Asahi Kasei's Circular Economy Initiatives

Shuta Kojima
Assistant Manger of Marketing Department
Ion Exchange Membrane & Electrolysis System Division

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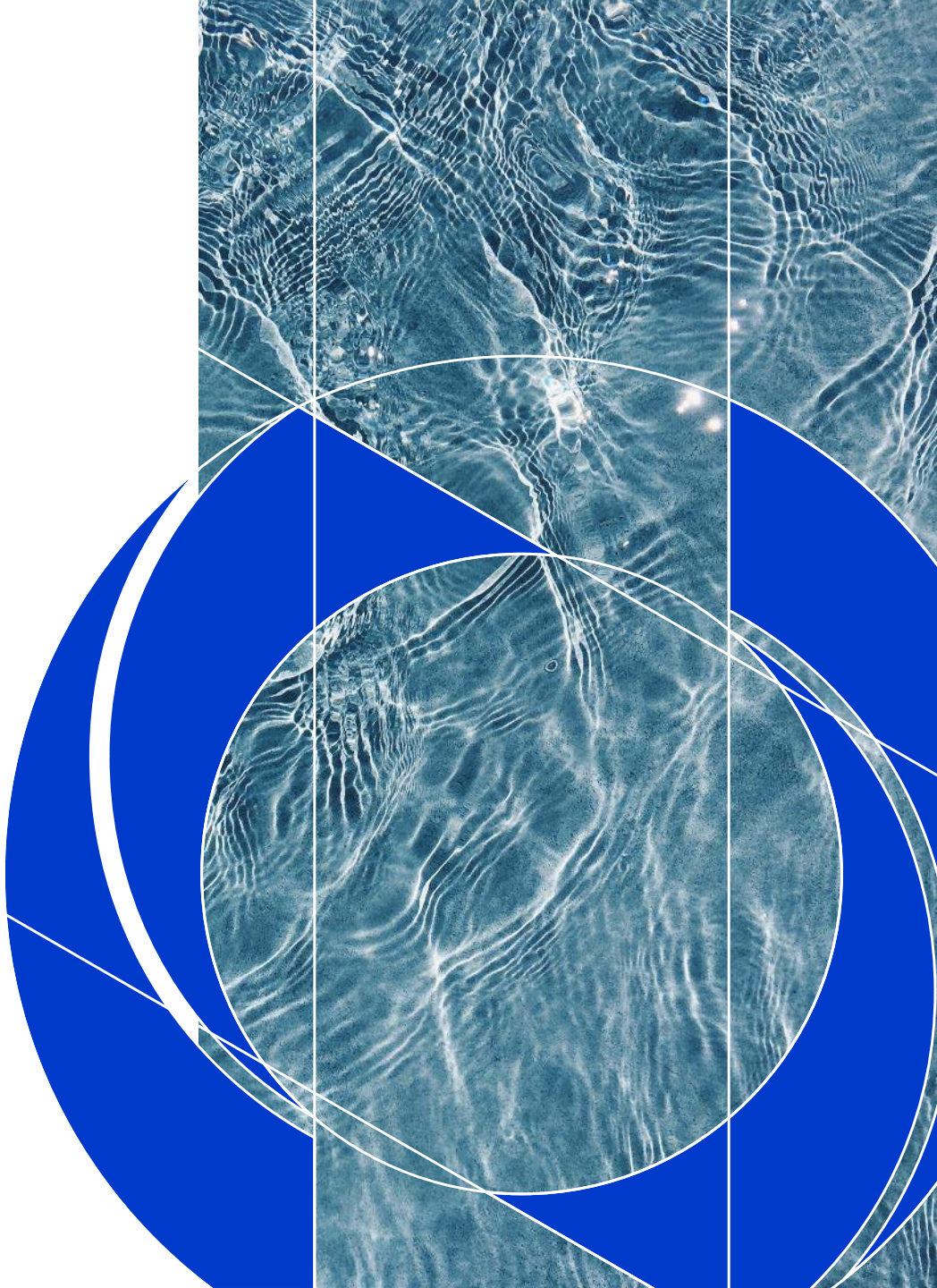

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AGENDA

01 **Introduction**

02 **Precious Metal Market Information**

03 **AlkaNexus® Metal Recycling**

04 **Summary**

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01 Introduction

Introduction

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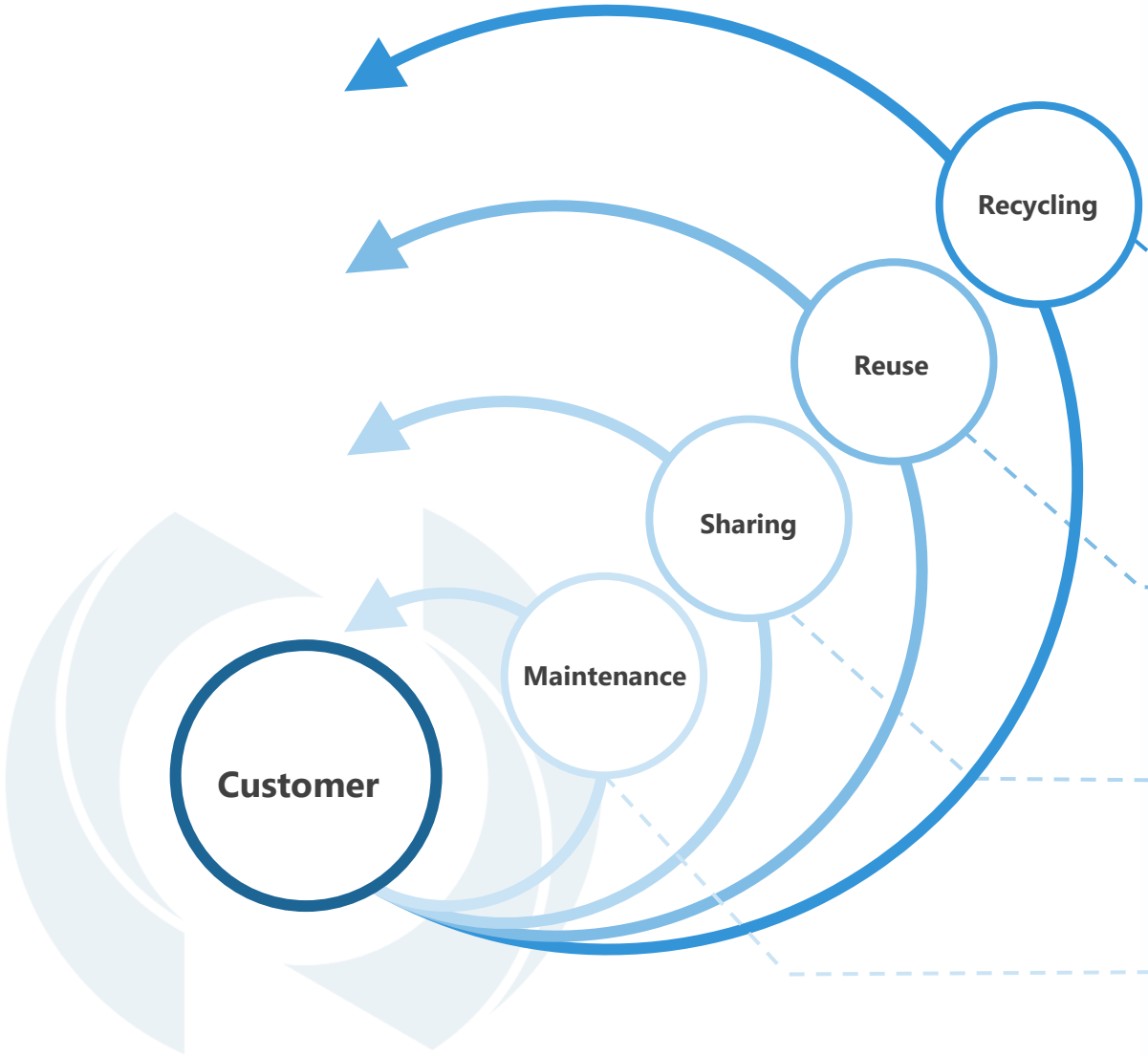
Shuta Kojima

Assistant Manager
Marketing Department
Ion Exchange Membrane &
Electrolysis System Division

Apr. 2016	Join Asahi Kasei Corporation Join Ion Exchange Membrane & Electrolyzer System Division
May. 2016	Marketing and Sales Department 1 Sales of electrolyzers and related parts to Chinese market
Apr. 2020	Planning & Coordination Department Coordination of business operation and planning of business strategy as well as post merger integration with R2
Apr. 2022	Customer Success Department New business development, especially software service and rental service as well as AlkaNexus development
Apr. 2025	Marketing Department New business development, especially related to circular economy in Chlor-Alkali industry

AlkaNexus®
One Stop Solutions
Circular Economy Service



Metal Recycling

Second-hand cell trading support

Circular Frame as a Service

Worldwide Maintenance Shop
Data Driven Technical Support

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02 Precious Metal Market Information

What are precious metals?

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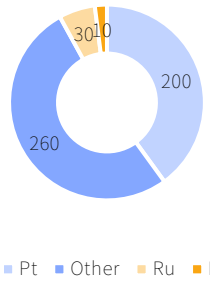
Precious metals

Among metals, eight elements are particularly rare and possess excellent stability and electrical conductivity: Au, Ag, Pt, Pd, Rh, **Ir, Ru,** and Os. Of these, the six elements from Pt onward are collectively known as the Platinum Group Metals (PGMs).

Rarity of precious metals

Over **80%** of virgin iridium and ruthenium (unused metals) come from **South Africa**, with the rest from mainly Russia—leaving Western countries effectively reliant on a single source. Of the ~500 tons of PGMs mined annually, platinum makes up ~200 tons, while **ruthenium and iridium**, obtained as byproducts, **total only ~30 and <10 tons respectively**. Since these elements are extracted in fixed ratios, overall PGM production is limited to manage platinum supply and demand.

PGMs production（t/y）



Origin of Iridium and Ruthenium

Price of 27 January 2026

*Reference Purpose Only

- Gold INR 15,847/g
- Iridium INR 20,956/g
- Ruthenium INR 4,901/g
- Nickel INR 0.170/g

Metals

Base metals

Iron

Iron, Stainless Steel etc.

Non-iron

Cupper, Aluminum etc.

Minor metals

Titanium, Nickel, Lithium, Cobalt etc.

Rare Earth

Niobium and 16 elements

Precious Metals
8 elements

What are precious metals?

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Ru application

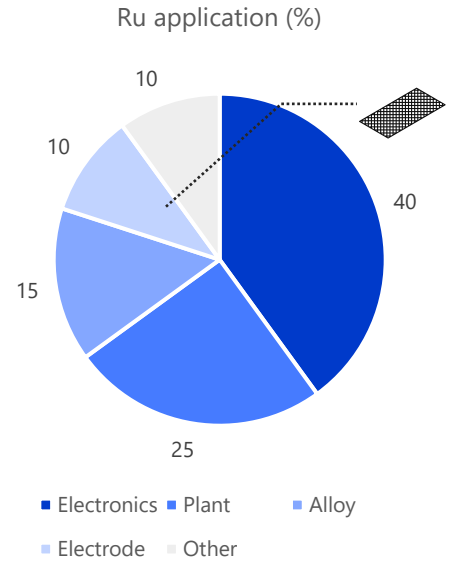
Electronic parts (spattering target for HDD etc.), Catalyst for chemical plants (ammonia etc.), Super alloy, Catalyst for electrodes and fuel cells

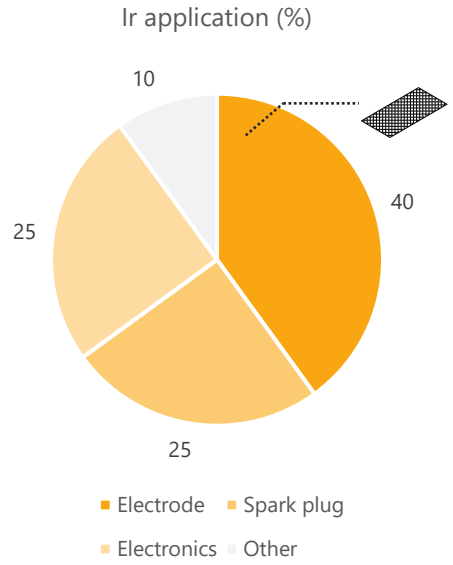
Ir application

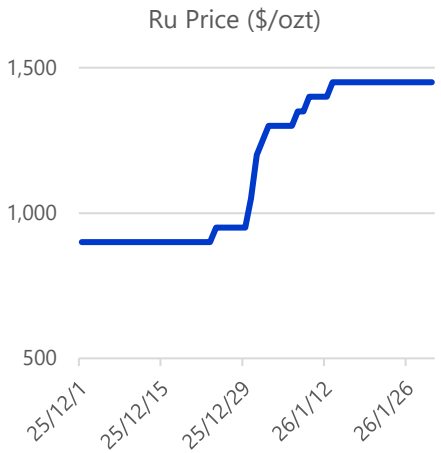
Catalyst for electrodes and fuel cells, Spark plug, Electronic parts (aerospace and medical device)

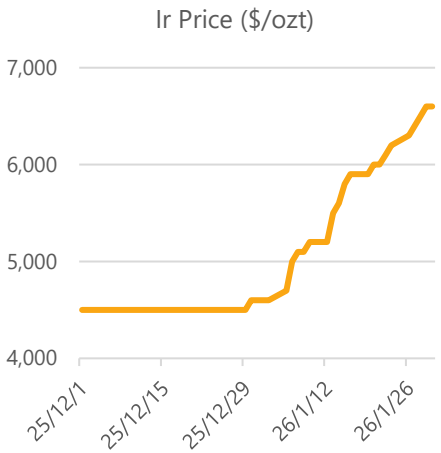
Asahi Kasei's View on the Market

Demand	**Ru**: Steady, led by chemicals and electronic sectors. **Ir**: Flat/Slightly softer, as the demand from the hydrogen sector has been slightly pushed back.
Supply	Natural disasters, higher labour/material costs are hitting miners' finances; industry reorganization and output cuts keep supply and prices unstable.
Note	Higher geopolitical risk is pushing money into gold and platinum, potentially lifting PGM prices; some speculation may play a role.
Recent	Demand far above supply; prices have jumped.
Outlook	No clear end to tensions among major countries, so broad PGM price drops look unlikely. Even if risks ease, steady Ru demand and unstable supply should keep prices high. If the hydrogen economy grows, Ir could fall badly out of balance; recycling PGMs from products ("urban mining") will become more important.









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03 AlkaNexus® Metal Recycling

AlkaNexus® Metal Recycling

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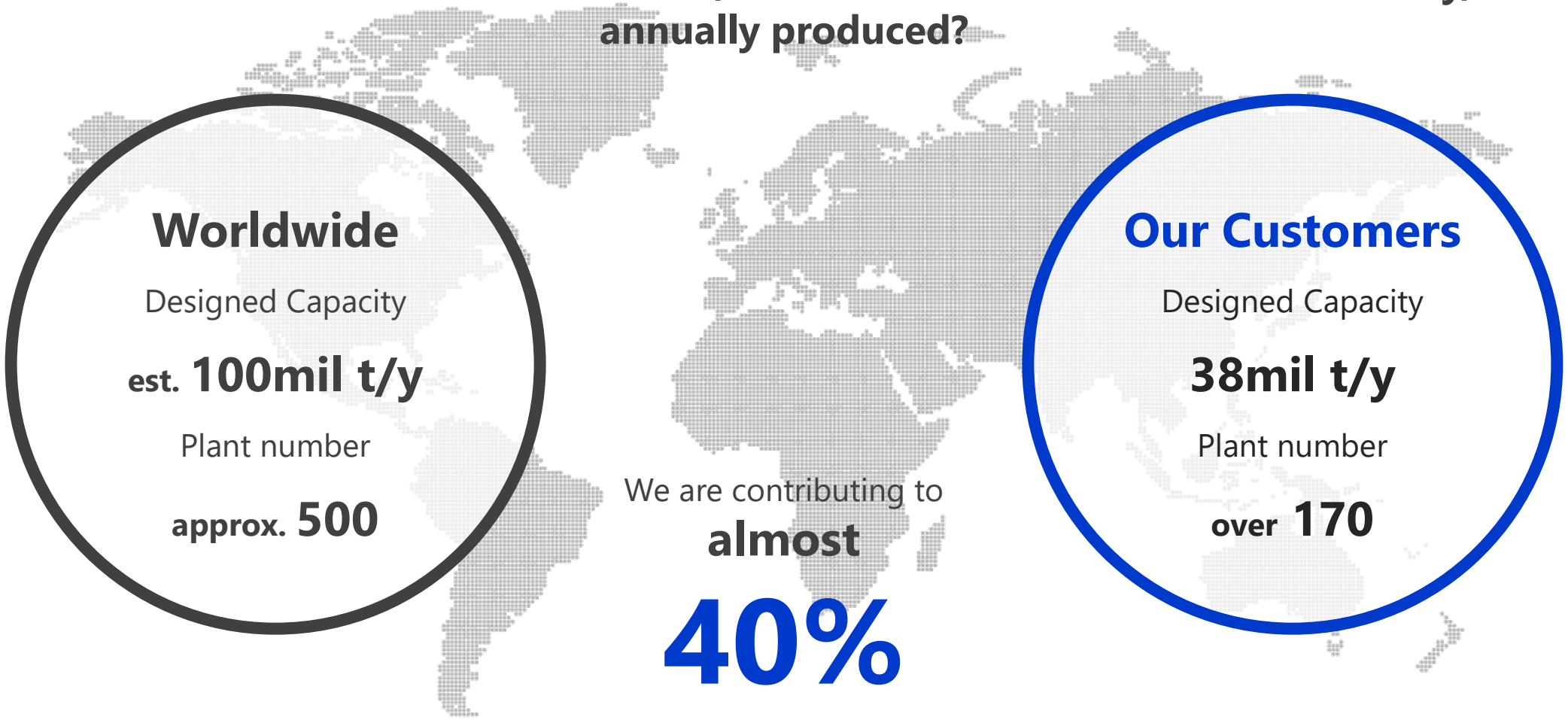
How much caustic soda and chlorine, infrastructure of the chemical industry, are annually produced?



Worldwide

Designed Capacity

est. 100mil t/y

Plant number

approx. 500

We are contributing to

almost

40%

Our Customers

Designed Capacity

38mil t/y

Plant number

over 170

AlkaNexus® Metal Recycling

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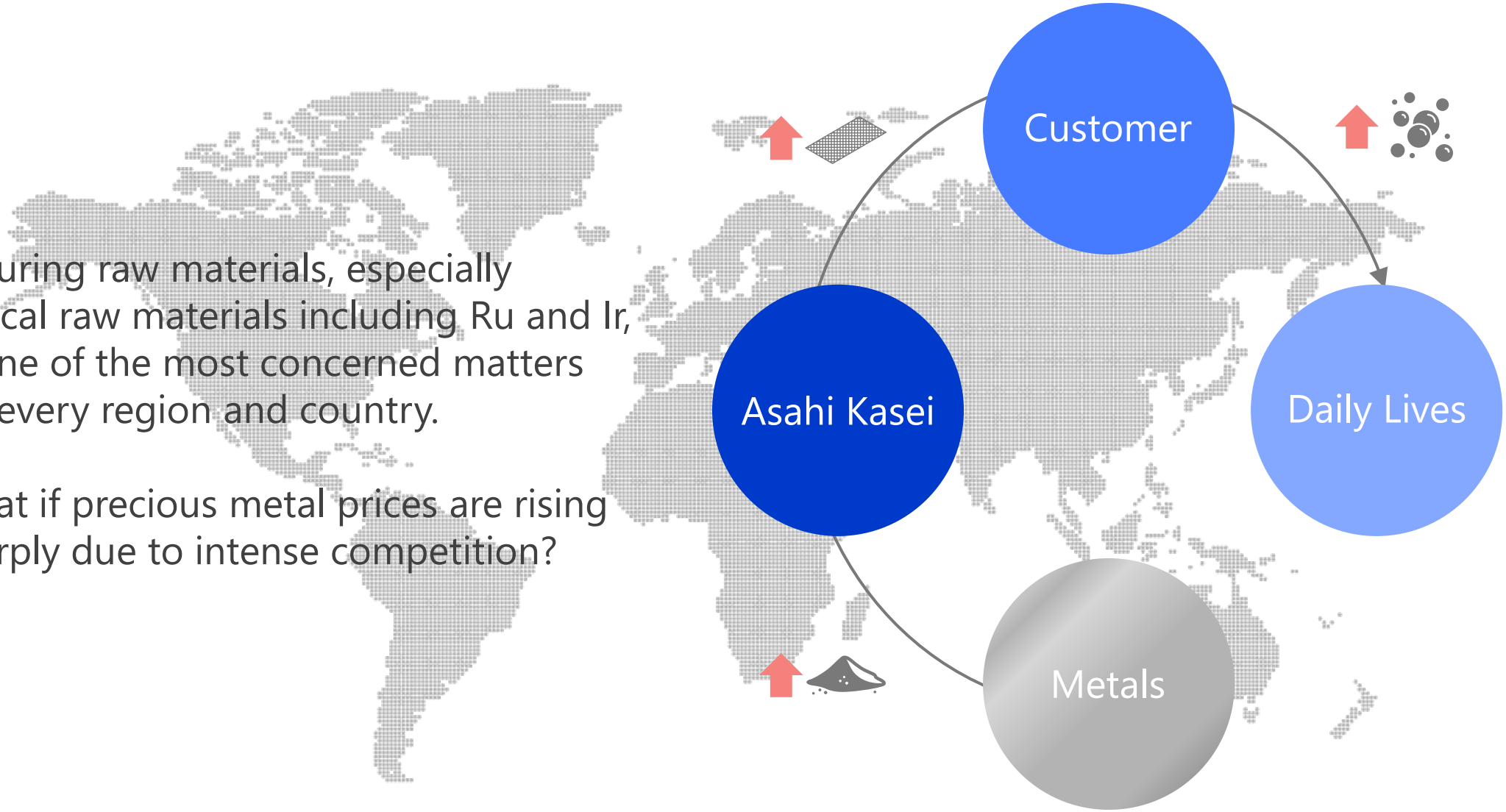
Securing raw materials, especially critical raw materials including Ru and Ir, is one of the most concerned matters for every region and country.

What if precious metal prices are rising sharply due to intense competition?



AlkaNexus® Metal Recycling

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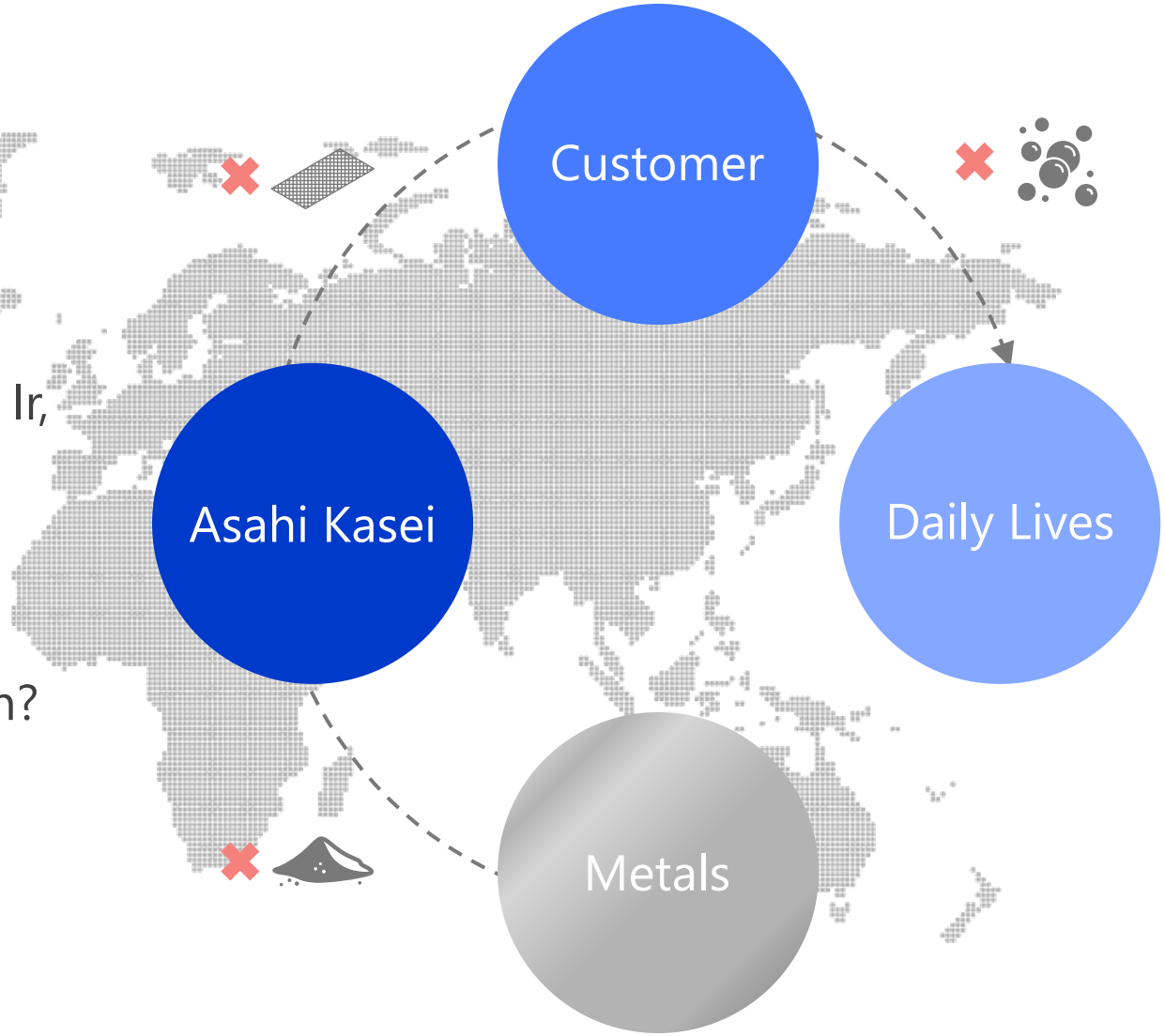
Securing raw materials, especially critical raw materials including Ru and Ir, is one of the most concerned matters for every region and country.

What if Ru and Ir become extremely difficult or almost impossible to obtain?



AlkaNexus® Metal Recycling

AlkaNexus

Our Customers

Designed Capacity

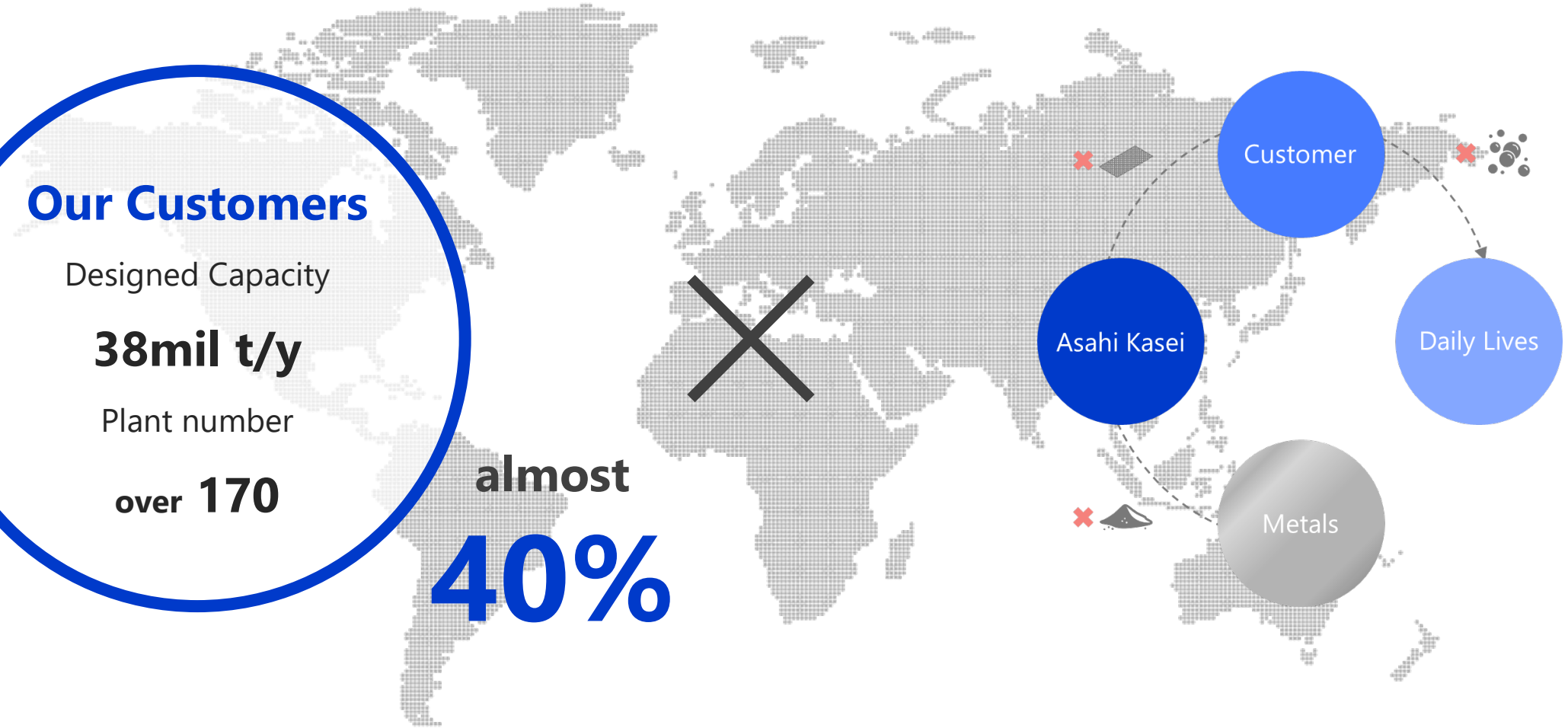
38mil t/y

Plant number

over 170

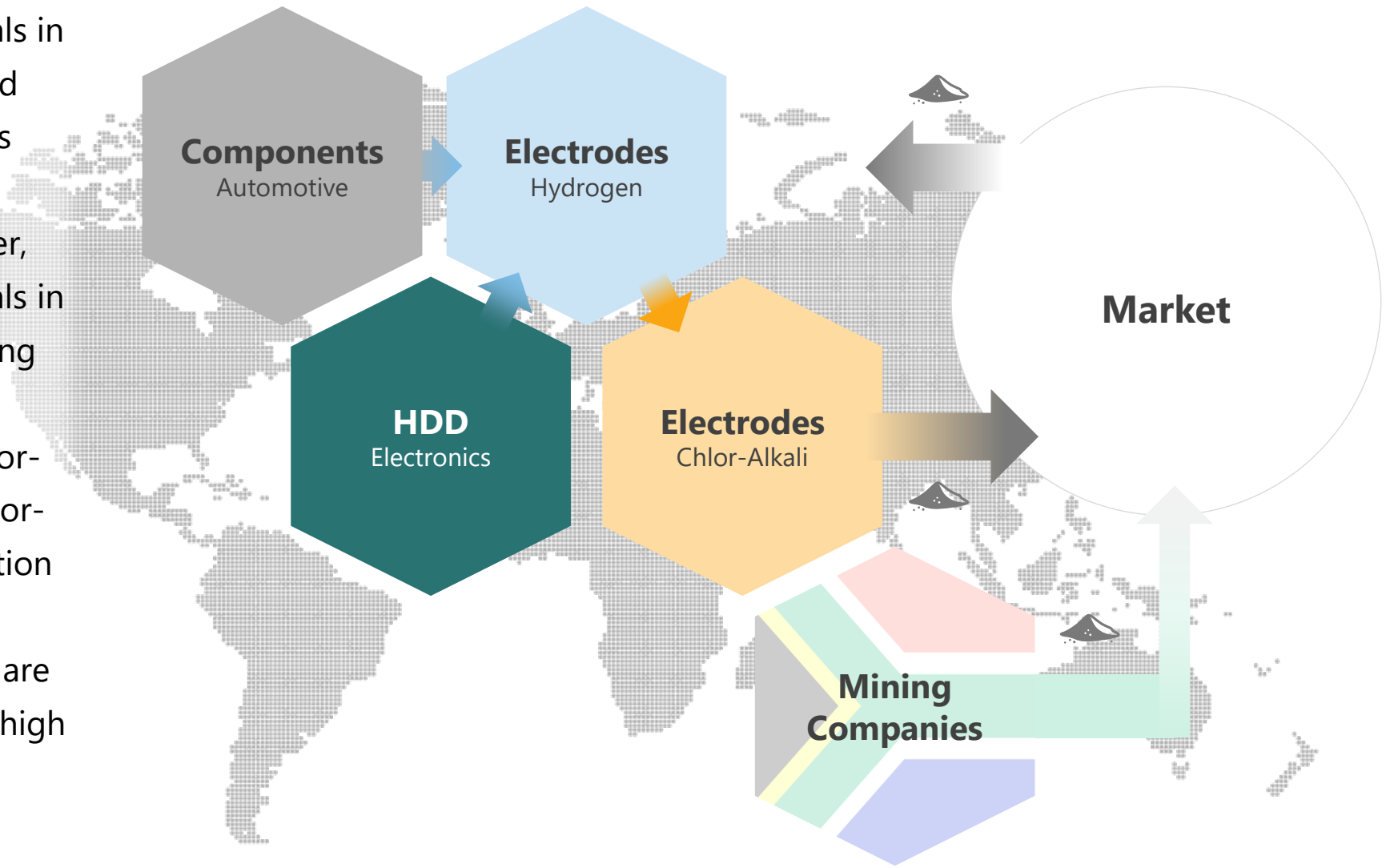
almost

40%



AlkaNexus® Metal Recycling

High demand of precious metals in automotive and electronics, and rising demand in hydrogen, has driven recycling companies to enter hydrogen sector. However, due to the lack of used materials in hydrogen today, they are shifting to chlor-alkali industry. Once recycled metals flow out of chlor-alkali and enter the market, chlor-alkali will face intense competition from well-funded sectors. Meanwhile, mining companies are cutting production because of high costs, leaving these metals vulnerable to hoarding.



AlkaNexus® Metal Recycling

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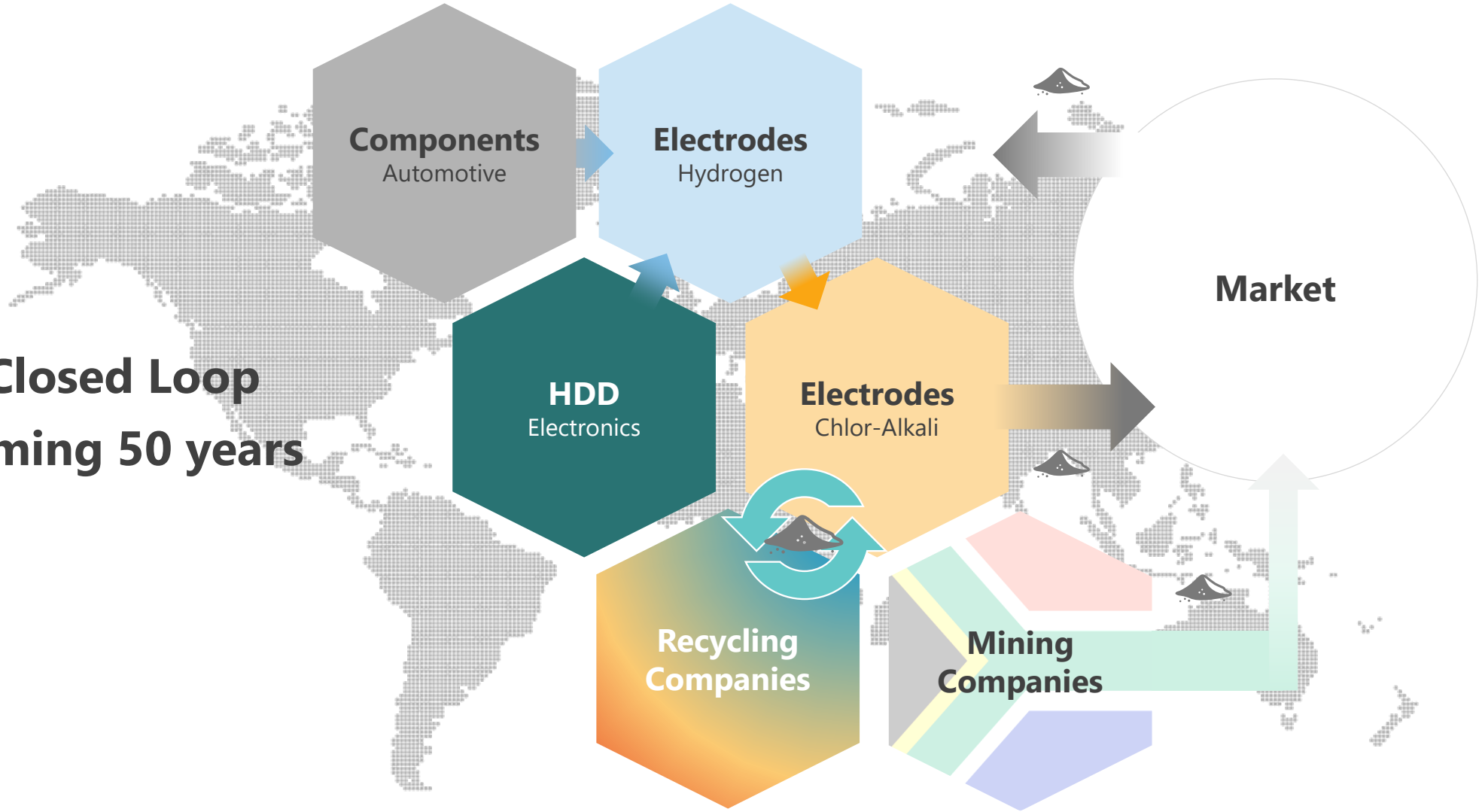
"**DENKAI**" Closed Loop
for the coming 50 years



AlkaNexus® Metal Recycling

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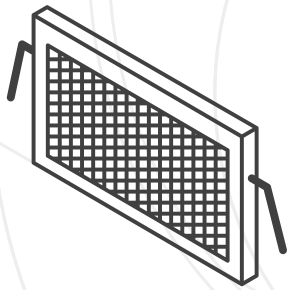
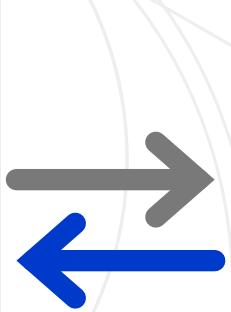
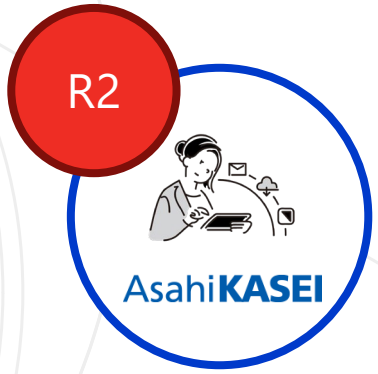
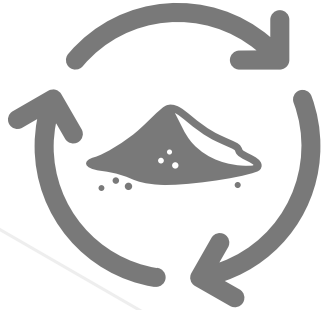
Start

- Propose cells/electrodes replacement proactively in a data-driven way
- Measure coating residue on electrodes by XRF spectrometer
- Propose estimated value of recovered metals from cells/electrodes
- Collect used cells/electrodes from your site









Return

- Pay back based on actual value of recovered metals (12 mo. since the start)
- Pay back based on estimated value of recovered metals immediately
- Pay back with a price discount on new cells/electrodes or with products
- Issue certificates for recovered rates of metals and CO_2 reduction amounts

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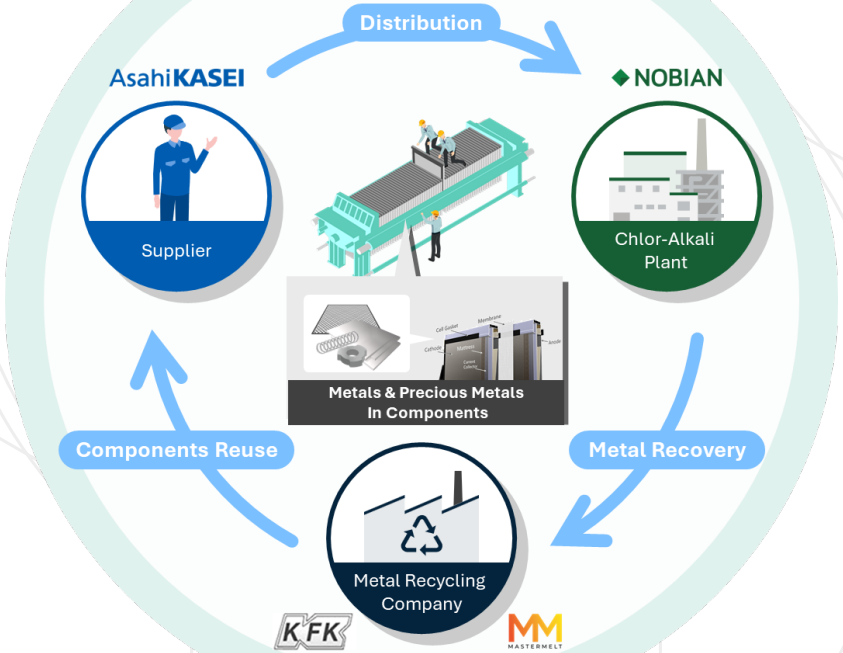

Pursuing **the prosperity of Chlor-Alkali industry** for the next 100 years and the implementation of AlkaNexus philosophy under the motto "DENKAI AS ONE“, we have embarked on the challenge of establishing **metal circularity (recycling cells and electrodes) within our industry** together with our industry partners.

Asahi Kasei, Nobian, Furuya Metal, and Mastermelt commenced joint project to recycle metals from electrolyzer components | 2025 | News | Asahi Kasei

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04 Summary

Summary

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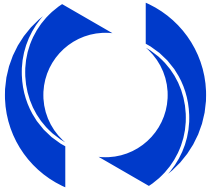
1

Asahi Kasei will contribute to our customers by expanding our business into the circular economy sector under the concept of **AlkaNexus**.

2

Metal recycling, which embodies the concept of “Recycle”, will promote the stable supply of caustic soda and chlorine through the closed-loop system.

DENKAI AS ONE



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