



**“ IF WE ARE SERIOUS ABOUT CREATING
A SUSTAINABLE SOCIETY, WE NEED TO
USE THE RAW MATERIALS WE ALREADY
HAVE, OVER AND OVER AGAIN”**

**WELCOME TO
THE CIRCULAR
ECONOMY**

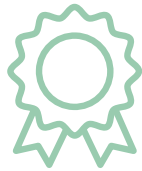
**A WHOLE
NEW ATTITUDE
TOWARDS WASTE**

**RAGN-SELLS GROUP
SUSTAINABILITY REPORT 2024**

RAGN  SELLS

IMPORTANT NUMBERS

Lars Lindén, CEO of Ragn-Sells Group, was awarded the prestigious prize



Sustainable Leadership 2024

Over **2,750**
employed in the
Ragn-Sells Group



Our new flat glass recycling facility in Sweden can recycle up to
10 tonnes
of flat glass per hour



Decision to invest
1.8 billion SEK
in two new phosphorus recovery plants
based on the Ash2Phos technology

10 million EUR
in EU support for the
AquaPhoenix project

Ragn-Sells Estonia is building a demonstration plant to recover raw materials from oil shale ash.

With **600 million tonnes** of ash left from energy production in Estonia, this project has the potential to meet the entire EU demand for critical raw materials such as magnesium and silica

Since 2023, we have reduced CO₂e emissions from our own operations by more than

6,100 tonnes



HIGHLIGHTS

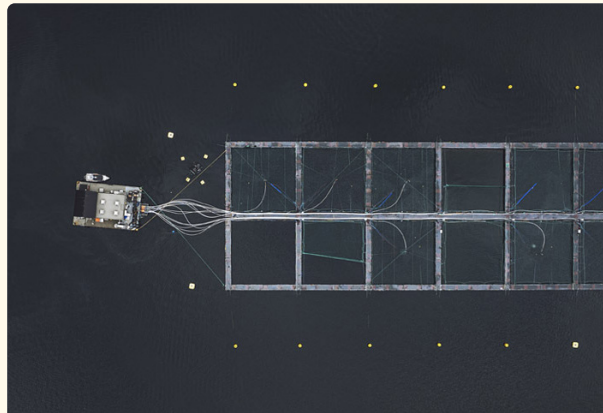
Green light for world's first phosphorus recovery plants

In 2024, Ragn-Sells and its innovation company EasyMining received the green light from the authorities to move forward with the establishment of the world's first phosphorus recovery plant based on the Ash2Phos technology in Schkopau, Germany. Ragn-Sells also received the environmental permit approval for a second Ash2Phos plant to be located in Helsingborg, Sweden.



“By turning our wastewater treatment plants into resource recovery plants, we can meet Europe's phosphorus needs in a more sustainable way.”

Jan Svärd, CEO at EasyMining



Leading the way in sustainable aquaculture

Ragn-Sells Havbruk, a subsidiary of Ragn-Sells Norway, won the 2024 SIVA Award for its pioneering work in collecting and recovering phosphorus from fish sludge. The award is an annual recognition of small and medium enterprises that are driving green transformation.

“This recognition shows that our efforts in sustainable aquaculture are making a difference, both for the environment and for Norwegian industry.”

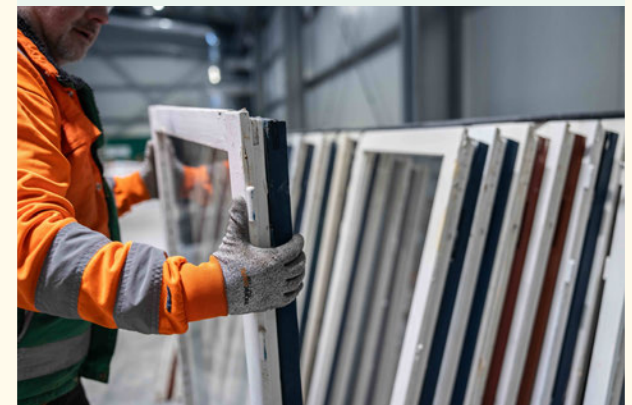
Vidar Svenning Olsen, CEO of Ragn-Sells in Norway

Inauguration of Sweden's first facility for flat glass recycling

To help close the loop on building materials, Ragn-Sells has developed a new process to recycle flat glass for windows. In 2024, we inaugurated Sweden's first flat glass recycling plant, enabling the production of high-quality flat glass with a significantly lower environmental impact.

“Flat glass recycling is an important contribution to increasing circularity in the emission-intensive construction sector.”

Christina Stålhandske, materials expert at Ragn-Sells Sweden



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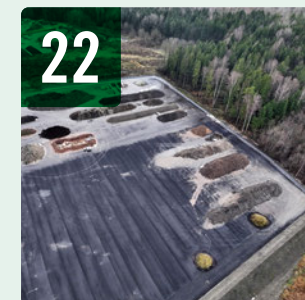
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INFORMATION IS CURRENCY

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CLOSING THE FISH
POOP LOOP

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THIS IS RAGN-SELLS

“WE ALL NEED TO
TAKE THE LEAP TOWARDS
CIRCULARITY, AND WE
NEED TO DO IT NOW”



WORDS FROM THE CEO

On a planet where the hunt for raw materials from receding traditional sources causes enormous harm, there is still great hope. Ragn-Sells is committed to the transition to a circular economy with waste as a reliable source of high-quality materials.

The world is quickly becoming less circular.

According to the UN, only 7.2 percent of the global economy runs on reused materials. Despite increased recycling, that figure is lower than five years ago. This might seem contradictory but is caused by a much faster increase in the extraction of virgin materials.

Every year, the world uses 100 billion tonnes of raw materials. The same UN report projects that demand will reach a staggering 160 billion tonnes within just 35 years. It is also very clear on what that means: Our planet cannot take it.

More than half of all climate emissions already stems from the unsustainable extraction and processing of virgin materials.

Add another 60 billion tonnes and the picture looks very bleak. This is what we are up against. Still, we are hopeful.

In fact, just doubling the circular share of the global economy would mean a very good chance of keeping global warming below the targets of the Paris Agreement.

For Ragn-Sells, the key to being sustainable and profitable is a core business which strikes at the root cause of several critical global challenges: The unsustainable extraction of virgin raw materials.

In 2024, we opened our first facility for recycling flat glass. This resource usually ends up in landfills, while the production of new windowpanes keeps depleting the finite

deposits of silica sand. As construction causes a very large share of global emissions, we look forward to providing this crucial sector with more high-quality recycled materials.

We also received environmental permits for two facilities which will produce phosphorus from sewage sludge. Sourcing this key agricultural nutrient from local waste will remove tens of thousands of tonnes of emissions and reduce import dependence from countries like Russia.

I often say that it's every company's damn duty to have circular ambitions. In 2024, we finally saw that lawmakers agree.

Several new EU legislative packages require businesses to take a long, hard look at their

value chains. How does the sourcing of their raw materials impact the planet and its people?

As businesses rebuild their value chains, we stand ready with circular solutions, recycled raw materials with a minimal carbon footprint, innovative power, and arms open to new partnerships. At the same time, we work every day to reduce our own footprint.

So, while circularity has been on a downward slope, there are plenty of reasons for hope. We invite you to join us and help speed up the transition towards a circular society even more.

Lars Lindén
CEO of Ragn-Sells Group
Stockholm, March 2025

The Ragn-Sells Group

LEADING THE TRANSFORMATION TO CIRCULARITY

OUR STORY

Ragn-Sells is a family owned, third generation company, originating from 1881. Every generation since, has kept a vision of a sustainable society at the heart of developing the company.

“ I WOULD VERY MUCH LIKE TO BELIEVE THAT THE WORLD IS TOO BEAUTIFUL TO PERISH.”

Ragnar Sellberg, founder of Ragn-Sells

The Ragn-Sells group is a privately held corporate group with operating companies in four countries. Since 1966, we have been involved in waste management, environmental services, and recycling. We collect, treat, detoxify, and recycle waste and residual products from businesses, organisations, and households.

Over the years, Ragn-Sells has transformed from being a traditional waste management company to a thought leader developing advanced recycling methods and driving the transition to a circular economy.



Group facts 2024

2,760
Employees



114
Sites

Sweden / Norway / Denmark / Estonia

Markets

8,860 MSEK
Sales

4.9 million tonnes
Material treated

THE RATIONALE FOR CIRCULARITY

According to the UN, the ever-increasing extraction and processing of virgin raw materials is responsible for half of all climate emissions, 90% of biodiversity loss, and 90% of water scarcity in the world.

Transitioning to a circular economy is crucial to our ability to mitigate climate change, the depletion of our natural resources, and the risk of overshooting planetary boundaries.

This means that creating new circular material flows, where we make use of the

resources we already have, over and over again, is the best way to bring back planetary stability.

Ragn-Sells' three business areas – **Recycling**, **Treatment & Detox**, and **New Value Chains**, are all based on a circular economy rationale.

If we are serious about creating a sustainable society, we have to start treating waste for what it really is: the only truly sustainable source of raw materials.

LEADING THE TRANSFORMATION

Ragn-Sells' vision, mission, and brand promise drive our ambition to lead the transformation towards a circular economy.

Vision

We want to be living proof that caring for the earth and business go hand in hand.

Mission

Ragn-Sells wants to lead the transformation towards a circular society, where we care for the environment, counter climate change, and help communities prosper.

Brand promise

We work every day to bring more resources back into the production cycle in a secure way. We aim to be at the forefront of circular solutions that make it easy for our customers to help create a sustainable and safe society.

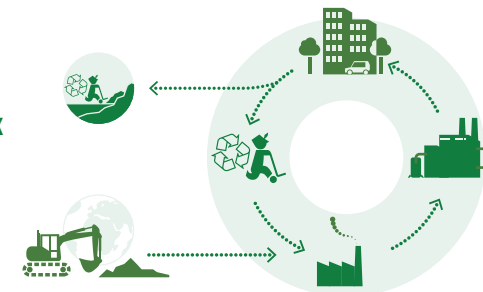
Recycling

Securing control of the flows of Commodity materials



Treatment & Detox

Solving the 'Tricky waste problems'



New Value Chains

Establish Joint Ventures via cross-segment integration



ENTERING THE CIRCULAR ECONOMY

“ IF THE GLOBAL ECONOMY
BECOMES JUST TEN PERCENTAGE
POINTS MORE CIRCULAR, WE STILL
HAVE A VERY GOOD CHANCE OF
ACHIEVING THE CLIMATE GOALS”



IN A CIRCULAR ECONOMY, INFORMATION IS CURRENCY

In a circular economy, waste serves as our main source of valuable resources. But to recycle waste back into society as high-value raw materials, we need information about its content and quality. To replace more virgin raw materials with circular alternatives, it is time to put content labels on waste.



— Imagine walking into a grocery store and seeing a shelf of tins, all without labels. You do not know whether a particular tin contains pineapple or peas. Would you buy it? What would you pay for it? The same applies to raw materials, says Anders Kihl, Chief Strategy Officer and R&D Director at Ragn-Sells Group.

To build a more sustainable society, we need to reuse the materials we already have. But to recover resources from waste in a productive way, we need to know its content and quality. Where did it come from? What substances does it contain? And what about the quality?

— Many industrial processes are expensive and complicated, which requires a lot from the quality of the feedstock used. To replace virgin materials with circular alternatives, we need to know the exact quality requirements

of the raw material — and have enough information about the waste stream to be confident that we can meet them, says Anders.

Flat glass recycling is a clear example of the importance of transparency. In 2024, Ragn-Sells inaugurated the first flat glass recycling plant in Sweden. Through new processes and partnerships across the value chain, waste glass can substitute the virgin sand needed to make new glass windows. The ability to share information both upstream and downstream is key here, as the quality and purity requirements for raw materials in flat glass production are meticulous.

— We work hard to ensure that we always know the quality of the waste we use. Unfortunately, we also need to know what is legally possible, as obsolete regulations make it expensive, complicated, and sometimes

even illegal to recover resources from waste, says Anders.

For example, Ragn-Sells can produce recovered phosphorus from wastewater that is of higher quality and purity than the conventional product. Still, the EU prohibits its use in animal feed.

— In this case, we have enough information to offer a high-value product with the potential to replace virgin raw materials from deeply problematic sources. But the EU's outdated view on waste is preventing us from bringing it to market, says Anders.

Stricter sustainability reporting and value chain transparency requirements in the EU will hopefully improve access to information on material flows and waste streams. But to really accelerate the circular transition,

Anders believes that a fundamental change in mindset is needed.

— We need to completely change the way we look at waste and embrace it as our main source of sustainable raw materials, concludes Anders Kihl.

“WE WORK HARD TO ENSURE THAT WE ALWAYS KNOW THE QUALITY OF THE WASTE WE USE.”

Anders Kihl, Chief Strategy Officer and R&D Director at Ragn-Sells Group

BUSINESS WITHIN PLANETARY BOUNDARIES

The linear economy is putting unprecedented pressure on our planet. The ever-increasing extraction and processing of virgin raw materials is causing climate change, biodiversity loss, and water stress. Circular business models can change this and protect planetary stability.

— The research is clear. We simply cannot continue to do business the way we have in a linear economy. The planet and the people

Ragn-Sells pledge

To counter climate emissions, biodiversity loss, and water scarcity, Ragn-Sells pledges to:

- Strengthen our efforts to recycle materials and bring them safely back to the market.
- Introduce more circular solutions that avoid CO₂e emissions in multiple value chains.
- Avoid using fossil fuels in our own operations.

on it cannot take it. It's time for the era of circularity, says Pär Larshans, Chief Sustainability Officer, Ragn-Sells Group.

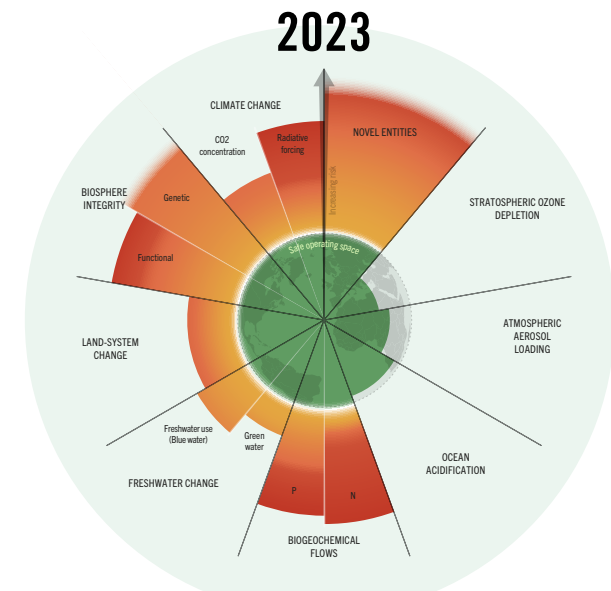
To assess the impact of human activity, researchers frequently turn to the planetary boundaries' framework. The framework identifies nine critical processes for a stable earth system and defines safe boundaries for human impact. The most recent assessment of the planetary boundaries concluded that six of the nine limits have been transgressed. This threatens to cause extreme environmental changes that put humanity at risk.

For years, mankind has been mining new raw materials like there's no tomorrow. We now know that the way we extract, and process raw materials is responsible for half of the world's climate emissions, as well as 90% of biodiversity loss, and 90% of water stress.

— Circular business models, where we reuse the resources we already have over and over again, with a detoxification step included, are the only way to conduct business within planetary boundaries. Waste is the solution, not the problem, says Pär.

By simply doubling the circular share of production, we can significantly lower the world's climate emissions while reducing our impact on biodiversity and water supplies. To support this shift, Ragn-Sells is committed to leading the transformation to a circular economy and bringing more resources back into the production cycle.

— We contribute by developing advanced circular solutions that push the boundaries of what can be recycled, by sharing our knowledge with everyone and influencing policymakers at the highest political level, says Pär Larshans.



The Planetary Boundaries

The planetary boundaries provide a framework for understanding and assessing the impacts of human activities on the planet. The framework identifies nine processes that are critical for a stable earth system and defines safe limits for human impact. Within the boundaries, humanity can continue to thrive, but beyond these limits, we risk irreversible environmental change.

The framework was first proposed in 2009 by Swedish professor Johan Rockström and a group of 28 internationally renowned scientists. The most recent assessment of the planetary boundaries, conducted in September 2023, shows that six of the nine limits have been crossed.

BUILDING OUR PEOPLE

Promoting
diversity is key

“ IN EVERYTHING WE DO
WE STRIVE TO CREATE VALUE.
FOR PEOPLE, NATURE,
AND THE BUSINESS”

HOW TO FEED 10 BILLION PEOPLE

Soon, 10 billion people will call our planet home. For everyone to have enough to eat, we need to change the way we produce food. By turning every wastewater treatment plant into a resource recovery plant, we can provide the nutrients agriculture needs to feed a growing population in a sustainable way.

In just 30 years, the world's population is expected to increase by 2 billion people. By the turn of the century, we will peak at around 10.4 billion. By then, seven out of ten people will live in a city somewhere — a seismic shift from today, when half the world still lives in the countryside. That means less farmland and more demand for food.

But how are 10 billion people going to eat?

Currently, the global food system causes enormous emissions, while the unsustainable production and use of agricultural nutrients such as phosphorus, nitrogen, and potassium harm both people and planet. At the same time, we are missing out on a more sustainable

source of these precious nutrients, simply because of the way we view waste.

Our wastewater has enormous potential to be a sustainable source for these nutrients. But many innovative ways to tap that source are practically impossible, financially unviable, or simply illegal - all due to outdated attitudes towards waste. We need to change that.

Transforming the food system is a complex task that requires a wide range of actors to work together. Ragn-Sells' contribution is clear: we create circular solutions for key nutrients.

Through technologies developed by our innovation company EasyMining, we can provide

farmers with high-quality nutrients without unnecessary climate emissions. We can produce clean phosphorus and capture nitrogen from sewage. We can turn fish poop from aquaculture into energy and fertiliser. And we can extract potassium from the ashes of waste incineration.

As you will see in this report, during 2024, we have taken major steps towards scaling up these technologies for commercial use.

But for these solutions to reach their full potential, we all need to start seeing every wastewater treatment plant as a resource recovery plant. A factory for raw materials from urban waste, not the end of the pipe

The 10 Billion Challenge Initiative

The 10 Billion Challenge Initiative aims to gather businesses, innovators, and entrepreneurs from the entire global food system and showcase the solutions they bring to the table.

We want to accelerate change, scale circular models, and create synergies that reward innovative companies.

Sign up at [Changing food together | The 10 Billion Challenge](#)

where we handle the dirty stuff to keep cities from smelling bad.

This mind shift creates enormous opportunities. Expanding megacities can become urban mines, containing a nearly endless supply of safe nutrients that have already been sourced.

We also know that we bring only one piece of the puzzle. This is why we keep working to gather stakeholders from the entire global food system in our 10 Billion Challenge Initiative.

Join us in our ambition to find more answers to how we feed 10 billion people on our planet. It is entirely possible. If we do it together. ■



SHARING KNOWLEDGE

Ragn-Sells strives to be a thought leader and a role model in the transformation of our society towards circularity. This impacts everything from business models to continuous skills training and knowledge sharing with all our stakeholders.

Investing in a wider knowledge base about the benefits and opportunities of a circular economy where waste is a source of sustainable raw materials, is not just a strategic business move – it is a commitment to building a culture of innovative thinking.

Being a thought leader means making sure that we walk the talk. That includes investing in people, in competence, new thinking, and really integrating what a circular economy and a new attitude towards waste means. Both for our business and for the world.

– For us, skills training is not just about learning new jargon or checking a yearly training box for the sake of checking a box. It's about empowering our people to be agents of change. Spokespersons for a circular future, says Cecilia Zarbell, Brand and Communications Director at Ragn-Sells Group.

During 2024, we developed a new e-learning aimed at building a common understanding for why we need a new perspective on waste. By investing in people, we want to drive the transition to a circular society by enabling the

development of new insights, skills, and working methods needed in the circular economy.

An important purpose with the e-learning is to nurture a sense of ownership and pride in the organisation where everyone knows that they contribute to something bigger than the bottom line. We are all part of a mission to redefine how we use resources and protect our planet.

But we can not change the world ourselves. For real change, we need to impact the entire

value chain. That is why we also invite our customers and partners to participate in the e-learning.

– We see that when our customers grasp how our actions can create synergies in the strive towards circularity, they join us in taking ownership of our shared future. There is still time to change the way we use the world's resources – if we do it together, says Cecilia Zarbell.

“Changing the way the world sees waste, is a sizeable task. But a necessary one. For us, sharing knowledge of what is possible is part of being a thought leader in the circular economy.”

Cecilia Zarbell, Brand and Communications Director at Ragn-Sells Group



EMPOWERING COMPLIANCE THROUGH-OUT THE VALUE CHAIN

Compliance is essential to maintain trust as a thought leader in the circular economy. Being compliant means navigating a complex web of regulation that affects business operations while empowering employees and stakeholders to do the right thing.

— As many businesses right now, we are facing a multitude of new regulatory requirements more or less at the same time. We are dedicated to updating our organisation with the infrastructure needed, says Fanny Hagbom, Head of Compliance at Ragn-Sells Group.

Ragn-Sells strongly welcome increased regulation on value chain transparency such as the EU's Corporate Sustainability Reporting Directive (CSRD).

— Transparency requirements in the value chain is good for all serious business actors. All businesses have challenges in their value chains. What matters is being open about

these challenges and efforts to manage them, says Fanny.

During 2024, Ragn-Sells initiated a comprehensive process to update our Code of Conduct to be better suited for a new regulatory landscape. The updated Code of Conduct will be an umbrella for all compliance initiatives and is planned to be launched in 2025.

— The main purpose with the updated Code of Conduct is to clarify to all stakeholders what kind of company we are, and how we do business. I hope it will instil a sense of pride in the organisation and be an efficient tool for everyday situations, says Fanny.

“Compliance is about ensuring a licence to operate – and about creating business opportunities. Companies that identify and address their sustainability challenges will be winners long-term”

Fanny Hagbom, Head of Compliance at Ragn-Sells Group



During 2024, the compliance function has developed from focusing on internal processes needed to be regulatory compliant, towards including customer related work and the entire value chain. Local contact points for compliance have been established on all markets.

— For me, the most exciting thing about compliance is that it is truly about change management. Most people want to do the right thing but are unsure how to navigate complex regulations. The job of the compliance team is to support and empower our colleagues and business partners to understand and follow new regulation, says Fanny.

Moving forward, focus will be on proactive, continuous, and long-lasting implementation of the updated Code of Conduct in order to integrate the guiding principles into all aspects of the business. In addition, EU-regulation on data protection, such as cybersecurity, GDPR, and AI, will be even higher up on the agenda.

— There really is no conflict between high sustainability ambitions and doing more business. The companies we partner with are responsible and sustainable. Together we can learn from each other's infrastructure and know-how; while developing the way we do business, says Fanny Hagbom.

BUILDING THE PLANET

Increased
transparency is
fundamental

“WE MUST CHANGE OUR WAY
OF LIVING TO BE WITH NATURE,
NOT AGAINST NATURE”

FROM TREATMENT PLANTS TO RESOURCE RECOVERY PLANTS

Untreated wastewater is a major threat to our health and the environment. But managed sustainably, our sewers are a rich source of valuable raw materials. It is time to turn our wastewater treatment plants into resource recovery plants.

Today, the discharge of untreated wastewater into waterways is a growing health and environmental threat. But managed sustainably, our sewers can be a rich source of valuable resources, including clean water, energy, and nutrients.

— Left untreated, wastewater poses a significant risk to people and the environment. But as well as removing the bad stuff from wastewater, we need to recover as much of the good stuff as possible. So, the concept of a resource recovery plant is not so much a new label as it is a shift in mindset, says Pär Larshans, Chief Sustainability Officer at Ragn-Sells Group.

One of the most important resources found in wastewater is phosphorus. Used in animal feed and fertilisers, this nutrient is so vital to our ability to produce food that the European Union has included it in its list of critical raw materials. With very limited production from domestic phosphate mines, Europe is heavily dependent on imports from highly problematic sources outside the EU.

The same is true for many other essential materials. Today, Europe consumes about 25%–30% of the world's raw materials but produces only 2–3%. To increase self-sufficiency, the EU has identified increased recycling of critical raw materials as a key

strategy. Through the Ash2Phos technology, developed by Ragn-Sells innovation company EasyMining, we can contribute to this aim by extracting clean, high-quality phosphorus from sewage sludge.

— To feed a growing planet in a sustainable way, we simply must break our dependence on virgin phosphorus. With the Ash2Phos technology, we offer a circular solution to reduce Europe's phosphorus supply challenge. That is, if the EU allows it, says Anders Kihl, Chief Strategy Officer and R&D Director at Ragn-Sells Group.

Currently, the EU bans the use of phosphorus recovered from waste in animal feed, even

though the Ash2Phos product is of higher quality and purity than virgin phosphorus. Like much waste legislation, the ban reflects the so-called waste hierarchy, a principle that sees waste as a problem to be minimised rather than a valuable resource.

— The waste hierarchy belongs in the dustbin of history. If we are to find circular solutions to Europe's critical raw material needs, Europe must replace the waste hierarchy with a sustainable resource supply strategy. Transforming wastewater treatment plants into resource plants should be a cornerstone of such a strategy, says Pär Larshans. ■

“As well as removing the bad stuff from wastewater, we need to recover as much of the good stuff as possible.”

Pär Larshans, Chief Sustainability Officer at Ragn-Sells Group



TAKING SCIENCE-BASED CLIMATE ACTION

The ever-increasing extraction and processing of natural resources is putting increased pressure on our planet. Climate change, biodiversity loss, and access to water are some of the main consequences. Increasing circularity is the easiest solution.

— Today, only 7.2% of the global economy is considered circular. By simply doubling the circular share of production, we can significantly reduce global climate emissions while lessening our impact on biodiversity and water supplies, says Miranda Jensen, Head of Group Function Environment at Ragn-Sells Group.

Ragn-Sells is committed to reducing the climate impact from our own operations and value chain while leading the transformation towards a circular economy. We do this by developing circular solutions with the potential to significantly reduce the demand for virgin materials and thereby avoid emissions

caused by others, and by continuously advocating for a circular transition.

In order to accelerate these efforts and align our business with science-based climate targets, Ragn-Sells started in 2024 the process to become members of the Exponential Roadmap Initiative (ERI), a collaborate climate initiative set to half global carbon emissions by 2030 and become net zero by 2040.

— Working with a science-based climate initiative like ERI is an excellent fit for Ragn-Sells. It supports both our efforts to reduce emissions within our own operations and value chain and to set clear criteria for circular

solutions that contribute to emission avoidance, says Miranda.

Ragn-Sells pledge to by 2030 cut climate emissions (CO₂e) from own operations with 50% compared to 2019, and to contribute with solutions that ensure that at least 2 million tonnes of emissions (CO₂e) per year are avoided. Through the process of joining ERI, these goals will be developed and challenged further. Moving forward, the focus for climate action connected to our own operations will remain on reducing emissions from landfills and transport. ■

Exponential Roadmap Initiative (ERI)

The Exponential Roadmap Initiative (ERI) is a climate initiative that supports companies in taking science-based climate action by providing frameworks, tools, and collaborations in four key pillars.

1. Reducing own emissions

ERI helps companies set science-based targets aligned with the 1.5°C framework and provides guidance on reducing emissions in line with the goal of halving them every decade.

2. Reducing value chain emissions

ERI promotes transparency through methods for measuring and reporting on Scope 1, 2, and 3 emissions, and encourages companies to collaborate in the value chain to optimise resource use.

3. Scaling climate solutions

ERI identifies and highlights innovative solutions, including circular economy practices, and supports the scaling of these solutions through cross-industry collaboration. By focusing on this we will enable reduced climate emissions in other value chains than our own. This is referred to as “avoided emissions” in society.

4. Accelerating societal transformation

ERI engages companies in policy dialogues and initiatives that drive systemic change and encourages communication and advocacy to inspire more stakeholders to take action.

ENABLE AVOIDED EMISSIONS BY SCALING CIRCULAR SOLUTIONS

In 2024, global warming exceeded 1.5°C above pre-industrial levels for the first time. A stark reminder of the growing urgency to reverse emission trends. One of the most important solutions is to maximise the use of existing materials at both societal and business levels.

— Our treatment and recycling methods, and circular solutions enable materials to re-enter society. This helps avoid emissions from virgin raw material extraction, says Miranda Jensen, Head of Group Function Environment at Ragn-Sells Group.

The Paris Agreement's 1.5°C target is in jeopardy. According to the EU's climate service, Copernicus, 2024 was the warmest year on record, with an average temperature 1.6°C above pre-industrial levels — making it the first calendar year to surpass the 1.5°C threshold.

The production and consumption of goods, combined with the extraction and transfor-

mation of virgin resources, account for half of the world's climate challenges. To keep global warming below 1.5°C, resource management must be prioritised. Transitioning to a circular economy, where materials are reused repeatedly, is the most effective way to deliver goods and services without worsening the climate crisis.

— Reducing emissions from our own operations is a priority and a hygiene factor, but the biggest impact we can have is in the value chain. Promoting circular material flows and constantly innovating new scalable circular solutions, is our best way of contrib-

“By simply doubling the circular share of production of raw materials and goods, we can significantly lower the world's climate emissions.”

Miranda Jensen,
Head of Group Function
Environment at Ragn-Sells Group



uting to reduced climate emissions, says Miranda.

Ragn-Sells has pledged to contribute with circular solutions that ensure that by 2030 at least 2 million tonnes of emissions (CO₂e) per year are avoided. This ambitious goal requires collaborative efforts and increased transparency across material value chains.

Partnerships, such as joining the climate initiative [Exponential Roadmap Initiative](#) (ERI) is one important way to achieve increased collaboration. ERI's clear criteria for circular solutions will be an important tool in scaling Ragn-Sells' efforts to ensure avoided emissions.

In addition, sustainability regulation, such as the EU Corporate Sustainability Reporting Directive (CSRD), raises transparency standards and accelerates the sustainability agenda.

— To achieve genuine circularity, we need better insights into all material value chains. The transparency that follows from sustainability reporting standards is key. As a recycler, detoxifier, and producer of recycled raw materials, Ragn-Sells is uniquely positioned to help partners both upstream and downstream to reduce their emissions, Miranda Jensen concludes.

FLAT GLASS: A CRYSTAL-CLEAR CASE FOR A MORE CIRCULAR FUTURE

In September 2024, Ragn-Sells inaugurated Sweden's first facility for flat glass recycling. Using innovative processes and optical sorting technology, the plant is a major milestone in our efforts to close the loop on building materials and secure flat glass for the future.

The building and construction sector is responsible for more than a third of global greenhouse gas emissions. Many of the materials used in construction also come from finite sources.

To reduce emissions and help close the loop on building materials, Ragn-Sells has developed a new process to recycle flat glass for windows. In 2024, the company inaugurated Sweden's first flat glass recycling facility in Örebro.

— Today, most old flat glass ends up in landfills, which is both a missed opportunity for

lowering emissions and a waste of valuable resources. The new flat glass recycling plant in Örebro is a significant step forward in terms of both material recovery and carbon emissions reduction, says Christina Stålhandske, materials expert at Ragn-Sells Sweden.

Flat glass is used everywhere in society, from windows and cars to solar panels and monitors. But making flat glass from scratch is an energy-intensive process that affects both the environment and the climate. The main ingredient is a type of sand known as silica, a finite resource that is nearing depletion.

“Flat glass recycling is a clear example of how a new process allows us to produce a material of a high enough quality to replace the use of virgin silica sand, but at a significantly lower environmental cost.”

Christina Stålhandske,
materials expert at Ragn-Sells
Sweden



— In a circular economy, waste is our primary source of raw materials. By recycling flat glass, we can save up to 30% of the energy required to produce new glass, while preserving critical resources and securing flat glass for the future, says Christina.

With a capacity to process up to 10 tonnes of flat glass per hour, the facility in Örebro can meet the recycling needs of all of Sweden and large parts of Norway. To drive behavioural change in the industry, Ragn-Sells works closely with for example property owners to ensure that as much waste glass as possible is properly sorted and collected for recycling.

In Örebro, the glass is separated by colour and quality using advanced optical sorting technology, before it is sent to our partner Saint-Gobain to be used in the production of new flat glass.

— In the manufacturing of flat glass, there are strict requirements regarding the purity of the raw materials. Flat glass recycling is a clear example of how a new process allows us to produce a recycled material of a quality that can be used in the production of new flat glass, but at a significantly lower environmental cost, says Christina Stålhandske. ■

MATERIAL BANKS DETOXIFY AND SECURE INNOVATION

The transition to a circular economy requires that the materials we recycle are clean and safe. Secure landfills are an important tool in the detoxification of society. They allow us to prevent the spread of harmful substances, while recovering materials that may prove valuable in the future.

If we are serious about creating a sustainable society, we need to use the materials we already have, over and over again. But to achieve circularity, the raw materials we put back into society must be clean and safe. That is why detoxification is at the heart of Ragn-Sells' operations.

— We are constantly seeking new and improved ways to deal with polluted and hazardous waste. But we also take care of waste for which there is currently no detoxification solution by storing it in secure landfills. The landfills prevent toxic substances from spreading in society, while allowing us to

preserve resources that could become valuable in the future, says Cecilia Ekvall, Business Developer and PFAS coordinator at Ragn-Sells.

As detoxification technologies continue to advance, society cannot afford to lose potentially valuable raw materials. Secure landfills therefore serve as material banks, safeguarding these resources for future innovation.

This is particularly critical for waste contaminated with highly persistent and toxic chemical compounds, such as PFAS, for which large-scale, effective detoxification solutions are not yet available.

“In a circular society, minimising waste is not the goal, as waste is the primary source of raw materials.”

Cecilia Ekvall,
Business Developer and PFAS
coordinator at Ragn-Sells



— To detoxify society in the long-term, we must stop the inflow of harmful substances by banning all non-essential uses of toxic chemicals such as for example PFAS. At the same time, secure landfills are important to be able to manage materials that are already contaminated, says Cecilia.

The ability to effectively detoxify society is hampered by the so-called waste hierarchy that underpins EU legislation and policy. According to the waste hierarchy, the focus should be on reducing waste and sending it to landfill only as a last resort.

However, a waste management approach based on minimisation, rather than recycling, risks leading to the loss of valuable raw materials and the spread of harmful substances.

— In a circular society, minimising waste is not the goal, as waste is the primary source of raw materials. Instead, the overall aim should be to reduce the unsustainable extraction of virgin resources by reusing the materials we already have, many times over, says Cecilia Ekvall.

Väätša landfill:

COMMITTED TO BUILD A TOXIC-FREE AND CIRCULAR SOCIETY

In waste management, landfill has traditionally been seen as a last resort. But in a circular economy, landfills are essential as a means of detoxifying society and as material banks for future innovation. By acquiring the Väätša landfill, Ragn-Sells is reinforcing its commitment to building a toxic-free and circular Estonia.

— We did not compete for a landfill site in order to be in the landfill business. Rather, the Väätša landfill enables us to expand our treatment and detoxification operations and increase our efforts to return hazardous materials to society, in a safe way, says Kai Realo, CEO of Ragn-Sells Estonia.

Ragn-Sells Estonia has long been a shareholder in Väätša Prügila, the company that operates the Väätša landfill, located in a remote part of central Estonia. In 2024, CEO Kai Realo and her colleagues took the strategic

business decision to acquire the remaining shares in the company, making Ragn-Sells the sole owner of the landfill.

— As partners in the company, we have sought to develop Väätša from a traditional landfill site into a modern treatment and detoxification centre. As the sole owner, we are in an even better position to accelerate this development and increase our contribution to a toxic-free Estonia, says Kai.



“The Väätša landfill, Ragn-Sells Treatment & Detox centre in Estonia, offers an opportunity to increase our efforts to return hazardous materials to society in a safe way.”

Kai Realo, CEO of Ragn-Sells Estonia

At Ragn-Sells, we are always looking for new and better ways to take care of hazardous materials. As our detoxification methods continue to evolve, contaminated waste for which there is no remediation solution today, could become a valuable resource tomorrow.

At a time when the extraction of increasingly scarce virgin resources is harming both people and planet, we cannot afford to lose potentially recyclable materials. Secure landfills therefore act as material banks, preserving these resources for future innovation.

— The Väätša landfill is packed with potentially valuable raw materials. Access to these resources provides a unique opportunity to innovate new circular solutions for hazardous waste. We will now continue to expand our capacity to manage even larger volumes. For example, there are still significant amounts of contaminated soil in Estonia that we want to remediate and return to society, says Kai Realo.

AquaPhoenix:

CLOSING THE FISH POOP LOOP

Sustainable innovation is always best achieved through collaboration. That is why we are excited to join forces with fish farmers, researchers, and industry colleagues on a new EU-funded project to collect and repurpose Norwegian fish sludge. Put simply, to close the loop on fish poop.

— Fish farming plays an important role in the global food system, but the sludge that leaks into the sea around the pens can have a negative impact on the marine environment. By collecting the sludge and turning it into valuable resources, we can reduce the environmental footprint of fish farmers and ease the burden on the fjords, says Vidar Svenning Olsen, CEO of Ragn-Sells Norway.

More than 100,000 tonnes of farmed salmon are produced in the Hardangerfjord in Norway every year. The resulting sludge, made up of uneaten feed and fish waste, contains high

levels of nutrients such as phosphorus and nitrogen. If discharged into the sea, this can lead to eutrophication, but above the surface these nutrients are of great value as agricultural inputs.

— Phosphorus is essential as nutrient for agriculture. But today, Europe is dependent on imports from highly problematic sources. This project is a win-win for both political stability and marine health, says Vidar Svenning Olsen.

The AquaPhoenix project is supported by more than 10 million euros from the EU



“By recovering nutrients and energy from fish sludge, we can increase Europe’s self-sufficiency while reducing the risk of eutrophication. A true win-win for political stability and marine health.”

Vidar Svenning Olsen,
CEO of Ragn-Sells Norway

Horizon Europe programme and brings together fish farmers, researchers, and industry from across Europe. Ragn-Sells’ main contribution is the patented Ash2Phos and Aqua2N technologies, which can be used to recover phosphorus and nitrogen from waste. The technologies have been developed by Ragn-Sells’ innovation company EasyMining, another partner in the project.

The use of these technologies in fish farming is being pioneered by Ragn-Sells Havbruk, a subsidiary of Ragn-Sells Norway, which is

working on the collection and recycling of sludge from the Norwegian fish industry.

— The Havbruk solution shows that it is possible to close the loop on the fish sludge: once the sludge is collected, we first extract the nitrogen before it is digested to produce biogas. After incineration, we can recover phosphorus, which in turn has the potential to be used in new fish feed. This is truly circularity at its best, says Vidar Svenning Olsen. ■

QUALITY THROUGH TRANSPARENCY

Recycling materials so that they can be used over and over again is at the heart of a circular economy. For waste to be used again as a high-quality raw material, it is important to know where it comes from and what other materials it has encountered along the way. Sorting the waste properly ensures this transparency.

One of the biggest challenges in recycling materials is to avoid mixing materials. Mixed waste is much harder to separate in the recycling process and risk lowering the quality of the recycled raw material.

— The most important sorting happens at the very first disposal of waste — placing waste in the right bin. Sometimes, by just moving your hand a decimetre at the sorting station, you make all the difference, says Jonas Wäneskog, Managing Director for Ragn-Sells Recyclables.

For industries dealing with raw material such as steel or other metals, the quality of raw materials is absolutely critical. If material

streams originating from waste are not sufficiently transparent to prove the same level of quality, it is very challenging to compete with virgin raw materials. Especially when current pricing models fail to account for the true environmental cost of virgin materials.

— As a producer, you know exactly what quality you get from virgin raw materials. For recycled materials to be able to compete with virgin raw materials, all actors in the value chain must understand the importance of precise sorting, says Jonas.

Plastics is one example where sorting is common, but not granular enough. Plastic

“I am passionate about sorting! It is the most efficient way to ensure the quality needed for waste to become our primary source of sustainable raw materials.”

Jonas Wäneskog,
Managing Director at Ragn-Sells
Recyclables



waste often arrive in mixed fractions which are difficult to sort, making it challenging to recycle at a sufficiently high quality. The collected plastic cannot compete with the much cheaper plastic from virgin material and becomes worthless.

— Ideally, I would like for the people recycling their plastic packaging from last night's dinner, to think of it as the packaging that will be wrapped around their dinner next week. Perhaps that could trigger the necessary behavioural changes, says Jonas.

The solution to challenges like this lies in understanding the entire value chain — from

product design to recycling. Working with both upstream and downstream customers makes Ragn-Sells uniquely positioned to influence transparent flows of high-quality recycled material.

— Continuously improving our sorting routines means that we can trace materials much better. This means that we can guarantee our upstream customers that the waste they hand over to us is recycled correctly, and our downstream customers a quality level in recycled raw materials that increasingly can replace virgin materials in new production, says Jonas Wäneskog.

BUILDING LONG-TERM PROSPERITY

Promote waste as
the primary source
of sustainable raw
materials

“THE ONLY WAY TO LEAD
THE TRANSITION IS TO
INVEST STRATEGICALLY”

Future Solutions Hub:

PUSHING BOUNDARIES FOR A CIRCULAR FUTURE

As part of Ragn-Sells' ambition to lead the transition to a circular economy, we are constantly exploring new ways to replace virgin resources with circular material flows. In 2024, we significantly stepped up our innovation efforts with the opening of the Ragn-Sells Future Solutions Hub in Umeå, Sweden.

— In order to tackle climate change and build a more sustainable society, we need to reuse the materials we already have. Through our Future Solutions Hub, we are accelerating our innovation efforts to provide even more circular solutions to societal challenges, says Camilla Sonnentheil, Head of Business Development at Ragn-Sells Recycling Sweden.

According to the UN, the extraction and processing of virgin raw materials is responsible for half of all climate emissions. This means that circular solutions that allow us to replace

virgin raw materials with resources recovered from waste are critical to effectively combat climate change.

The aim of the testbed is to explore and evaluate circular material flows that match available waste streams with society's raw material needs. To ensure tangible impact, there is a strong emphasis on applicability and scalability.

— The Future Solutions Hub serves as a catalyst for new processes and partnerships. Together with customers and collaborators

from different sectors, we are developing new circular solutions that make use of the valuable resources in our waste, while helping us to break our harmful dependence on virgin raw materials, says Camilla.

In the first six months that the testbed has been up and running, Ragn-Sells have completed several projects that have delivered concrete results and important insights. These include new methods of separating materials to improve the efficiency of construction waste management, solutions

for reusing organic waste, and innovative sorting technologies to simplify the recycling of complex plastic streams.

In 2025, the Future Solutions Hub team will be working together with the pharmaceutical and retail sectors to address industry-specific challenges.

— The recycling industry is changing rapidly. The testbed is a way of pushing the boundaries of what can be recycled to speed up the transition to a more circular economy, says Camilla Sonnentheil.



“In the Ragn-Sells Future Solutions Hub, we are exploring new circular solutions to help us break our harmful dependence on virgin raw materials.”

Camilla Sonnentheil, Head of Business Development at Ragn-Sells Recycling Sweden

THE PHOSPHORUS REVOLUTION BEGINS IN OUR SEWERS

How can what we flush down the drain make the global food system more sustainable? The answer can be found in the small German town of Schkopau, where the world's first Ash2Phos-plant will recover phosphorus by turning sewage sludge ash into valuable agricultural nutrients.

Phosphorus is an essential part of our food system, used as a nutrient in both animal feed and crop fertiliser.

— In a few decades, the world will be home to 10 billion people. To feed a growing planet, we need a stable supply of phosphorus. But today, phosphorus production leaves a huge environmental and climate footprint. That's why we need to look down our drains for alternative sources, says Anna Lundbom, Managing Director of PGS.

Traditionally mined from phosphate rock, the production of phosphorus causes large emissions and is often linked to environmental and human rights challenges. With only one

single phosphorus mine within its territory, Europe also relies on importing phosphorus from countries like Russia.

— Our sewers offer a rich supply of phosphorus. With our Ash2Phos technology, we can recover this precious nutrient from wastewater and provide farmers with high-quality phosphorus, but without unnecessary climate emissions, says Anna.

The Ash2Phos technology, a patented innovation developed by EasyMining, extracts phosphorus from incinerated sewage sludge. The Ash2Phos plant in Schkopau is the result of Phosphorgewinnung Schkopau GmbH, a joint venture between EasyMining and the

German infrastructure and utility company Gelsenwasser, supported in part by investment from the European Commission's Just Transition Fund.

Detailed planning of the facility and procurement of equipment is now in full swing, with operations scheduled to begin in early 2027. Once up and running, the plant will have the capacity to produce 15,000 tonnes of calcium phosphate per year.

— The Ash2Phos technology allows us to produce phosphorus of higher quality than the same product from traditional mines, but at a lower environmental cost and without

the supply risks and price volatility associated with import dependency, says Anna.

The process of extracting phosphorus from sewage sludge ash also generates marketable by-products such as ferric chloride, sodium aluminate, and silica sand, making the Schkopau plant a sustainable source of valuable raw materials for a wide range of applications.

— A circular future is best shaped together. We are very happy to be on this journey together with Gelsenwasser. The Ash2Phos plant in Schkopau represents a real paradigm shift in phosphorus production, says Anna Lundbom.



“The Ash2Phos plant in Schkopau represents a true paradigm shift in phosphorus production.”

Anna Lundbom, Managing Director of PGS
(Phosphorgewinnung Schkopau)

MARKET



Denmark

Established	2001
Number of sites	7
Number of employees	119
Turnover (ext)	KSEK 655,000

Ragn-Sells in Denmark

MOVING AWAY FROM
TAKE, MAKE, AND DISPOSE

In Denmark, Ragn-Sells’ focus is on closing the loop on one material stream at the time. The business contributes to recycling systems that enable our resources to be used over and over again.

“EVERY DAY, WE PLAY A CRITICAL ROLE IN BUILDING A SUSTAINABLE SOCIETY, REDUCING ENVIRONMENTAL HARM, AND PROMOTING THE EFFICIENT USE OF RESOURCES.”

Charlotte Scott Larsen, CEO of Ragn-Sells Denmark

As landfill is very difficult and almost forbidden in Denmark, the focus for Ragn-Sells in Denmark is reuse and recycling. With a recycling rate of around 83%, they inspire efficient solutions all over Ragn-Sells Group.

– For a successful transition to a circular economy, we need systems that make sure materials are reused or recycled. We have to move away from “take, make, and dispose”, towards a view on waste being the source of sustainable raw materials we need to build a circular economy, says Charlotte Scott Larsen, CEO of Ragn-Sells Denmark.

Different material streams provide different challenges in this endeavour. For example, paper has been a closed loop for a long time, whereas the flow for plastics and textiles can improve tremendously. As part of the solution, Ragn-Sells partners with companies to analyse needs.

– We find out what virgin material they buy, what we can substitute with recycled materials, and how to create a formula that suits theme, says Charlotte.

Promoting a strong safety culture is a priority. In 2024, all production managers have participated in safety training, and during the annual Ragn-Sells Safety Week, CEO Charlotte spent the week visiting all sites and personnel in Denmark.

It has also been a year of future-proofing the business in order to be prepared for new legislative sustainability requirements.



In June 2024, Ragn-Sells Denmark suffered a fire at the headquarter office. Thankfully, there were only material injuries, but this has had a huge impact on the year.

At the top of the agenda for 2025 is getting ready for new national legislation on producer responsibility for packaging. As of now, it is unclear how this will change the market conditions.

– Business development always means risks, but where we see risks we also see opportunities. We stand ready to contribute to the best possible solution for packaging recycling, says Charlotte Scott Larsen.

MARKET

Ragn-Sells in Estonia

WHEN BUSINESS DEVELOPMENT
AND THOUGHT LEADERSHIP
GO HAND IN HAND

In Estonia, Ragn-Sells continues the journey from a traditional waste management company to a driving force for a circular economy. By combining business development and thought leadership, Ragn-Sells in Estonia has taken huge leaps towards commercialising circular solutions and promoting a new approach to waste.

“WE URGENTLY NEED STANDARDS THAT VALUE THE QUALITY OF MATERIALS OVER THEIR ORIGIN.”

Kai Realo, CEO of Ragn-Sells Estonia

— In 2024, we achieved a breakthrough moving from a traditional waste management company into a leader in the circular transition. This means that, in addition to processing and managing waste, we have also started supplying recycled raw materials to support our customers’ production processes, says Kai Realo, CEO of Ragn-Sells Estonia.

The shift that Kai describes includes an increased focus on category management, where all parts of the business work together to find circular solutions to Estonia’s raw material needs.

— We take our role as a thought leader in the circular economy very seriously and are happy to share our knowledge with the media, participate in public debate, and engage in policy development. These efforts have paid off and we now see increasing interest in working with us and being part of the circular movement, says Kai.

Interest in Ragn-Sells’ perspective is also high among decision-makers both nationally

and in the EU. And Kai is clear about the change she wants to see in the future.

— The outdated view on waste is the biggest obstacle to the circular economy. Even if the raw materials we produce from waste are of higher quality than virgin materials, it is often difficult to get them to market. We urgently need standards that value the quality of materials over their origin, says Kai.

Another highlight of the year was the progress of the Oil Shale Ash project, including the investment decision to build a demonstration plant. The project is a groundbreaking effort to recover raw materials from the ash left from decades of burning oil shale for energy.



Estonia

Established	1992
Number of sites	6
Number of employees	283
Turnover (ext)	KSEK 425,000



Using new technology, the ash can be used to produce precipitated calcium carbonate, a substance widely used in manufacturing, as well as critical raw materials such as magnesium, silica, and aluminium.

— After five years of research and development, careful planning, and partnerships across the value chain, we are finally approaching production. With 600 million tonnes of oil shale ash left from energy production in Estonia, this project has the potential to meet the entire EU demand for critical raw materials such as magnesium and silica, says Kai Realo.

MARKET



Norway

Established	1989
Number of sites	31
Number of employees	599
Turnover (ext)	KSEK 2,583,000

Ragn-Sells in Norway

DRIVING CIRCULARITY THROUGH INNOVATION ACROSS SECTORS

Through concrete ways of turning recycled materials into new valuable resources, in areas such as fish poop and end of life vehicles, Ragn-Sells Norway aims to inspire the industry and influence decision makers in the transition towards a circular economy.

“ I AM SO PROUD OF OUR SKILLED ORGANISATION. IN MY 20 YEARS HERE, I HAVE SEEN OUR BUSINESS AND EXPERTISE GROW THROUGH GREAT PEOPLE AND A DEDICATED BUSINESS CULTURE.”

Vidar Svenning Olsen, CEO of Ragn-Sells Norway

— Ragn-Sells Norway had an excellent year in 2024, achieving 13% growth and launching several projects that enhance circularity, says Vidar Svenning Olsen, CEO of Ragn-Sells Norway.

During the year, Ragn-Sells Norway won the SIVA Award for sustainable solutions in aquaculture, focusing on collecting sludge from salmon farms and recovering phosphorus. However, challenges remain, including the wait for updated regulation.

— We need regulatory action. This is not just an issue for aquaculture. The lack of governmental focus on transitioning from linear to circular models, in combination with the low cost for virgin materials, make it difficult to scale circular solutions, says Vidar.

To show what is possible, Ragn-Sells Norway keeps developing new solutions for how

to recycle materials from different sectors. One notable example is the recycling of end-of-life vehicles, where Ragn-Sells is the largest actor in Norway. A new central sorting facility, set for completion in 2025, is expected to boost the reuse of car parts.

Additional achievements in 2024 include making CO₂e-emissions reporting available to customers, and the development of a sensor to measure container fill-levels to reduce unnecessary transports. With a 40% fossil-free vehicle fleet, Ragn-Sells leads the transition to fossil-free logistics among private companies in Norway, targeting 50% by 2025.

— Measures like these contribute to higher transparency in our value chains and offer ways to minimise negative impact from our business operations, while providing our customers with the best possible service, says Vidar.

Nine years in the making, Ragn-Sells Norway also received a permit to build a new facility in Drammen, using primarily reused materials.

— Building our facility from reused materials is a 200 million NOK investment and has been almost a decade long process, but it really shows that using reused materials works, says Vidar Svenning Olsen. ■



MARKET

Ragn-Sells Recycling in Sweden

AT THE FOREFRONT OF THE CIRCULAR TRANSITION

Recycling is at the heart of a circular economy. By collecting materials that are no longer useful in their current form and transforming them into valuable resources, we accelerate the transition to a sustainable society.

“ABOUT HALF OF GLOBAL EMISSIONS STEM FROM THE EXTRACTION AND USE OF VIRGIN MATERIAL IN PRODUCTION. BY SIMPLY DOUBLING THE CIRCULAR SHARE OF THE GLOBAL ECONOMY, WE WOULD BE WELL ON OUR WAY TO TACKLING CLIMATE CHANGE.”

Magnus Uvhagen, CEO of Ragn-Sells Recycling Sweden

— Gladly, the transition to a circular economy is now high on the agenda for decision-makers, but there is still a lack of understanding

of what it truly entails. For example, much of the discussion focuses on reuse, an important, yet small part of a circular economy. We need to talk more about material recycling and new circular solutions, says Magnus Uvhagen, CEO of Ragn-Sells Recycling Sweden.

Currently, the extraction and use of virgin materials in production accounts for roughly half of the global climate emissions, while only about 7% of the global economy is circular. Simply doubling the circular share of the global economy would significantly advance the fight against climate change.

Collecting materials currently classified as waste and finding new circular solutions to

return them to society as valuable resources is a core part of Ragn-Sells' business strategy. One of the biggest barriers to circular innovation is legislation. Policymakers still do not recognise waste as a resource for sustainable raw materials. According to Magnus, this is for example expressed by waste management remaining largely municipal, and various taxes that are imposed on waste.

— The current view on waste is like throwing a wet blanket over innovation. The municipal sector's role is to deliver a specific service within a set budget, while the private sector is driven by profitability. If we provide companies with more control over material flows and incentives to invest in new circular



Sweden

Established	1966
Number of sites	70
Number of employees	1,759
Turnover (ext)	KSEK 5,815,000



solutions, we would see some real progress, says Magnus.

This has not stopped Ragn-Sells from continuing efforts to find new ways to recycle. In 2024, the company inaugurated both its flat glass recycling facility and the new Future Solutions Hub, a testbed for exploring new circular solutions.

— I am really excited about our testbed. It is a unique opportunity to test bold ideas, and if they work small scale, we will accelerate our efforts and create new business opportunities, says Magnus Uvhagen. ■

MARKET

Ragn-Sells Treatment & Detox in Sweden

LEADING THE WAY TO A TOXIC-FREE SOCIETY

If we want to build a sustainable society, we need to reuse and recycle the resources we already have, many times over. To replace virgin materials with circular alternatives, the resources we put back into society must be clean and safe. That is why Ragn-Sells Treatment & Detox continues to push the boundaries of what can be recycled.

“AS DETOXIFICATION METHODS CONTINUE TO EVOLVE, WHAT IS CONSIDERED HAZARDOUS WASTE TODAY MAY BE A VALUABLE RESOURCE TOMORROW.”

Madeleine Ljunggren, CEO of Ragn-Sells Treatment & Detox Sweden

— A circular society also has to be a toxic-free society. When recovering valuable resources from waste, we must ensure that residual flows do not pose a threat to our health or the environment. Our contribution to the circular transition is to secure and continuously

search for safe solutions for flows that cannot be recycled today and that are not clean enough to be reintroduced into society, says Madeleine Ljunggren, CEO of Ragn-Sells Treatment & Detox Sweden.

Madeleine took the role as CEO of Treatment & Detox in 2024. While the innovative detoxification solutions often end up in the lime-light, the business is also built on an equally important foundation — landfills.

— Landfills are often seen as something bad, but in fact they are essential for pushing the circular transition in a sustainable way as they both prevent harm and safeguard the materials for the future.

In addition, Madeleine and her colleagues are highly dedicated to developing the competence around PFAS, a group of toxic chemical compounds. In 2024, Ragn-Sells has highlighted the need to ban all non-essential uses of PFAS and implemented measures to clean up the toxins already in circulation.

— Stopping the use of harmful compounds such as PFAS is one important step towards a toxic-free society. But to deal with the toxins already circulating in society, we are working hard to develop better treatment methods and push for clean-up efforts, says Madeleine.

In 2023, Ragn-Sells inaugurated the world's first Ash2Salt plant to convert fly ash from

waste incineration into commercial salts. However, during 2024, we experienced technical problems with some components in the facility that prevented us from becoming fully operational.

— We are so proud of the Ash2Salt technology. The method perfectly illustrates our business rationale — to recover a resource that would otherwise be wasted and create a product that can replace virgin materials. Our current focus is getting the plant into full swing, and we look forward to both scaling up this technology, and continue to innovate for a circular, non-toxic world, says Madeleine Ljunggren. ■



Sweden

Established	1966
Number of sites	70
Number of employees	1,759
Turnover (ext)	KSEK 5,815,000



MARKET

TOWARDS A MORE SUSTAINABLE SOURCING OF KEY NUTRIENTS

Our wastewater is a goldmine of valuable nutrients such as phosphorus and nitrogen. With the technologies in place to recover these, EasyMining's focus in 2024 has been on scaling up production and removing political barriers to provide the world with sustainably sourced nutrients.

“MORE AND MORE DECISION-MAKERS ARE WAKING UP TO THE NEED FOR SUSTAINABLY SOURCED PHOSPHORUS. BUT REGULATORY DEVELOPMENTS ARE STILL TOO FEW AND TOO SLOW.”

Jan Svärd, CEO of EasyMining

— Without phosphorus, we can not produce enough food. But the way phosphorus is traditionally sourced harms both people and planet. Fortunately, we have a more sustainable source of phosphorus, right there in our

sewers, says Jan Svärd, CEO of Ragn-Sells' innovation company EasyMining.

At the heart of EasyMining's operations are three patented innovations for recovering agricultural nutrients from waste: Ash2Phos for phosphorus, Aqua2N for nitrogen, and Ash2Salt for potassium. In 2024, the company's main focus was on scaling up the Ash2Phos technology, which captures phosphorus from sewage sludge ash.

During the year, major steps were taken to establish phosphorus recovery plants in Sweden and Germany. The Ash2Phos technology was also at the centre of a series of meetings with Canadian authorities to

explore the possibility of supplying the country's farmers with recycled feed phosphorus. The reason is that unlike the European Union, Canada does not ban the use of phosphorus from waste in animal feed.

— More and more decision-makers are waking up to the need for sustainably sourced phosphorus. But regulatory developments are still too few and too slow, says Jan.

As an example of a policy that is pushing development in the right direction, Jan cites the updated Urban Wastewater Treatment Directive, which will require EU member states to reuse or recycle phosphorus from wastewater.

EasyMining

Established	2007
Offices in	Uppsala and Gothenburg, Sweden, and Berlin, Germany
Number of employees	60



— This is an important step as Europe is currently dependent on phosphorus imports from deeply problematic and emissions-heavy sources. By turning our wastewater treatment plants into resource recovery plants, we can meet Europe's phosphorus needs in a more sustainable way, says Jan.

Beyond technology and politics, EasyMining's success also depends on the 60 talents working in its offices in Sweden and Germany.

— What I am most proud of is that we have built such a strong and diverse team. When you look for the best talent out there, you get people from different backgrounds. That is a huge asset, says Jan Svärd. ■

ADVOCATING FOR A SUSTAINABLE FUTURE

The transition to a circular economy requires systemic legislative change to ensure that waste is recognised as a key source of sustainable raw materials. To help drive this shift, Ragn-Sells continuously share knowledge and engage with decision-makers at national, EU, and global level.

CONSTRUCTIVE DIALOGUE WITH LOCAL POLICYMAKERS

— We want to contribute to better decision-making by presenting concrete solutions to society's challenges. At the same time, we seek collaboration with non-governmental actors who share our circular values. Together, we have a greater impact, says Susanna Lind, Head of Public Affairs and Government Relations in Ragn-Sells Sweden.

By generously sharing insights into the opportunities and obstacles of the circular transition, Ragn-Sells are helping to place circularity at the top of the political agenda in our local markets. In discussions with policymakers throughout 2024, including at political

events such as Almedalen in Sweden and Arendalsuka in Norway, we have consistently advocated for a new regulatory approach to waste.

— We need regulatory action. Outdated waste regulations, combined with the inadequate pricing of virgin resources, make it difficult to scale up circular solutions. By highlighting both the challenges and the solutions, we aim to create meaningful change, says Vidar Svenning Olsen, CEO of Ragn-Sells Norway.

Ragn-Sells' increasingly strong position as a thought leader in the circular transition is driving interest in our knowledge and

perspectives among local policymakers. In Estonia, this is for example evident from CEO Kai Realo being one of two business representatives on the national climate council.

— Our frequent media presence and contributions to the public debate have solidified our role as a political player. In a small country like Estonia, we are also naturally closer to our decision-makers, both at national and EU level, says Kai Realo, CEO of Ragn-Sells Estonia.

Two recurring themes in policy discussions throughout the year have been how to ensure fair competition between virgin and circular

resources, and the need for standards that prioritise material quality over origin.

— There is strong demand for recycled sourced resources from our customers in Denmark. But for circular solutions to be truly competitive, virgin raw materials must bear their full environmental costs, which is not the case today. We also need to revise regulations so that materials recovered from waste are not disadvantaged simply because of their origin, says Charlotte Scott Larsen, CEO of Ragn-Sells Denmark.

Susanna Lind, Head of Public Affairs and Government Relations in Ragn-Sells Sweden



Vidar Svenning Olsen, CEO of Ragn-Sells Norway



Kai Realo, CEO of Ragn-Sells Estonia



Charlotte Scott Larsen, CEO of Ragn-Sells Denmark

A STRONGER PRESENCE AT THE HEART OF EUROPEAN POLITICS

— As the EU raises its climate ambitions, there is a growing recognition of the importance of moving towards a more circular economy. By strengthening our presence in Brussels and contributing our expertise, we aim to help EU leaders take the lead in this critical transition, says Tobias Eriksson, Head of Public Affairs and Government Relations EU at Ragn-Sells Group.

During 2024, there was significant progress for Ragn-Sells' advocacy work at the European level. In March, we opened our first office in Brussels to strengthen our presence at the heart of European policymaking. From these new headquarters, we continuously engage in dialogue with key decision-makers, build alliances with advocacy groups, and submit our perspectives to legislative processes.

A key focus has been to advocate for reform of EU regulations restricting the use of phosphorus recovered from waste, pushing for a shift towards prioritising quality over origin. To keep colleagues, customers, and other stakeholders updated on the developments in the EU, our Brussels office also distributes the monthly Ragn-Sells Circular EU News. ■

Tobias Eriksson, Head of Public Affairs and Government Relations EU at Ragn-Sells Group



GROWING GLOBAL INTEREST IN NUTRIENT RECYCLING

— To secure food for future generations, we must prioritise circular solutions that recycle key nutrients like phosphorus, instead of relying on virgin materials. By participating in global forums and sharing our knowledge with decision-makers worldwide, we can show that systemic change is not only necessary but possible, says Pär Larshans, Chief Sustainability Officer at Ragn-Sells Group.

At a global level, our advocacy work has focused on promoting circular solutions to

the world's phosphorus needs — and removing regulatory barriers to scaling these innovations. Throughout the year, Ragn-Sells was invited to speak about the potential of nutrient recycling from wastewater in high-level contexts such as the World Trade Organization in Geneva, the United Nations Environment Assembly in Nairobi, the Water Knowledge Europe Conference in Brussels, and COP29 in Baku.

In 2024, Pär Larshans also met with Canadian authorities in Ottawa to explore the possibility of supplying farmers with feed phosphorus recovered from wastewater. This initiative reflects Ragn-Sells's ambition to build partnerships beyond Europe, given the EU ban on using of phosphorus produced from waste in animal feed — a policy that Ragn-Sells continues to challenge in discussions with EU decision-makers. ■

Pär Larshans, Chief Sustainability Officer at Ragn-Sells Group





OUR SUSTAINABILITY AGENDA

**“WE WANT TO BE A DRIVER
OF THE TRANSFORMATION
INTO A CIRCULAR ECONOMY”**

A SUSTAINABLE BUSINESS STRATEGY

Ragn-Sells' business strategy is based on our vision to be living proof that caring for the earth and business go hand in hand. To save the planet and create a safe environment where people can prosper, our economy must become circular. This requires a new attitude towards waste.

Leading the transformation to a circular economy is not just our sustainability strategy – it is our way of conducting business.

In a linear society, the general ambition is to reduce the amount of waste. This does not address the core challenges the planet faces. Focus must shift to the long-term reduction of unsustainable extraction of increasingly scarce natural resources. This requires a whole new attitude towards waste.

Viewing waste as a sustainable resource guides our business strategy and sustainability goals. This perspective is also the most effective way to integrate sustainability across our entire organisation.

Ragn-Sells' strategic sustainability work guides all business operations and consists of five areas.

By finding **circular solutions**, and new material flows to be a part of, we can offer a higher degree of sustainability and customer value.

We walk the talk by focusing on a stable **delivery**, ensuring compliance, quality, and business ethics, while always putting safety first.

Even if we want to lead the development, we know that we cannot change the world alone. **Partnerships** are key to identifying and developing new and innovative circular solutions and material flows, and lead to a deeper customer understanding.

This in turn helps us to ensure quality and create a **value-based business** that enables sustainable and innovative solutions for a circular future.



A circular society depends on trustful cooperation. Ragn-Sells aims to be a strong and trusted brand and thought leader – being **premium in the circular economy**.

These focus areas reinforce each other and help us reach our sustainability goals and ambitions, while creating a competitive advantage.

Moving forward, we welcome the regulative development on responsible business conduct pushing transparent value chains, including the Corporate Sustainability Reporting Directive (CSRD). This will complement our strategic work with a more data-driven approach and a deeper alignment between our sustainability goals and measurable key performance indicators (KPIs).

SUSTAINABILITY GOALS

Our sustainability goals are rooted in our business strategy and designed to lead the transformation towards a circular economy. These goals encompass all three pillars of sustainable development – environmental, social, and governance.

Our business strategy and sustainability goals are firmly anchored in the challenges highlighted in the UN Agenda 2030, the Sustainable Development Goals (SDGs) and the ambition in the Paris Agreement to limit global warming to 1.5 degrees Celsius.

To support our business strategy, we have been working towards seven sustainability goals to be achieved by 2030. In 2023, we complemented these seven sustainability goals with a 2030 Pledge to counter the planetary challenges climate emissions, bio-diversity loss, and water scarcity. In preparation for CSRD we have in 2024 conducted a double materiality analysis (DMA). The DMA indicates a need to adopt a more data-driven approach and align our goals with KPI-based reporting. During 2025, we will refine our sustainability goals in accordance with the findings in the DMA.

Throughout 2024, we have continued to work towards our seven sustainability goals and the 2030 Pledge. It is this progress that this report illustrates.

Our 2030 Pledge:

To counter climate emissions, bio-diversity loss, and water scarcity, Ragn-Sells pledges to:

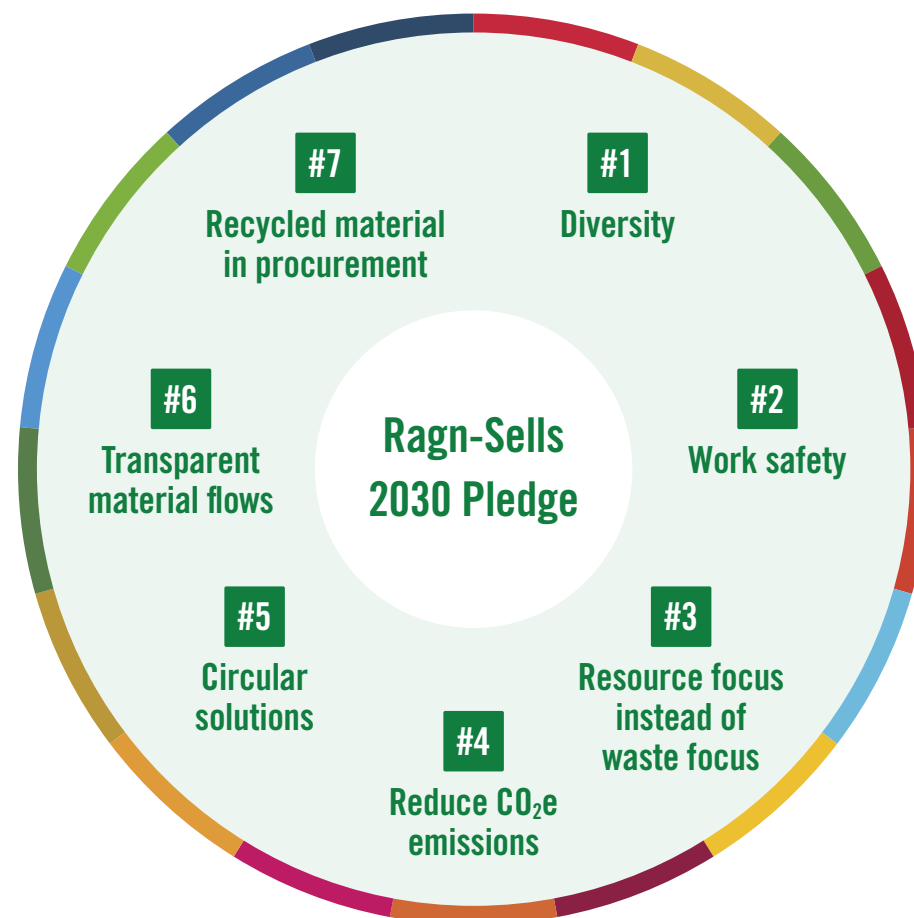
- Maintain and strengthen our current efforts to source raw materials from recycled resources and bring them safely back to the market.
- Introduce more circular solutions to avoid and prevent overshooting of the planetary boundaries that otherwise would have been caused by others.
- Avoid the usage of fossil fuels in our own operations.

Goals for 2030:

- Cut climate emissions (CO₂e) from our own operations with 50% compared to 2019*.
- Implement circular solutions that avoid climate emissions (CO₂e) caused by others equivalent to at least two million tonnes per year

* Through the ongoing process of defining science-based climate targets, this will be further developed and challenged.

Our sustainability goals



TURNING REGULATION TO BUSINESS DEVELOPMENT

Increased regulation on responsible business conduct and transparent value chains is good for circularity and good for serious business actors. All businesses will find challenges in their value chains. The key is to find ways to turn these challenges into business development.

The past years have offered an influx of regulation with the purpose of promoting transparent value chains. Several EU legislative packages require businesses to take a long, hard look at their value chains. How does the sourcing of their raw materials impact our planet and the people on it?

Increased requirements on transparency are good for all serious business actors. Every company will find sustainability challenges in the value chain. The defining question will be how we choose to act on this information. For Ragn-Sells the answer is clear – we all need to rebuild our value chains in a more transparent, sustainable, and circular way.

Ragn-Sells welcome increased regulation on value chain transparency such as the EU Corporate Sustainability Reporting Directive

(CSRD). Comprehensive and standardised value chain analysis and reporting will be a driving force for the circular transformation.

For most businesses that produce or sell products, the lion's part of climate emissions does not come from their own transport or energy use, but rather from how we produce materials and goods. Transparent value chain reporting will highlight this and promote businesses to prioritise the sustainability impact from the sourcing of materials used.

Ragn-Sells continuously seeks new circular material flows to maximise the value of limited resources. By shaping market demand for sustainable and circular waste management solutions, we contribute to transforming society into a circular economy with waste as a sustainable source of raw material. This has

steered our business development towards being a raw material supplier and detoxifier of urban flows.

Our new flat glass factory in Örebro, Sweden, is one example of this development. The glass is separated and sorted before sent to our partner Saint-Gobain to be used in the production of new flat glass. Even with partly fossil fueled transports, the CO₂e emissions savings for the new flat glass being produced are approximately 50%.

We want to collaborate with producers who want to change their sourcing of raw materials to a more sustainable alternative. Regulation promoting transparent value chains will support this change. ■

“AS BUSINESSES REBUILD THEIR VALUE CHAINS, WE STAND READY WITH CIRCULAR SOLUTIONS, RECYCLED RAW MATERIALS WITH A MINIMAL CARBON FOOTPRINT, INNOVATIVE POWER, AND ARMS OPEN TO NEW PARTNERSHIPS.”

Pär Larshans, Chief Sustainability Officer at Ragn-Sells Group

TOWARDS DOUBLE MATERIALITY

Increased awareness of the effects and potential of our business operations helps us develop our sustainable business strategy. The main tool for this is an analysis of sustainability impact and financial risks and opportunities throughout the value chain – a double material analysis.

During 2024 we performed a double materiality analysis in accordance with CSRD. This included an analysis of positive and negative impacts on people and the environment (impact materiality), and an assessment of sustainability aspects based on financial implications, including risks and opportunities (financial materiality).

A large group of Ragn-Sells executives participated in the process, including a financial impact workshop with the Group Leadership Team, and a double materiality analysis proposal presented first to the Executive Leadership Team, then to the Board.

The double materiality analysis identified 7 topics and 19 sub-topics as material, as illustrated in the accompanying chart.

Identified environmental impacts, risks, and opportunities align closely with our sustainability commitments and strategic goals, including our 2030 Pledge, with ESRS E1 (Climate change) representing the most significant impact. The greatest potential for positive sustainability outcomes and financial impact, is identified in ESRS E5 (Resource use and circular economy).

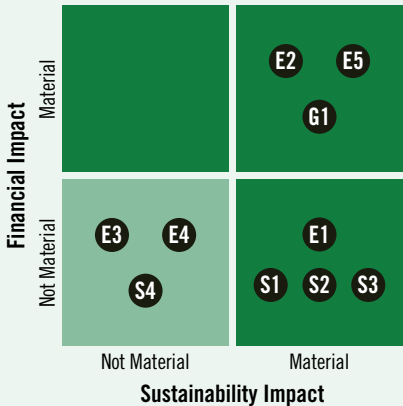
For social sustainability, the DMA identified material issues in standards ESRS S1, S2,

and S3 (Own workforce, Workers in the value chain, and Affected communities). We have a strong strategic focus on safety and inclusion, though human rights remain an area where additional work is required. Governance and ESRS G1 (Business conduct) is assessed as double materiality and during 2024, we started the process to improve the organisational structure for better alignment with CSRD requirements.

The results indicate a need to update our sustainability goals and to report on a wider set of data points. This work is ongoing and will continue in 2025.

Ragn-Sells Group result summary

In total, 7 topics and 19 subtopics are assessed as material



Environmental

- ESRS E1 Climate change
- ESRS E2 Pollution
- ESRS E3 Water and marine resources
- ESRS E4 Biodiversity and ecosystems
- ESRS E5 Resource use and circular economy

Social

- ESRS S1 Own workforce
- ESRS S2 Workers in the value chain
- ESRS S3 Affected communities
- ESRS S3 Consumers and end-users

Governance

- ESRS G1 Business conduct

OUR STAKEHOLDERS

Collaborating and engaging with our stakeholders is essential to understand our impact in the value chain and how our surroundings affect our business strategy. This is key to develop innovative solutions and services that create value. We need all available partners to be successful in the transformation to a circular economy.

Identifying and interacting with our stakeholders, is key to be successful in our business strategy and achieving our sustainability goals. Dialogue is the best way to understand our impact in society, identify new business opportunities, and find partners in our efforts to innovate circular solutions.

As we continue to develop our business in a fast pace, increasingly moving towards being a raw material provider, we keep entering into new partnerships, value chains, and markets. This requires that we continuously update our stakeholder analysis, materiality

analysis, and stakeholder dialogue. Increased access to input from our stakeholders will benefit our business strategy and help enable the transition to a circular economy.

Our prioritised groups of stakeholders are those we assess have the greatest impact on us, and/or are most impacted by our business operations. During 2024, we have had an ongoing dialogue with all our prioritised stakeholder groups. ■

During 2024, we have had an ongoing dialogue together with all of our prioritised stakeholder groups.

Stakeholder group	Dialogue in 2024
Owners	Board meetings and financial reporting are the main channels for conducting dialogues with our owners.
Employees	An Employee satisfaction survey conducted biannually complemented with a Pulse survey performed in the inbetween year, culture workshops, meetings, onboarding and offboarding surveys, dialogue with union representatives and safety representatives.
Customers	Customer surveys, personal meetings, customer audits, our Customer Portal, and interviews.
Policymakers	International perspective: Regular meetings with politicians in the EU Parliament, ongoing dialogue with politicians on national level in all countries where we operate. National perspective: Personal meetings, round table discussions, referrals, seminars, consulted as experts in different processes of policy making.
General public	Round table discussions, open seminars in for example Almedalen, meetings, cooperation groups (samverkansgrupper).
Partners/Suppliers	Supplier assessments, supplier dialogues and meetings, on-site audits.

COMPLIANCE AND RISK MANAGEMENT

With Ragn-Sells' ambition to be a global thought leader in the circular economy comes the obligation to be transparent about risks with our business operations, accountable for our actions, and compliant with all relevant regulation. Throughout the value chain.

Since the Ragn-Sells Group operate in several countries and is involved in a wide range of processes, services, and types of production, we adopt a comprehensive approach to compliance, business ethics, and risk management.

This encompasses a broad spectrum of responsible business conduct and sustainability issues. In addition to addressing corruption, bribery, competition, data protection, and information security, our compliance efforts prioritise providing safe, high-quality products and services. It also includes labour rights issues such as health and safety, and the prevention of discrimination.

The Ragn-Sells Code of Conduct is our main instrument to ensure compliance in both own operations and the value chain. It outlines commitments to legal compliance, human rights, employee relations, business ethics, conflicts of interest, protection of company assets, and responsible exports. Employees are encouraged to raise concerns about

possible violations of the Code of Conduct, and since 2021, we have operated an external whistleblower channel to enhance this process.

As suppliers, we are frequently part of other businesses' due diligence processes. The Code of Conduct provides fundamental infrastructure to procedures like that.

During 2024, we have undertaken comprehensive work to update our Code of Conduct to be better suited for a new regulatory landscape. The updated Code of Conduct will be an umbrella for all compliance initiatives and is planned to be launched in 2025.

To act as a responsible business partner, we work proactively to identify and address risks both downstream and upstream in the value chain. Downstream, risks may for example arise from non-compliance with relevant regulations by our partners. Upstream, risks may include poor working conditions for

temporary staff, as well as workers at the sites of our suppliers and customers.

Ragn-Sells is committed to enhancing transparency throughout the value chain and warmly welcome increased regulation on transparency, such as the EU's Corporate Sustainability Reporting Directive (CSRD). They raise the bar and expand the scope for risk assessment and transparency requirements. This is good news for all serious business actors and a game changer for the circular transition.

Looking ahead, our compliance efforts will increasingly focus on transparency and identifying risks in the entire value chain. For example, we need to increase our knowledge of risks connected to potential business partners and their supply chains. We will also broaden our scope on our human rights impact. The updated Code of Conduct will be an important tool in this endeavour. ■

“ENSURING THAT OUR BUSINESS OPERATIONS ARE COMPLIANT, ETHICAL, AND WITH STRONG CORPORATE GOVERNANCE, IS FUNDAMENTAL TO OUR LICENSE TO OPERATE.”

Fanny Hagbom, Head of Compliance at Ragn-Sells Group

REPORTING ON 2024

#1

DIVERSITY

Goal: The culture in Ragn-Sells is inclusive and non-discriminative where diversity and gender balance amongst company leaders is the norm.

As a male-dominated company in a male-dominated industry, gender equality has been a priority for Ragn-Sells diversity ambitions, with well-defined goals for gender equal representation. Actions to achieve these goals have included making job advertisement and recruitment processes more attractive for women applicants. These efforts are now paying off with a steady improvement in gender balance. During 2024, we saw an increase among women in leadership positions, with women being 50% of new recruited leaders.

Ambitions related to gender equality:

- At least 50% of all new leadership recruitments are to be female until 2030.
- Wanted position 2025: Women in Profit & Loss leadership teams: 35%
- Women in Succession Planning: 40%
- Women in Leadership positions: 30%
- Wanted position 2030: 50/50 gender balance in all leadership positions and leadership functions.



“Diversity is more than gender balance. It gives us more perspectives, which is good for business, innovation, and our working environment.”

Susanne Schumann, Chief Human Resources Officer at Ragn-Sells Group



Our diversity, equity, and inclusion believes:

Age diversity

Requires continuous learning and provides knowledge exchange and a better understanding of customers.

Gender balance

Our strategic commitment to Diversity, Equity & Inclusion with the goal of maintaining equal pay.

Cultural diversity

Provides different insights and a variation of perspectives.

LGBT+*

Requires that our workplace provides psychological safety to be able to be our authentic selves.

Supporting individual needs

Different working models in different life phases promotes a better well being.

Our 5C's

Our cultural framework that sets expectations for leadership and behaviour.

* LGBT (lesbian, gay, bisexual, transgender)

#1

DIVERSITY

Recent years have expanded our view on diversity towards building an inclusive culture in order to attract and retain people from different backgrounds. Diversity in experiences, skills, and thoughts is key to securing all necessary skills for the transition to a circular economy.

During 2024, all employees in human resources attended a diversity workshop in order to create a common understanding on how diversity is a method for Ragn-Sells to continuously improve both our organisation and our business offer. This effort contributed to moving the business culture from a more

limited focus on gender balance, towards integrating diversity as business critical.

Employee surveys from 2024 showed that this attitude is starting to sink in and that our efforts to communicate diversity benefits have had an impact and improved our working environment. For example, the results indicate a higher understanding of the need for communication and collaboration in order to understand different points of view in a diverse organisation.

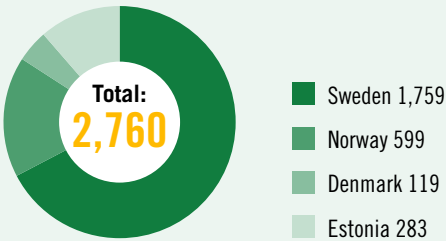
As the business continues to grow and develop, diversity is a continued priority.

During 2025 we will focus on diversity training for our management positions. By fostering inclusion, we build the foundation for innovation and business development, while achieving our sustainability goals.

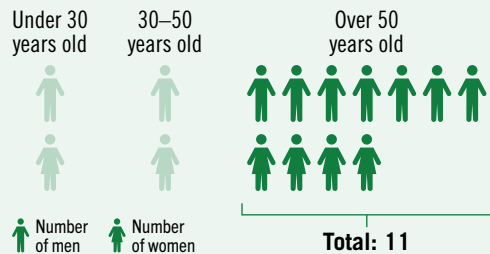
Whistleblower channel

During 2024, 9 (5) incidents were reported through the whistleblower channel, and there were 0 (0) convictions related to violations of human rights, labour law, or other violations of legislation related to social aspects such as discrimination or harassment.

Number of employees 2024



Diversity in top management 2024



Employees by gender 2024



#2

WORK SAFETY

“By fostering attitudes that prioritise safety, our employees are more committed to safety routines and we see a decline in incidents.”

Vidar Svenning Olsen, CEO of Ragn-Sells in Norway



Goal: Our workplace safety is industry-leading, and we are perceived as a role model.

Every employee has the right to feel safe at work. The most common incidents in our workplaces include slips, trips, falls, falls from heights, contact with sharp edges, and improper working positions. In order to reduce the risks for these or any other work-related incident, we have robust and systematic routines in place.

Constantly updating safety equipment and ensuring compliance with safety routines are essential to create a safe working environment, but we see that what really makes a difference is our persistent efforts to foster a business culture and attitudes that prioritise safety.

Our approach to building a safety culture is to increase knowledge and risk awareness among our employees. In 2024, we held our third annual Safety Week. We used statistics to identify the most common types of safety incidents and created videos highlighting specific risks connected to these incidents, with information on how to avoid them.

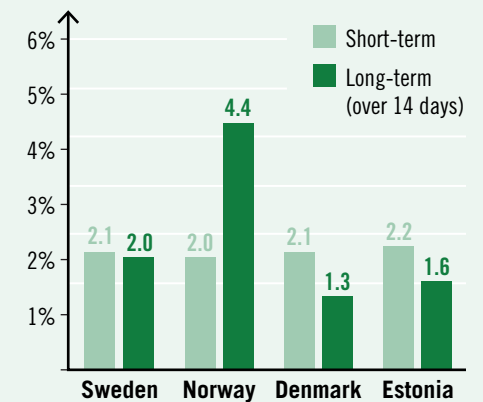
Our group common Safety Board cover areas and key performance indicators measured on own employees such as Lost Time Injury Frequency (LTIF) and Total Recordable Injury Frequency (TRIF), report progress on decided safety activities for the group. This reporting year, the Lost Time Injury Frequency (LTIF) was

6.9 (6.6) and Total Recordable Injury Frequency (TRIF) 13.9 (13.2) for the Ragn-Sells Group.

In 2025, we will continue to develop and implement safety indicators, particularly those tied to our updated double materiality analysis.

Hazards are defined and documented in instructions, identified locally after investigations, and subsequently reported centrally. In 2024, 132 (104) injuries were reported, of which fatality 0 (1), lost time cases 30 (28), medical treatment cases 30 (29), permanent disability cases 0 (0), restricted work cases 0 (5), and first aid cases 72 (41).

Percentage of sick leave 2024



#3 RESOURCE FOCUS INSTEAD OF WASTE FOCUS

“In a circular society, it is not waste that we want to minimise, but the unsustainable extraction and processing of virgin raw materials.”

Anders Kihl, Chief Strategy Officer and R&D Director at Ragn-Sells Group



Goal: The established waste hierarchy (part of the EU legislation) has been replaced by a resource focus instead of a waste focus principle, that emphasises the importance of securing the availability of circular resources.

To build a sustainable society, we need to reuse the materials we already have. This requires that we stop treating waste as a problem to be minimised and instead embrace it as a sustainable source of raw materials.

Further we need to stress the perspective of decontamination – circulation of contaminants cross our economic system will not help us.

The current view of waste is rooted in the waste hierarchy, a principle that directs regulation towards waste minimisation only. But in a circular society, the aim is not to reduce

waste, it is to reduce the harmful extraction and transformation of virgin raw materials.

The waste hierarchy is therefore trying to solve the wrong problem. To promote circularity, the waste hierarchy should be replaced by a sustainable raw material supply strategy that break our dependence on the extraction of increasing amounts of depleting virgin resources.

With this focus, waste minimisation would still be relevant, only in a few cases including if it contributes to a reduced use of virgin materials, caused for example by inefficient

production. But it is not a useful guiding principle for waste flows not designed for circularity, or waste flows in need of detoxification. These waste streams should instead be collected, treated, and stored in a secure way, which in many cases will require an increase in the amount of waste, rather than a decrease.

During 2024, we have worked to promote this shift through advocacy efforts, knowledge sharing, and stakeholder dialogue, both globally and in our local markets.

One notable example is Ragn-Sells' contribution to the Royal Swedish Academy of Engineering Sciences project [Roadmap for Metals and Minerals](#), which explored how Europe can secure the supply of metals and minerals in a sustainable way. The final report highlights circular material flows as a key strategy but also identifies current legislation as a barrier to the circular transition.



#3

RESOURCE FOCUS INSTEAD OF WASTE FOCUS

“We need to embrace waste as the only truly sustainable source of raw materials.”

Anders Kihl, Chief Strategy Officer and R&D Director at Ragn-Sells Group

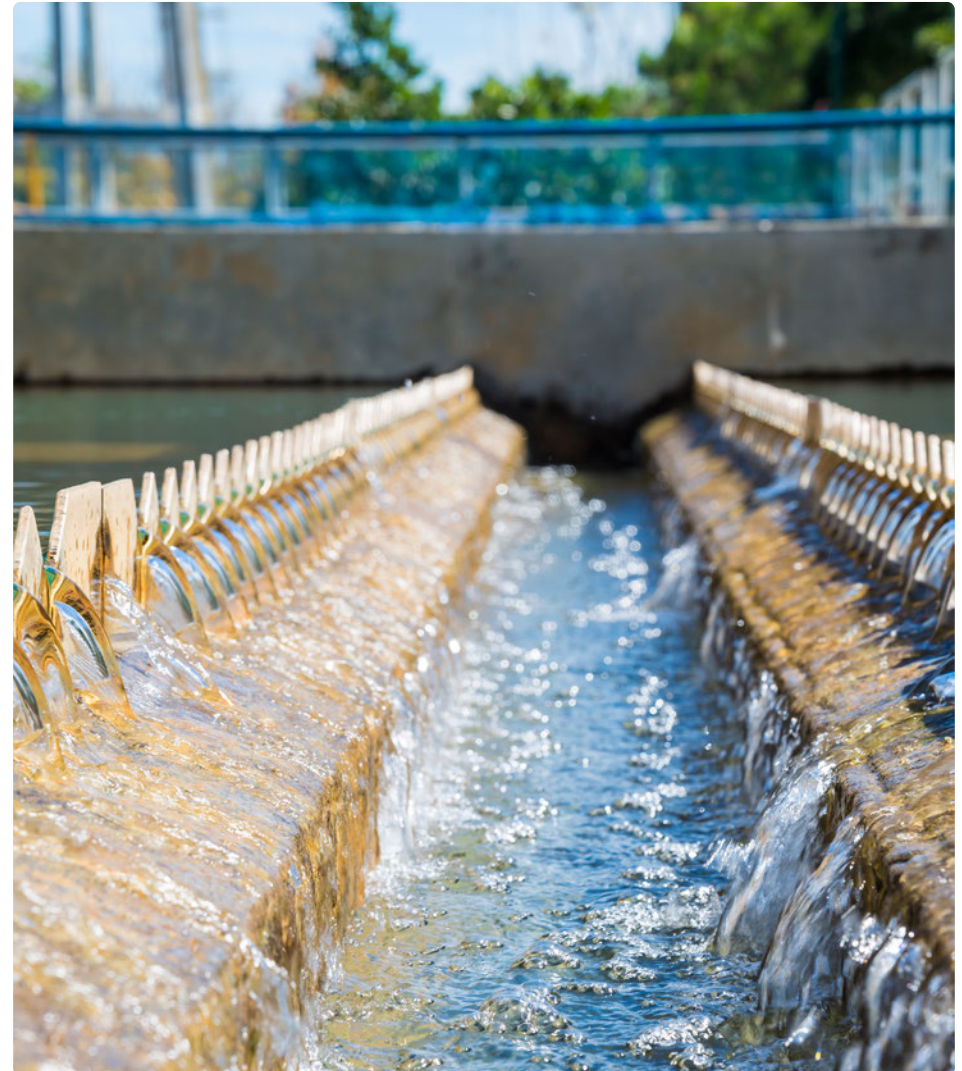
A key focus in 2024 was also to promote the idea of transforming wastewater treatment plants into resource plants to recover valuable materials from sludge. Throughout the year, Ragn-Sells shared this perspective in a wide range of high-level fora, including events arranged by the United Nations Environment

Programme, the EU Water Conference, and the World Trade Organisation.

The importance of recovering resources from wastewater was also in the spotlight when Ragn-Sells attended the UN Climate Change Conference COP29 in Baku, Azerbaijan. In our local markets, we participated in advocacy events such as Arendalsuka in Norway and Almedalen in Sweden.

To share our knowledge on circularity and build a common understanding of the need for a new view on waste, we have developed an e-learning tool open to employees, partners, and customers.

In 2025, we will continue our efforts to accelerate the circular transition and ensure that waste is recognised as a valuable resource. ■



#4

REDUCE CO₂e EMISSIONS

“A transition of the vehicle fleet to non-fossil fuels, as well as continuing the work with streamlining our treatment processes and electrifying our heavy machinery, is necessary to achieve our goal.”

Magnus Uvhagen,
CEO of Ragn-Sells Recycling Sweden



Goal: Ragn-Sells has reduced the footprint from our operations and facilities in line with, or better than, the Paris Agreement.

At the heart of Ragn-Sells' 2030 Pledge is a commitment to reduce the climate emissions from our own operations by 50% compared to 2019 levels.

Even if Ragn-Sells' main contribution to reducing the climate emissions in society lies in developing circular solutions that can replace and reduce the use of virgin materials, we remain a significant emitter of CO₂e from our own operations.

Our emissions mainly come from landfills, transport, and treatment plants. To address this, we focus on optimising transport logistics; transitioning to renewable fuels; and completing landfill coverage.

Regarding transport, strategies differ across markets, but focus are on fossil free transport. Sweden prioritises the use of HVO over diesel, electrifies heavy machinery, and explores electro fuels in collaboration with partners in the vehicle industry. Norway is focusing on electrification of the vehicle fleet, complemented with some gas-powered vehicles, while Denmark and Estonia are following similar paths.

Our second major challenge is emissions from landfills, which account for 50% of Ragn-Sells' operational emissions. Since 2005 it is not allowed to deposit organic waste at landfills, and we therefor anticipate

that these levels will naturally decrease in the future.

However, landfills can also be an energy carrier and a resource. Ragn-Sells collect and incinerate the landfill gas, and through these efforts effectively collect the gas, which is then used for heating, cooling, and to generate electricity that our recycling processes can be run on.

In addition to our goal of reducing the CO₂e emissions from our own operation with 50% by 2030, we have during 2024 started the process of developing a science based target using the Exponential Roadmap Initiative (ERI) framework.



#4

REDUCE CO₂e
EMISSIONS

Total emissions

This reporting year, Ragn-Sells' total emissions of greenhouse gases amounted to 73,330 tonnes CO₂e (79,468 tonnes, 2023) including landfill gas. Total emissions of greenhouse gases, landfill gas excluded, amounts to about 43,138 tonnes CO₂e. The purchased electricity for all operations in Sweden is origin-marked renewable electricity.

In 2024 have we initiated a comprehensive mapping of our Scope 3 emissions. Once finalised, the total emissions will cover more categories and close the reporting gaps.

We report in accordance with Green House Gas protocol (GHG) including Scope 1, 2, and 3 when calculating our climate emissions.

Emissions from transports in 2024

A major part of our emissions, 39,647 tonnes CO₂e (43,310 tonnes, 2023), derive from transporting and handling of material, both from own vehicles and outsourced. The use of renewable fuels such as HVO and electricity have increased during 2024 compared to previous years which have resulted in a reduction of CO₂e emissions from transports and working vehicles at site. Emissions from business travel decreased in 2024 to 1,153 tonnes CO₂e (1,399 tonnes, 2023). The vehicle fleet for company cars consists of 94% electrified vehicles (94, 2023).

Emissions from landfills in 2024

Climate emissions from Ragn-Sells' landfills account for about 30,192 tonnes CO₂e. ■

Since 2023, we have reduced CO₂e emissions from our own operations by more than

6,100 tonnes

Activity (tonnes CO₂e)

	2023	2024
Scope 1	60 240	54 791
Own vehicles	14 215	11 246
Working vehicles at site	13 052	13 353
Landfill emissions	32 973	30 192
Scope 2	1 786	2 338
Electricity, location based*	1 288	1 805
Electricity, market based**	0	0
District heating, location based	498	533
SUM Scope 1 and 2	62 026	57 129
Scope 3***	17 442	16 201
SUM Scope 1, 2 and 3	79 468	73 330

* Emissions from electricity differs depending on the local grid.

Ragn-Sells has operations in Sweden, Norway, Denmark, and Estonia.

** In Sweden the purchased electricity is marked as renewable electricity.

*** Scope 3 mapping includes the following categories: Upstream transportation and distribution (cat 4), Business travel (cat 6), Downstream transportation and distribution (cat 9).

#5

CIRCULAR SOLUTIONS

“Ragn-Sells contributes to resolving planetary challenges through innovative circular solutions that detoxify material streams and bring back critical resources to society – over and over again.”

Pär Larshans, Chief Sustainability Officer at Ragn-Sells Group



Goal: Through collaboration with partners, we develop new and refined circular material flows to increase material recycling. By 2030 these will contribute with an additional 1 million tonnes of CO₂e in avoided emissions per year.

The ever-increasing extraction and processing of virgin raw materials, are responsible for 50% of all climate emissions, 90% of biodiversity loss, and 90% of water scarcity in the world, according to the UN.

The best way to counter these planetary challenges is to increase the recycling of raw materials by establishing circular material flows.

Already now, our existing recycling solutions yearly contribute with 1 million tonnes of avoided emissions, and through our new circular solutions, we commit to contributing with an additional 1 million tonnes of avoided CO₂e emissions per year.

During 2024, we took several steps towards practical realisation of our circular solutions. Some notable examples include the inauguration of a flat glass recycling factory in Örebro, Sweden. The CO₂e emissions savings for the new flat glass are approximately 50%. Another example is our Future Solutions Hub in Umeå, Sweden, a testbed for exploring new circular solutions.

We have also made major investment decisions in circular solutions. Two plants will be built to recover phosphorus from incinerated sewage sludge utilising the Ash2Phos technology developed by our innovation

company EasyMining, one in Germany and one in Sweden.

In addition, a demonstration plant will be built in Estonia to recover materials from ash left from decades of burning oil shale for energy. Through new technology, it is possible to produce calcium carbonate, and critical raw materials such as magnesium, silica, and aluminium.

All of these investments are in circular solutions that recover important raw materials from waste, with a huge potential to avoid climate emissions.

Challenges during 2024 include technical problems. In 2023, Ragn-Sells inaugurated the world's first Ash2Salt plant to convert fly ash from waste incineration into commercial salts. During 2024, the plant has had technical problems with some components in the facility. Our focus now is to get the plant fully operational and scale up the Ash2Salt technology.

In 2025, we will continue to develop new circular solutions, identify relevant data points, and develop targets for our contribution to avoided emissions. ■

#6

TRANSPARENT MATERIAL FLOWS

“One of the most important things we have achieved this year is improved sorting and increased transparency in several material flows, allowing us to offer higher quality materials downstream.”

Jonas Wäneskog, Managing Director at Ragn-Sells Recyclables



Goal: The depositing of our downstream material on the global market is monitored and audited in a transparent and compliant manner and becomes the norm in society.

Effective material sorting enables us to recycle more and replace virgin raw materials to a greater extent. One challenge is that materials often arrive at Ragn-Sells' facilities in mixed, or even crushed, fractions, which are difficult to sort.

During 2024, Ragn-Sells made progress in sorting procedures across all material groups. This allowed us to increase quality grades in recycled metals, plastics, and fuels in our downstream flows.

With the goal to achieve plastic-free fuel fractions by 2030, plastics in fuel fractions

remain a challenge. As industry demands for combustible material without plastics are rising, we aim to accelerate this timeline.

Managing diverse plastic flows requires action across the entire value chain; from improved upstream sorting to optimised processing at our facilities.

Higher quality grades means better transparency in the value chain, enabling traceability all the way to the end customer. This boosts competitiveness and creates financial advantages by increasing raw material volumes for downstream customers.

In 2024, we completed a major logistics project for fuel flows, our largest material stream. Streamlining and centralising previously fragmented operations has reduced both our transports and mileage.

Following the risk assessment of downstream customers in 2023, we introduced an electronic and simplified customer assessment process in 2024. Integrating this assessment into our internal audits ensures that all business units can confirm valid customer agreements, which is essential for transparency and follow-ups.

In 2024, 15 (16) critical upstream suppliers and 12 (16) critical downstream customers were audited. These audits identify potential corrective actions and will continue in 2025.

Looking forward a new e-learning connected to compliance with the Waste Shipment Regulation is being developed. We will also continue to focus on upskilling personnel through onsite training that identifies key considerations for each material flow, helping us improve sorting and refine operations even further.

#7 RECYCLED MATERIALS IN PROCUREMENT

“If we are serious about our mission to lead the circular transition, we need to take responsibility as a customer.”

Madeleine Ljunggren, CEO of Ragn-Sells Treatment & Detox Sweden



Goal: At least 50% of all our procurement is sourced from recycled resources.

By 2030, Ragn-Sells aims for half of all product procurement to be made from recycled raw materials. This in line with our mission to promote circularity and drive demand for recycled materials. It is also an opportunity to lead by example and encourage our suppliers to explore circular options.

In 2024, we took important steps towards achieving this goal. For example, our purchasing department conducted a comprehensive mapping of prioritised procurement categories where a shift to recycled materials would have the greatest impact, but also where is most relevant to start due to the availability on the market.

The first step is to start with the areas where it is possible to find products produced from recycled materials. This includes categories such as containers, bins and bags, asphalt and ground. But we will continue to have a dialogue with suppliers and producers for the areas where we can make the biggest difference – simply because this is where we use the most materials. This will include categories such as machinery, vehicles, and buildings, requiring us also to involve parts of the organisation where purchasing is not directly managed by the procurement team.

Since 2024, all major projects are required to assess the potential for sourcing recycled materials before procurement decisions are

made. While this work is progressing, it is not without its challenges. One obstacle is that suppliers may be reluctant to disclose information about the content of recycled material in their products. However, we anticipate that this issue will diminish as EU requirements for supply chain transparency become more stringent, and the demand for recycled products increases.

During 2025, we will focus on implementing continuous measurement and monitoring systems. With the groundwork in place to assess the possibility of sourcing recycled materials for all major investments, the next step is to better track and evaluate the impact.

With five years to go until 2030, we are fully committed to increasing the demand for recycled materials in society, both through our core business and through our responsibility as a customer. ■

ANNUAL REPORT

During 2024 we have maintained a strong financial position, strengthening our ability to continue innovating and promoting a circular transformation.



“Increasingly stringent sustainability legislation and the growing recognition of waste as a valuable resource are also shaping our business development. From being primarily a waste management company, Ragn-Sells is now evolving into a raw materials producer.”

Madeleine Ljunggren, Chief Financial Officer at Ragn-Sells Group

Direct economic value generated (MSEK)

	2023	2024
Revenues	8,530	8,860
Net investment	149	922

Distributed economic value (MSEK)

Employees	-1,999	-2,091
Suppliers and public sector	-6,216	-6,755
Sum of distributed value	-8,216	-8,846
Profit from associated company	23	7
Operating profit	485	440
Providers of capital (payment)	-32	-25
Accounted taxes	-91	-102
Profit	363	312
Dividend to owners	9	15



WORDS FROM THE CFO

Our financial stability and long-term family ownership give us the confidence and conditions needed to make bold investments in circular innovations. The 2024 results for Ragn-Sells Group offer further proof that sustainability and profitability go hand in hand.

Ever since Ragn-Sells was founded, our vision has been that caring for the earth and business go hand in hand. To lead the transformation to a more sustainable future requires capital and therefore we have to be profitable. Looking back at 2024, we are happy to close yet another year with stable profit. Thanks to a long-term, determined business strategy, we have maintained a strong financial position despite economic challenges and global uncertainties.

As CFO, my role is to support Ragn-Sells' mission to lead the circular transition by ensuring a solid financial foundation for both our everyday business and innovation efforts. Our strategy is simple: plan for the worst and hope for the best. In practice, this means focusing on profitability, strong financial

controls, and risk awareness. Together with our long-standing family ownership, this gives us stability in daily operations and courage to make ambitious investments in a more circular future.

In 2024, Ragn-Sells announced investments in two new facilities to recover phosphorus from sewage sludge using technology developed by our innovation company EasyMining. Once operational, the Ash2Phos facilities in Helsingborg, Sweden and Schkopau, Germany, will have the capacity to produce 30,000 tonnes of phosphate per year, reducing Europe's unsustainable reliance on mined phosphorus.

Increasingly stringent sustainability legislation and the growing recognition of waste as

a valuable resource are also shaping our business development. From being primarily a waste management company, Ragn-Sells is now evolving into a raw materials producer.

Rather than simply disposing of their waste, our customers increasingly want to work with us to maximise the value of their specific waste stream. While this development places greater demands on us as a supplier, it also presents opportunities to grow our business and further contribute to the circular transition.

According to the UN, the extraction and production of virgin raw materials is responsible for half of all climate emissions. But beyond environmental impact, our dependence on virgin resources also poses significant financial and security risks. Moving towards a

circular economy is therefore essential to increase resilience at a time when competition for dwindling resources is leading to conflict and unreliable access to critical raw materials. From a financial standpoint, circularity and access to raw materials need to become integrated aspects to risk assessment models and sustainability analysis.

With a productive 2024 behind us, we look forward to continuing developing our daily operations and keep investing in circular solutions and innovation – for further financial growth and a more sustainable future.

Madeleine Ljunggren
CFO of Ragn-Sells Group
Stockholm, Sweden, March 2025



For further information regarding this report, please do not hesitate to contact Pär Larshans, Chief Sustainability Officer and Public Affairs Director at Ragn-Sells Group, par.larshans@ragnsells.com



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