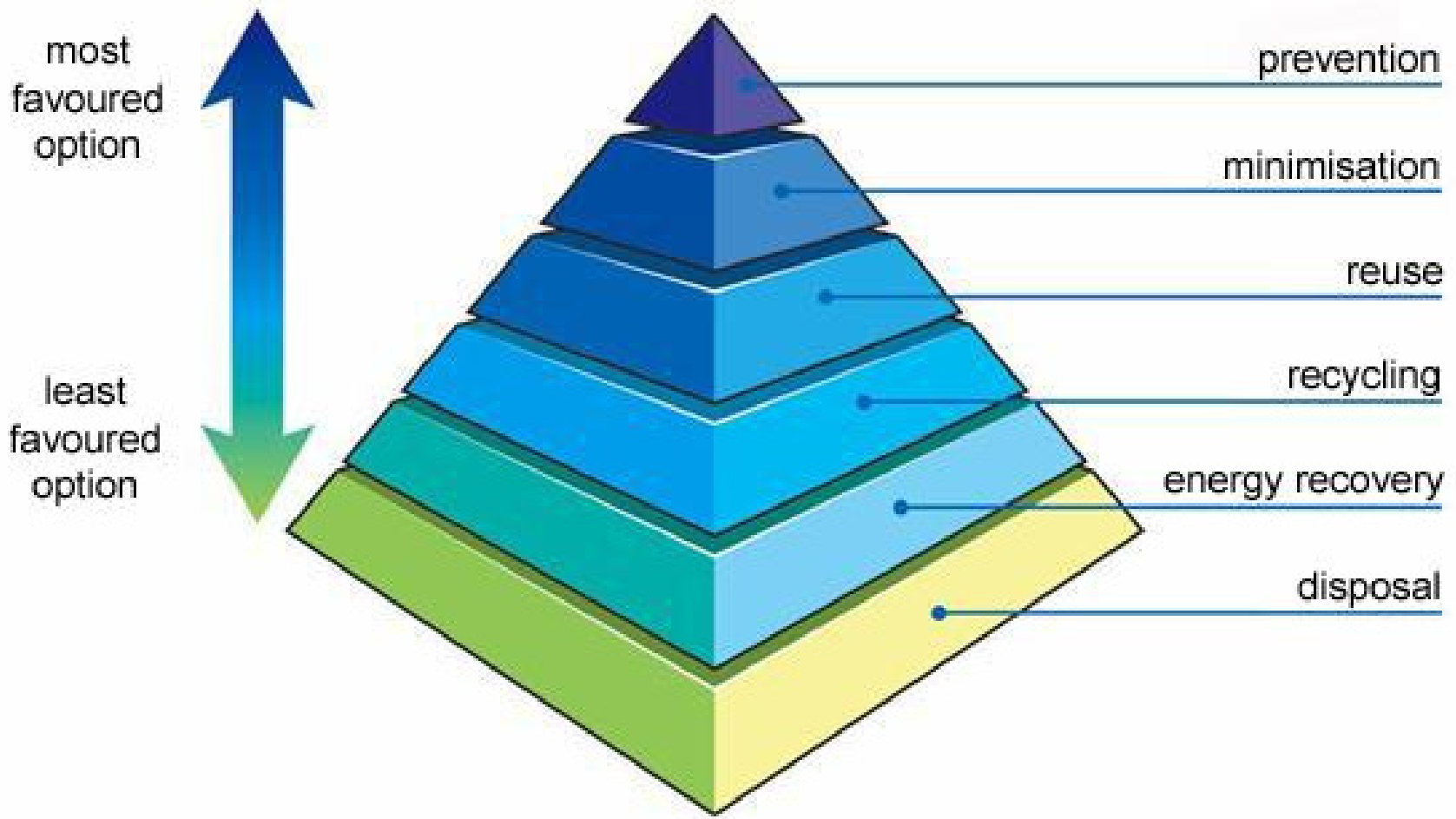
Did you know?

Using recycled steel to make new steel can save up to 40% in water use[1]

Using recycled fibers to make a ton of paper instead of virgin pulp can save about 26,000L of water and 4,000kWh of electricity[2]

1: British Metals Recycling Association website. http://www.recyclemetals.org/whatis.php
2. Quoted from Asian Development Bank website. http://www.adb.org/Documents/Papers/Resource-Efficient-Economies/default.asp (p.5)

The Waste Hierarchy - Getting Our Basics Right



Source: http://www.wasteonline.org.uk/resources/InformationSheets/WasteDisposal.htm

Hurdles in Achieving Resource Efficient Economies

- Economic productivity vs. Environmental Sustainability (real or perceived)
- Political Considerations
- There tends to be “timing” matching issues – Short term vs. Long Term Goals
- Limited resources, need to address the different needs of the growing Asian population
- Competition with other national initiatives and agenda for which limited budget
- We will do it only if…..

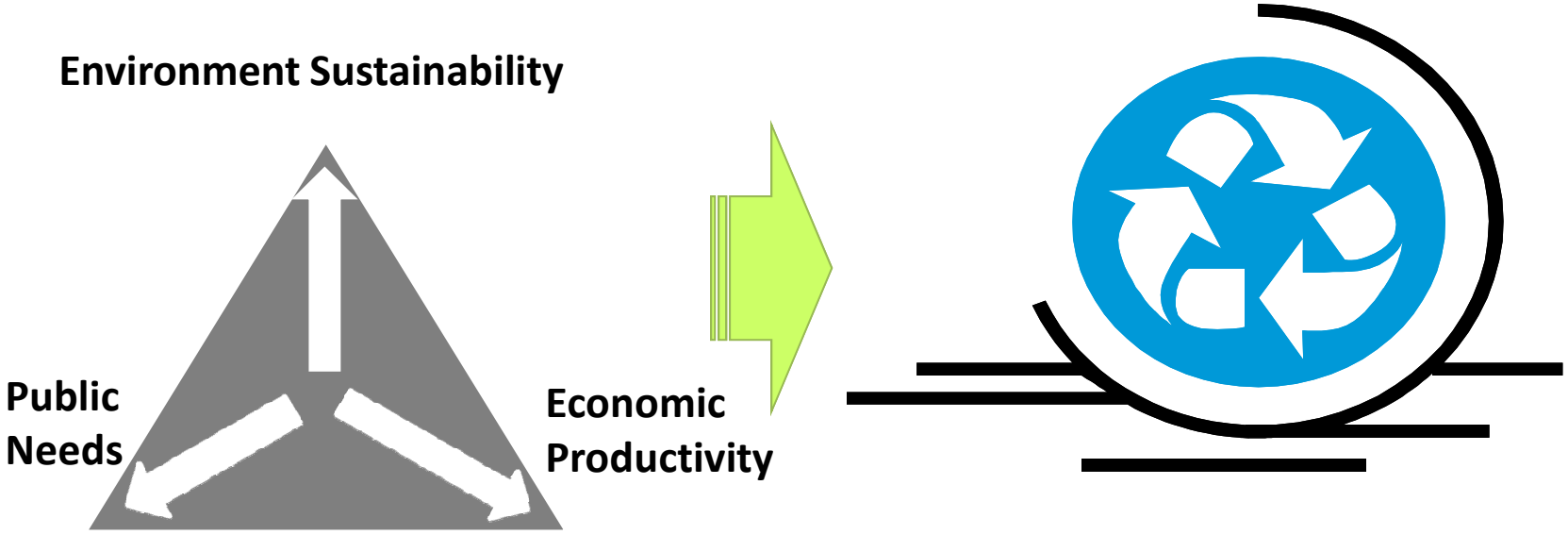
Specific Challenges in Achieving Resource Efficiency

- Ability to modify industrial processes to use less materials
- Difficulty in developing adequate government incentives
- Increase in the number of consumers and consumer power
- Resistance to changes in lifestyle and resource use habits

Resource efficiency is a challenge, but is also a critical survival skill for many Asian countries.

In the case of land scarce Singapore which is also relying heavily on imported resources (energy, sands, food & raw materials etc), a resource efficient economy is an essential element of its sustainable development

Turning common perceptions into knowledge-based action plans

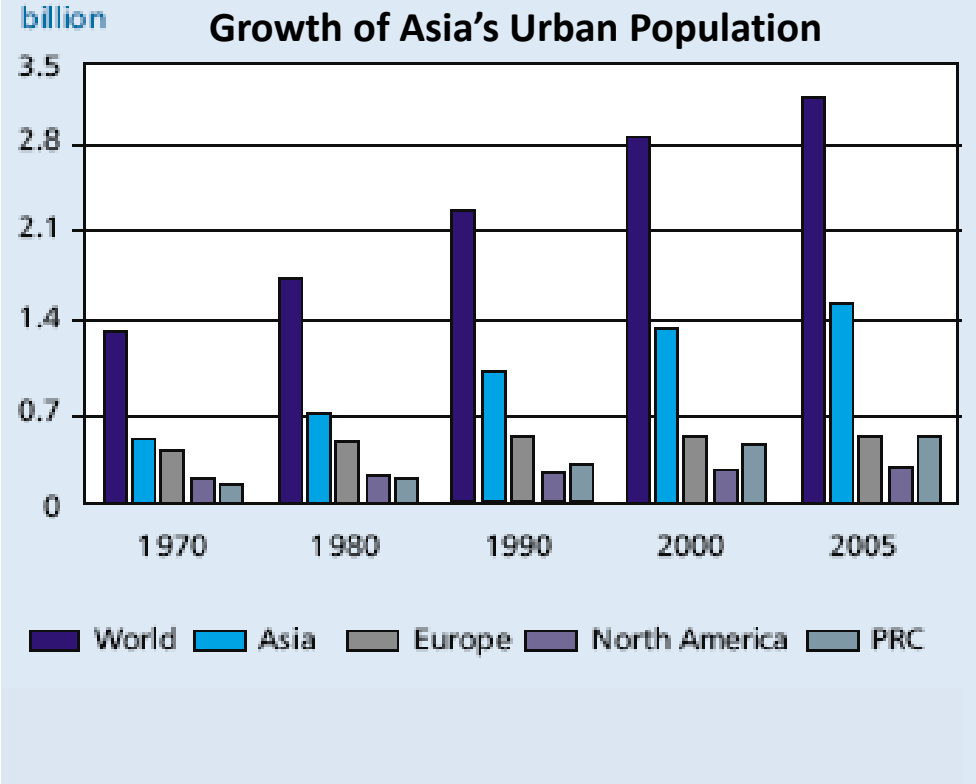


Sustainable Development

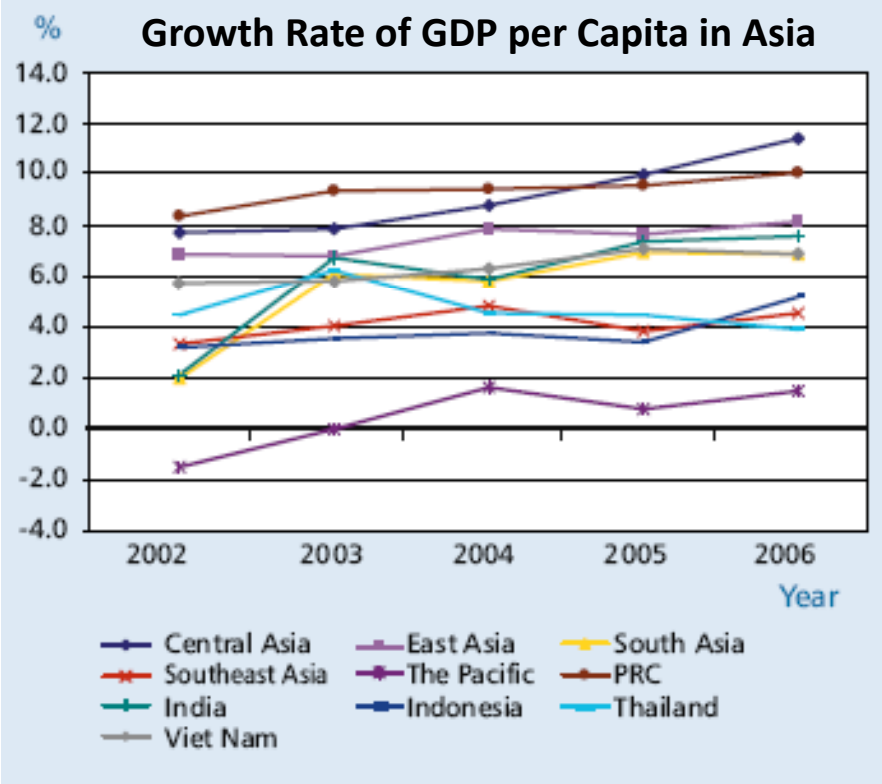
3-Way Conundrum?
Real or Perceived

Demand vs Supply of Finite Resources

Challenges abound in achieving resource efficiency in Asia due to competing urban needs, compounded by growths in population and GDP per capita



Source: United Nations 2005, World Population Prospects. The 2004 Revisions Population Database, New York



Source: ADB 2007, Asian Development Outlook 2007. Manila

Conflict in Resource Allocation (example using water)

Life needs water.

Economy needs water.

Leisure needs water.

Resource efficiency remains elusive in Asian society due to the conflicts of different needs – humanitarian, business, and even for leisure – in the modern, complex Asian society.

To meet the complex resource requirements of today's Asian society efficiently, it is thus paramount to reduce the resources needed in each of these urban needs. Knowing to "reduce" is important.

Roles of Governments in Resource Efficiency (1 of 3)

Governments can highlight the country's emphasis and priority in increasing resource efficiency by allocating public funds for industries and individuals to actively partake in relevant programmes. In Singapore, numerous such funds are spearheaded by key government statutory boards and organisations:

- Environmental Technology Capability Development Programme
- Innovation for Environmental Sustainability Fund
- 3R (Reduce, Reuse, Recycle) Fund
- 3P Partnership (Public-Private Partnership) Fund

Minimization & Recycling

- Energy Efficiency Improvement Assistance Scheme
- Grant for Energy Efficient Technologies
- Design for Efficiency Scheme SCEM Training Grant

Energy Efficiency

- Market Development Fund Green Mark Incentive Scheme for Existing Buildings
- MND Research Fund for the Built Environment

Efficiency for Buildings

National Environment Agency

Singapore Environment Council

EDB Singapore

WMRAS

Building and Construction Authority

Roles of Governments in Resource Efficiency (2 of 3)

Governments can catalyse resource efficiency through programs that promote waste reduction. Singapore has launched one such program, known as the Singapore Packaging Agreement:

Singapore Packaging Agreement

Jointly developed by businesses, industry groups, non-governmental organisations and the National Environment Agency (NEA) since 1 July 2007

Aim: To minimize packaging waste, starting with the F&B industry

To date: S$4.4million saved from reduced packaging; reduction of 2500 tonnes of packaging waste

The programme was extended to cover all types of product packaging including detergents, toiletries, and personal care products and household products on 1 Oct 2009

Launched the 3R Packaging Award in 2008 – to recognise companies who have made significant progress in reducing packaging waste and who have been proactive in educating consumers

Roles of Governments in Resource Efficiency (3 of 3)

Another key role that governments can play in improving the country's resource efficiency is to assist industries in improving their manufacturing processes. Below is an example from Singapore:

SUSTAINABLE MANUFACTURING PROGRAMME

Launched on 30 April 2009, this programme brings together manufacturers and environmental technology providers to develop eco-efficient solutions. The primary objective it to assist manufacturers in making eco-efficient improvements to their processes.

Projects include recycling of waste streams into value-added products, energy efficiency projects, reduction of waste streams, carbon footprinting, etc.

As part of this programme, a Sustainable Manufacturing Centre was launched on November 4, 2009.

Labelling Schemes for Eco-Products and Energy Efficiency

- Allowing the public and the industry to make informed choices
- Encourages development of products that use recycled materials

Singapore Green Labelling Scheme

Launched in May 1992- Awards environmentally-friendly products with eco-labels. The Green Label can be used on products which meet the eco standards specified by the scheme.

Applicable to most products, except food, drinks and pharmaceuticals. Not applicable for services and processes.

Recognised as a member of the international Global Ecolabelling Network (GEN).

Other Labels- Energy Efficiency Labels

SINGAPORE ENVIRONMENT COUNCIL

Accreditation Scheme for Recycled Aggregate Suppliers

- Giving the industry the confidence to specify and use recycled aggregates

The accreditation scheme for Recycled Aggregate Supplier is an industrial led effort with inputs from Industry Professionals, representatives from Statutory Boards and Construction Industry Associations.

The scheme aims to improve the quality and consistency of the waste processors serving the construction industry. Through the adoption of the testing standards specified in the BS EN12620, the objective is to increase the Industry Professional and Users' confidence in specifying the use of recycled products in their projects.

Collaboration between:

National Environment Agency

WMRAS

Building and Construction Authority

Reducing Manufacturing Waste (1 of 2)

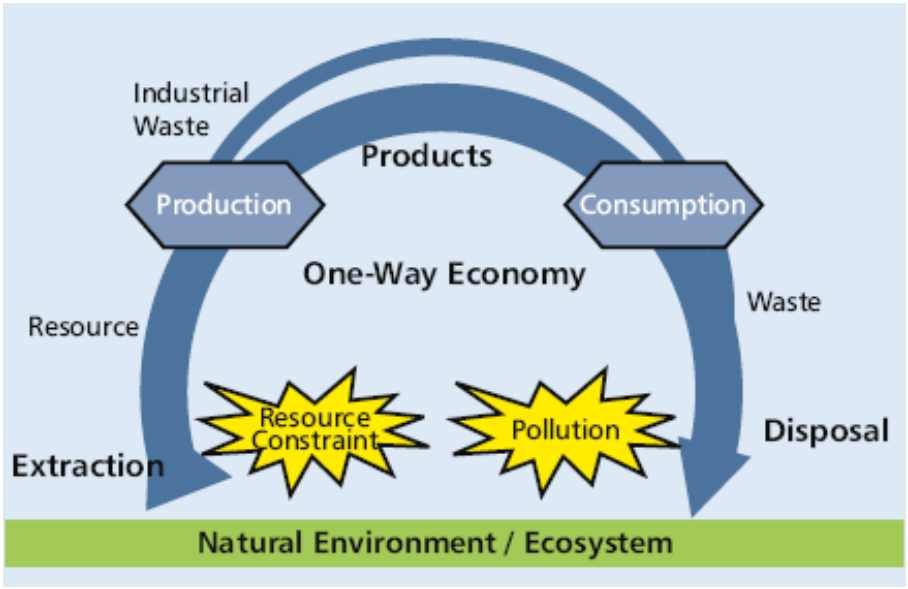
- In order to implement ways to reduce waste, it is paramount to analyse a product's life-cycle
- Life-Cycle Assessment (LCA) looks at environmental impacts across the full product life-cycle, from the extraction of raw materials for production to its eventual disposal
- Every part of the life-cycle emits waste and pollutants to the environment – the challenge for the industry is to reduce these emissions during production

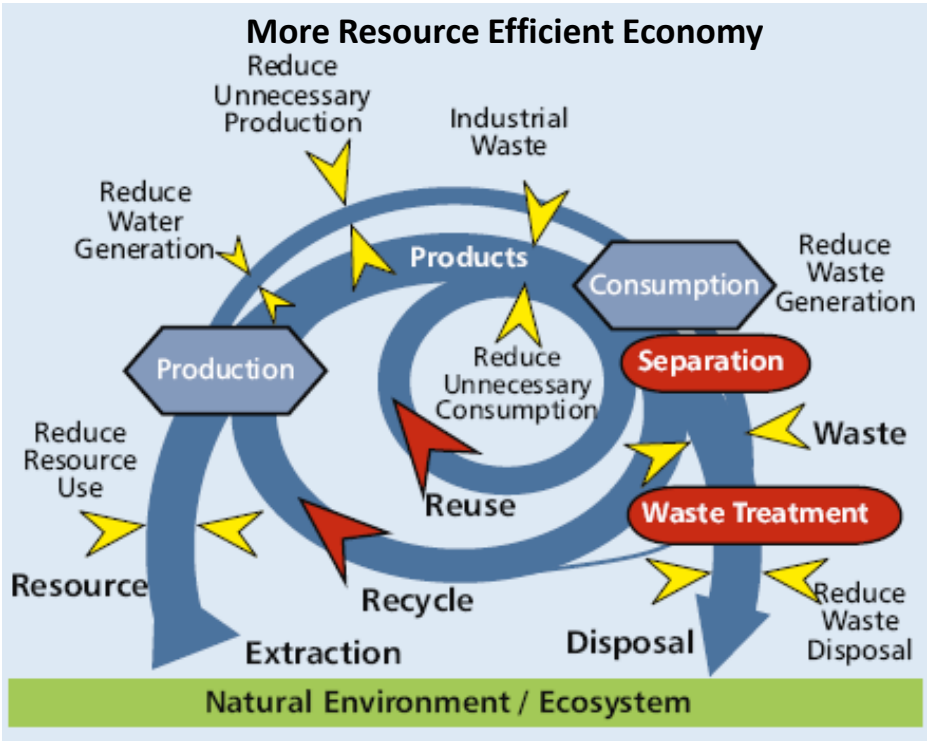
Source: Modified from www.environment.gov.au/settlements/industry/corporate/eecp/publications/shop.html

Reducing Manufacturing Waste (2 of 2)

The overarching aim of LCA is to move from a one-way economy to a more resource efficient economy

- A key concept is to implement measures on both the production and consumptions ends: by reducing consumption and waste, and by recycling and reusing, the ultimate material consumed per unit of product or service is reduced, thus increasing resource efficiency





Source: Asian Development Bank, website. http://www.adb.org/Documents/Papers/Resource-Efficient-Economies/default.asp

Singapore Examples - National Recycling Programmes

As population and GDP per capita increases, consumerism grows, which leads to generation of more waste. Individuals in societies must thus be responsible in managing their purchases, so that resources are not wasted. National Recycling Programs are paramount in meeting such objectives.

- Singapore's National Recycling Programme, for instance, was launched in 2001 to manage the nation's waste output
- Infrastructures are installed in residential areas and outreach programmes are conducted in school and neighbourhoods to increase participation
- The goals are to achieve 60% recycling rate in 2012, 65% in 2020, and 70% in 2030. In 2008, the national recycling rate reported was 56%

Door-to-door collection of recyclables

Recycling bins deployed at residential estates

Opportunities in Resource Efficiency – Reuse & Recycling

For a resource efficient economy to be sustainable, the industry must look at ways to reduce material use, and to reuse and to recycle waste products. Doing so can bring about business opportunities such as:

Wood waste recycling to furniture (e.g LHT Holdings Limited, Singapore)

Opportunities in Resource Efficiency – Recovery & Recycling

A resource efficient economy, together with sound government policies and incentives, can provides good conditions for recycling businesses to thrive.

Example: Sembcorp Environment, Singapore

Sorting and recovery of recyclables.

Paper Recycling.

Wastewater Treatment.

F&N COCA COLA (SINGAPORE) PTE LTD

3R PACKAGING AWARDS 2009

Distinction Award Winners

1) Reduce weight of

- 1.5L bottle - 46g to 44g (2g)
- 500ml bottle - 27.5g to 25g (2.5g)

2) Implement short neck closure

Reduced between 1.25 – 1.32g /bottle

Reducing the Weight of PET Bottles

Benefit

- **Save 203 tons of plastic packaging material / year**

F&N COCA COLA (SINGAPORE) PTE LTD

3R PACKAGING AWARDS 2009

Distinction Award Winners

Other Environmental Initiatives

- Sales and Vending Team collected back for recycling, all carton trays and plastic shrink film after dispensing their products into the vending machine.

- Work with 3rd party vendor to recover used tea leaves which constitute 20% of plant general waste, for recycling.

Samwoh Group of Companies

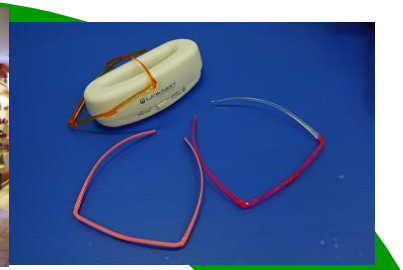
- Accreditation of recycled aggregates gives the industry confidence to use recycled aggregates

SAMWOH

Recycling Process

Open and Closed loop Recycling System for Nanyang Optical Singapore

R3plas collection bin at outlets



(LinkSkin Eye Wear, Spectacle box)

Molding of R3plas Eco-label Product

R3plas Color Technology

Compounding R3plas Technology

Scarp plastics

After segregation by colors

Unwanted eyewear /Collected by Winrigo

Closed Loop

R3plas™

R3plas™

Winrigo (S) Pte Ltd

Food for thoughts…..

"Resource Efficiency makes Sustainability Development sense"

"If you think Environment is expensive, try Ignorance and Remorse"

"What can you tell your future generations of what you have done to give them a better place to live in?"

THANK YOU