

# ENVIRONMENT

Environmental conservation remains a key focus area for the Group. As one of the region's largest food and beverage manufacturers, we recognise and consider the environmental impact our daily business activities has on the environment.

We make rational and conscientious use of our resources, through the efficient use of water and electricity, and waste minimisation at all levels within the Group. The adoption of these best practices across our operating units underlie our commitment to safeguarding our environment.

As a socially responsible company, we are constantly looking at innovative ways to minimise our impact on the environment and lower our cost through energy and water conservation, as well as the minimisation in the use of packaging materials.

In this section:



Energy and  
Carbon Emissions



Water



Waste



Packaging

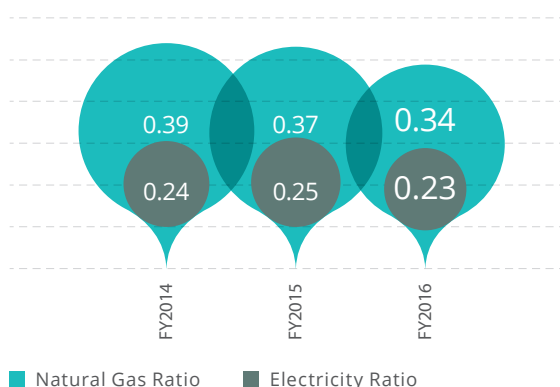


## ENERGY AND CARBON EMISSIONS

In an era of rising global temperatures as a result of increased carbon emissions, we believe we have a responsibility in minimising our carbon footprint across our value chain. From manufacturing to packaging and logistics, we are constantly finding ways to reduce and optimise our energy usage, including investing in energy efficient equipment to reduce carbon emissions.

### BEVERAGES MALAYSIA

#### Energy Utilisation Ratio (GJ/ton)



#### Carbon Emission Ratio (MT CO<sub>2</sub>/ton)

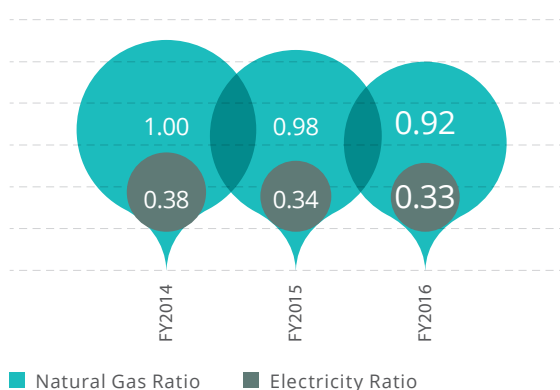


Beverages Malaysia has recorded improvements in both energy utilisation and carbon emissions. Its electricity ratio and natural gas ratio have reduced 4% and 13%, respectively, since FY2014.

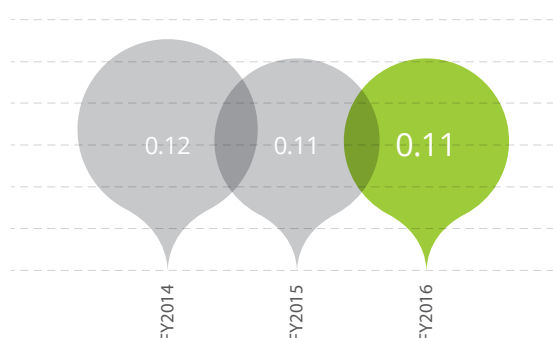
The Group is concerned about the conscientious use of electricity. To use this resource more efficiently, Beverages Malaysia converted individual cooling systems to a centralised one, as well as improved the efficiency of its production line, resulting in both cost and energy savings.

### DAIRIES MALAYSIA

#### Energy Utilisation Ratio (GJ/ton)



#### Carbon Emission Ratio (MT CO<sub>2</sub>/ton)



With consistent monitoring, Dairies Malaysia successfully reduced its electricity and natural gas consumption by 13% and 8%, respectively, in spite of increasing production output volumes since FY2014. The more efficient use of energy resulted in a year-on-year decrease in the carbon emission ratio.

This year, Dairies Malaysia's emphasis on maintaining its ISO 14001 and OHSAS 18001 certifications helped to instill a culture of energy conservation in the workplace. It continued to monitor its energy consumption and implemented energy-saving initiatives on its machinery and equipment, to achieve overall energy savings.

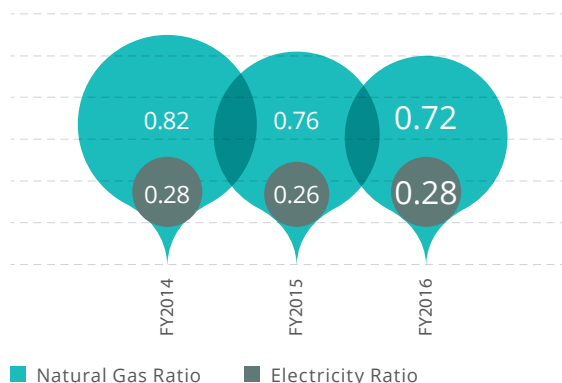
#### Notes:

- 1 Energy Utilisation Ratio is calculated based on energy consumption (in gigajoule, GJ) per ton of product.
- 2 Carbon Emission Ratio is measured as carbon dioxide release per ton of product.

# ENVIRONMENT

## DAIRIES THAILAND

### Energy Utilisation Ratio (GJ/ton)



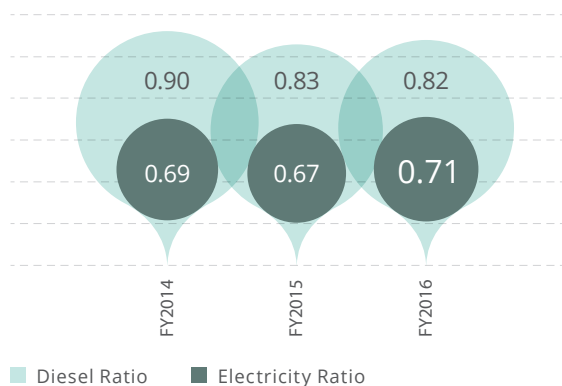
### Carbon Emission Ratio (MT CO<sub>2</sub>/ton)



In spite of increasing production volumes, both energy utilisation and carbon emission per ton of product have been decreasing, at 9% and 7%, respectively, compared to FY2014. Dairies Thailand's energy-savings initiatives this year included the replacement of lights with energy-saving LED ones. In the coming year, it has plans to install automatic timers for chillers to conserve electricity.

## DAIRIES SINGAPORE

### Energy Utilisation Ratio (GJ/ton)



### Carbon Emission Ratio (MT CO<sub>2</sub>/ton)



Diesel consumption rate improved over the years, recording a 9% decline since FY2014. Electricity consumption ratio increased in FY2016 due to a higher number of refrigerated containers used in the transportation of chilled milk.

An energy audit was conducted last year to reduce energy consumption. Recommendations from the audit implemented include the increase in chiller temperature, and the installation of LED lights in the manufacturing plant. Power meters have also been installed at its production lines and utility systems to further reduce energy consumption.

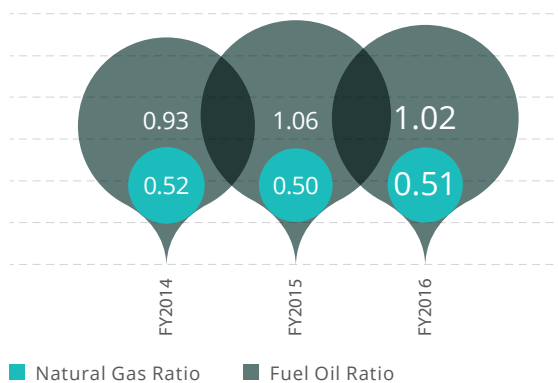
#### Notes:

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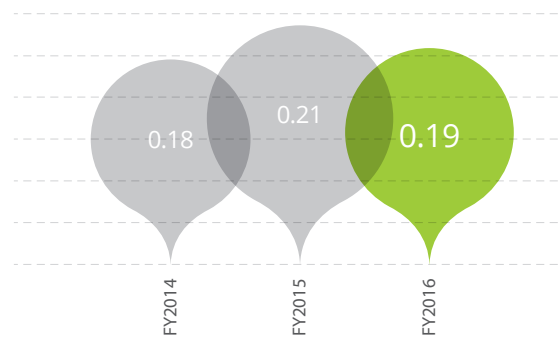


## CREAMERIES MALAYSIA

### Energy Utilisation Ratio (GJ/ton)



### Carbon Emission Ratio (MT CO<sub>2</sub>/ton)

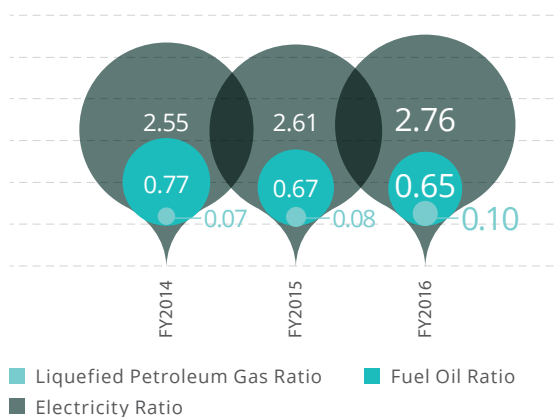


Following its FSSC 22000 Food Safety System Certification in FY2015, Creameries Malaysia achieved an improvement in electricity consumption due to energy saving initiatives implemented, particularly in the coldroom where compressors were automatically regulated when the optimal temperature was reached.

Creameries Malaysia has plans to further reduce energy consumption in its plant, including replacing high intensity lamps with LED lights.

## CREAMERIES THAILAND

### Energy Utilisation Ratio (GJ/ton)



### Carbon Emission Ratio (MT CO<sub>2</sub>/ton)



Energy consumption in Creameries Thailand was mostly for the running of the cold storage and freezers. After the installation of a new steam boiler in FY2015, fuel oil consumption has reduced year-on-year. Creameries Thailand will continue to monitor its energy management system through energy-saving initiatives.

#### Notes:

- 1 Energy Utilisation Ratio is calculated based on energy consumption (in gigajoule, GJ) per ton of product.
- 2 Carbon Emission Ratio is measured as carbon dioxide release per ton of product.

## Reducing CO<sub>2</sub> Emission from Fleet Vehicles and Chillers

In Singapore, the F&N F&B division aims to reduce its carbon footprint through the minimisation of electricity consumption and vehicle emissions.

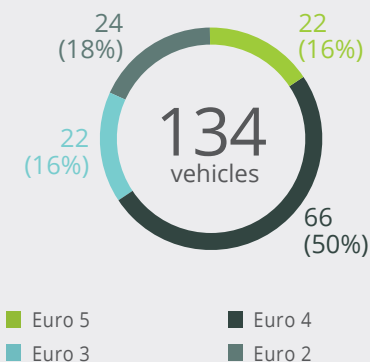


As at FY2016, it owns a fleet of 134 diesel vehicles as part of its supply chain. To minimise its impact on the environment, it ensures that all vehicles are compliant with the European emission standards, which are defined as the acceptable limits for exhaust emissions of vehicles. There are six stages within this standard, ranging from Euro 1 to Euro 6, with increasingly restrictive emission limits as the stages progress. Its target is to increase the number of vehicles that are compliant with Euro 5. To that end, several vehicles in its fleet that are of Euro 1 and Euro 2 standards are being replaced to comply with Euro 5 and Euro 6 standards.

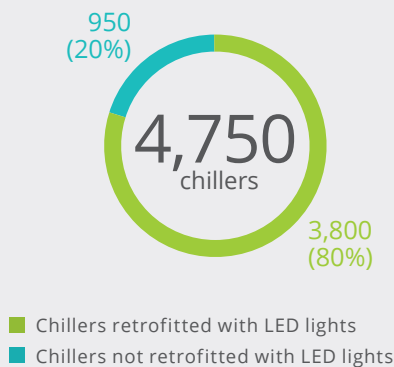


F&N has chillers provided as part of its support to businesses and partners. All the chillers are installed with chlorofluorocarbon ("CFC") free refrigerant gas R134a or R404a. An ongoing exercise to replace fluorescent lights with energy saving, light-emitting diode ("LED") lights began four years ago. This year, it achieved an improvement in the proportion of chillers being retrofitted with LED lights despite having an increased number of chillers. The remaining chillers will be retrofitted with LED lights by 2019.

### Fleet Compliant with European Emission Standards



### Chillers Retrofitted with LED Lights



# ENVIRONMENT

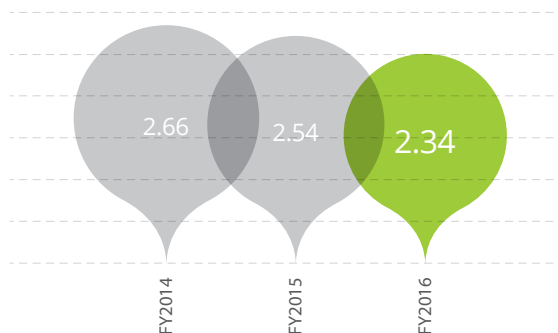


## WATER

As one of the leading manufacturers in the region, the availability of clean water is essential to us. We use water in our finished product as well as throughout our supply chain. That is why we understand the importance of the responsible usage of water to ensure the sustainable supply of this precious resource.

### BEVERAGES MALAYSIA

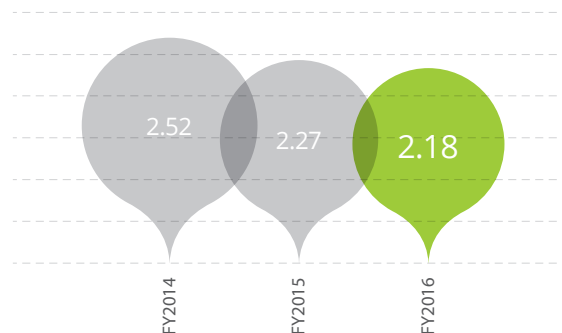
#### Water Ratio (m<sup>3</sup>/ton)



The consumption of water per ton of product has been decreasing year-on-year due to effective water management practices carried out by Beverages Malaysia. This year, water consumption has improved 12% as compared to FY2014, due to continuous efforts to ensure there are no water wastages in the production process.

### DAIRIES MALAYSIA

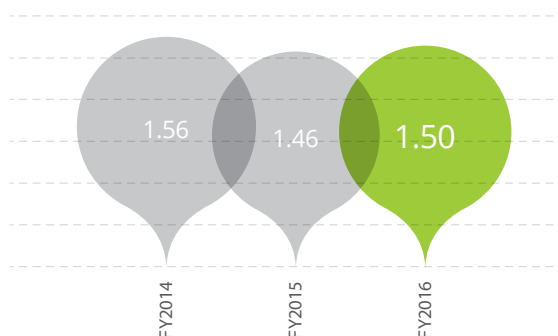
#### Water Ratio (m<sup>3</sup>/ton)



Despite an increase in production volume since FY2014, the water ratio for Dairies Malaysia has decreased 13% in FY2016. The significant reduction was achieved due to its daily monitoring of water consumption and recycling of wastewater for gardening purposes. There are plans to explore more uses of wastewater in the new year to reduce its water consumption.

### DAIRIES THAILAND

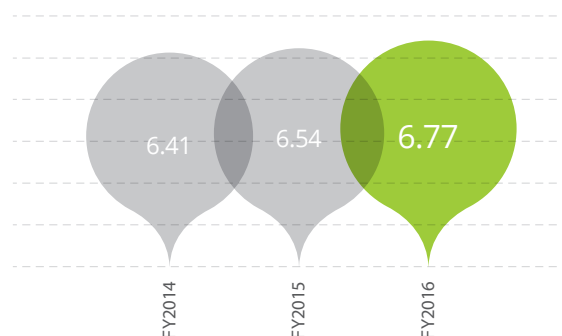
#### Water Ratio (m<sup>3</sup>/ton)



Water usage per ton of product has been decreasing year-on-year as a result of continuous improvements in its water management system, with the exception of FY2016, which saw a marginal increase in water ratio due to the implementation of a new production line and steriliser. However, Dairies Thailand has also started recycling its wastewater to be used in the evaporator of its chiller in order to reduce its water consumption.

### DAIRIES SINGAPORE

#### Water Ratio (m<sup>3</sup>/ton)



Dairies Singapore's water consumption rate has increased marginally over the years. To achieve more efficient use of water, its water saving measures in FY2016 included the replacement of two old evaporative condensers with a more efficient one and the condensate recovery system from one of its chillers.

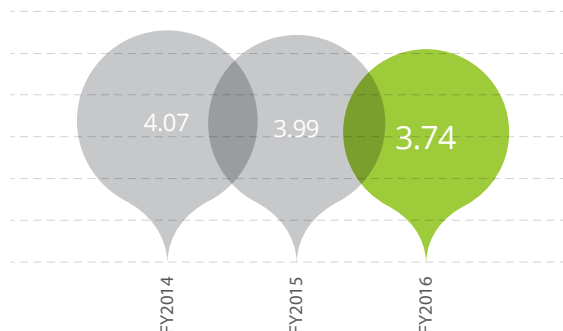
Note:

1 Water ratio is calculated based on water consumption (in cubic metre, m<sup>3</sup>) per ton of product.

# ENVIRONMENT

## CREAMERIES MALAYSIA

### Water Ratio (m<sup>3</sup>/ton)



Water consumption has improved 8% since FY2014. Following the installation of a new production machinery in FY2015 which is more water-efficient while producing higher output, Creameries Malaysia has further reduced its water usage.

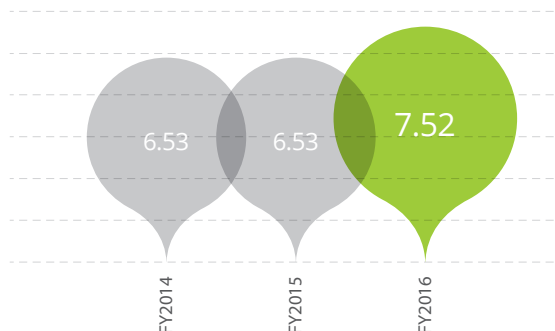
Creameries Malaysia plans to conduct water-saving awareness programmes for its equipment operators in the new financial year.

Note:

1 Water ratio is calculated based on water consumption (in cubic metre, m<sup>3</sup>) per ton of product.

## CREAMERIES THAILAND

### Water Ratio (m<sup>3</sup>/ton)



The water ratio of Creameries Thailand increased in FY2016 due to the use of more water for the cleaning of the production lines and cooling systems.

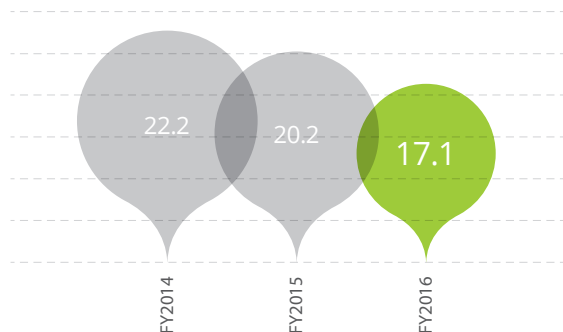


## WASTE

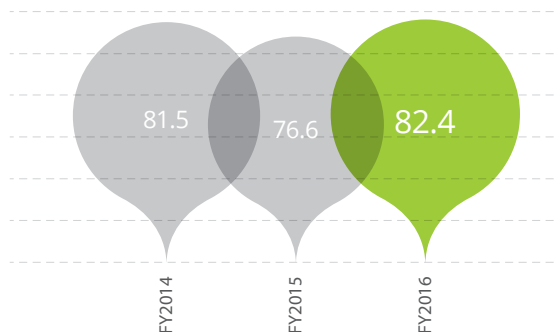
Large quantities of waste are generated during the manufacturing of our products. As part of our commitment to reduce our carbon footprint, we have made concerted efforts in managing the amount of solid waste generated and amount of waste recycled.

## BEVERAGES MALAYSIA

### Solid Waste Ratio (kg/ton)



### Solid Waste Recycled (%)



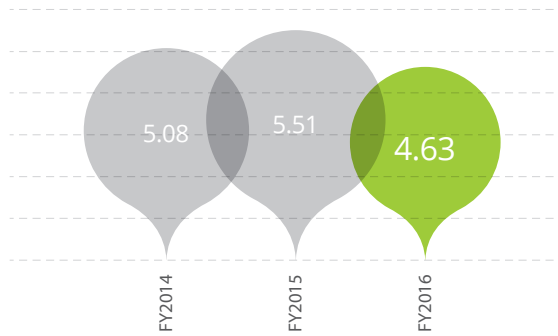
Following its successful efforts in reducing sludge, a non-recyclable waste generated by the effluent treatment plant, the solid waste generated per ton of product has decreased to 17.1 kg/ton, from 20.2 kg/ton in FY2015. Beverages Malaysia's percentage of solid waste recycled has also improved to 82.4%, the highest level since FY2012.

Notes:

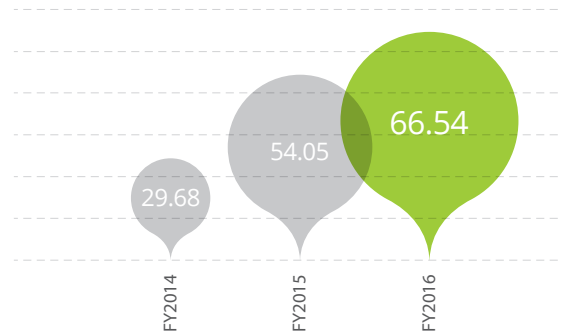
- 1 Solid Waste Ratio is calculated based on the total amount of waste generated (in kilogram, kg) per ton of product.
- 2 Solid Waste Recycled is the percentage of waste generated that was sent for recycling.

## DAIRIES MALAYSIA

### Solid Waste Ratio (kg/ton)



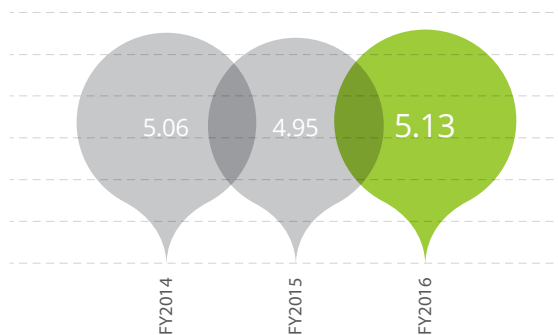
### Solid Waste Recycled (%)



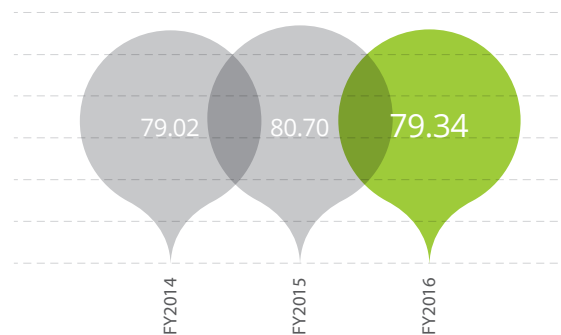
Dairies Malaysia has been effective in its waste management efforts, reducing the solid waste ratio in FY2016 by 16% as compared to FY2015, in spite of higher production volume. The amount of solid waste recycled has also more than doubled since FY2014 due to its concerted recycling efforts.

## DAIRIES THAILAND

### Solid Waste Ratio (kg/ton)



### Solid Waste Recycled (%)



Dairies Thailand's solid waste ratio increased slightly in FY2016 due to the installation and commissioning of new production and packing lines. In FY2016, 79.34% of the solid waste generated was successfully recycled and did not enter any landfill.

#### Notes:

- 1 Solid Waste Ratio is calculated based on the total amount of waste generated (in kilogram, kg) per ton of product.
- 2 Solid Waste Recycled is the percentage of waste generated that was sent for recycling.



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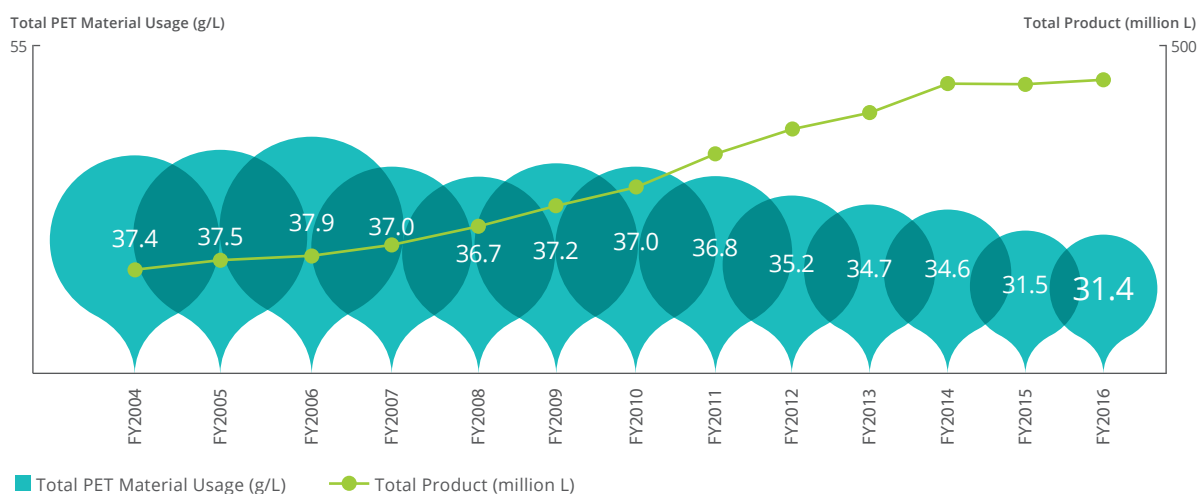


## PACKAGING

Packaging plays an important role in presenting our products and brands to our consumers while protecting the integrity of the product. F&N is constantly looking at packaging innovation to achieve optimal packaging design and functionality with the least impact on the environment.

Despite growing sales volumes, the Group has achieved improvements in its packaging footprint for its Beverages and Dairies segments, through continuous packaging innovation and light-weighting initiatives.

### Packaging Index for Beverages (Singapore and Malaysia)



F&N's packaging index for beverages measures the use of polyethylene terephthalate ("PET") material used per product, within the following parameters:

- Isotonic, Carbonated Soft Drinks, Asian Soft Drinks and Water categories
- PET bottle sizes of 350ml, 380ml, 500ml, 600ml and 1.5L
- Produced in its Singapore and Malaysia beverage manufacturing plants

The Group has significantly reduced the amount of PET material used in Beverages over the years, achieved through the continuous improvements made in packaging designs. Its packaging index has improved year-on-year since FY2009, despite rising sales volume. In FY2016, it achieved a significant reduction of 16% compared to FY2004, when the packaging index was first measured. Both Singapore and Malaysia recorded packaging footprint reductions compared to FY2015. The Group's 16% reduction in FY2016, a further improvement from FY2015's 15.8% reduction, was partly due to the growth in consumption of larger pack sizes, which translated to less PET material used per product.

F&N has implemented several light-weighting projects to reduce the amount of packaging material used in our products:

Financial Year	Category	Bottle Size	PET Weight Reduction
FY2007	Carbonated Soft Drinks	1.5L	48g to 46g
FY2010	Carbonated Soft Drinks	500ml	29g to 27.5g
FY2012	Water	500ml	22g to 17g
		600ml	20g to 16g
		1.5L	35g to 29g
FY2013	Isotonic, Asian Soft Drinks	500ml	32g to 28g
FY2015	Carbonated Soft Drinks	1.5L	46g to 42.75g
		500ml	27.5g to 22.74g

#### Packaging Ratio for Dairies Malaysia (Ton of packaging material/Ton of product)



Dairies Malaysia and Dairies Thailand continually examine their packaging use by seeking innovative designs to achieve packaging optimisation and functionality. They have also implemented waste minimisation initiatives through the use of recycled materials. The packaging ratio for Dairies Malaysia and Dairies Thailand tracks the amount of packaging material used in the production of canned milk.

In Dairies Malaysia, the marginal increase in its packaging ratio corresponded with the growth in export volume of canned milk, which required more packaging material as compared to products for the local market.

#### Packaging Ratio for Dairies Thailand (Ton of packaging material/Ton of product)



Dairies Thailand's marginal increase in packaging ratio this year was due to an increase in production volume. However, through Dairies Thailand's continuous efforts in reducing its total packaging material used, cumulative packaging reduction since FY2009 was more than 13,000 tons in FY2016. In FY2016 alone, Dairies Thailand reduced its packaging material by close to 2,200 tons, mainly due to the reduced use of tinplate in its production.