

# **The Challenges of Eliminating the Leakage of Waste into the Natural World**

**Marine Plastic Debris and its Countermeasures in Asia:  
Impact on Ecosystems and International Cooperation**

February 6, 2023



# **Pirika**



**CEO**

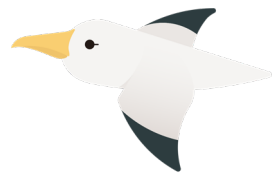
## **Fujio Kojima**

- Resolved to solve environmental problems after being influenced by a book he read at the age of 7.
- Majored in environmental engineering at Osaka Prefecture University, then studied energy economics at Kyoto University's Graduate School.
- Traveled around the world while at graduate school and saw the problem of the leakage of waste into the natural world firsthand.
- Began developing the Pirika waste collection social networking service after returning to Japan.
- Withdrew from Kyoto University program in 2011 and established the company.

Awarded the Environment Minister's Award for Environmental Startups  
MIT Innovators Under 35 Japan recipient

Pirika provides “waste emission countermeasure services”

## Pirika provides “waste emission countermeasure services”



**ALBATROSS**

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Microplastics  
Emission Investigation  
and Countermeasures

**Albatross**



**Takanome**

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Waste Distribution  
Investigation  
Services

**Takanome**



**Pirika**

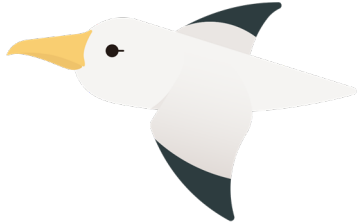
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Waste Collection  
Promotion  
Platform

**Pirika**

Microplastics Emission Investigation  
and Countermeasures

Albatross



ALBATROSS

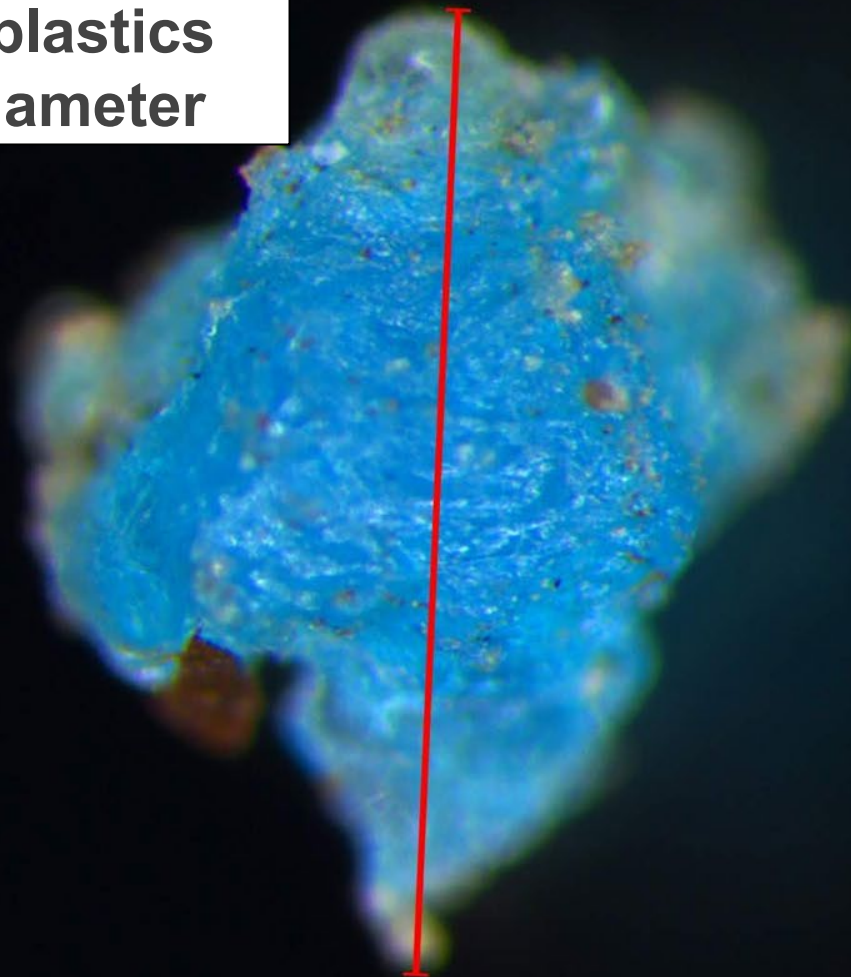


Identifying the source of microplastics emissions

Stopping the root cause of emissions

# Emission of Microplastics 5 mm or Less in Diameter

1.05 mm



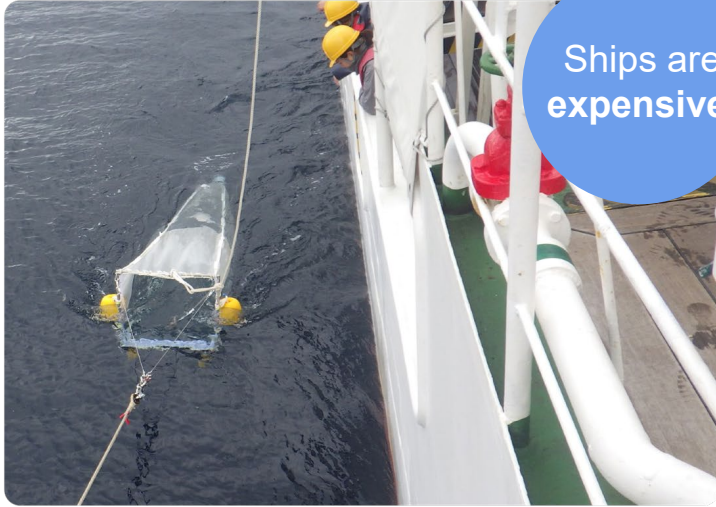
## Emission of Microplastics 5 mm or Less in Diameter

1.05 mm

Since the original product and emission pathway are unknown, countermeasures cannot be implemented.

# Problems with Traditional Microplastics Investigation Method

The traditional method (dragging nets with ships) is expensive & unusable in some places.



Ships are expensive.

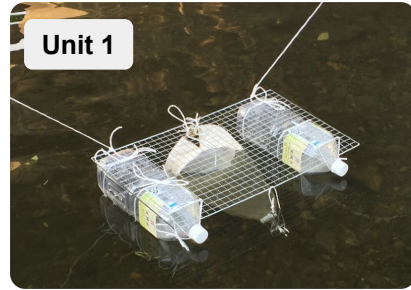


Ships cannot enter.

Left: Photo provided by Professor Uchida, Tokyo University of Marine Science and Technology

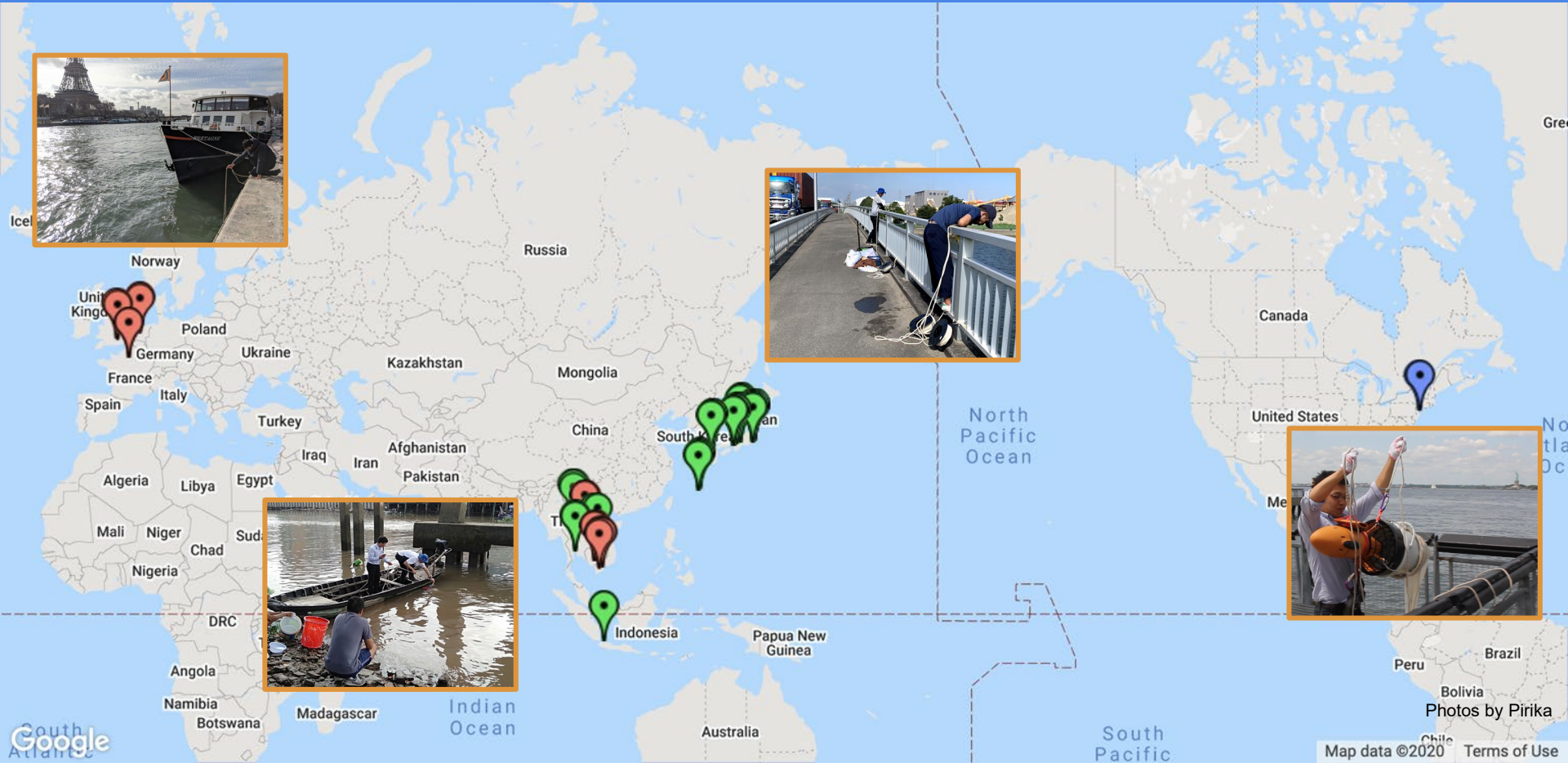
Right: Photo by Pirika

Developed investigation devices using a combination of existing products:  
low cost & can be used anywhere.





# Adopted by the United Nations and currently one of the most widely-used microplastics investigation methods worldwide



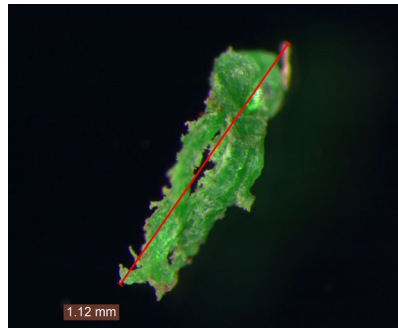
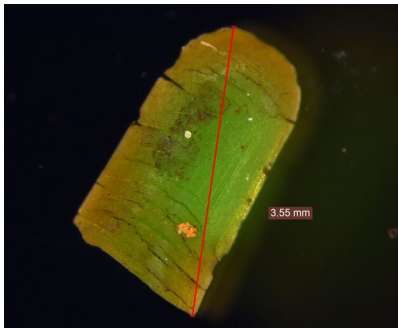
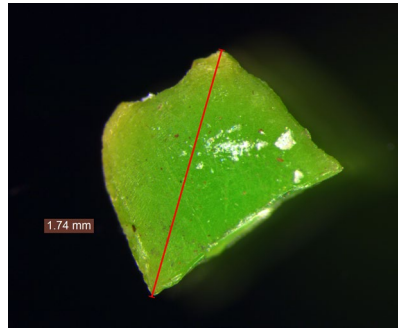
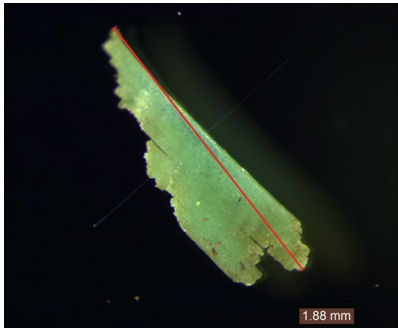
## Albatross Analysis Process

Over 5,000 collected samples are analyzed individually one by one. In cooperation with Tokyo Institute of Technology, Tokyo University of Science, and plastics molding companies, we attempt to identify the original products which are the source of leakage.



## Massive Leakage from Artificial Turf Identified

Investigations of domestic waters in fiscal 2020 found that **20% of spilled microplastics** (by number of particles) **originated from artificial turf**. Artificial turf accounted for over 50% of plastics in multiple rivers.



Note: Only plastics particles with a maximum diameter ranging from 0.3 to 5.0 mm were considered.

**The investigation found that there was severe leakage of plastics from sporting facilities, schools, and similar locations.**



# Developing a Solution in Cooperation with Partners

住友ゴム 企業情報 ▼ イノベーション ▼ 商品・事業紹介 ▼ IR ▼ サステナビリティ ▼ 採用情報

## 海洋汚染対策を施したグラウンド

グラウンドの外周にマイクロプラスチックの流出を防止するゾーンを設置。充填物が流出しにくい高比重のカラーチップを採用しています。

高比重充填物使用



外周バリア人工芝      バリア資材設置

マイクロプラスチック流出防止策を施したグラウンド



外周バリア人工芝(明るい緑部分)と防球フェンスを利用したバリア (メッシュネット)

Sumitomo Rubber website: Initiatives for the problem of microplastics originating from sports-use artificial turf  
[https://www.srigroup.co.jp/newsrelease/2021/sri/2021\\_035.html](https://www.srigroup.co.jp/newsrelease/2021/sri/2021_035.html)

## Promoting discussion and resolution based on actual conditions through press conferences and open data conversion of results.

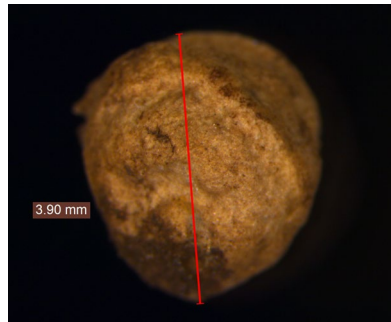
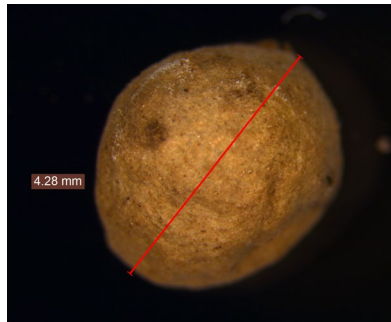
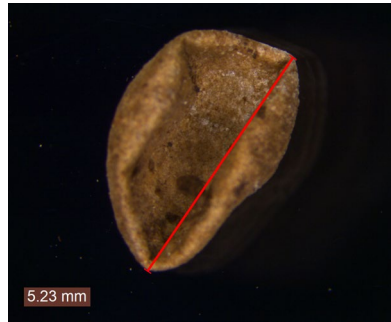
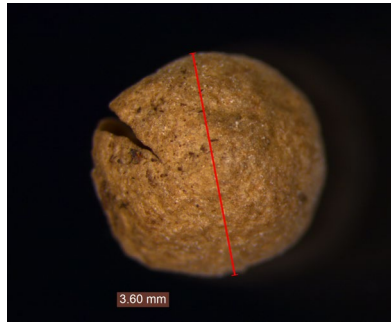


### Media appearances and exposure from May 2020 to April 2021

NHK (Today's Close-up), Nippon TV (news every), TV Asahi (Tokyo Ouen Sengen), BS Asahi (Baton Touch SDGs Hajimetemasu), BS Fuji (Chikyu HEROS), Asahi Shimbun, Nihon Keizai Shimbun, Mainichi Shimbun, Yomiuri Shimbun, Chunichi Shimbun (twice), Yukan Fuji, Nikkei Sangyo Shimbun, Kankyo Shimbun, Denki Shimbun, Kyoto Shimbun (twice), Kobe Shimbun, Akita Sakigake Shimpo, J-WAVE, Yahoo! News (twice), and others

## Coating Fertilizer Emission Source Identified

Coating fertilizer is also known as single-use fertilizer and sustained release fertilizer capsules, among other names. These materials accounted for 3.5% of plastics collected in the Hokuriku area and over 60% in the Sai River (Ishikawa) and Oyabe River (Toyama).



## Coating Fertilizer Emission Sources Identified





## Information Disclosure and Media Exposure

In January 2022, 3 years after Pirika's investigation results were reported:

The National Federation of Agricultural Cooperative Associations issued a proclamation: "We will aim to achieve farming which does not rely on coating fertilizers made with plastics by 2030."

(1) Clear statement that coating fertilizers contain plastics.

(2) Implementation of preventive measures for leakage of fertilizer shells from farmland.

(3) Achievement of farming which does not rely on plastic coatings.

Hidden due to copyright considerations

National Federation of Agricultural Cooperative Associations website,  
1/21/2022 release: <https://www.zennoh.or.jp/press/release/2022/87368.html>

Litter Investigation Service

Takanome



Takanome



Combining AI, smartphones, and automobiles  
to create standards for waste emission problems.

**Mount a smartphone to the car dashboard.**





# Machine learning analyzes waste volume.



地点ID : 872a74567acd42cdab422f0eb7bc5821

撮影日: 2022/11/28 11:41:48

ごみレベル: 多い

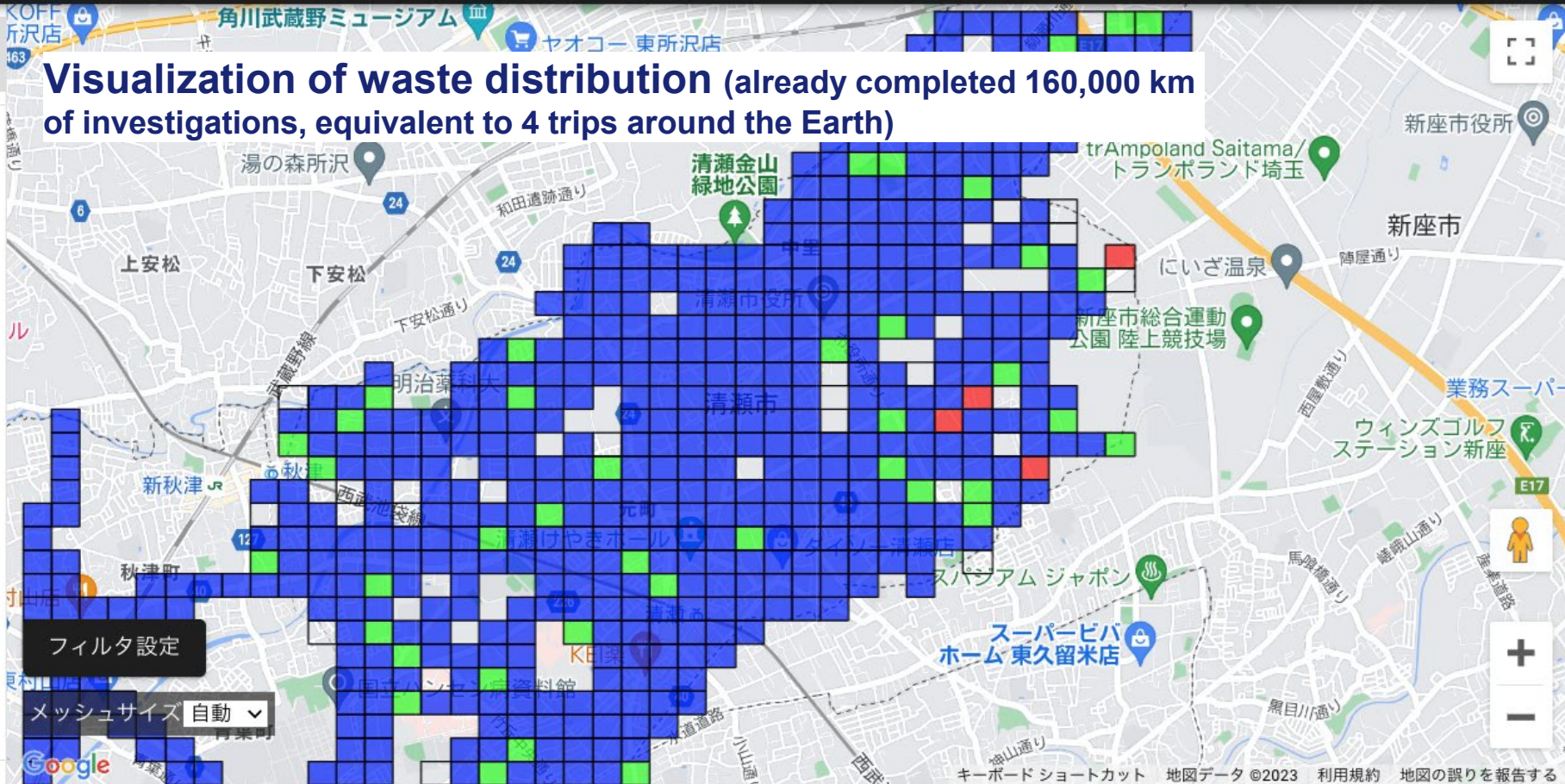
結果の修正希望を送る



なし 少ない 中間 多い



# Visualization of waste distribution (already completed 160,000 km of investigations, equivalent to 4 trips around the Earth)



フィルタ設定

メッシュサイズ 自動

なし 少ない 中間 多い



# Using the data, municipalities improve the efficiency of waste leakage suppression and waste collection activities.

- (1) Budget allocation: In which areas should the budget be focused?
- (2) Measurement of effects: Which initiatives achieved the biggest results?

Adopted by industries such as waste and logistics for social contribution and public relations purposes.



# To achieve zero waste emissions on a global scale, universal worldwide standards are needed.

## (1) Dispersion of standards for problem-solving

By dispersing Takanome worldwide, we will create universal worldwide standards for measurement of waste emission problems.

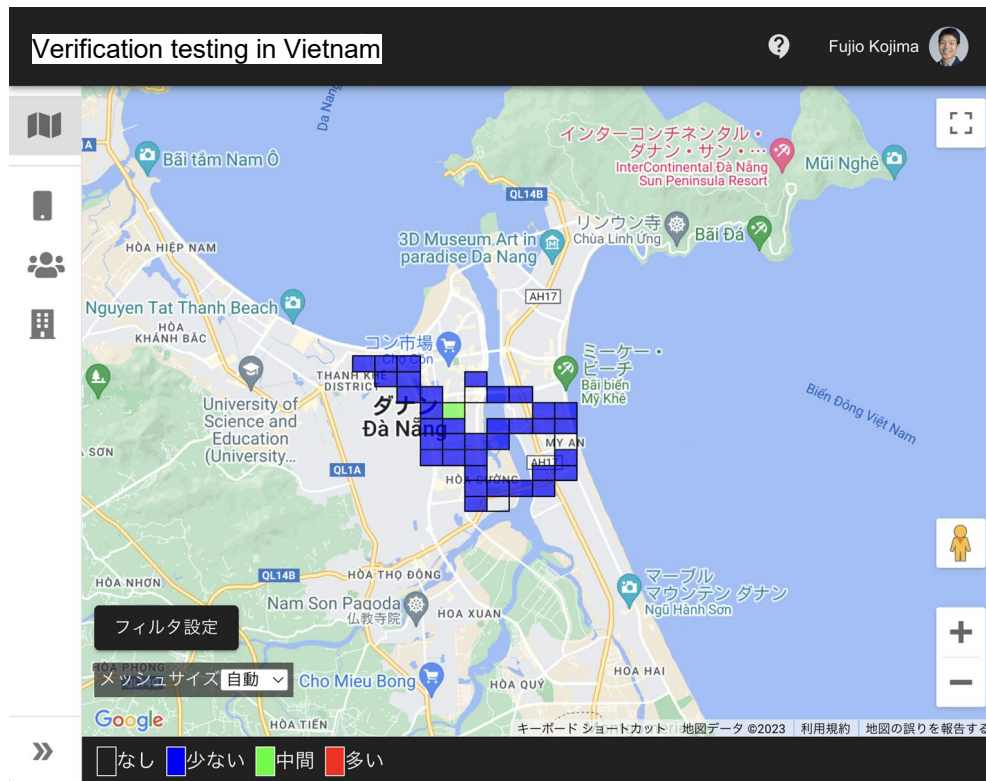
## (2) Prioritization

Through these standards, the severity of waste emissions can be ranked to determine priority areas for implementation of countermeasures.

## (3) Introduction and improvement of solutions

We will provide solutions to priority areas where countermeasures should be implemented.

After measuring results, the solutions will be continually improved until problems are solved.





Waste Collection Promotion  
Platform

Pirika



Pirika



Making waste collection fun so it's easy to continue!

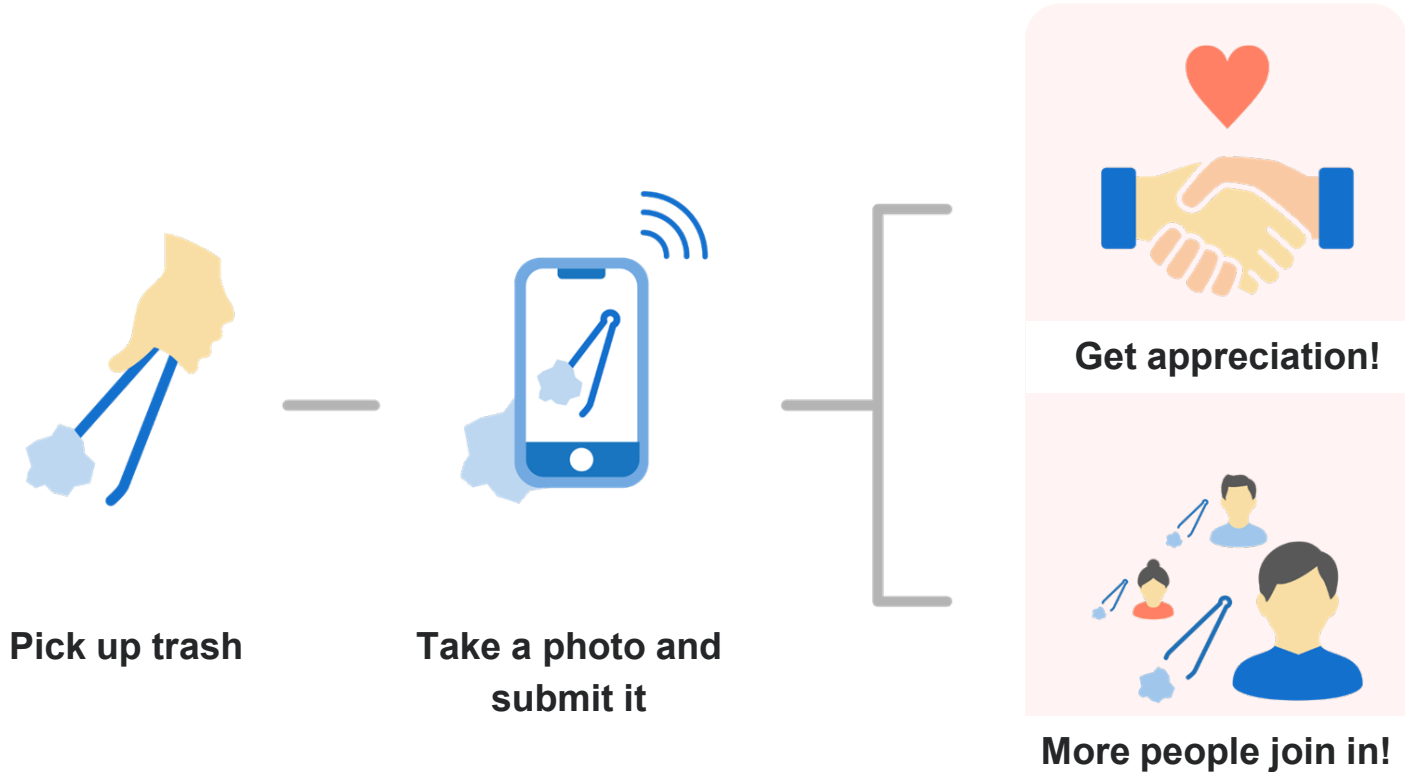
Using the power of a social networking service to pick up all  
the world's waste.



Pirika is a Twitter-like service for waste collection volunteers.

Users can contribute to cleaning up their local area **anytime and anywhere with a smartphone**, just like participating in real-world cleanup events.

## Structure of the Pirika Waste Collection Social Networking Service





kojimafujio



詳細を見る

千代田区

皇居東御苑

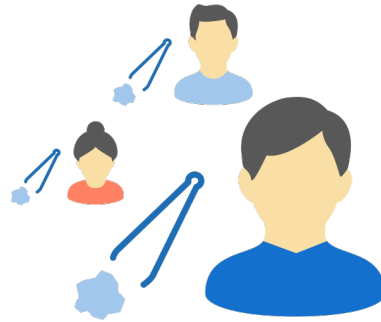
千代田



## Achievements of the Pirika Waste Collection Social Networking Service



Used in **116**  
countries and  
regions



A total of **2**  
million  
participants



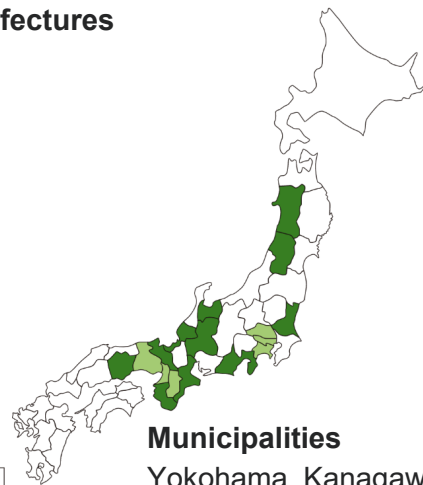
**270** million  
pieces  
of waste collected.

# Pirika provides digital transformation tools for cleaning activities to prefectural and municipal environment divisions.



## Pirika Introduction Areas: Prefectures

- Fukui\*1 (from 2014)
- Okayama (from 2017)
- Toyama\*2 (from 2018)
- Wakayama (from 2018)
- Akita (from 2020)
- Yamagata\*3 (from 2020)
- Ibaraki\*4 (from 2021)
- Kyoto (from 2022)
- Gifu (from 2022)
- Shizuoka (from 2022)
- Mie (from 2022)
- Hyogo (from 2022)



## Municipalities

- Yokohama, Kanagawa (from 2016)
- Izumiotu, Osaka (from 2018)
- Nishinomiya, Hyogo (from 2021)
- Shibuya Ward, Tokyo (from 2021)
- Minato Ward, Tokyo (from 2021)
- Saitama, Saitama (from 2021)
- Yamatokoriyama, Nara (from 2022)
- Toshima Ward, Tokyo (from 2022)

\*1: The visualization page was scaled back at the end of fiscal 2019 when the Fukui National Sports Festival was held, but data provision has continued.

\*2: Shifted to a private sector operational structure led by the JT Hokuriku Branch from fiscal 2021.

\*3: Implemented as a limited-time campaign by TV-U Yamagata Inc. in fiscal 2020.

\*4: Only using the illegal dumping report function.

# Pirika provides cleaning activity management and PR tools for corporate CSR departments.

## SAPPORO

### サッポログループ★清掃活動

サッポログループでは、「酒いを創造し、豊かさに貢献する」という経営理念の元、地域社会の支援に感謝し、主体的に創造的に取り組む活動として、「全従業員が1年に1回は清掃活動へ参加すること」にチャレンジします。



参加人数 **9,015** 拾われたごみの数 **1,112,150**



- ★ サッポロビール** 2日前  
ソニックシティ前鐘塚公園にて。S・B・P・S合同で清掃活動を実施しました。
- ★ サッポロビール** 5日前  
11月少し肌寒くなった。先月に続き、枯葉・落ち葉掃除を含めて作業を行う。作業で動く事で体が暑くなり、支給された水はうまかった。
- ★ サッポロビール** 6日前  
恵比寿ガーデンプレイスの入り口からJR恵比寿駅までの坂道約300メートルの道路両脇の清掃をしました。飲み物の缶、PETボトル、タバ
- ★ サッポロビール** 1週間前  
今月もサンポート高松・中央通り等一斉清掃に参加致しました。
- ★ サッポロビール** 2週間前  
爽やかな秋晴れの中活動できました。吸い殻が多いことと、植え込みの中に缶やPETが多く捨てられていました。

Coca-Cola

SAPPORO

JT

SCOUT ASSOCIATION OF JAPAN

ALVARK TOKYO