

PET Bottle Recycling in Japan



Feb. 16, 2012

**The Council for PET Bottle Recycling
(CPBR, Japan)**

Contents



- 1. What is CPBR
(The Council for PET Bottle Recycling)**
- 2. History of PET Bottle Recycling in Japan**
- 3. Outline of PET Bottle Industries in Japan**
- 4. PET Bottle Recycling System in Japan**
- 5. 3R (Reduce, Reuse, Recycle) in Japan**
- 6. Summary**

1. What is CPBR

The Council for PET Bottle Recycling, Japan

➤ Main Objectives

- ✓ **Promotion** of PET Bottle Recycling
- ✓ **Research and Study** of PET Bottle Recycling
- ✓ **Advice and Guidance** for PET Bottle Recycling
- ✓ **Co-operation** with related PET Bottle Recycling Organizations and Associations

➤ Members

- ✓ The Japan **Soft Drinks** Association
- ✓ The Japan **Fruit Juice** Association
- ✓ The Japan **Soy Sauce** Brewers Association
- ✓ The Nippon **Distillers'** PET Bottle Recycling Association
- ✓ Japan **PET Bottle** Association

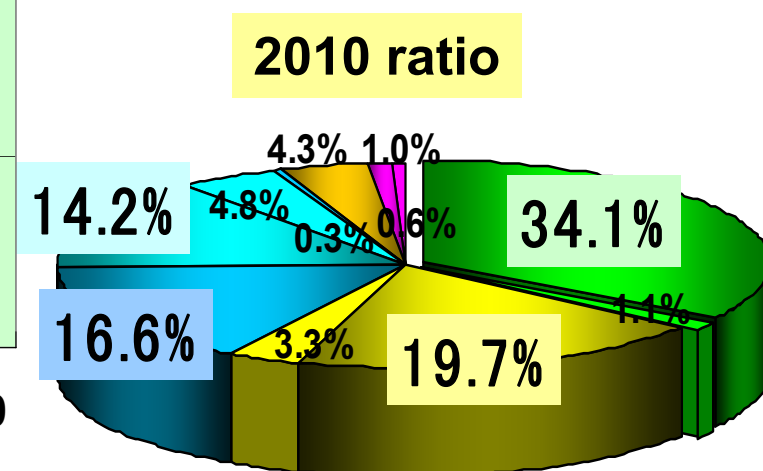
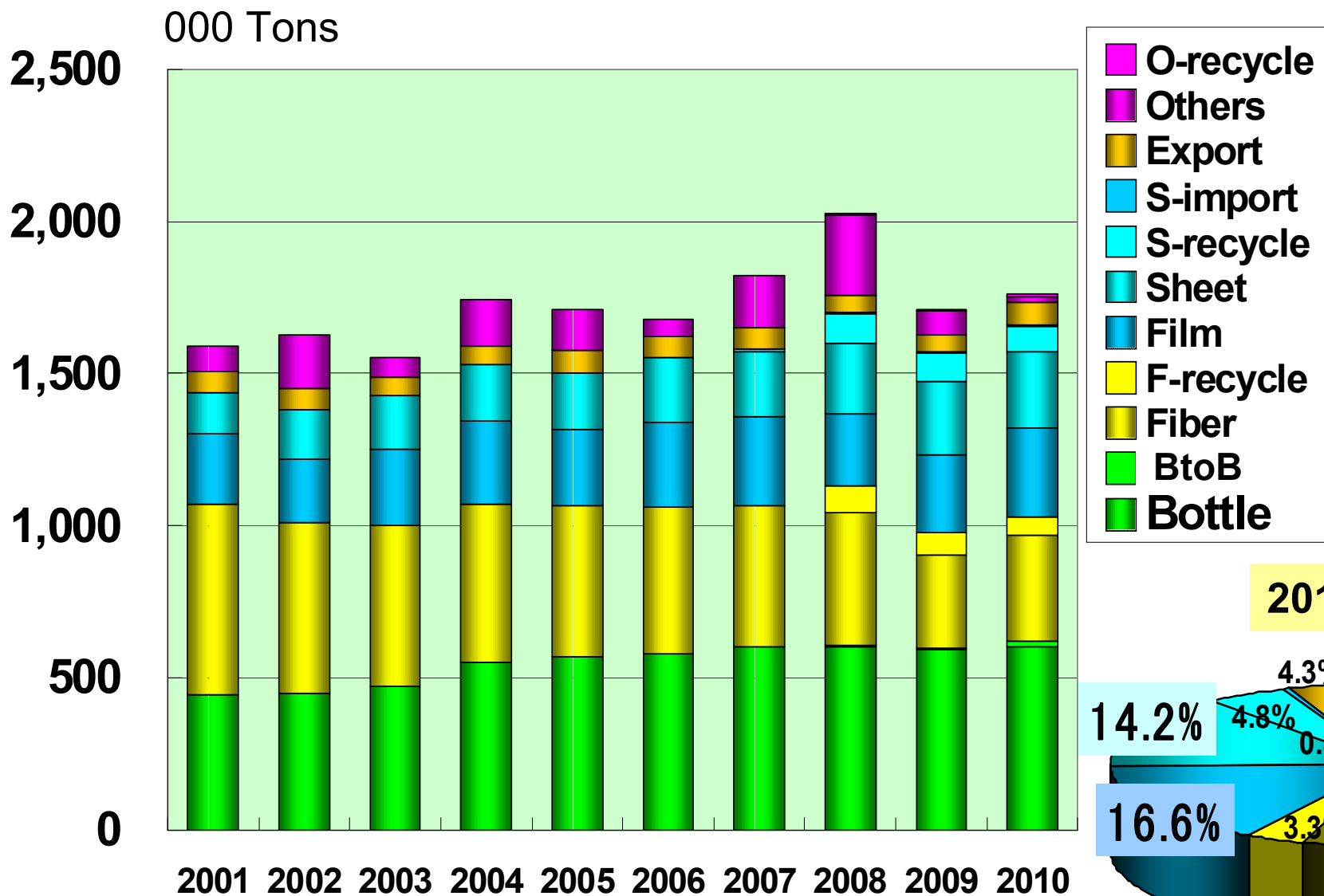
2. History of PET Bottle and PET Bottle Recycling in Japan



- 1977 : Application of PET Bottle into Soy Sauce was started
- 1982 : Application of PET Bottle for Soft Drinks was approved
Japan PET Bottle Association was established
- 1992 : **Voluntary Design Guidelines for designated PET Bottle** was published
- 1993 : Foundation of **CPBR**
- 1995 : Enactment of “**The Containers and Packaging Recycling Law**”
- 1996 : Application of PET Bottle expanded to start the Small Sized PET Bottles (less than 500ml) for Soft Drinks
- 2001 : The issue of “PET Bottle Recycling Annual Report” by CPBR was started
- 2004 : **Chemical Bottle to Bottle (BtoB) Recycling** was approved
by the Food Safety Commission
- 2006 : **The 1st Voluntary Action Plan for 3R Promotion** was started
- 2006 : Post Consumer PET became Valuables
- 2008 : Global Financial Crisis
- 2009 : Feasibility Study Report on **Reuse of PET Bottle** was published by the
Ministry of Environment
- 2011 : **The 2nd Voluntary Action Plan for 3R Promotion** is started
Mechanical BtoB Recycling is started

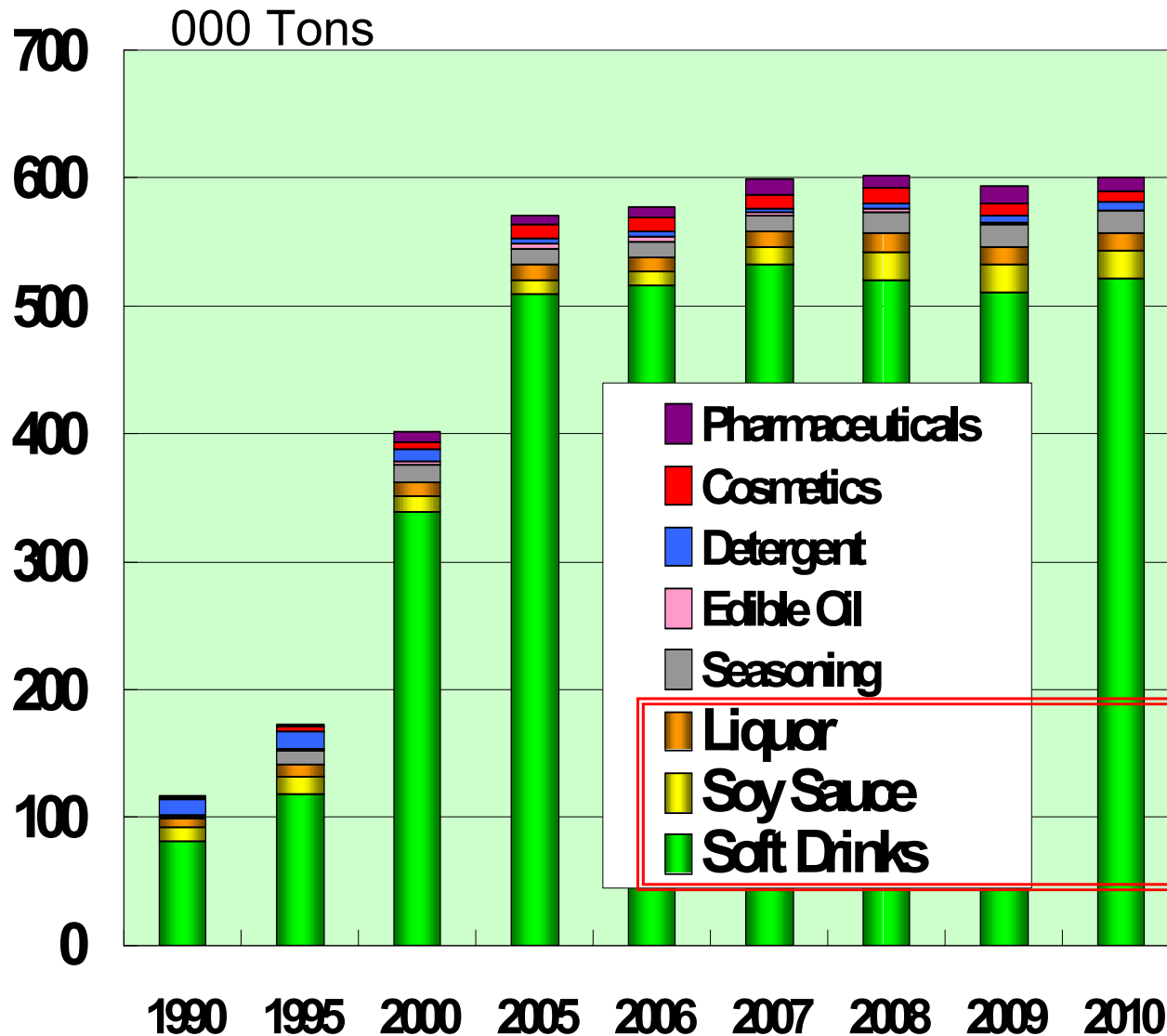
3. Outline of PET Bottle Industries in Japan

PET Resin Market

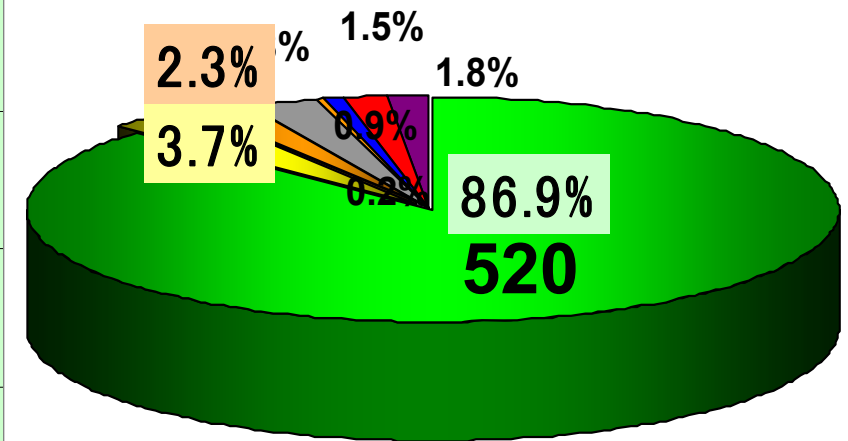


3. Outline of PET Bottle Industries in Japan

PET Bottle Applications



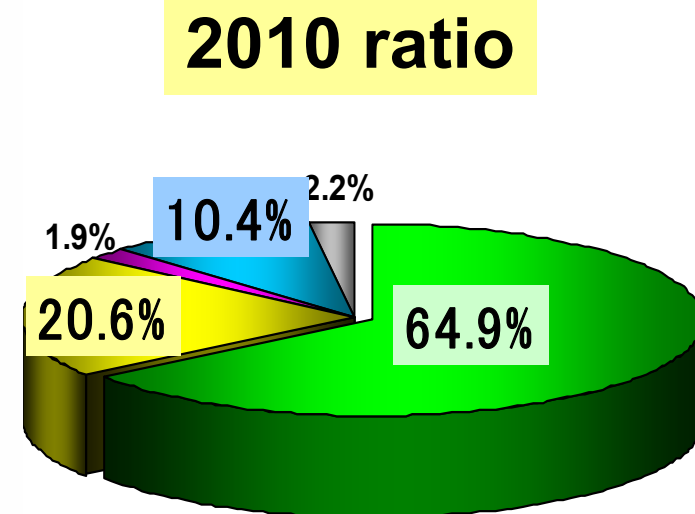
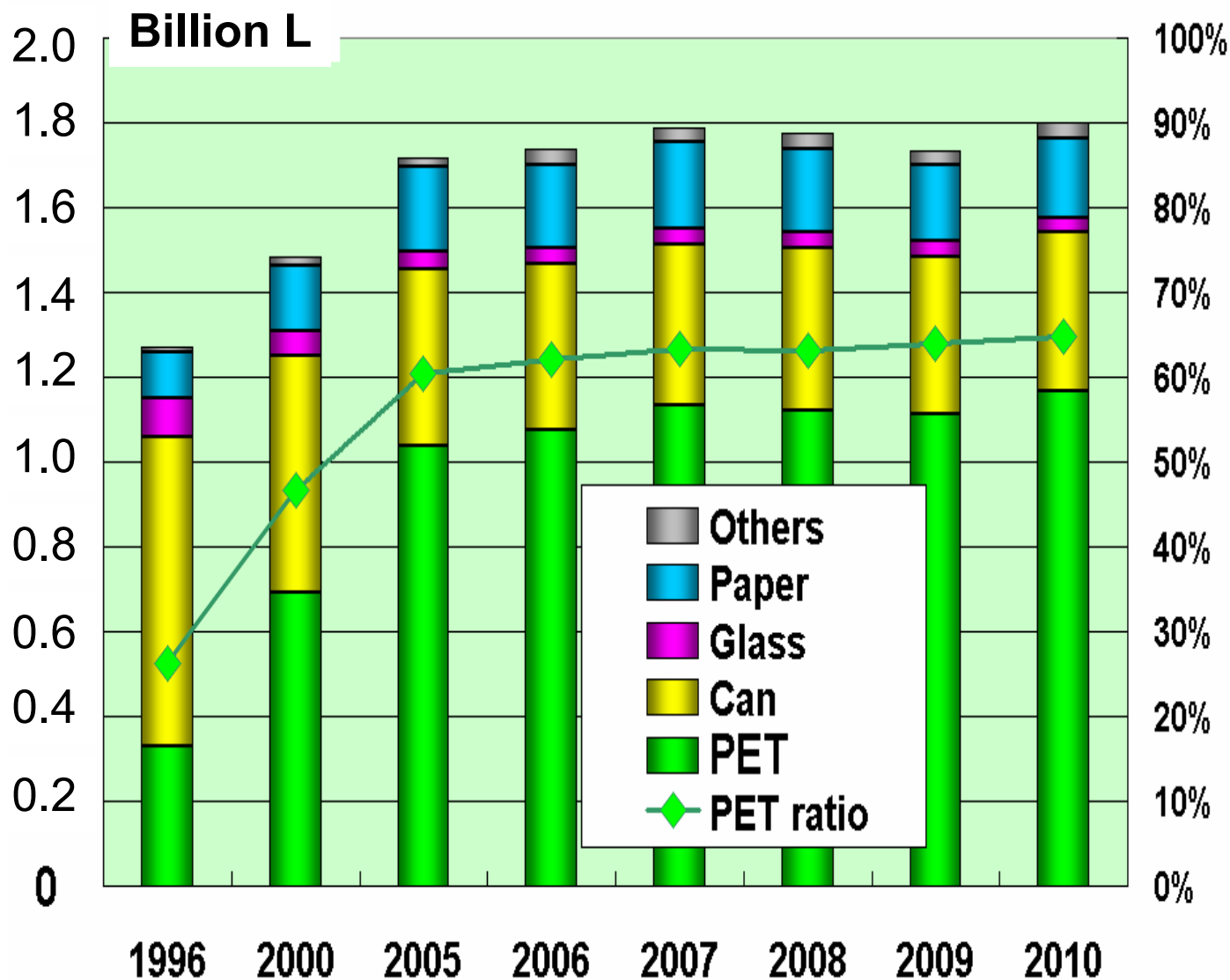
2010 ratio



Designated for
Recycling

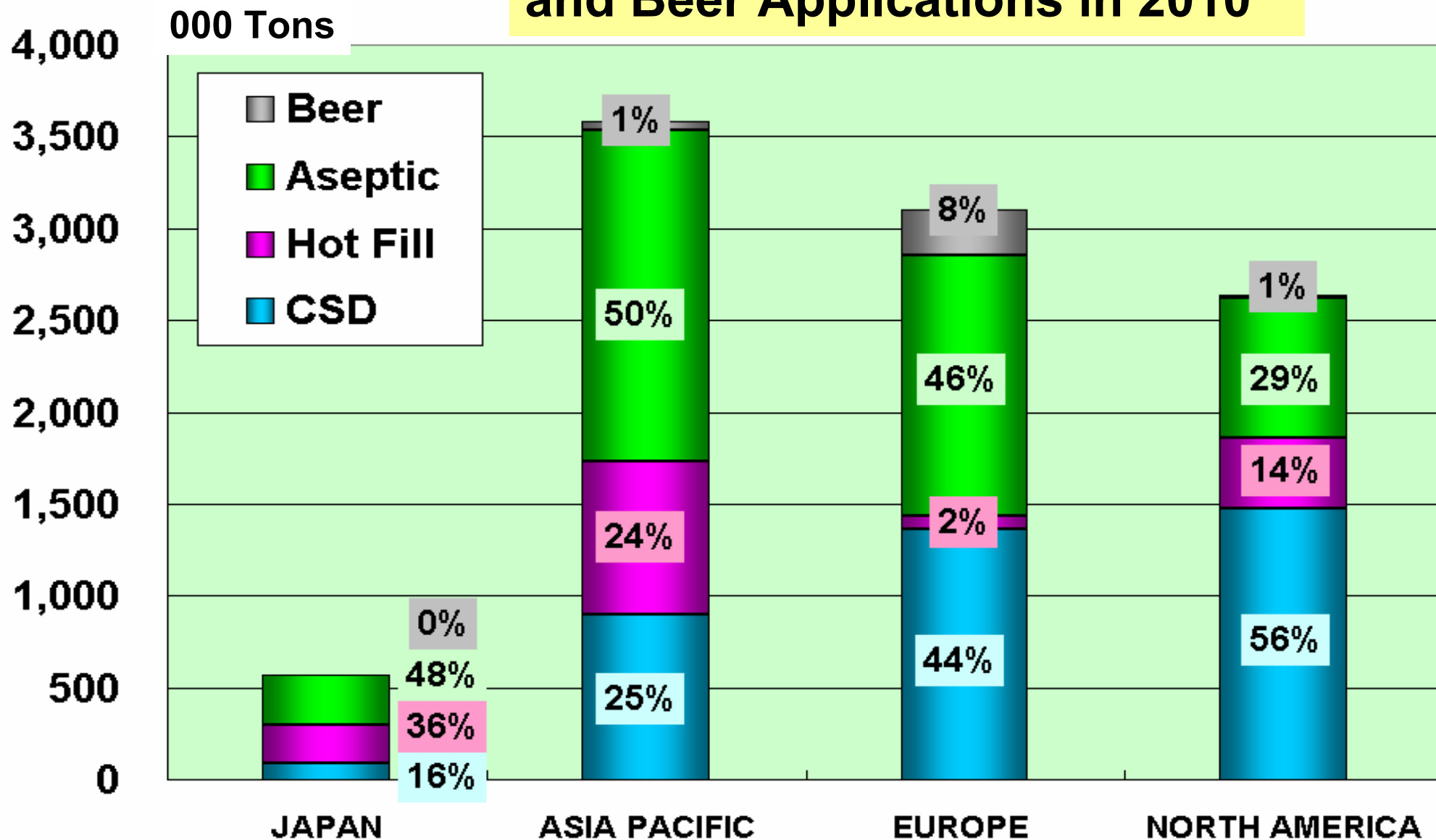
3. Outline of PET Bottle Industries in Japan

Packages for Beverage



3. Outline of PET Bottle Industries in Japan

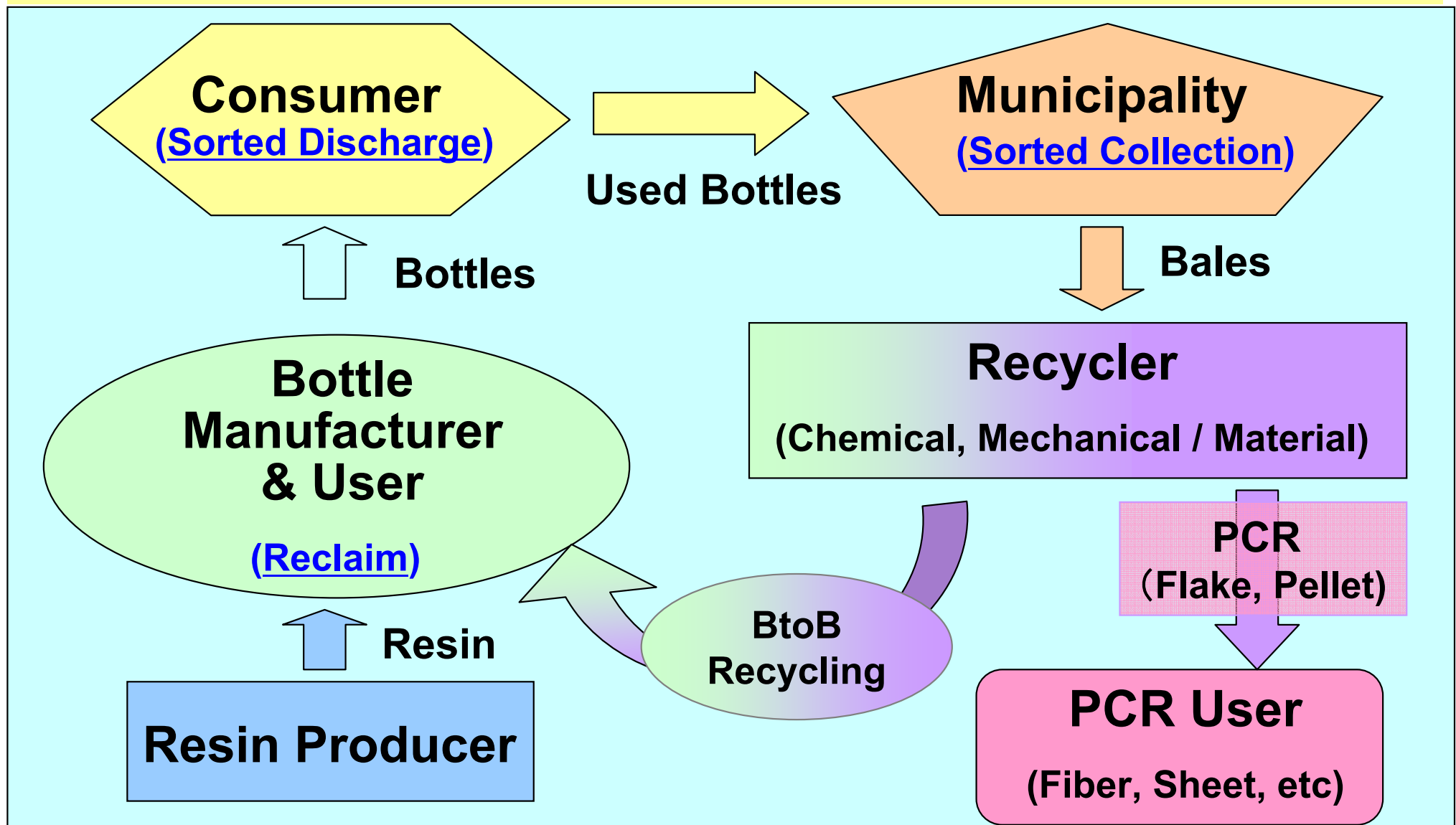
PET Bottle Market for Beverage and Beer Applications in 2010



4. PET Bottle Recycling System in Japan



Scheme of Packaging Recycling Law : **Share of Obligation**



5. 3R (Reduce, Reuse, Recycle) in Japan



Collaboration with other Recycling Associations

Members

The Council for **PET Bottle** Recycling

Japan **Steel Can** Recycling Association

Japan **Aluminum Can** Recycling Association

Glass Bottle Recycling Association

Japan Recycling Council for **Beverage Cartons**

Paper Packaging Recycling Council

Corrugated Packaging Recycling Council

Plastic Packaging Recycling Council

5. 3R (Reduce, Reuse, Recycle) in Japan

Target of 3R for PET Bottles

Voluntary Action Plan	The 1 st 2006=>2010	The 2 nd 2011=>2015
Reduce (2004 BM)	PET Bottle Weight Reduction Target : more than 3%	PET Bottle Weight Reduction Target : more than 10%
Reuse	Study of Returnable System	Promote Mechanical BtoB instead of Reuse
Recycle	<ul style="list-style-type: none"> Collection Rate Target : more than 75% Promote Outsiders to comply our Design Guideline 	<ul style="list-style-type: none"> Recycling Rate Target : more than 85% Promote Outsiders to comply our Design Guideline

5. 3R (Reduce, Reuse, Recycle) in Japan



**Voluntary Design Guideline for Designated PET bottles
= Obligation of PET Bottle Manufacturers & Users**



**Plastic Closures must be made
of PE or PP.
Do not use Aluminum Closures.**



**Bottles must be made of only Clear
PET (no color). When use multi-
layer / coating for barrier, must
evaluate a recycling performance.**

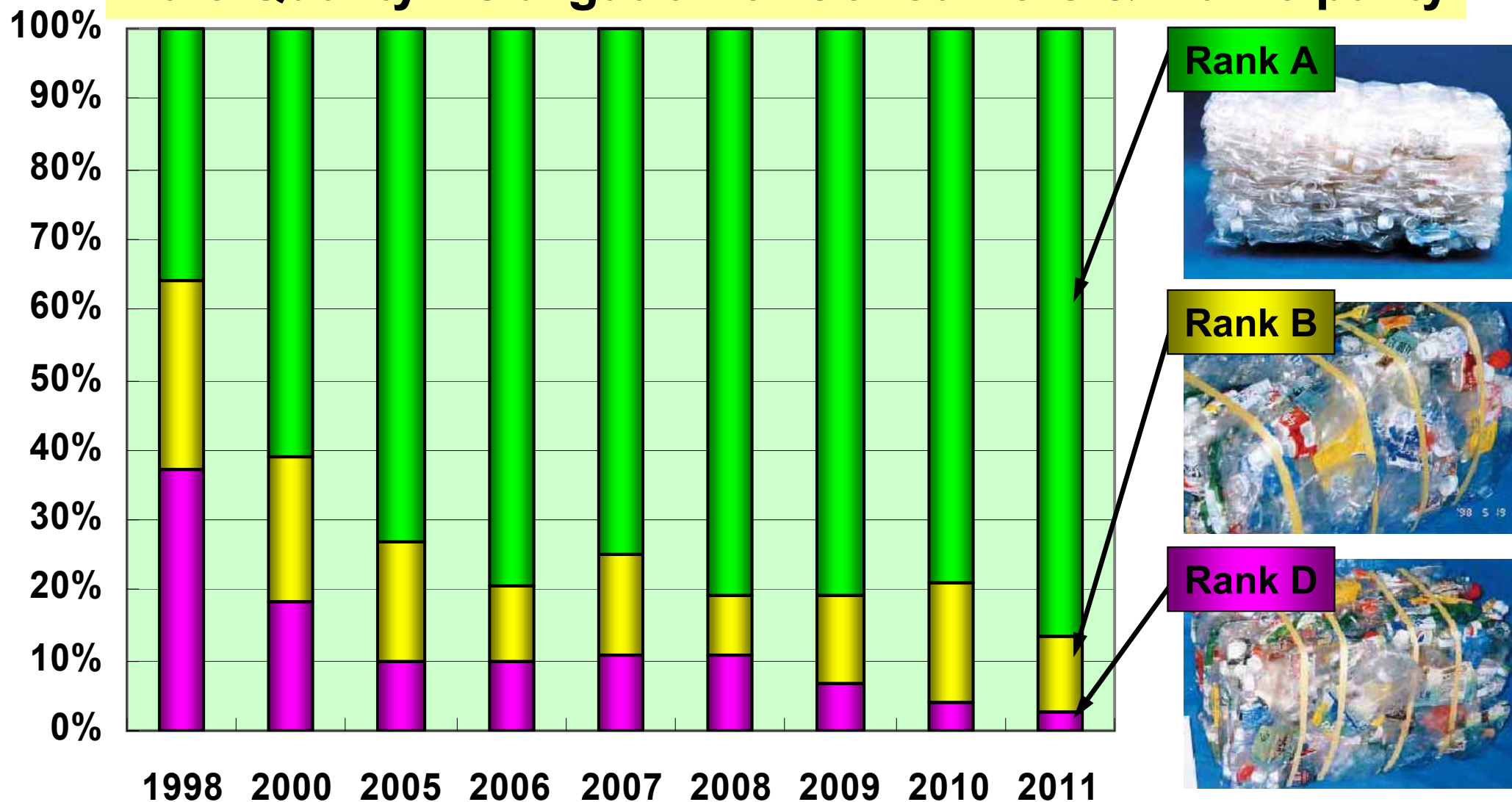


**Labels must be easily removable
by hand.**

5. 3R (Reduce, Reuse, Recycle) in Japan

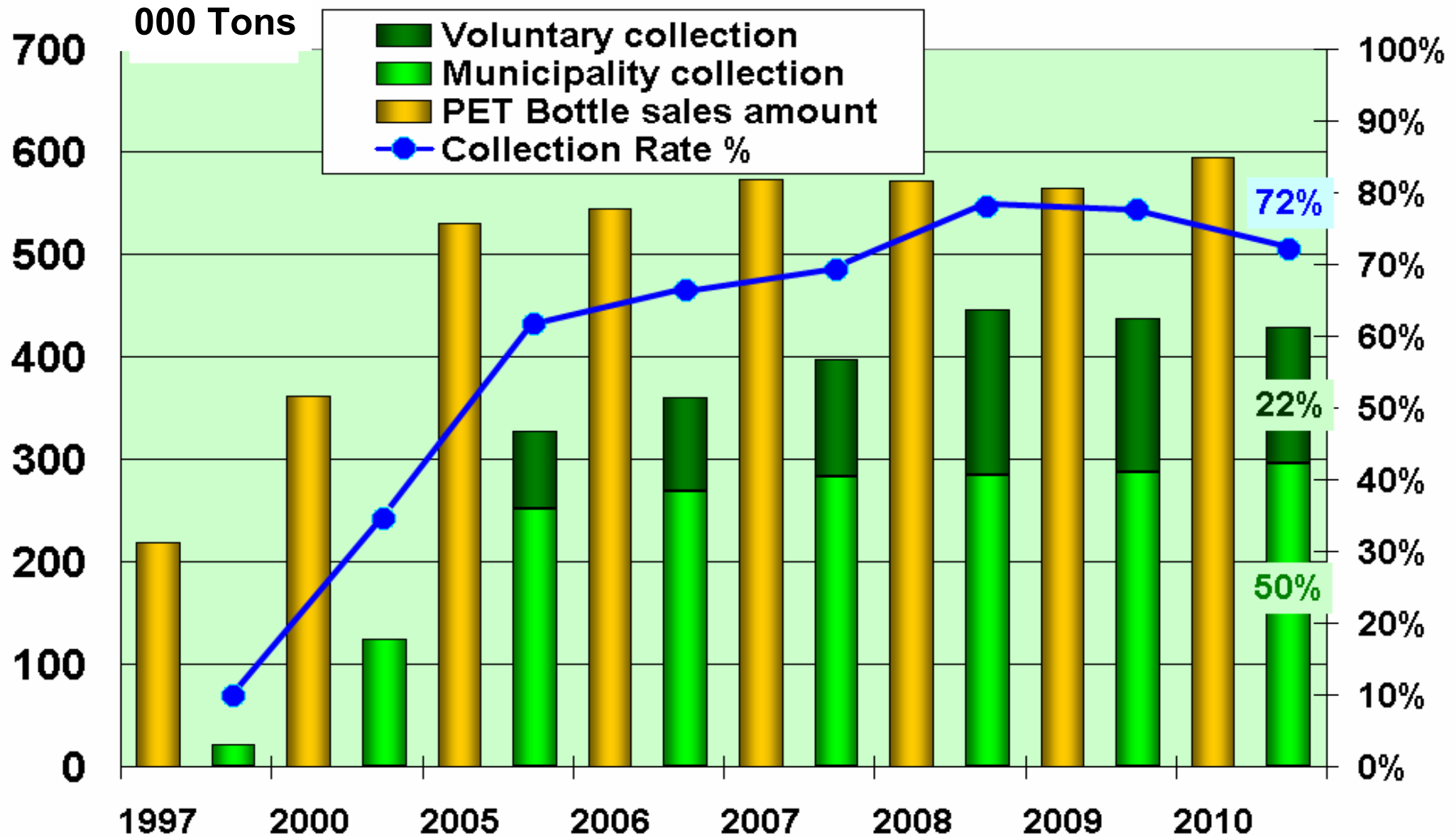


Bale Quality : Obligation of Consumers & Municipality



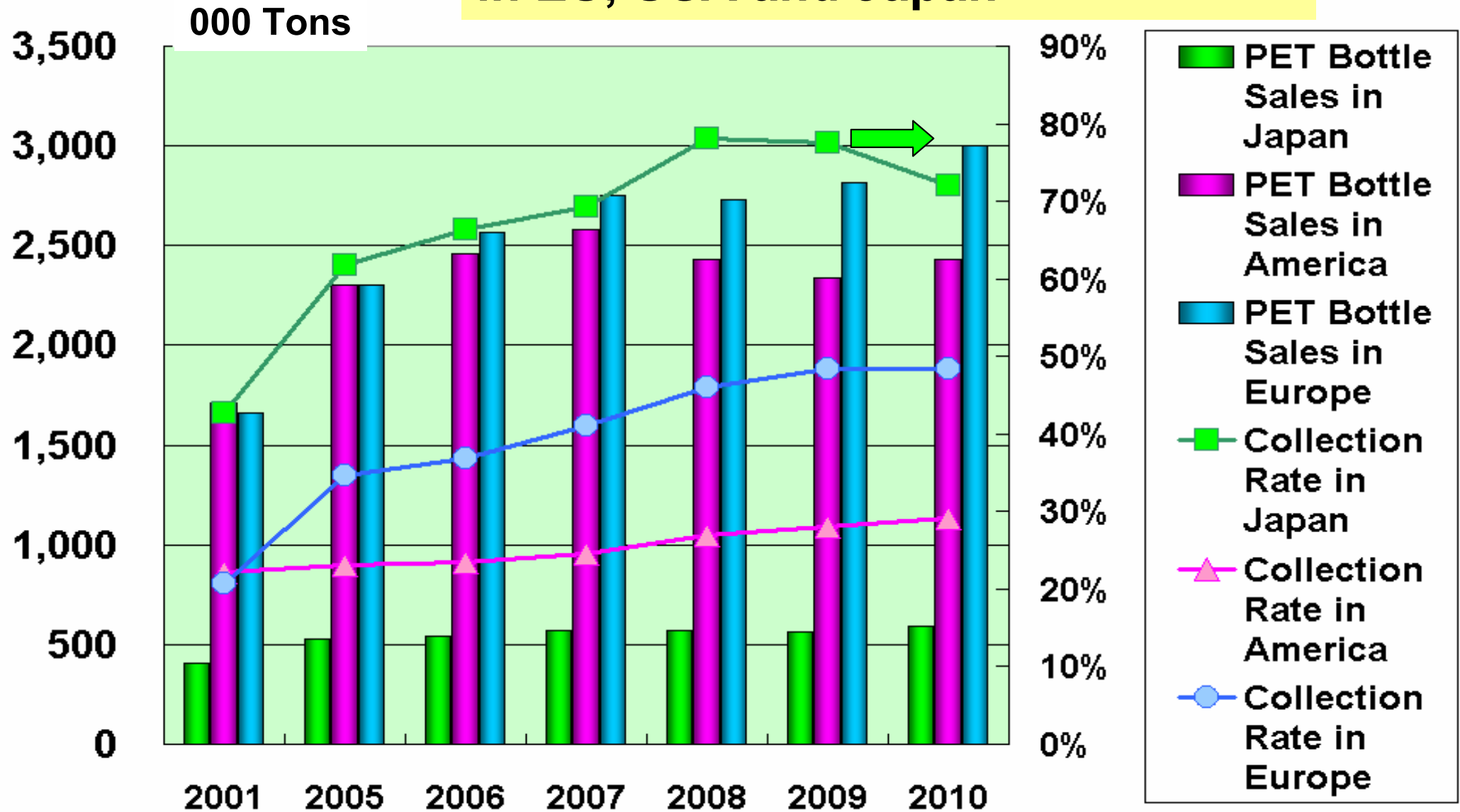
5. 3R (Reduce, Reuse, Recycle) in Japan

Collection Status of PET Bottle



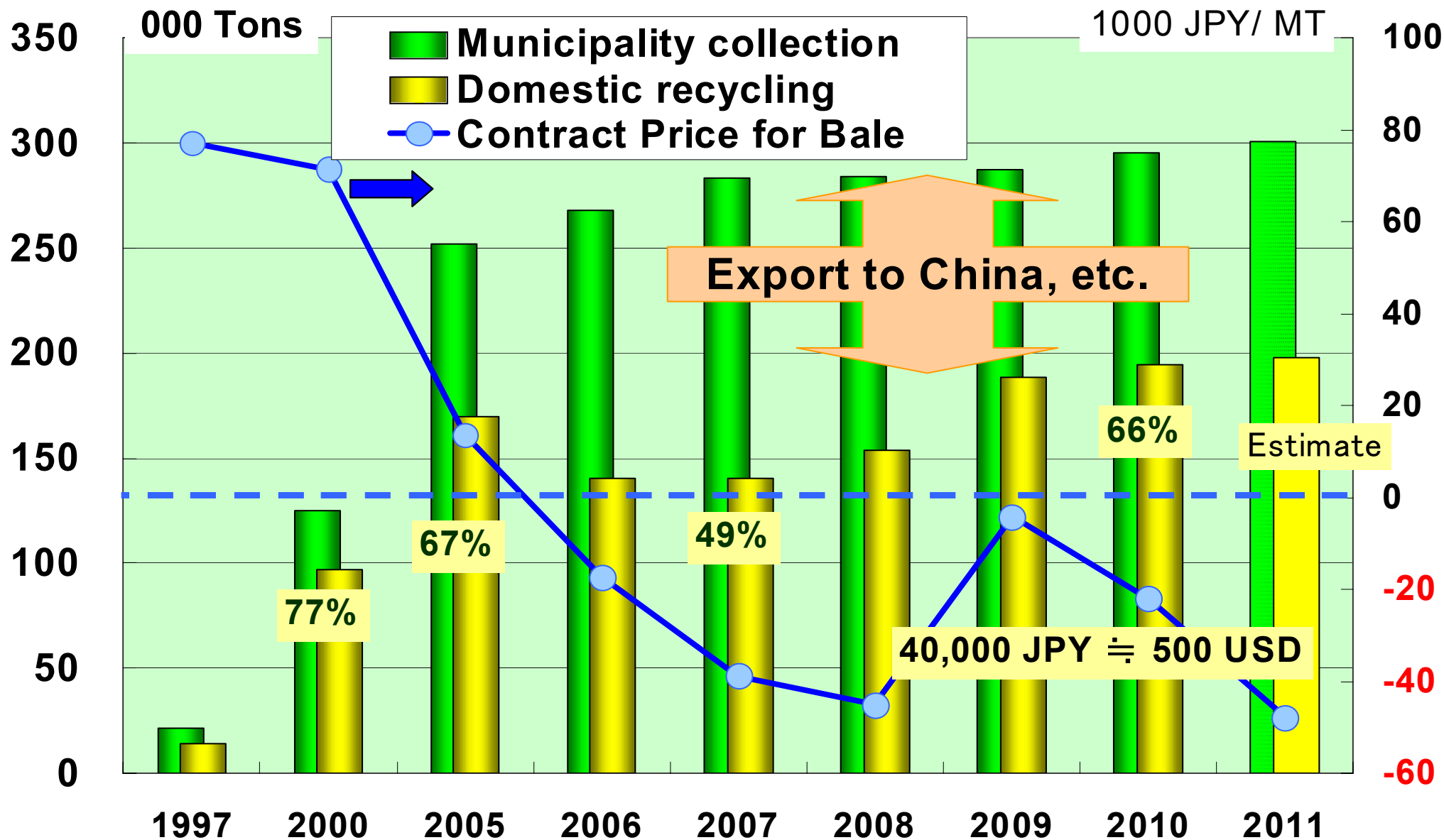


5. 3R (Reduce, Reuse, Recycle) in Japan Comparison with Collection Rates in EU, USA and Japan



5. 3R (Reduce, Reuse, Recycle) in Japan

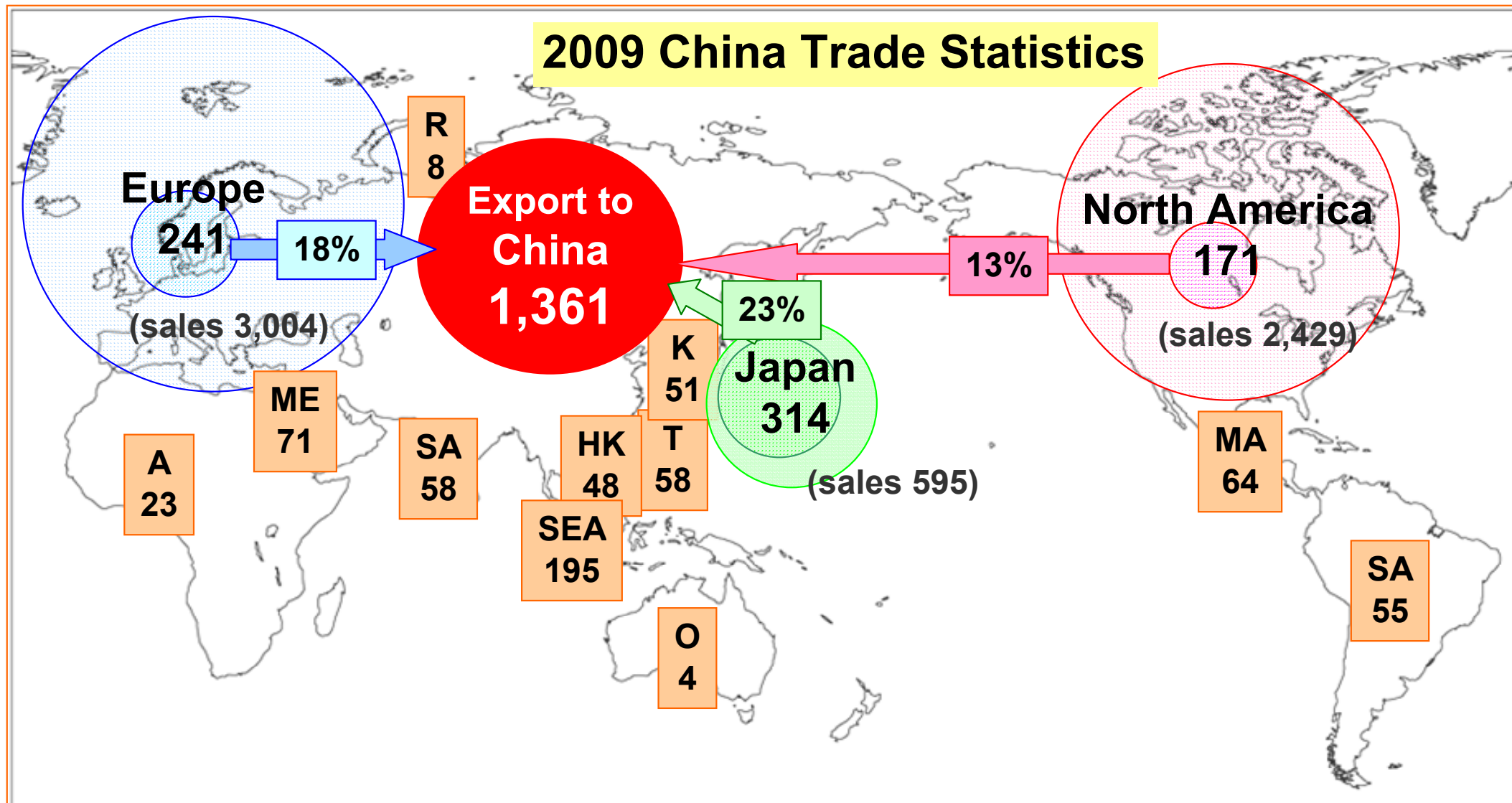
Value of Post Consumer PET



5. 3R (Reduce, Reuse, Recycle) in Japan Collection and Recycling Channel



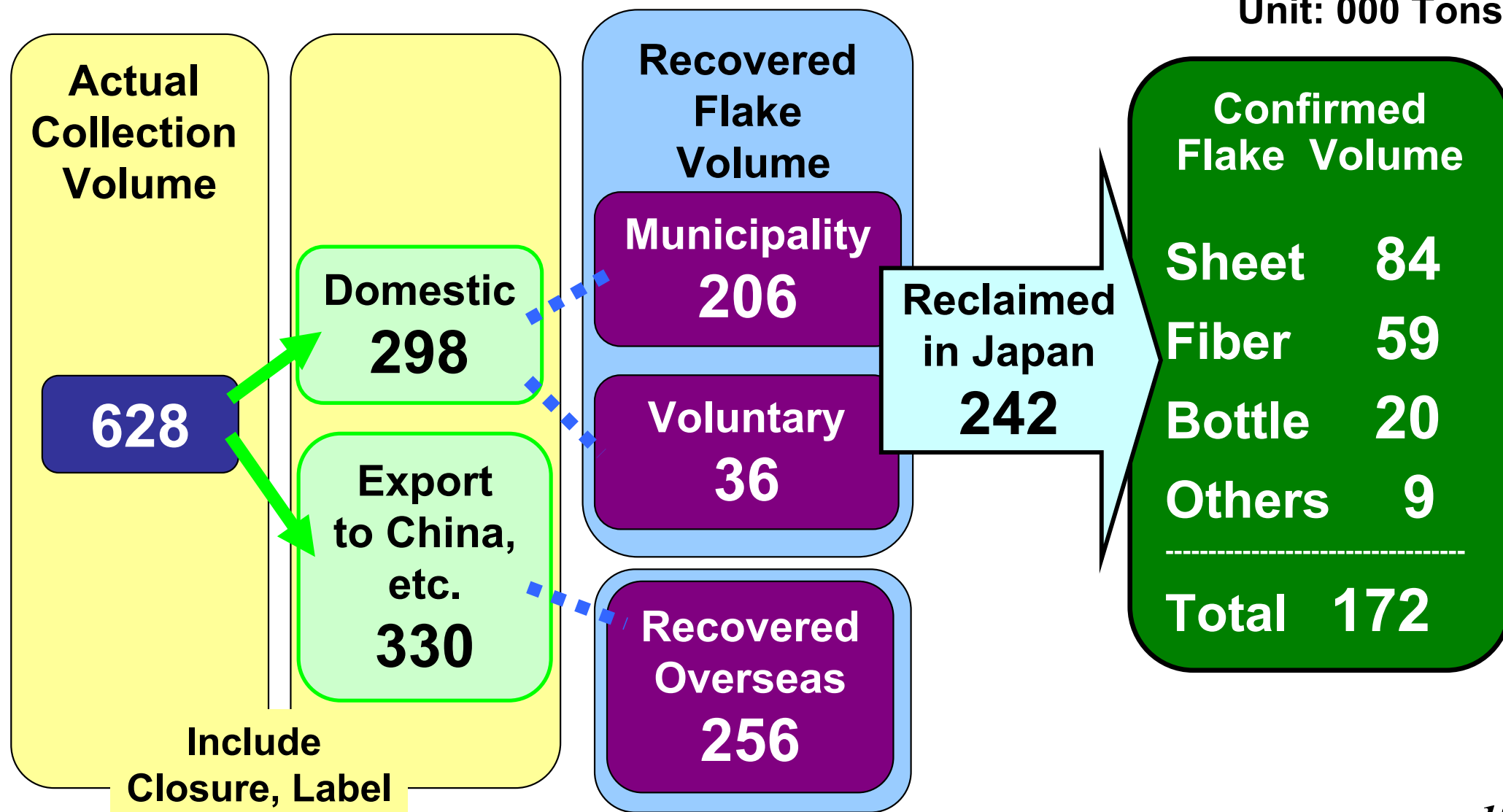
Unit: 000 Tons



5. 3R (Reduce, Reuse, Recycle) in Japan

Flow of Collection and Recycling, 2010

Unit: 000 Tons

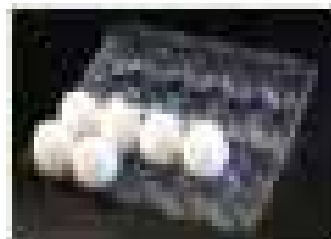
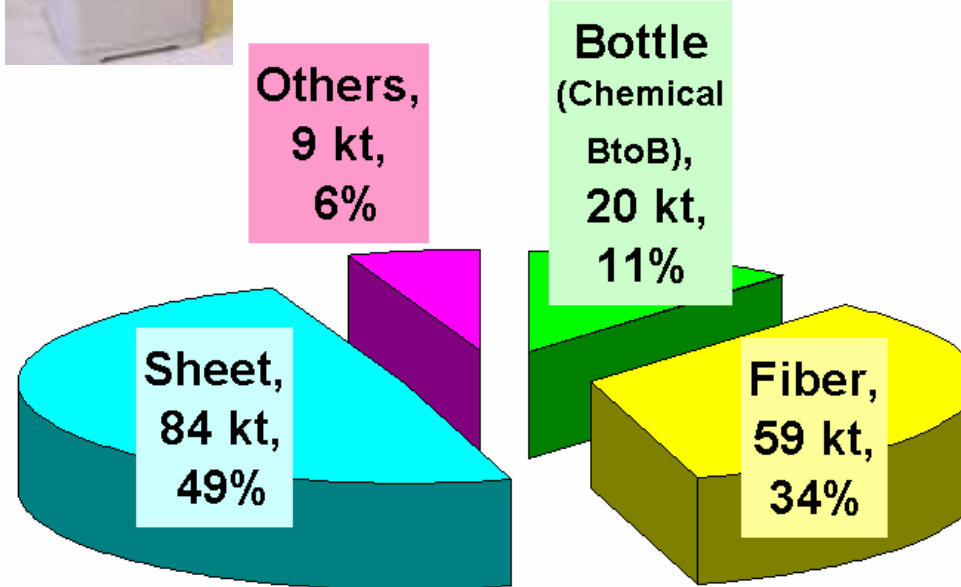


5. 3R (Reduce, Reuse, Recycle) in Japan

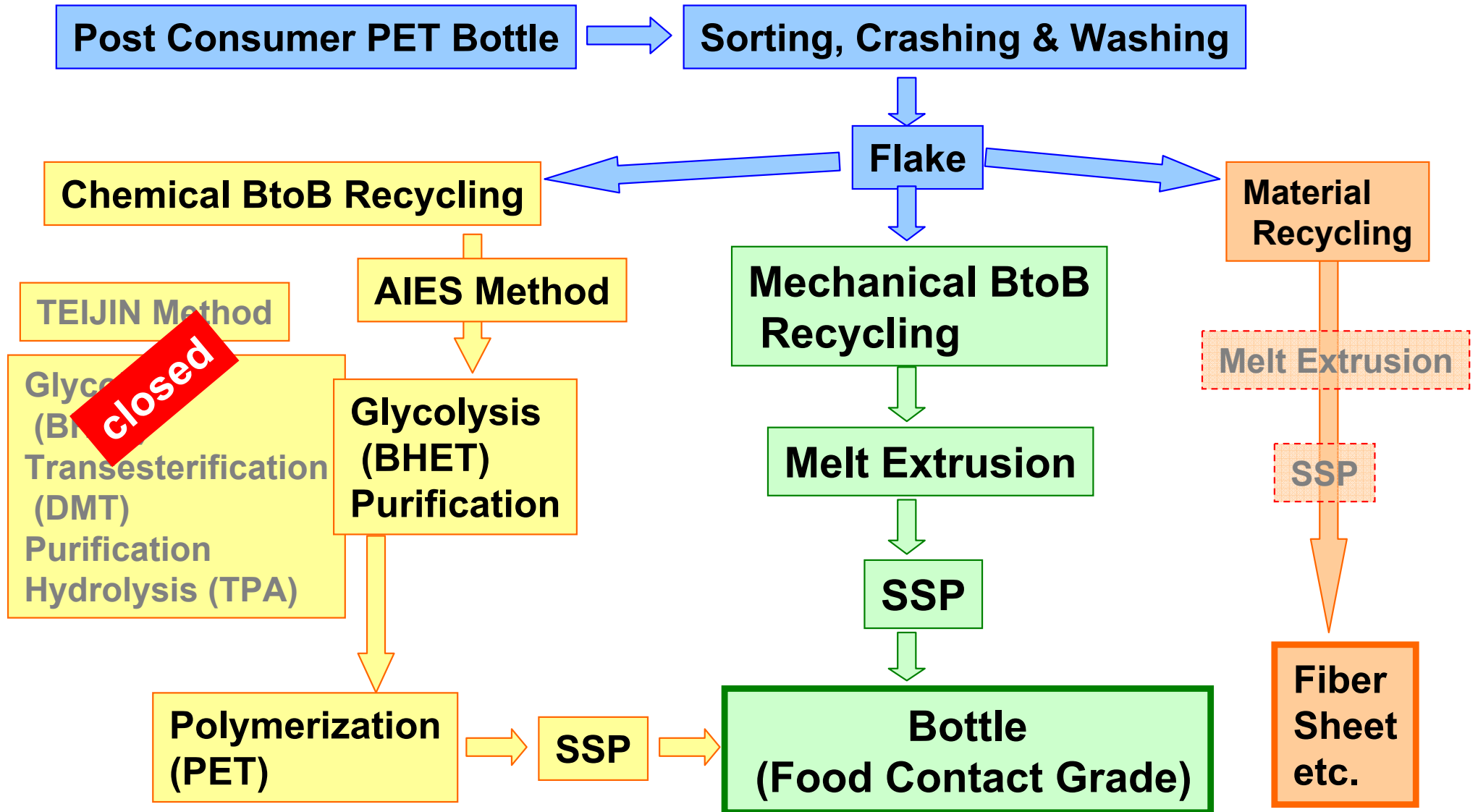


High Quality Recycled PET
generates many Applications

Unit: 000 Tons



5. 3R (Reduce, Reuse, Recycle) in Japan PET BtoB Recycling Processes



5. 3R (Reduce, Reuse, Recycle) in Japan

Mechanical BtoB Recycling



- **Mechanical BtoB recycling was started in Japan last year**
- **Guideline for use of Recycled Plastics in Food Package is being made by the Ministry of Health, Labour and Welfare**

The Guideline consists of the Following Items ;

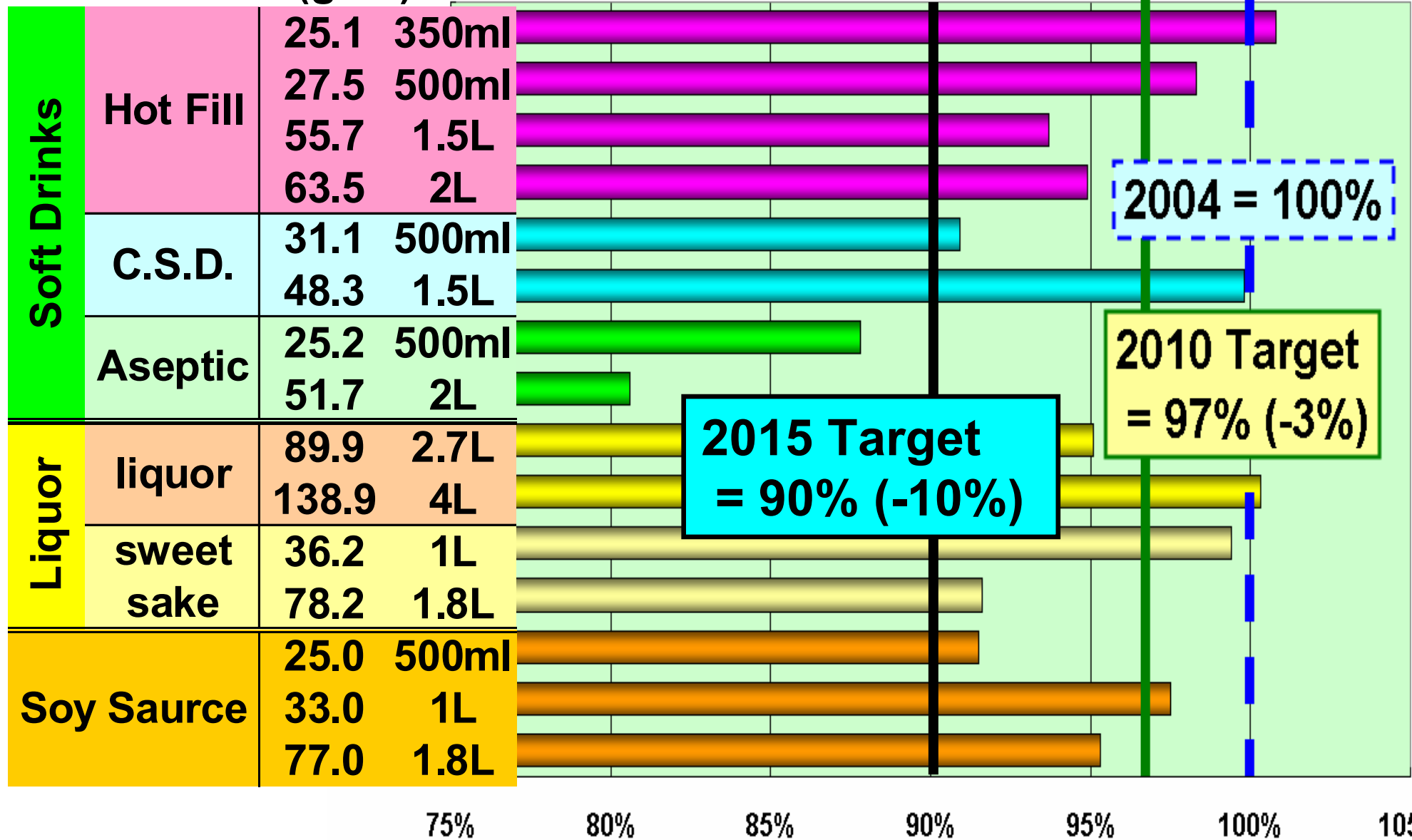
- ✓ **Source Control**
- ✓ **Challenge Test**
- ✓ **Evaluation of Recycled Plastics**
- ✓ **Safety Standard**
- ✓ **Process Quality Control**

5. 3R (Reduce, Reuse, Recycle)

in Japan

Weight Reduction 2004 vs. 2010

2004 (g/btl)



5. 3R (Reduce, Reuse, Recycle) in Japan

Examples of Weight Reduction

改善事例 No.14

事例項目

軽量化・ユニバーサルデザイン

会社名

キリンビバレッジ株式会社

商品名

2005年

事例説明

2005年、2003年に薄肉・軽量化したペコロジーボトルを長角化し、生茶とその他の飲み物の両方に導入。2007年の変更に合わせて、2010年に国内最軽のペコロジーボトルと国内最軽のペコロジーボトルを考案。軽量化率※20%

2L Hot Fill

63 g/btl

2L Aseptic

42 g/btl

2L Aseptic 38 g/btl

Universal Design

2Lボトル1本当たりの重量 ... 63g ⇒ 42g ⇒ 38g

軽量化内容

ペコロジーボトル

New ペコロジーボトル




Reduced in 2005

-21g



Reduced in 2010

-4g





23

5. 3R (Reduce, Reuse, Recycle) in Japan

Examples of Weight Reduction

改善事例 No28

事例項目

軽量化・つぶしやすさ

会社名

日本コカ・コーラ株式会社

事例説明

本製品に使われるボトルを国内最軽量となる目付けへと軽量化した。2010年には500ml Aseptic 20.5 g/btl 採用

効果

ボトル1本当りの重量 ... 20.5g ⇒ 12g

軽量化内容

500ml Aseptic 20.5 g/btl

Reduced

-8g

520ml Aseptic 12 g/btl Bio-based Resin


2011 DuPont Awards for Packaging Innovation

2011 Warc Asia Strategy Prize

24

5. 3R (Reduce, Reuse, Recycle) in Japan

Examples of Weight Reduction

改善事例 No.21	
事例項目	軽量化
商品名	ペプシ
事例説明	軽量化とCO ₂ 排出削減で、環境にも配慮している。また現行のPETボトルに比べ
500ml C.S.D. 31 g/btl	500ml C.S.D. 24 g/btl
<p>軽量化内容</p> <p>ハイブリッドボトル: 当社と(株)吉野工業所が共同で開発した3層構造(PET/ナイロン/PET)のPETボトルで、現行のペットボトルに比べ炭酸ガスや酵素のバリア性が約1.3倍^(※)と優れており、薄肉化しても炭酸ガスが抜けにくい。</p> <p>※現行「ペプシネックス」500ml PETボトル(開栓前)比</p>	
 <p>Reduced</p> <p>-7g</p>	

5. 3R (Reduce, Reuse, Recycle) in Japan

Feasibility Study



- **Feasibility Study on Reuse of PET Bottle was started in 2008 and the Report was issued by the Ministry of Environment in 2009**

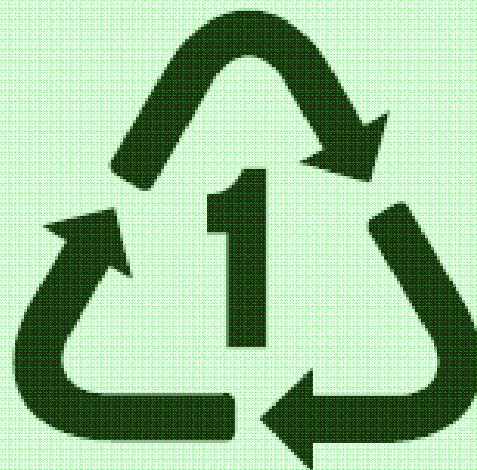
The report concluded that the Returnable System of PET Bottle was Superior to the One Way System in LCA only in the Following Conditions;

- ✓ **Collection Rate of the Bottle : More than 90%**
- ✓ **Distance of Deliver / Return : Within 100 km**

6. Summary

- **Scheme of Packaging Recycling Law sharing Obligation among PET Bottle Manufacturer & User, Consumer and Municipality is Quite Effective**
 - ✓ Keeping High Collection Rate
 - ✓ Keeping High Quality of Bale
 - ✓ A Big Problem : Most of PCR are exported to China
- **Mechanical BtoB Recycling was started.**
- **Voluntary Action Plan for 3R Promotion is Very Effective**
 - ✓ Bottle Weight Reduction
 - ✓ Knowing the Difficulty of Reuse of PET Bottle
 - ✓ Higher Collection Rate

**Thank You
for Your Kind Attention!!**



PET

**The Council for PET Bottle Recycling
(CPBR, Japan)**

<http://www.petbottle-rec.gr.jp/>

<http://www.petbottle-rec.gr.jp/english/>