

## Climate Change Adaptation and Mitigation

### Performance

GRI302-2  
GRI302-3  
GRI302-4

► Press release  
(Japanese)

### Performance

GRI302-5

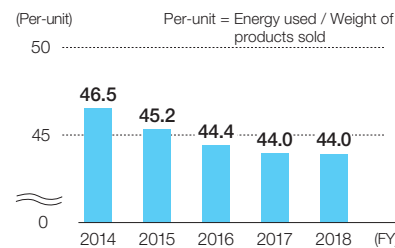
► P43

### Initiatives in Transportation

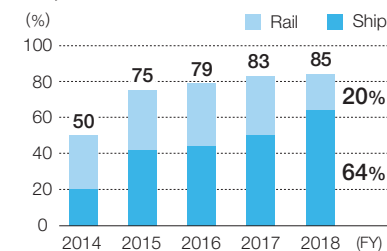
Japan's Energy Conservation Act obliges specified consignors to make effort to reduce per-unit energy use (crude oil equivalent) of their cargo logistics by at least 1% per year on average over five years and report the result to the government. This applies individually to Ajinomoto Co., Inc., Ajinomoto Frozen Foods Co., Inc., and Ajinomoto AGF, Inc. For the three companies combined, per-unit energy use declined 1.4% per year on average in the five years to fiscal 2018. In fiscal 2018 alone, the result was about the same as the previous year due mainly to the increase in per-unit energy use by two manufacturing subsidiaries of Ajinomoto Frozen Foods Co., Inc. merged in July 2018.

The Ajinomoto Group has been pursuing modal shift<sup>[1]</sup> since 1995 in an effort to simultaneously enhance transport capacity and make logistics more environmentally friendly. In fiscal 2018, although railway use markedly decreased due to the division of some railways caused by torrential rains in western Japan, increased shipping use from Fukuoka to Mie and western Japan and joint trunk line use in Hokkaido through F-LINE have increased the modal shift percentage of Ajinomoto Co., Inc. for long-distance transport to 85% overall.

#### Per-unit energy use in logistics<sup>[2]</sup>



#### Modal shift percentage of Ajinomoto Co., Inc. 500 km or more



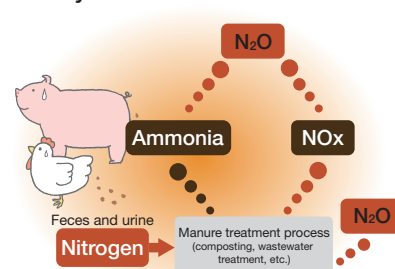
[1] Changing to modes of transport with lower environmental impact, including rail and ship transport. Railway container and ship transport produce one-eleventh and one-eighth of the CO<sub>2</sub> emissions of trucking, respectively.

[2] Combined results of Ajinomoto Co., Inc., Ajinomoto Frozen Foods Co., Inc., and Ajinomoto AGF, Inc.

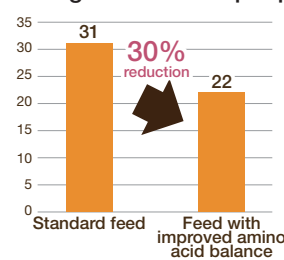
### Reducing Nitrogen Emissions by Livestock with Feed-use Amino Acids

Feeds with poor amino acid balance lead to an oversupply of unnecessary amino acids, which are not utilized by the animals and are excreted in large quantities as nitrogen compounds. During the waste treatment process, they turn into nitrous oxide (N<sub>2</sub>O), which increases environmental impact with approximately 300 times the global warming potential of CO<sub>2</sub>. Feed-use amino acids improve the balance of feeds, reduce excretion and reduce excreted nitrogen compounds by about 30%. Amino acids thus help to reduce the life-cycle CO<sub>2</sub> (LC-CO<sub>2</sub>) emissions of feeds while also helping to diminish odor caused by ammonia derived from nitrogen compounds as well as reduce soil, surface water and groundwater pollution.

#### N<sub>2</sub>O cycle



#### Nitrogen emissions per pig (g/day)



Source: Takada et al., Japanese Society of Animal Science (2009)