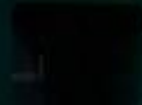


Opening up a zero-waste society
with the power of technology and cooperation

happy habit

A reusable cup circulation initiative



카드결제



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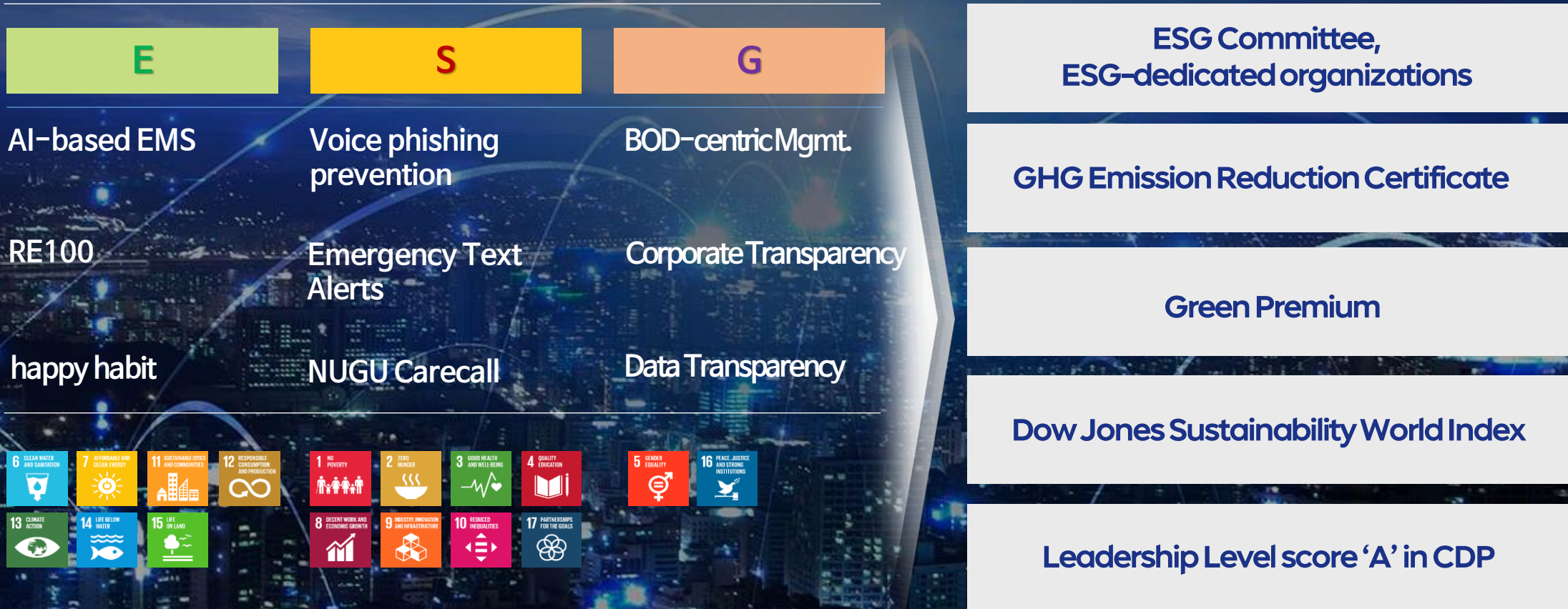


ha:bit
eco alliance



1. SKT's direction for ESG

Sustainable growth with all stakeholders
by ICT based ESG activities – AI, IoT and Big Data



SK Telecom presents the **happy habit**

- an initiative that encourages the use of **multi-use cups** to...



Tackle disposable plastic waste problems,
Contribute to biodiversity conservation, and
Make our living sustainable



#Hash_Tech


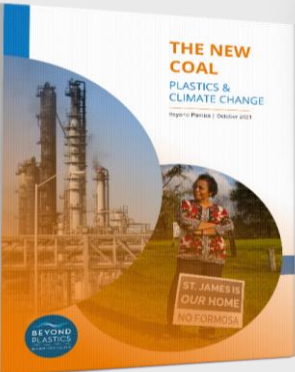
Zero waste

an emerging consumption trend

Efforts to drive shift to reusable alternatives led by the spike in the use of single-use plastics

Global

- Excessive abuse of disposable plastics**
 - ✓ Plastic, renamed as the 'new coal'
 - ✓ 3.3 billion plastic cups (46,000 tons) per year
 - ✓ KRW 170 billion for purchasing and incineration (2017)
- Restrictions on disposable plastics**
 - ✓ **European Union (EU)**
10 types of plastics banned from the market from 2021
 - ✓ **U.S., Canada, Spain, Taiwan, etc.**
Regulations on single-use plastic plates, cutlery and cups



South Korea (The Ministry of Environment)

- Single-use plastic cups in stores banned**
※ Disposable paper cups and plastic straws (Nov 2022)
- 'Single-use Cup Deposit Rule'** (Dec 2022)
※ Applied to businesses with 100 stores or more
- A total ban on the use of single-use plastics (2030~)**

2. Overview

Plastic circulation platform established to break the habit of using single-use plastics through ICT technology and cooperation



3. Progress

4 million disposable cups in Seoul and Jeju saved by the hands of 50+ partners joined together (July 2021 - July 2022)



Eco-friendly Starbucks stores
(4 stores in Jeju)

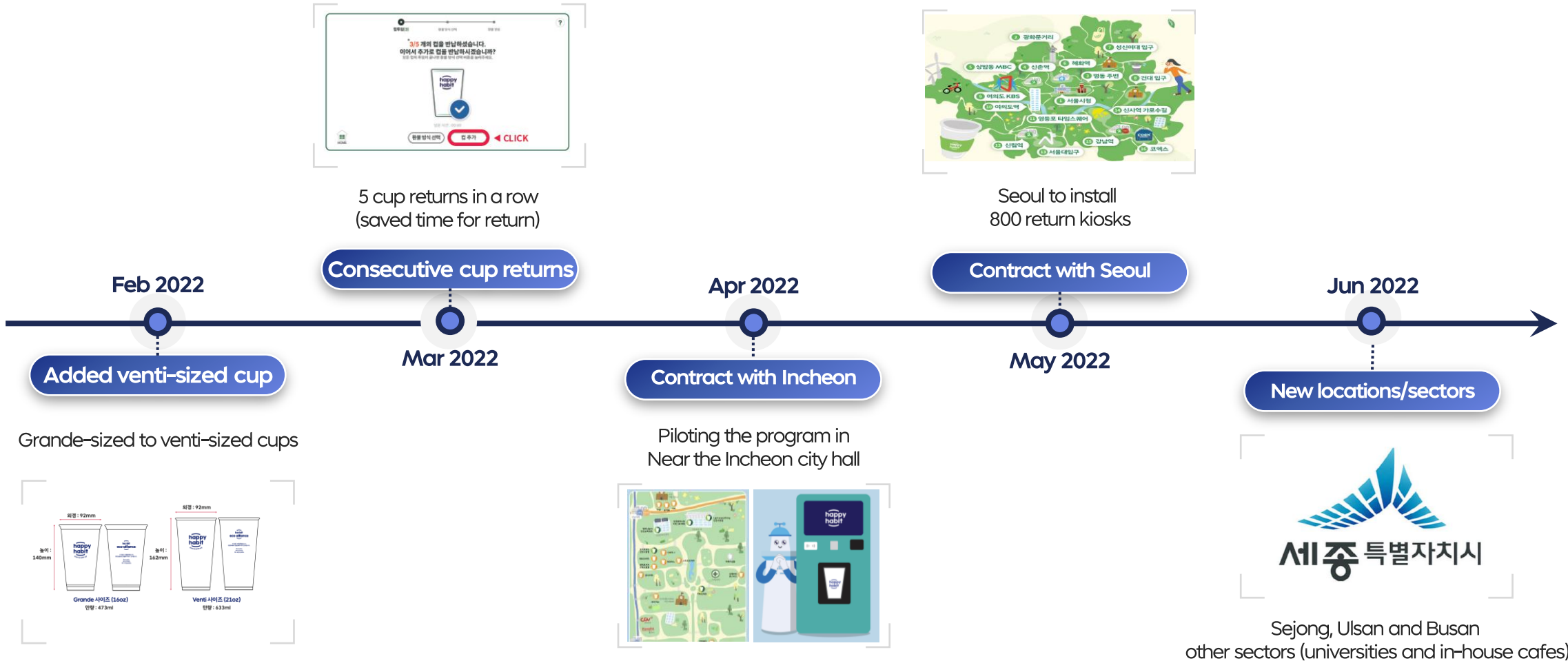


47 partners in ha:bit eco alliance
Alliance expanded to 55+ (July 2022)



3. Progress

Contracts to various regions and business sectors with solution advancement, infrastructure upgrade and partnership expansion



Committed to changing habits to save the planet...

Café franchise, small cafes, retail stores



In-house Cafés, Universities, Hospital



4. Core infrastructure

Reusable cup, ICT-based unmanned return machine, dedicated app and cleaning hub
- key components of the happy habit multi-use cup circulation system

Reusable cup



- ✓ 16 oz (grande), 21oz (venti)
- ✓ PP (Polypropylene)
- ✓ Safer choice than other types of plastics

ICT-based unmanned return kiosk



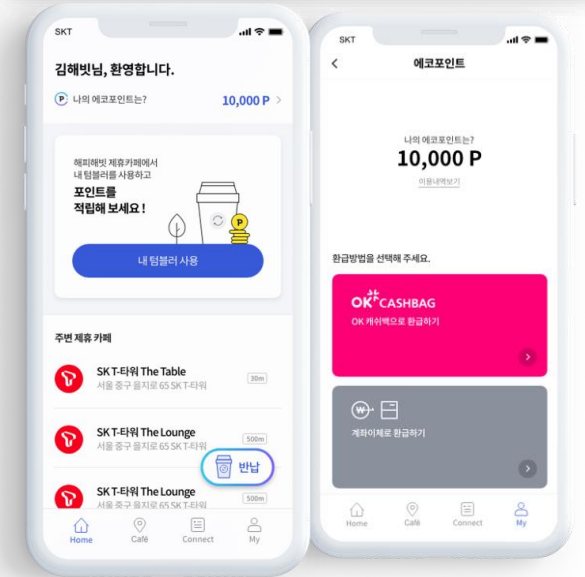
- ✓ Cup recognition enabled by SKT Vision AI
- ✓ Minimizes tasks for staff in charge and for sanitization

Specialized cleaning hub



- ✓ Outskirts of Seoul and Jeju, nation-wide Self-Sufficiency Promotion Centers
- ✓ 7-step cleaning process

Integrated system and dedicated app



- ✓ Logistics flow and management of reusable cups
- ✓ Deposit refund management
- ✓ Integrated data management

4. Core infrastructure (Reusable cup)

50~70 times of re-use; in safe, durable and sustainable way

Features Key Functions

- ❖ **Types and specification**
 - * 16oz (grande full volume 473ml)
 - * 21oz (venti): full volume 633ml
 - * ice cream and larger volumes to be added (Sep 2022)
- ❖ polypropylene (PP), BPA-free

- ❖ Safe, robust, heat resistant and ready for commercial service
- ❖ Can be reused more than 70 times and 100% recyclable
- ❖ Identification code to track the number of reuses (Aug 2022)

results on environmental hormone test and conformity test



4. Core infrastructure (Reusable cup)

2.6 times of reuse offsets carbon emission costs caused by using a single-use cup

	happy habit Cup	Single-use Plastic Cup
Material	▶ <u>Polypropylene (PP)</u>	<u>Polyethylene terephthalate (PET)</u>
Characteristics	▶ Food and heat safe (resistance temperatures 121~165°C) Classified as the future resource by Greenpeace	Most used material for single-use cups Tend to deform in high temperatures and cause environmental hormones (resistance temperatures 60~100°C)
Carbon emission (by plastic type)	▶ 1.63 (g CO2 eq) ※ Per 1g of PP material used, for 16oz	2.19 (g CO2 eq) ※ Per 1g of PET material used, for 16oz
Eco-Cost (per cup)	▶ 68.2 KRW ※ cost of material consumption + carbon emissions	26.7 KRW ※ cost of material consumption + carbon emissions

4. Core infrastructure (ICT-based unmanned return machine) ————— happy habit

Unmanned return kiosks powered by technologies to identify the eligibility of the cup and to conveniently refund deposit (points, cash, etc.)

Type I return kiosk

Type II return kiosk



✓ **Size and weight**

- 160cm(H) * 60cm(W) * 61.5cm(D)
- 200kg

✓ **Touch screen (21.5 inch)**

✓ **Cash outlet**

✓ **Multi-use cup drop slot**
Cup verification and deposit refund enabled by SKT Vision AI solution

✓ **Storage for collected multi-use cups (can store up to 360 cups)**

Cash-free, easier to install, flexible for the space of mom-and-pop stores



✓ **Size and weight**

- 110cm(H) * 59.5cm(W) * 40cm(D)
- 35kg (basic type)

✓ **Cup verification and deposit refund enabled by individual identification code**
(The deposit is refunded in points via happy habit app.)

✓ **Collecting box can be separately placed for flexible use of the space**

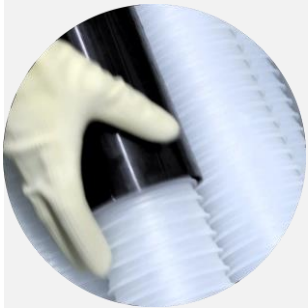
4. Core infrastructure (Cleaning hub)

happyhabit

The 7-step cleaning process in place for thorough cleaning and management of the multi-use cups



Surface check



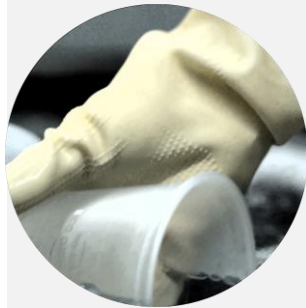
Check the surface of the cups that are delivered to the cleaning hub

Ultrasonic cleaning



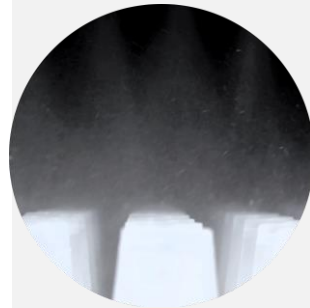
Put the cups in the ultrasonic cleaner to remove any residues using ultrasound

First round of cleaning



Remove residues in the cups in the first round of washing

High pressure, high temperature automated cleaning



Put the cups in the automated washer to clean the cup with hot, strong water sprays

UV sterilization and drying



Sterilize and dry the cups using UV rays and hot air

Total inspection



Inspect each and every cleaned multi-use cups and select only the perfectly cleaned ones

ATP inspection, detergent residue inspection



Check the ATP* value and any detergent residues

**happyhabit 3~23RLU
Criteria: 200RLU
(Random sample test)

* ATP (Adenosine Tri-Phosphate): refers to the total organic contamination level on the surface of the multi-use cup.

** RLU: Relative Light Units

4. Core infrastructure (Integrated system, dedicated app) ————— happy habit

Monitoring system for the use of multi-use cups, return rate and logistics flow, and deposit refunding

Integrated management system

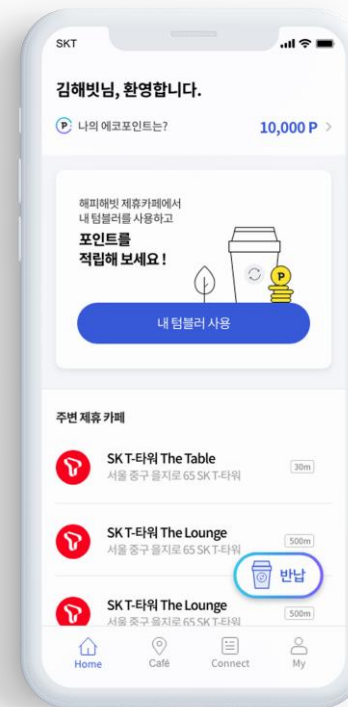
A dedicated application 'happy habit'

Real-time return rate in the integrated management system dashboard

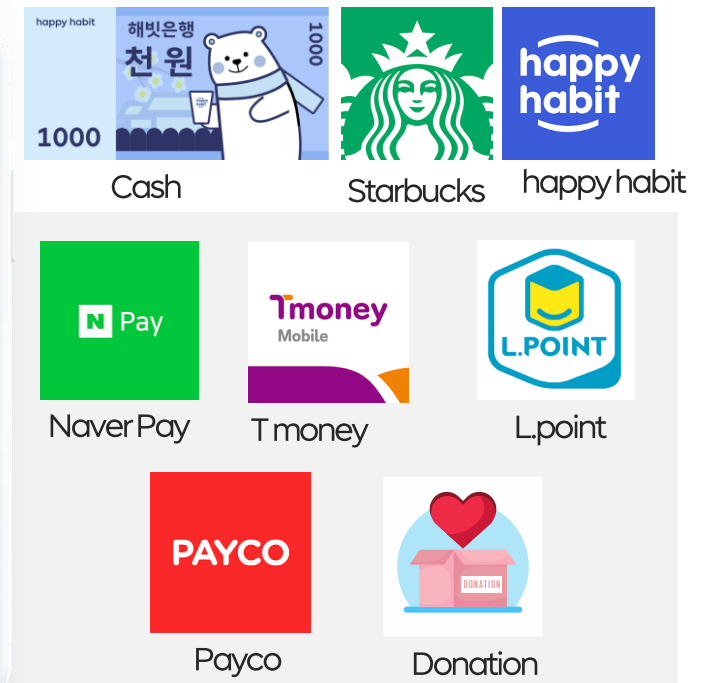
NO	반납기 ID	보유량(80%기준)	합 거래량	보유수량	정상반납 수량	불량반납 수량	반납기 거절수량
28	서귀포OT			28	28	0	0
27	경산동물농			71	71	0	0
26	신계주이마트			149	149	0	0
합계				1,705	1,705	0	0

NO	일시	회수수량	정상반납 수량	불량반납 수량	반납기 거절 수량
150	2022-04-04 14:38:04	102	102	0	0
149	2022-04-04 13:25:15	72	72	0	0
148	2022-04-04 11:20:45	126	118	8	0
147	2022-04-03 19:32:31	149	149	0	0
146	2022-04-03 15:03:14	0	0	0	0
145	2022-04-03 14:03:00	31	31	0	0
합계		10,105	9,566	539	240

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Various means of deposit refunding



* Other means of refund can be added upon the business operator's request

5. ha:bit eco alliance

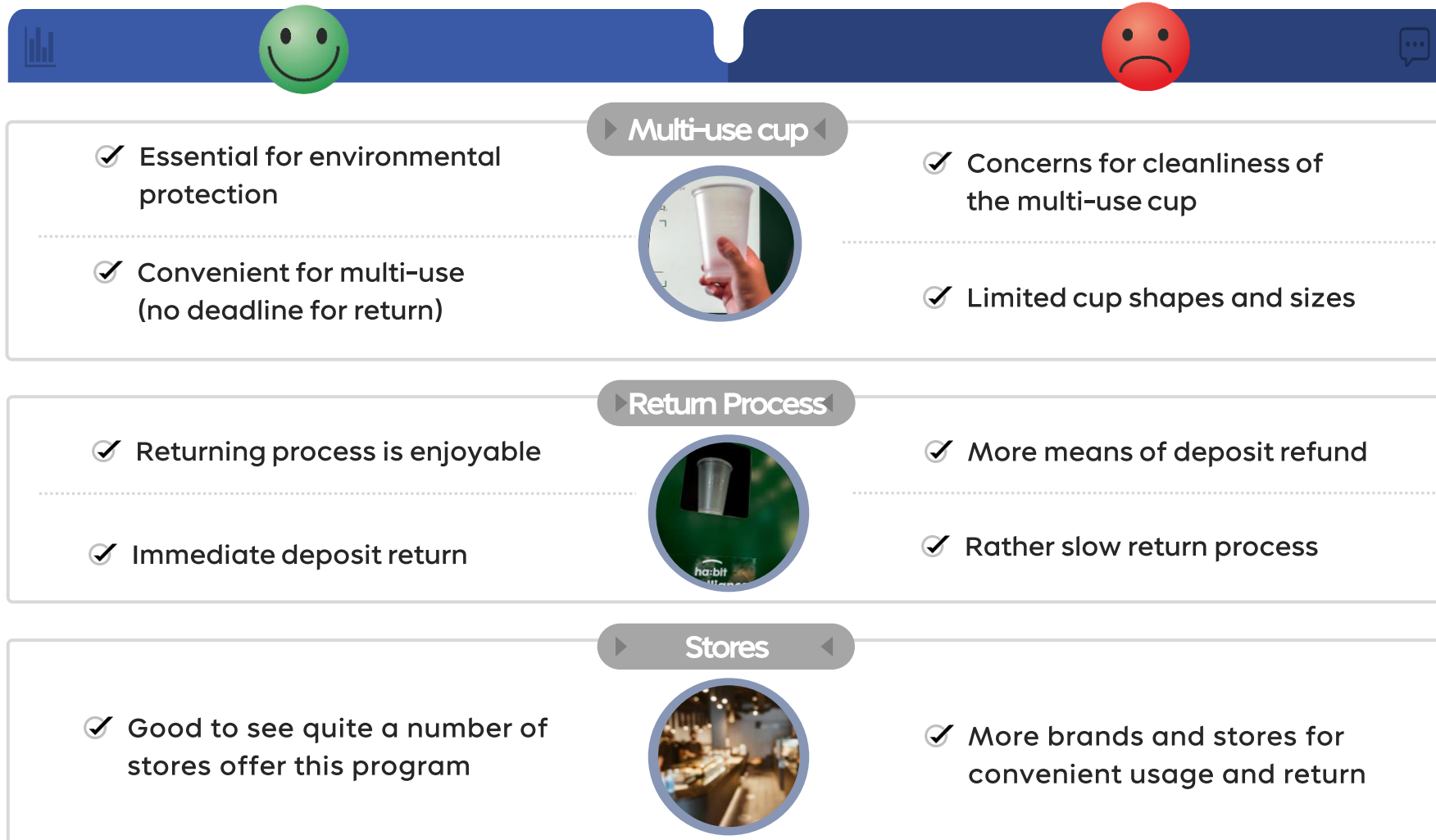
Government agencies, local governments enterprises, press and coffee houses gathering to promote a zero-waste society



The largest public-private environment alliance in South Korea



Regular consult with user feedback for the continuing service improvement



4 million single-use cups

saved by the happy habit line up

560 kilometers long in a row



Mt. Everest



63
Times

Less waste for more jobs



Environmental Impact



70 uses of the happy habit saves one pine tree



- ✓ The yearly amount of CO2 absorbed by a single pine tree (average*): 2.35Kg
- Source: National Institute of Forest Science
- ✓ carbon emissions when using a single multi-use cup: 0.0338Kg CO2 eq

The amount saved when reusing the cup 70 times
 $70 * 0.033 = 2.366 \text{ Kg CO2 eq}$



Social Impact

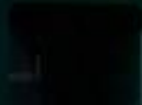


1,000 cups to clean create one cleaning job



- ✓ Based on the result of the 2021 program in Seoul and Jeju
- ✓ The cleaning staff mainly consist of local residents

Thank you



한글번호

