

Chapter 2

Singapore Packaging Agreement and the 3R Packaging Awards

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1. Introduction

Singapore is a relatively small country. Its land area in 2007 was reported to be about 707 sq km. Its population grew from about 2 million in 1970 to 4 million in 2000. The quantity of solid waste disposed per year grew from 1,200 tones per day in 1970 to 7,600 tones per day in 2000. It was quickly realized then that with such rapid increase in the volume of waste disposed, the waste management situation was not sustainable, especially with the limited land resource for waste-to-energy plants and landfills in the country.

Three strategies were adopted to reduce the quantity of waste going into the landfill. These are volume reduction through incineration, waste recycling and waste minimization. These strategies were explained in a previous report¹.

This report explains the Singapore Packaging Agreement in greater detail. This Agreement and the corresponding 3R Packaging Awards are part of the waste minimization strategy.

2. Singapore Packaging Agreement

In 2008, domestic waste constituted 57% of all waste disposed in Singapore². Of this, packaging waste, comprising typically of paper, metal, plastic and glass, constituted about one-third of all domestic waste. It was therefore clear that there is potential to reduce packaging waste in the municipal waste stream.

During the review of the Singapore Green Plan (SGP) 2012 that was conducted in 2005, the Clean Land Focus Group (i.e. the focus group that was tasked to review waste management) had recommended that Singapore consider adopting the principle of Extended Producer Responsibility (EPR) to reduce waste, including waste from packaging, as this had proven to be effective in other countries. This was in line with an online survey conducted in conjunction with the review of the SGP2012 that 94% percent of the respondents shared the

¹ ERIA Research Project Report 2008 NO 6-1; 3R Policies for Southeast and East Asia, Edited by Michikazu Kojima and Enri Damanhuri, Chapter 4.

http://app2.nea.gov.sg/topics_packagreement.aspx (accessed 10th April 2010)³

http://www.packaging.org.sg/index_detail.asp?id=25 (Accessed 10th April 2010)

opinion that there should be measures to reduce the amount of packaging by manufacturers. The National Environment Agency (NEA) then studied various packaging policies in several countries, such as Australia, Japan, and New Zealand. NEA also consulted with industries to understand their concerns. Then, industry felt that if legislation were used, it would increase cost and this cost would eventually be passed on to the consumer. Moreover, legislation would not provide industry with the flexibility for innovation.

Eventually, the stakeholders agreed that a voluntary programme be launched instead. It was to be modeled after New Zealand's Packaging Accord, with certain elements adopted from Australia's National Packaging Covenant. This program was to be based on product stewardship, where everyone in the entire chain of the product's lifecycle would share the responsibility for minimizing the product's environmental impact. Such a program was expected to have the following benefits; it would:

- foster government-industry partnership and promote government-industry-community interaction;
- engage the entire packaging supply chain and offer industry opportunities to assume greater corporate responsibility; and
- shift the focus from mere compliance to continual improvement.

The Singapore Packaging Agreement (SPA) was established on 5 June 2007. Its objectives are the following: to reduce packaging waste arising from consumer products, to raise community awareness on packaging waste minimization and to introduce supply chain initiatives that foster the sustainable use of resources in packaging. The Agreement has a five-year lifespan.³

For a start, the focus was on food and beverage (F&B) packaging as this was a major component of household packaging waste. There were 32 signatories when the Agreement was launched. These included 5 industry associations representing more than 500 companies, 19 individual companies, 2 non-governmental organizations, the Waste Management & Recycling Association of Singapore, the 4 public waste collectors and the National Environment Agency. In October 2009, the scheme was extended to cover other packaging of other products such as detergents, household products, toiletries and personal care

³ http://www.packaging.org.sg/index_detail.asp?id=25 (Accessed 10th April 2010)

products. By end 2009, the number of signatories increased to 95 with new signatories from various industries including building owners/managers of hotels and shopping malls.

A Governing Board oversees the implementation of the five-year lifespan of the Agreement. The Governing Board has 13 members comprising representatives from industry associations and companies, NGOs and the Government. The roles of the three stakeholder parties are shown below:

- A. Roles of Industry
 - a. Review or redesign packaging
 - b. Reduce packaging material usage
 - c. Use recyclable packaging material
 - d. Reuse or recycle packaging waste
 - e. Educate industry partners and customers on packaging waste minimization and recycling
- B. Roles of Government
 - a. Promote waste minimization and recycling at a national level
 - b. Facilitate and provide support for building industry knowledge and technology capability to recycle and reduce waste
 - c. Implement and enhance the existing recycling programmes to include packaging waste

C. Role of NGOs

- a. Educate consumers and businesses on packaging waste minimization and recycling.

Signatories of the Agreement are allowed to use the SPA logo (Figure 1) on their stationery, websites, name cards, and publicity materials.



Figure 1. The Singapore Packaging Agreement Logo for signatories

In the first two years of implementation of the Agreement, about 2,500 tonnes of packaging waste (cumulatively) had been avoided. This translated into S\$4.4 M worth of (cumulative) direct savings. Indirect savings not quantified are reduced storage cost, freight cost and fuel cost associated with the transportation of the final product.

3. Role of Singapore Packaging Council

The Packaging Council of Singapore (PCS) is an Industry Association Signatory to the SPA. PCS is a member of the Asian Packaging Federation (APF) which counts members from 14 countries in the Asia-Pacific region. PCS is also a member of the World Packaging Organization (WPO) which consists of 35 countries. Members of the PCS are mainly packaging designers, package structure manufacturers and material producers. Some members are in the packaging machinery related business as well as packaging related business. PCS encourages its members to be individual signatories to the SPA, as well as to exchange information on new green packaging technology with members of the APF and WPO, and to share the information acquired with other SPA signatories.

The PCS has taken the lead in reducing packaging waste because the main source of packaging waste comes from private sector companies. As a private sector organization, it should do its part in reducing the environmental impact arising from industrial activities within its sector. If the packaging can be reduced at source then the volume of packaging waste from the consumer will correspondingly be reduced.

Companies participate in the SPA because they feel that it is their corporate social responsibility to reduce packaging waste. The benefits that companies gain from joining this scheme is the networking and experience sharing with other signatories on how their packaging could be reduced. Through experience sharing sessions, SPA members can learn new packaging technologies from other members in the network and from APF and WPO.

In trying to reduce packaging, companies often face the challenge of maintaining the shelf life of the products and also ensuring that the new packaging does not adversely affect the packaging strength or the physical appearance of the packaging. Most of them enlist external help such as material suppliers and packaging designers.

To promote this scheme, PCS believes that more education campaigns among consumers and collaboration with packaging experts from other parts of the world such as Japan are needed. As an industry association, PCS provides assistance to its members by sharing packaging knowledge, new packaging development, today's status of green packaging & other matters related to packaging. Moving forward, PCS will continue to promote the Agreement to its members in non-F&B areas.

4. 3R Packaging Awards

The 3R Packaging Awards were introduced in 2008 to recognise the SPA signatories who have made notable achievements and contributions towards the goals of the Agreement. There are two categories of Awards – the Distinction Award and the Merit Award. In 2009, there were three Distinction Award recipients and nine Merit Award recipients.

4.1. Awards Criteria

4.1.1. Candidates were assessed on their efforts on the following

- a. Packaging waste avoidance

- b. Recycling or reuse of packaging waste
- c. Consumer education
- d. Use of recyclable/recycled packaging material
- e. Reduction of other waste

4.1.2. Pre-requisites for 2009 Awards

- a. Only signatories of SPA are eligible for the 3R Packaging Awards.
- b. The initiatives assessed must have been implemented between 1 July 2008 to 30 Jun 2009.
- c. Initiatives assessed were for packaging of products that are largely meant for local consumption.

4.2. Case Studies

4.2.1 Case Study 1 – Tetra Pak

Tetra Pak⁴ is one of the three companies in the Tetra Laval Group – a private group that started in Sweden. The other two companies are DeLaval and Sidel. Tetra Laval is headquartered in Switzerland. The company operates in more than 150 markets with over 21,000 employees. Tetra Pak supplies more than 132 different types of carton packaging to 32 different markets. The products are tailored to suit the needs of their customers and the company developed its own processing solutions including design and service complete plants.

Tetra Pak's commitment to the environment is stated in their environmental policy.⁵ The company has numerous environmental improvement initiatives. One of these initiatives aimed to reduce packaging waste by recovering polyethylene (PE) plastic used to laminate carton packaging for reuse in the packaging process.

⁴ http://www.tetrapak.com/about_tetra_pak/the_company/pages/default.aspx (Accessed 1 Dec 09)

⁵ http://www.tetrapak.com/environment/policy_and_goals/pages/default.aspx (Accessed 1 Dec 09)

The beverage carton packaging material manufactured at the Jurong plant is made up of six protective layers consisting of paper board, PE plastic and aluminium foil materials. In the production process, excess PE used in laminating the carton packaging is trimmed off at the edges. In the past, this PE trim was previously compacted into bales, sold to a waste trader and subsequently sent overseas for recycling. In January 2009, Tetra Pak started on a continuous improvement project and invested in new equipment so that the PE trim could be recovered for reuse in the packaging production process. Tetra Pak found that it could reduce the net amount of PE resources consumed, and reduce plastic waste by about 380 tonnes of PE per year from just one machine. For their effort in reducing packaging waste, the company was given the Distinction Award in 2009.

Moving forward, Tetra Pak is replicating the recovery process in their second production line in Singapore as well as in other plants in other countries. The company is looking for other opportunities to reduce waste, e.g. reducing grammage of their packaging materials by replacing existing materials with others offering similar strength and stability.

Product development is done by a team of five staff. Their responsibilities include redesigning products, carrying out life cycle assessment (LCA) and engaging other experts to assist in the Research and Development (R&D). Reducing packaging material is not an easy task. Redesigning the product is not without its challenges. The development team has to address issues such as preserving product integrity without compromising the strength of the packaging. This involves experimenting with different designs using materials with different thickness.

4.2.2 Case Study 2 – Kentucky Fried Chicken (KFC)

KFC set up its first restaurant in Singapore in 1977 and has grown to become a popular fast food option for Singaporeans with 79 outlets in the country. Since being a signatory to the SPA in 2007, KFC Singapore implemented many key initiatives to reduce packaging wastage:

1. Reducing Dimensions of packaging boxes:

- KFC Thrift boxes was shrunk from 350 mm x 230 mm x 70 mm to 260 mm x 233 mm x 73 mm, saving about 17 metric tons of paper material annually as well as some \$21,000 in cost.
- KFC Dinner Box was shrunk from 255 mm X 170 mm X 71 mm to 205 mm X 170 mm X 71 mm, hence reducing the use of corrugated board material by 3 tons per annum.

The reduction in size of these 2 packaging boxes also meant that they will take up less space in the delivery bag, allowing more products to fit in.



Source: 3R Packaging Awards 2009 Booklet (Singapore Packaging Agreement, 2008)

2. Reducing thickness of its products:

- In April 2008, small plastic bags used to pack small items for takeaway were reduced in thickness, from 18 microns to 15 microns. This 17% decrease in thickness avoided 2.9 metric tons in the amount of plastic packaging material used annually.
- KFC Zinger box thickness was reduced from 240 gsm to 210 gsm since July 2008, saving 5 tons of paper material used per year.
- Continuing from the Zinger box success, KFC also reduced the thickness of its turnover sleeve for dessert pies from 240 gsm to 210 gsm, saving about 300 kg of paper annually.
- In February 2008, the thickness of KFC napkins was reduced from 18.5 gsm to 16.5 gsm, saving about 24 metric tons of paper material annually.

In trying to reduce packaging waste, meeting customers' demands as well as economic considerations are still at the top of KFC's priorities. For example, KFC switched from the thinner normal food board packaging to corrugated board material because it can better retain the temperature of its product as well as maintain the robustness of the box even when it is moist with condensation. This is especially important with KFC's home delivery when the products may take up to 20 minutes to reach consumers from the restaurants.

The majority of KFC reduction in packaging waste is the result of an in-house cross departmental team. Although external technical expertise is not needed, KFC has to ensure that the newer, smaller or thinner packaging materials meet operational and customers' functional requirements. Also, despite being a big player in local fast food market, due to limited size of the Singapore market, KFC is not able to request special designs from its packaging suppliers and has to work with existing suppliers.

Looking forward, KFC will continue to look for solutions that are win-win in both economic and environmental performance.

4.2.3. Case Study 3 - Boncafé

Boncafé International Pte Ltd is a local company producing gourmet coffee. The company was founded in 1962. Their customers include internationally renowned hotels, resorts, airlines, restaurants and foodservice establishments. Their coffee, in roasted beans and ground form, are packed in aluminum foil bags and distributed to their customers in South East Asia, Sri Lanka, Myanmar, the Maldives, the Philippines, Korea and Japan. Boncafé's products are also available in local supermarkets.

As their business grew, the company saw a significant 33% increase in usage of packaging material over the past 10 years (an annual 3.3% increase). This translated into an increase of between 900,000 – 1,000,000 packets each year. As a responsible company, Boncafé is concerned with the large amount of packaging waste generated as a result of its business. When approached by the National Environmental Agency in 2006, Boncafé agreed to be a signatory of the SPA.

The company has had challenges with their product packaging. The packaging material was made up of layers of polyester, foil and linear low density polyethylene. The composite layer was about 140 microns thick. Moreover, the seal deteriorated very quickly and product quality was affected. After being a signatory of the SPA, Boncafé embarked on a project to reduce the thickness of the packaging material.

Boncafé worked closely with the material supplier to reduce the packaging content. It was important that the package would still bear the premium quality appearance and attractiveness despite being thinner. Boncafé took the opportunity to create a new look for the product at the same time.

The company managed to significantly reduce the number of microns (thickness) of the material from 140 to 120 microns without compromising on the look and quality of the packaging. Despite of a thinner material, the package was able to stand firm when placed in an upright position. This was important as the product had to be displayed on shelves in supermarkets.

The change in material thickness amounted to a 14% reduction in material usage. With a projection of 900,000 packets produced per annum, the expected reduction in packaging material used would amount to 1516 kg per year.

In summary, this change would result in the following environmental and economic benefits:

Table 1. Summary of Changes and their Associated Material and Cost Reduction

Change	Reduction in Material Usage	Reduction in Cost
Packaging Material reduced from 140 microns to 120 microns	14% reduction or 1516 kg of packaging waste material per annum(in savings)	12.8% reduction in costs or approx \$6160 per annum

Source: Provided by Boncafe



The 'old' material



The 'new' material

In another 3R initiative, Boncafé changed the delivery packaging for local customer orders in the retail sector from polyethylene carrier bags to woven bags.

During the past 15 years, Boncafé had experimented with different types of bag, colour, design and material from polyethylene to laminated paper bags. The table below summarized the challenges faced with the different types of bags.

Table 2. Summary of Environmental & Cost Benefits

Material	Usage per annum and spoilage	Environmental benefits	Cost Benefits
Polyethylene Bags	20,000 pieces (out of which about 3,000 pieces would deteriorate during storage)	The polyethylene and laminated paper bags are seldom reused as they could get torn or spoilt during delivery of the products.	The woven bags are less expensive to produce, compared to the polyethylene and laminated paper bags, thereby saving the company about \$14,000 per annum
Laminated paper bags	20,000 pieces (out of which about 1,000 pieces would deteriorate during storage)	Moreover, a portion of the bags deteriorate during storage. The woven bags, on the other hand, do not deteriorate during storage and can be reused by the customers.	
Woven bags	20,000 pieces (no deterioration in quality during storage)		



From polyethylene bags to laminated paper bags to reusable woven bags.

Wover bags
banded together
with Brazilian
Instant Coffee
200gm at Sheng
Siong outlets.



Source: Provided by Boncafe

4.2.4. Case study 4 – Suki Sushi Pte Ltd

Suki Sushi Pte Ltd was established in July 2002 with the opening of its first restaurant in Singapore. Today, the Suki Group of Restaurants has six concept restaurants, with more than 30 outlets scattered across the country serving sushi, sashimi, do-it-yourself steamboat, teppanyaki, shabu shabu as well as international buffet. Restaurants under the Suki Group of Restaurants are Suki Sushi, Yuki Yaki, Ishi Mura, Day29 Food Galore, Sakura, Nihon Mura and Sakura Charcoal Grilled, and Shabu Shabu.

The company signed the SPA in 2008 after attending a CEO luncheon organised by the SPA's Governing Board. As a large chain of restaurants, it uses huge quantities of resources for its operations and it wants to be a socially responsible corporate citizen. Suki Sushi was convinced of the need to take action to reduce the environmental impact of its business.

Suki Sushi has several environmental improvement initiatives. Its food waste, in the past, was disposed by incineration. Today, its food wastes undergo a biomethanisation process. It has replaced its incandescent light bulbs with energy efficient light bulbs and it is looking to switching to light-emitting diodes (LED) lamps. To reduce fuel consumption, its supplies are delivered at night when vehicular traffic is low thus avoiding traffic jams. It is currently exploring ways to improve its food packaging. It is looking at switching from styrofoam to paper boxes for its takeaway food.

Suki Sushi feels that the initial capital cost of implementing environmental improvement initiatives is high in most cases. Hence, the ability to do life-cycle costing is important. Environmental improvement initiatives should also not adversely affect product or service quality. Hence, time and effort are needed to conduct research, to carry out evaluation on alternative solutions. Suki Sushi thinks that companies are hampered by a lack of professional help. Most F&B companies do not have core competencies in environmental technologies and engineering solutions to evaluate various environmental technologies. Thus, SPA experience sharing sessions are very useful. It also believes that Type 1 eco-

labelling⁶ is helpful as the environmental impacts of eco-labelled products have been assessed by a team of experts.

Moving forward, Suki Sushi would like to see greater promotion of the SPA. With more companies taking steps to improve its environmental performance, certain environmental improvement initiatives would be able to achieve economy of scale and hence lowering the cost of implementation.

In the various case studies, we have seen how SPA has reached out to multinational corporations (MNC) like Tetra Pak and KFC as well as Small Medium Enterprises (SMEs) like Boncafé and Suki Sushi.

For MNCs such as Tetra Pak which already have a proven environmental record, the SPA serves as an opportunity to further highlight and showcase their efforts. For SMEs like Boncafé which have also taken significant strides in reducing packaging, SPA is also a platform to establish a branding beyond their size. Participation in SPA allows SMEs like Suki Sushi an opportunity to rapidly learn industry best practices.

5. Conclusion

Based on our interviews with the selected signatories of the SPA, this Agreement is useful in raising the environmental awareness of the industry. It was interesting to note that while it was industry's concern that new waste legislation would drive up business cost that prompted the creation of a non binding agreement like SPA, the SPA signatories that we interviewed said that the government should take firmer action or even introduce new laws to force companies to reduce their environmental impacts. Companies also believe that SPA could do more to publicise the SPA logo. This can be done through SPA's participation in environmental events or eco-product fairs. Consumers can be educated through exhibitions in supermarkets where such food and beverage products are sold. The media can also help to build awareness by having articles written about Packaging Award winners.

Another recommendation is for SPA to allow only companies which have taken specific improvement measures to use the SPA logo on their publicity materials. Currently, all signatories are allowed to use the logo without having to show proof that waste reduction efforts have been made by the companies, although a written application to the Governing

⁶ ISO 14024

Board of SPA is needed for the use of this logo. Companies also express the need to simplify the SPA award application process because it seems that the current procedure is document intensive.

Given the economic and environmental benefits of SPA as shown in the cases discussed, SPA approach can be replicated in other countries. The concerns expressed by the Singapore companies such as the need for experience sharing sessions among members of the same business community, the need to provide technical support, in particular to SMEs to assist them in evaluating different options and to conduct cost benefit analysis should be addressed.

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Mr Philip Ng, Senior Manager SCM/QA and Miss Shawn Quan, Purchasing Manager, Kentucky Fried Chicken Management Pte Ltd.

Ms Sharon Ong, Senior Scientific Officer, Resource Conservation Department, National Environment Agency.

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Date of Interview: 20 November, 2009
Place of Interview: Tetra Pak Jurong
19 Gul Lane, Singapore 629414
2. Mr. Albert Lim, Chairman, Singapore Packaging Council.
Chairman, Singapore Packaging Agreement Governing Board
Date of Interview: 26 November, 2009
Form of Interview: Email Interview
3. Mr. Eric Huber, Factory Manager, Boncafé International Pte Ltd.
Date of Interview: 14 December, 2009.
Place of Interview: Boncafé International Pte Ltd
208 Pandan Loop, Singapore 128401
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Date of Interview: 31 December 2009
Place of Interview: Suki Sushi Pte Ltd,
5 Kallang Way 2A, Singapore 347494
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Date of Interview: 7 January, 2010
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17 Kallang Junction, Singapore 339274
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Date of Interview: 13 November, 2009
Place of Interview: National Environment Agency, Environment Building
40 Scotts Road, #13 – 00, Singapore 228231