7. Suntory Limited

1. Company Profile

Suntory Limited, established in 1899 as a small wine manufacturer and merchant in Osaka, Japan, has expanded its business in various fields, ranging from whisky, liquor, beer and non-alcoholic beverage businesses to the new fields of flower, health food and restaurant business and so on.

Suntory Group, which consists of Suntory Limited and its 168 affiliated companies, operates various food and beverage businesses in 16 countries in the world. As of December 31, 2003, over 18,000 people are working under the name of Suntory Group and marked ¥1,320 billions (US $ 12 billions) of consolidated turnover in the year.

2. Environmental Activities

Since most of their products are made from the blessing of nature, Suntory, has been engaged in various activities to reduce environmental impacts. In 1997, they defined the *"Basic Principles of Suntory's Environmental Policy"* to be applied to every aspect of the business activities throughout the Suntory Group.

Development of eco-products: From the stage of new product development and package designs, Suntory has been committed to reduce environmental impacts. They have added two points of view, "to be harmless" and "to be universally designed", in addition to the general environmental viewpoints of 3-R; i.e., Reduce, Reuse and Recycle.

Production at eco-factory Suntory's production sites in Japan are called 'eco-factories' which are designed and operated with an environmentally oriented mind. And all of the factories have achieved a 100% recycling rate of by-products and industrial wastes by 2000, and their 13 major factories have acquired the ISO14001 certificate.

Promotion of container recycling Suntory is promoting to build an efficient and active recycling system of used beverage containers, and at the same time they are making efforts to utilize materials recycled from used containers. They have developed, and are positively using Eco-Bottles, which are composed of over 90% recycled colored glass cullet, and the yarn of the uniforms of the production plants and group-companies are made from recycled PET (Polyethylene terephtalate) bottles.

Preservation of forest In 2003, Suntory set out a new project named "the Forest of Natural Water" in Kumamoto, Japan. To work to preserve the water cultivation forest under contract with the Japanese Government which may last for 60 years. The "Suntory School of Forest & Water" for school children was also founded in the Forest as a place of environmental education, where they can touch and learn the splendid world of nature and the water cultivating forest.

3. Objectives

- Introduction of JEPIX as an integrated evaluation index.

- Applicability of JEPIX as a decision-making tool.

4. Scope

The system boundary is surrounded by a black border in Figure 7.1: impacts through fuel consumption in factories, impacts through energy production, and raw materials (only packaging materials).

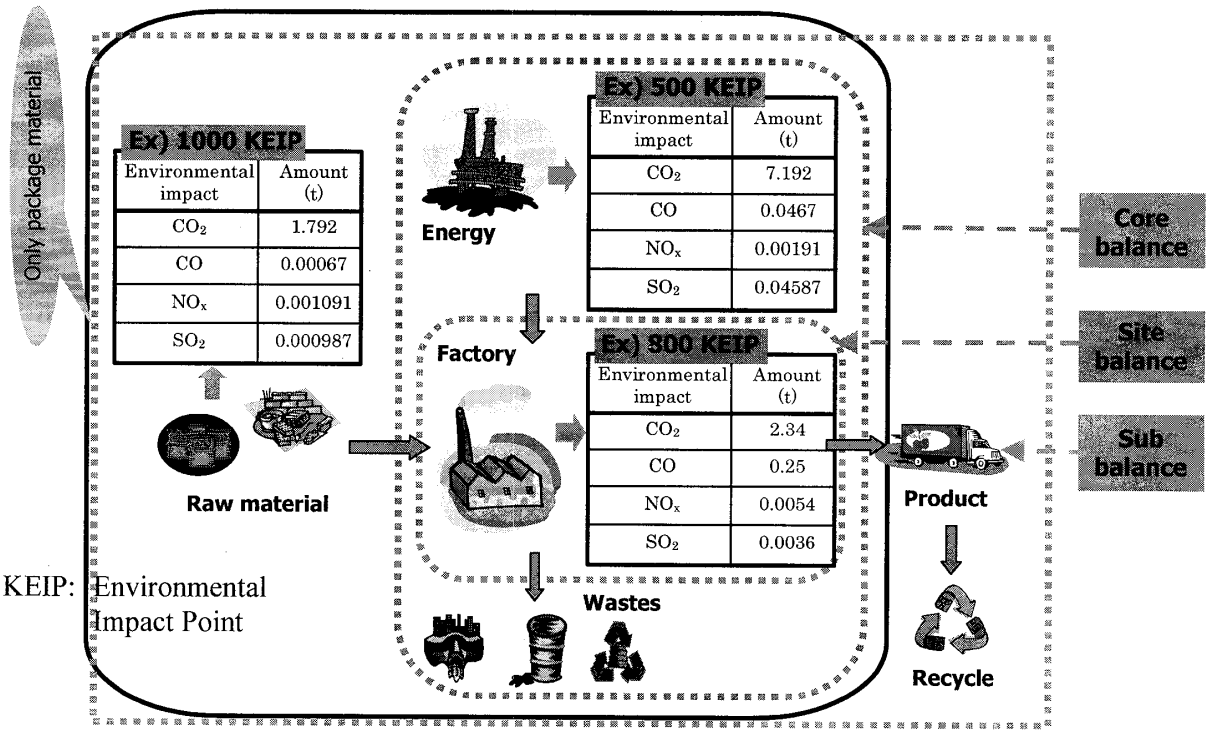


Figure 7.1: Area of analysis

5. Condition

The whole company is analyzed.

▼ Input inventory data base

1) The priority of data is 1) data of the Japan LCA forum, 2) NIRE database, and 3) data (originally collected for European companies) available in Regis. The details are in Figure 7.2.

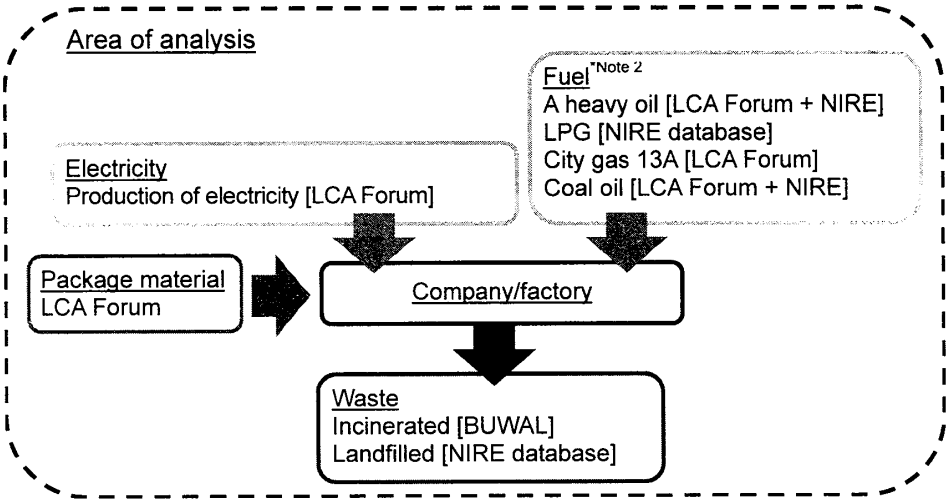
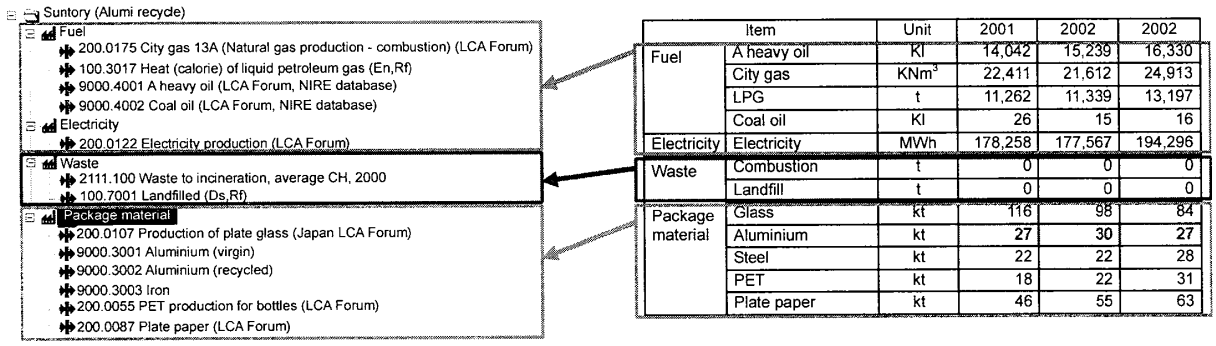


Figure 7.2: Perspective of imput inventory database

▼ Analysis model of Regis

Regis set up such a model as in figure 7.3 and entered data as follows.



	Item	Unit	2001	2002	2002
Fuel	A heavy oil	Kl	14,042	15,239	16,330
	City gas	KNm^3	22,411	21,612	24,913
	LPG	t	11,262	11,339	13,197
	Coal oil	Kl	26	15	16
Electricity	Electricity	MWh	178,258	177,567	194,296
Waste	Combustion	t	0	0	0
	Landfill	t	0	0	0
Package material	Glass	kt	116	98	84
	Aluminium	kt	27	30	27
	Steel	kt	22	22	28
	PET	kt	18	22	31
	Plate paper	kt	46	55	63

Figure 7.3: Analysis model by Regis

▼ Input data

Details of input data are as below:

1. Period: 2001-2003 (the end of the year 2000 saw a complete recycle of by-products and wastes. The analysis is to be done under same conditions.)
2. Target: the whole company
3. Input data: energy, electricity, packaging materials
   - ◇ Packaging materials: aluminum to be analyzed in two patterns
     - (1) in case all materials in use are virgin materials
     - (2) in case some materials are recycled materials (Aluminum is made of 83% recycled materials and 17% virgin materials)

▼ Difference in aluminum of virgin or recycled materials

We analyzed a difference in environmental impacts resulting from two types of materials, and its influence to the whole evaluation. The following indicates a difference in inventory data of aluminum (Figure 7.4):

- Both are data from the LCA forum.

➔ Virgin material: aluminum new metal

➔ Recycled material: aluminum recycled metal

- Data of aluminum new metal consider mining of bauxite and procurement of energy fuel. It doesn't include domestic transportation. It is unsure how much we get ahold of energy such as electricity.
- Data of aluminum recycled metal should reflect environmental impacts borne through recycling, but it is unsure whether we have a proper understanding on it.
- Environmental impacts of aluminum recycled metal cover about 1.1% of the new metal.
- The both are adopted in trial and should be examined in detail later.

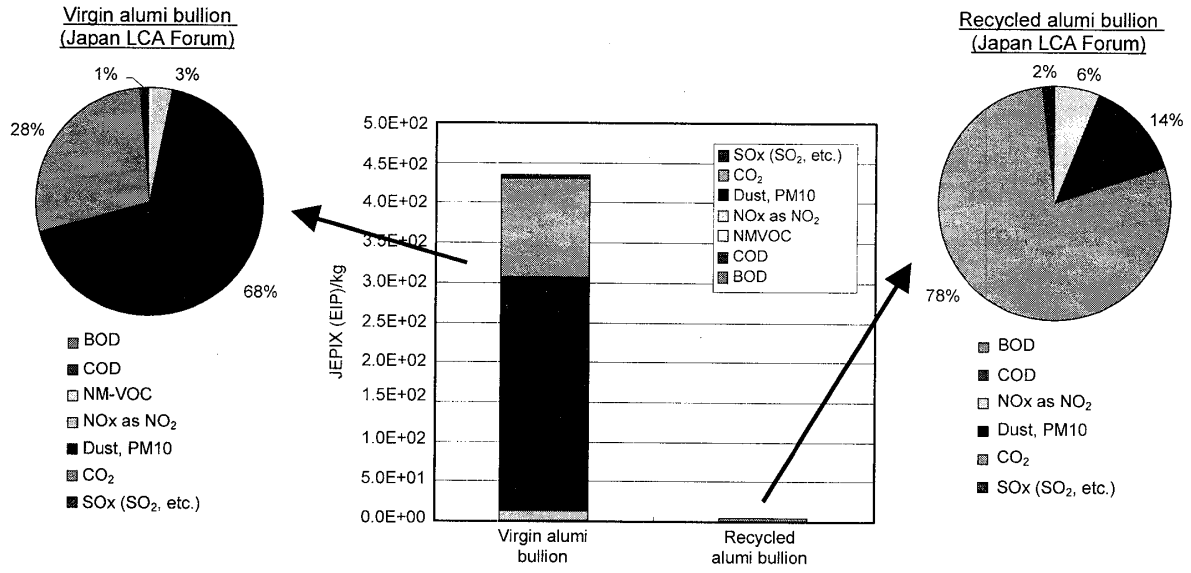
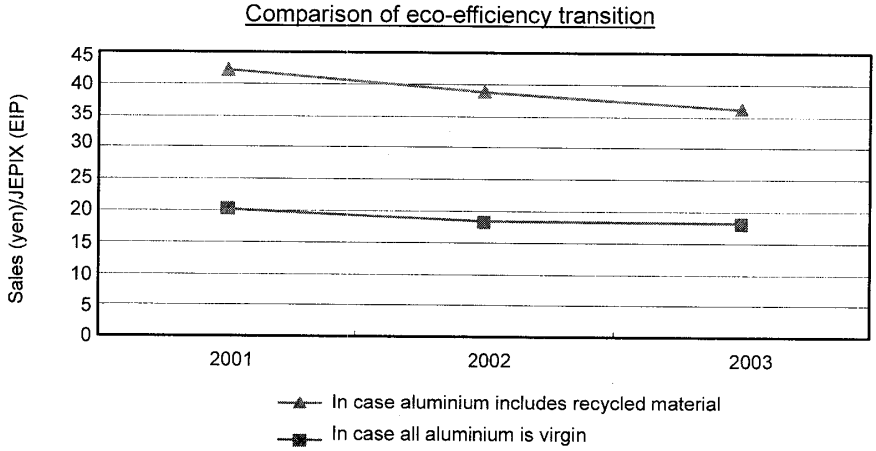


Figure 7.4: Difference between virgin aluminium and recycled aluminium

6. Results

▼ Eco-efficiency analysis

Considering recycled aluminum doubles eco-efficiency values.



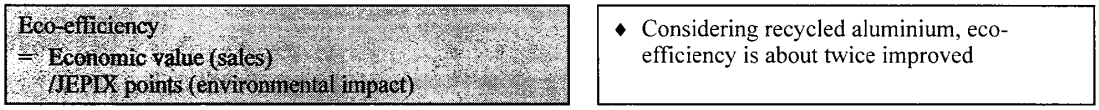


Figure 7.5: Analysis of eco-efficiency

*As a reference, here are results calculated with product sales as eco-efficiency instead of economic values (Figure 7.6). Different from the condition in Figure 7.5, eco-efficiency values increase, which may indicate the situation of our company where sales of low-priced products increase and sales of high-priced products stagnate.

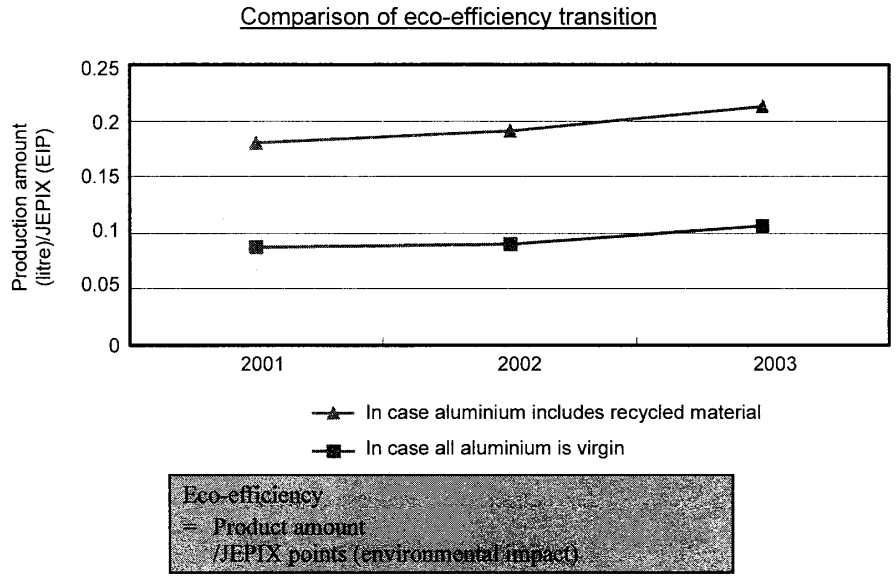


Figure 7.6: Comparison of eco-efficiency (product amount)

▼ Category analysis (1)

Considering the recycling status decreases EIP values.

AI data: Calculated as virgin material 100%

Category	2001	2002	2003
Electricity	1182333505	1177750303	1288708897
Fuel	1940096403	1983174960	2227832899
Waste	0	0	0
Package material	15506297839	16541069171	15727204297

AI data: Calculated considering recycled material

Category	2001	2002	2003
Electricity	1182333505	1177750303	1288708897
Fuel	1940096403	1983174960	2227832899
Waste	0	0	0
Package material	5849781229	6120837645	6070687687

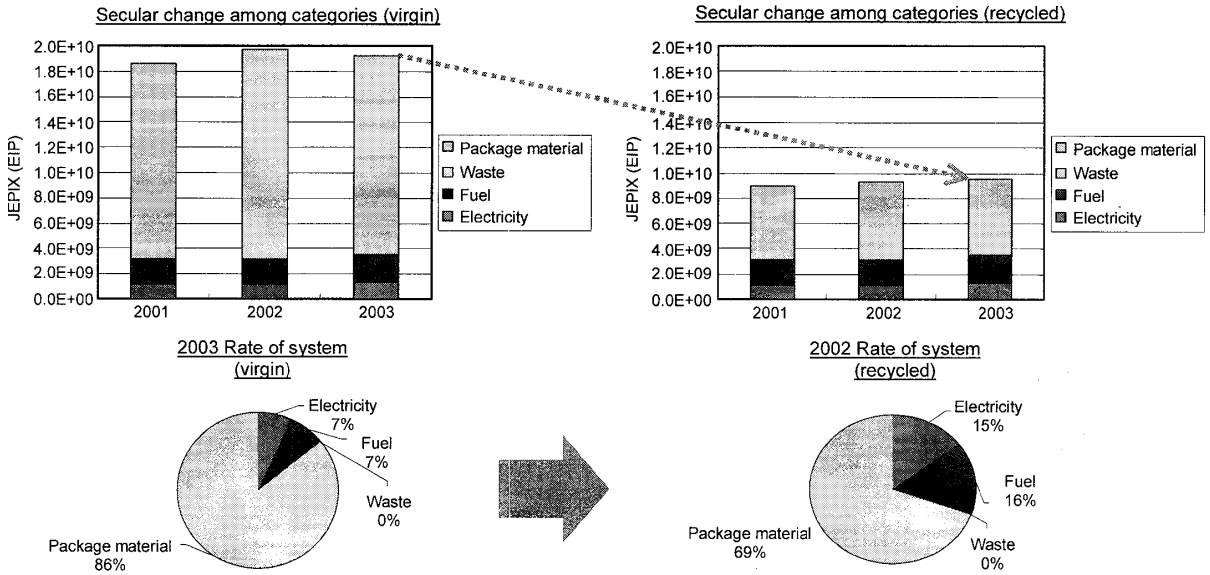


Figure 7.7: Comparison of eco-point among categories (fuel, electricity, package material)

▼ Category analysis (2) (except for packaging materials)

As seen in Figure 7.7, EIP values of packaging materials are outstanding. Figure 7.8 analyzes every category except for packaging materials.

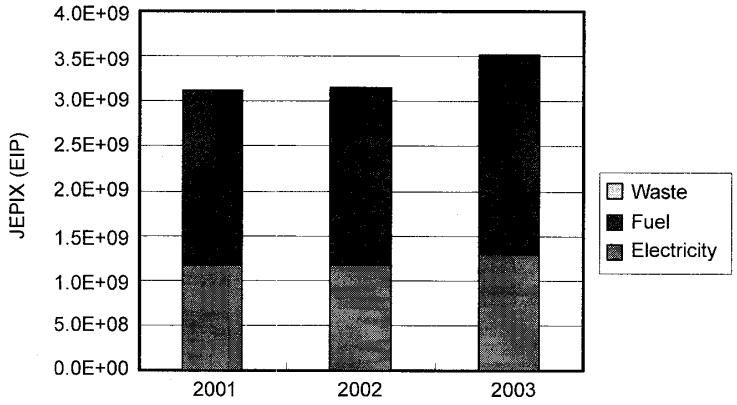


Figure 7.8: Secular change among categories (without package materials)

- EIP values remain unchanged from 2001 to 2002.
- The year 2003 saw an increase of EIP due to a rise of energy and fuel consumption in a test run of new factories.

▼ Analytical comparison of each element (comparison of virgin and recycled materials)

We analyzed influences to EIP values due to a difference in production materials of aluminum, considering the use of recycled material.

◆ In case aluminum is produced merely of virgin materials (Figure 7.9)

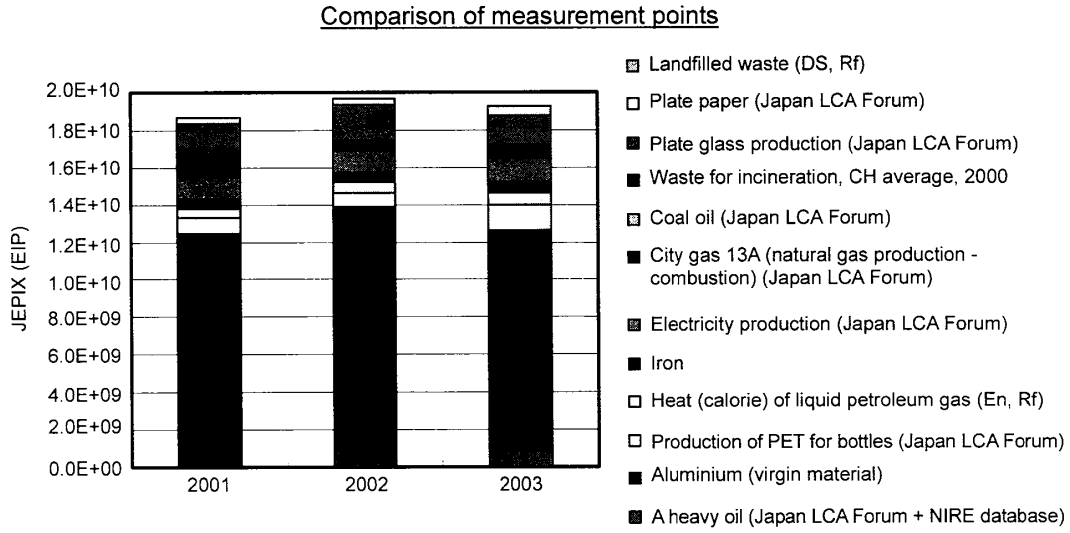


Figure 7.9: In case all aluminium is virgin material

The share of virgin materials is so large that other elements seem trivial.

◆ In case the use of recycled materials is reflected in calculation (Figure 7.10)

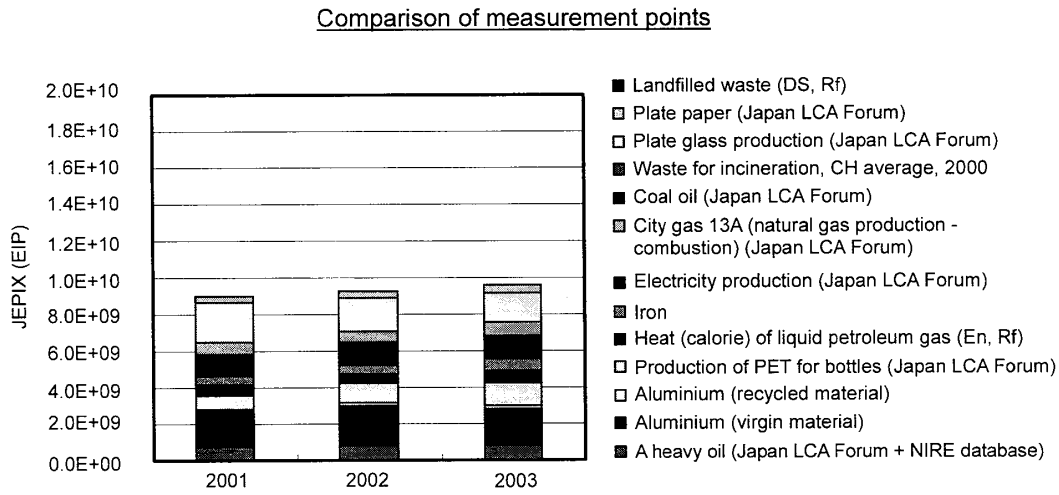


Figure 7.10: In case recycled aluminium is considered

- EIP decreases so much that total environmental impacts are held down to the half.
- The share of packaging materials remains still large but shares of other elements (electricity, fuel) increase relatively. It has reached a level where we can evaluate achievements etc. of our company's main efforts in factories.

7. Summary

(1) Eco-efficiency values reflect the situation our company is in.

- Change of business structure (alcoholic beverages → food business)

- Change of hot-selling products (increasing sales of low-priced products)

(2) Influence of EIP of packaging materials

- Doubled eco-efficiency when recycling of aluminum is considered.
- Disregard of aluminum recycling makes other elements look trivial.

(3) Necessity of examination and standardization of inventory data

- Examination of aluminum data (reflection of environmental impacts of recycled aluminum to inventory data of recycled metal).
- Examination of inventory data (virgin, recycled) of other materials (steel, pet, etc.), and consideration of our recycling situation.
- Standardization of inventory data in order to enable a comparison in the same industry and among industries.

(4) Application of JEPIX as a decision-making tool