aqua minerals

Annual Report 2024

Contents

Foreword

A new view on resilience

Lately we have increasingly heard the word resilience being used. Until quite recently, it didn't really speak to me. Resilient … against what exactly? It felt as if it was about arming ourselves against an imaginary enemy. For decades we could count on relative peace, abundance, technological progress, and well-functioning markets and governments.

But now it's become clear that this comfortable feeling is misguided. We find ourself in a period in which potential threats are real and can have dramatic consequences. Think for instance of the failure of our digital, logistical, energy or food infrastructures, or dramatic geopolitical developments. Hopefully, the numerous crises in recent years have awakened us from our slumber.

Resilience calls for a collective, mid- and long-term approach. After all, we are stronger together than on our own. Moreover, organising and preparing have a smaller impact when they are done in collaboration.

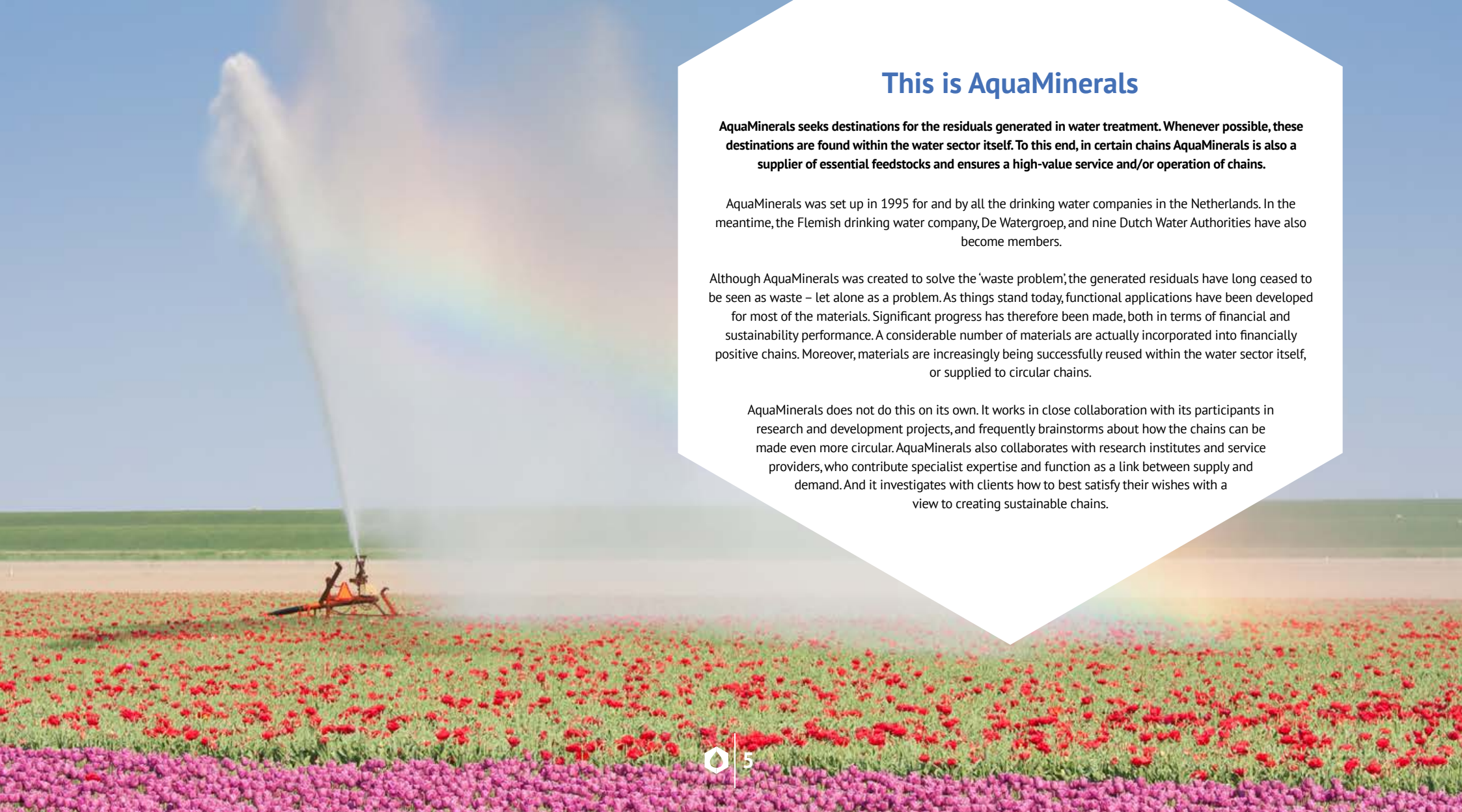
As a society we can see however that we are not always well prepared. One example here is our susceptibility to extreme perceptions and even mis-information on social media. Let's therefore begin by providing a counterbalance by presenting the facts. Let's not simply shake our heads and look away, but actively explain what is actually going on. Because if a large group trivialises or even denies the need, the organisation of resilience makes little sense.

I realise that resilience helps not only in dealing with dramatic events, but can also contribute to preventing them. A resilient person, a strong organisation or a resilient country are less likely to fall prey to risks than a vulnerable person, a vulnerable organisation, or a vulnerable country. The organisation of resilience is therefore also a form of prevention.

Is this new? No, certainly not. Although we have some catching up to do in many areas, in the Netherlands we have a centuries-old example of resilience: our struggle against water. This resilience is the result of cooperation, innovation and a long-term vision.

It won't surprise you to learn that taking part in the thinking about and contributing to a resilient energy and resources policy for the water sector is, for me personally and for AquaMinerals, a top priority. After all, the circular organisation of chains offers more control of raw materials and renders the sector less vulnerable to external developments.

Olaf van der Kolk
Managing Director, AquaMinerals



This is AquaMinerals

AquaMinerals seeks destinations for the residuals generated in water treatment. Whenever possible, these destinations are found within the water sector itself. To this end, in certain chains AquaMinerals is also a supplier of essential feedstocks and ensures a high-value service and/or operation of chains.

AquaMinerals was set up in 1995 for and by all the drinking water companies in the Netherlands. In the meantime, the Flemish drinking water company, De Watergroep, and nine Dutch Water Authorities have also become members.

Although AquaMinerals was created to solve the 'waste problem', the generated residuals have long ceased to be seen as waste – let alone as a problem. As things stand today, functional applications have been developed for most of the materials. Significant progress has therefore been made, both in terms of financial and sustainability performance. A considerable number of materials are actually incorporated into financially positive chains. Moreover, materials are increasingly being successfully reused within the water sector itself, or supplied to circular chains.

AquaMinerals does not do this on its own. It works in close collaboration with its participants in research and development projects, and frequently brainstorms about how the chains can be made even more circular. AquaMinerals also collaborates with research institutes and service providers, who contribute specialist expertise and function as a link between supply and demand. And it investigates with clients how to best satisfy their wishes with a view to creating sustainable chains.

This is what AquaMinerals does

For, and in the name of, participants:

- Direct the chain.
- Procure services and works.
- Sell the residuals and raw materials to both external market players and (processed) back to participants.
- Innovate and valorise through joint research with participants, clients and research institutes.
- Scout interesting technologies by participating in (international) knowledge networks and innovation projects.
- Carry out quality management.
- Strive with chain stakeholders for a certain measure of standardisation, and thus jointly enhance predictability and continuity.
- Arrange and maintain the required certificates and declarations.
- Monitor, lobby and advise in areas of policy and legal and regulatory frameworks concerning circularity, residuals and waste materials.
- Provide transparency in financial and product flows, the CO_2 footprint, and the degree of circularity in chains.

AquaMinerals is a not-for-profit, shared service centre for the participants. For the market, AquaMinerals is a commercial raw materials supplier. The earnings go to the participants, research and development.

Our core values

Joint pursuit of shared interest

Innovation

Reliability

Social entrepreneurship

The AquaMinerals Participants

At the end of 2024, AquaMinerals had twenty shareholders: the ten Dutch drinking water companies, the Flemish drinking water company, De Watergroep, and nine Water Authorities.
AquaMInerals has two types of shares: 'WS' shares (Water Authorities) and 'DWB' shares (drinking water companies), so that specific decisions can be taken by the Supervisory Board and by the shareholders, depending on whether they concern specific drinking water or Water Authority materials.

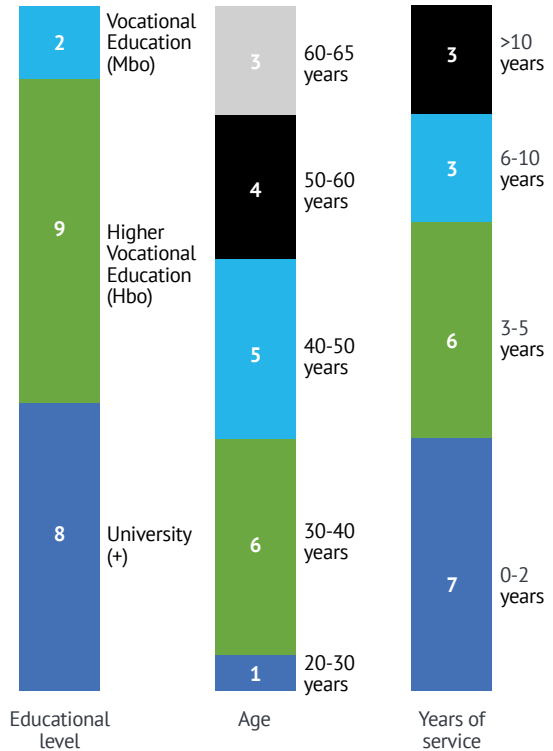
Drinking water Companies

Organisation	Shares	Share number	Interest
Vitens	DWB	2.808	18,1%
Brabant Water	DWB	1.968	12,7%
Evides	DWB	1.242	8,0%
De Watergroep	DWB	1.028	6,6%
PWN	DWB	802	5,2%
WML	DWB	614	3,9%
Dunea	DWB	574	3,7%
Waternet (DWB)	DWB	527	3,4%
Waterbedrijf Groningen	DWB	354	2,3%
Oasen	DWB	275	1,8%
WMD	DWB	252	1,6%
	Sub-total DWB	**10.444**	**67,2%**

Water Authorities

Organisation	Shares	Share number	Interest
Hoogheemraadschap Amstel, Gooi en Vecht	WS	773	5,0%
Waterschapsbedrijf Limburg	WS	751	4,8%
Hoogheemraadschap van Delfland	WS	653	4,2%
Waterschap De Dommel	WS	607	3,9%
Waterschap Aa en Maas	WS	546	3,5%
Waterschap Hollands Noorderkwartier	WS	537	3,5%
Waterschap Brabantse Delta	WS	499	3,2%
Hoogheemraadschap De Stichtse Rijnlanden	WS	479	3,1%
Waterschap Zuiderzeeland	WS	257	1,7%
	Sub-total WS	**5.102**	**32,8%**
	Total	**15.546**	**100%**

Staff-member structure year-end 2024



Highlights of 2024

The figures for 2024 were approximately as anticipated:

- AquaMinerals disposed of more than 328,000 tonnes of residuals for the participants in 2024: 2.5% (8,000 tonnes) more than in 2023. This is 2,000 tonnes more than the record year of 2021.
- The disposed volumes of the following materials of the participants exceeded the 2023 levels: aluminium sludge (+4,000 tonnes = +26%), river sediment (+3,000 tonnes = +42%), dewatered aquafer (+6,000 tonnes = +30%) and liquid aquafer (+7,000 tonnes = +10%). But disposals were lower for iron-lime sludge (-5,000 tonnes = -24%), filter gravel (-4,000 tonnes = -36%) and WWTP sludge (-9,000 tonnes = -14%).
- In 2024, for the first time, certificates for green gas were sold. These contributed to the higher sales value, but had no impact on the disposed tonnages.
- The sales value of materials with a positive economic value rose to € 7.34 million. This is € 2.26 million (+45%) more than the previous record of € 5.08 million in 2023. The sales value was actually double the figure for 2020.
- The collective costs – and thus the shareholders' contribution – expressed in €/tonne, rose to € 7.04/tonne (+€ 0.45 = +6.8%), primarily due to increased personnel expenses.
- The disposal and acceptance expenses increased to € 19.0 million (+5.4%), primarily due to price increases resulting from (inflation) indexations.
- The average transport distance fell from 134 to 129 kilometres, mostly because less WWTP sludge, which is transported over relatively greater distances, was transported in 2024.
- **The recycle percentage decreased. On the one hand, this was because coagulation sludge which, through to 2023, was taken to the brick industry, in 2024 remained in the depot pending an export licence for high-value applications in Belgium. And, on the other hand, a portion of the iron-lime sludge can no longer be supplied to agriculture.**
- The turnover per FTE increased to a record of € 1.58 million.
- Sick-leave levels dropped compared to 2023, from 2.1% to 0.6%. This is considerably lower than previous years and below the national average (5.2% in 2024).

Key figures

	2024	2023	2022	2021	2020
Results					
Turnover residuals and consulting	€ 26.341.965	€ 22.697.512	€ 17.960.796	€ 17.278.904	€ 15.792.924
Turnover non-shareholders in %	3,0	4,9	5,7	5,1	10,8
Total disposal and acceptance expenses	€ 19.047.292	€ 18.068.316	€ 13.975.345	€ 13.281.052	€ 12.064.083
Sales value (pos.-value materials)	€ 7.357.723	€ 5.077.946	€ 4.121.011	€ 3.988.703	€ 3.745.849
Acceptance (neg.-value materials)	€ 8.106.780	€ 8.977.202	€ 6.899.594	€ 6.786.926	€ 5.991.862
Operating result (before taxes)	€ 17.220	€ 23.094	€ 48.268	€ 54.548	€ 18.910
Shareholders' contribution in €/t	7,04	6,59	6,20	5,38	5,59
Assets					
Balance sheet total	€ 5.895.496	€ 5.787.349	€ 5.191.933	€ 3.860.230	€ 5.718.834
Shareholders' equity	€ 1.789.211	€ 1.775.263	€ 1.700.176	€ 1.433.884	€ 1.315.587
Liquidity (quick ratio)	1,4	1,4	1,5	1,6	1,3
Materials' figures					
Supply in tonnes[1]	328.323	320.648	300.801	326.026	298.634
Recycle percentage[2]	63 (68)	65 (71)	70 (80)	73 (78)	75 (80)
Average transport distance	129	134	114	125	126
Personnel					
Number of employees FTE per report year	16,5	16,3	15,8	13,8	13,6
Absenteeism in %3	0,6	2,1	4,7	2,4	6,0
Average turnover per FTE	€ 1.577.363	€ 1.392.485	€ 1.136.759	€ 1.252.095	€ 1.161.244

[1] Tonnage of shareholders, including third-party tonnage. In 2024, 341,293 tonnes were supplied.
[2] The part of the residuals that were sold as products or recycled. This is exclusive of other useful applications, such as in infrastructural works, and combustion for energy recovery. Parenthetic figures nclude upcycling into biofuel.
[3] 2020 includes long-term sick leave of two employees.

Sustainable, unless ...

The drive to find destinations of maximum value and sustainability for residuals is part of the DNA of AquaMinerals. And this also encompasses the environmental impact, related for instance to transport, storage and processing. AquaMinerals therefore strives to keep this impact as small as possible – both relatively (compared to alternatives) and absolutely. Several years ago, commitments were made regarding the maximum costs per tonne of CO_2 reduction.

The commitments offered a guideline, but proved to be problematic in practice. Market fluctuations, such as variations in the price of blue diesel compared to that of fossil diesel, meant that the cost price was sometimes above, and sometimes below the norm. Commitments of this type, which depend on daily rates, make the operation not only challenging, but also undermine the reliability of the sector.

It was therefore agreed with the participants that AquaMinerals will organise the chains sustainably, unless, for reasons related to costs, flexibility, scalability or reliability, it is not feasible. AquaMinerals reports on these choices and results on an annual basis.

From worthless to valuable

At the De Blankaart water production site, which is part of the Flemish De Watergroep drinking water company, there is a depot where aquafer generated in the production process has been deposited for a number of years. This 'mono-depot' – which contains only aquafer – turns out to be quite a valuable asset. The aquafer has acquired a positive economic and sustainability value and – because it has remained pure – is superbly suited for use. Following thorough preparations and consultations with various stakeholders, the excavation of the depot began in 2024. An intermediate site is being used to distribute the aquafer to biodigesters, where it is used for desulphurisation.

New material: green-gas certificates

In 2024, for the first time, AquaMinerals sold green-gas certificates. In contrast to the other materials marketed by AquaMinerals, this does not involve a physical delivery, but deliveries in the virtual domain. Naturally, this is subject to stringent rules: the origin and the supply chain are carefully and independently validated. AquaMinerals took steps in 2024 to become certified according to the ISCC EU (International Sustainability & Carbon Certification). AquaMinerals has therefore become part of a global certification system that guarantees the sustainability and traceability of biomass, biofuels and circular carbon sources. The certificate was obtained in early 2025.

Focus on iron-pellet and CO_2 chains

As a means of focusing on the development of circular innovations, a decision was made at the end of 2023 to prioritise iron pellets and liquid, green CO_2. This was a conscious choice: the materials originate in the water sector and are then applied in the very same sector. The iron pellets are produced from the iron sludge of drinking water companies and used to remove phosphate from WWTP effluent. The liquid CO_2, which comes from sludge digestion at WWTPs, can be used in drinking water pH correction, among other applications. Both chains are making progress. Steps are being taken towards the certification of CO_2, and a new disposal contract has been signed, while the development of iron pellets has received a boost through the creation of a new consortium. The scaling-up and start of complementary field tests will follow in 2025.

Interview

Guïljo van Nuland is chairperson of the Supervisory Board of AquaMinerals.

Increasing resilience through self-reliance

'Resilience is a highly topical theme. As long as everything runs smoothly internationally, and is predictable, the concern with resilience often remains in the background. But now we're seeing things shifting, both internationally and nationally. Geopolitical relations are changing and climate change is proceeding faster than we had hoped. It is already five past mid-night. These developments can exert pressure on the availability of raw materials and energy in the Netherlands. Think for instance of the import tariffs, or of the tensions between countries, but also of the Dutch decision to largely cease its own gas extraction activities. If we can't rely on external sources any longer, we will become extremely vulnerable. AquaMinerals can actually play an important role here. We ensure that a huge amount of residuals are brought back into the economy and society. And what is more, we are also increasingly active in the field of energy. We extract green gas and green CO_2 in the treatment of residuals – resources that previously were simply wasted. Initiatives of this kind contribute to greater self-reliance.

AquaMinerals needs to be resilient internally as well. This has to do with the continuity of our own organisation. Are we sufficiently protected against cybercrime? What happens if the regulatory and legal framework changes? How can we make sure that we will go on receiving and disposing of residual streams? We need to be conscious of these risks and ensure that we respond to them effectively. Every year we ask Olaf, the manager, to draw up a list of the twenty most relevant risks to the continuity of AquaMinerals. We then discuss the list, fine-tune it, and then determine the top three risks. These are then given special attention and are actively monitored. In this way, we work on our resilience.'

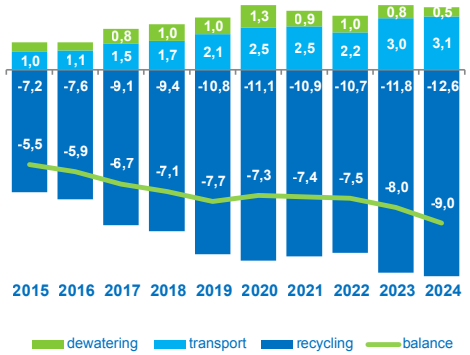
Sustainability results

Climate footprint

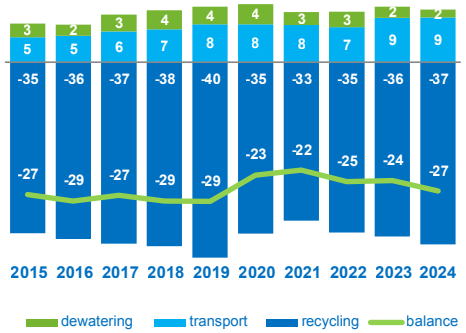
The climate objective for 2030 has almost already been achieved! The goal: in 2030 the climate benefit in the chain, through the reuse of residuals and recovered materials, has to be 50% greater than the level in 2015. A climate benefit is achieved when the CO_2 emissions avoided through recycling are greater than the impact of transport, dewatering and waste processing.

In 2015, the climate benefit amounted to 5.5 million kg CO_2-eq; in 2024, the figure was 9 million kg CO_2-eq. The climate benefit per residual tonne in the chain increased from 24 kg CO_2-eq in 2023 to 27 kg CO_2-eq last year. The increase is thus related not only to the volume of the residuals, but also to their increasingly high-value application.

Total footprint (mln kg CO_2-eq)



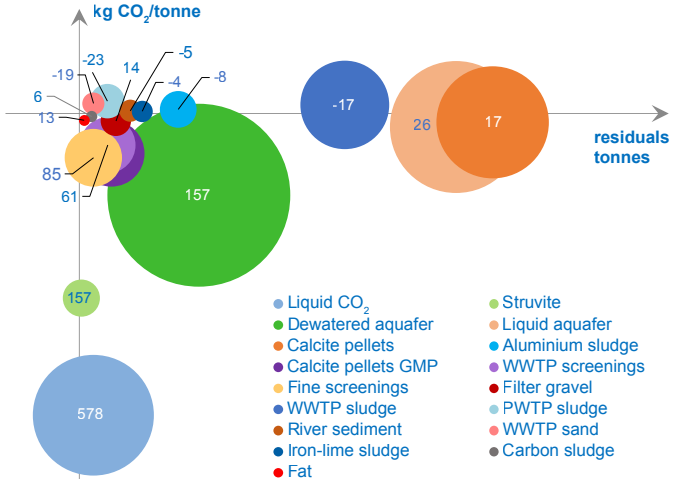
Footprint per tonne (kg CO_2-eq)



Climate-positive materials

Calcite pellets, aquafer, filter gravel, liquid CO_2, struvite, fine screenings, screenings and fat produce, on balance, a climate benefit over the entire chain. With regard to the last three of these materials, this is a result of their energy content: the combustion or digestion produces energy, thereby reducing the use of fossil fuels. Aquafer has for many years made the greatest contribution as a sulphur-binding agent in biodigesters, where it replaces iron chloride. In the years ahead, it is expected that it will be soon overtaken by CO_2, which is captured in the production of green gas from biogas in wastewater treatment, and then liquified. Currently, this is still only being done at a single plant at the Tilburg WWTP, but several initiatives are in preparation. The goal? To make all residuals climate-positive. Some residuals already have a climate-positive chain, but their scaling-up requires time, or there are as yet simply not enough clients.

Climate benefit per material (tonne CO_2-eq)



The bubble graph shows how far AquaMinerals has come. The size of the bubble indicates the climate impact or climate benefit for each material. On the vertical axis, the materials are ordered according to their climate impact per tonne. On the horizontal axis, the materials are ordered according to volume. Everything below the horizontal axis is climate-positive

Sustainable procurement
With the sustainable procurement of transport and dewatering, AquaMinerals can directly impact the footprint of the residuals chain – and that bears its fruit.

Most of the dewatered aquafer, coagulation sludge and 30% of the calcite pellets is transported using HVO100 biofuel, which produces a saving of 1,500 tonnes CO_2-eq. In addition, a trial with electric transportation produced an additional saving of 165 tonnes of CO_2. Together, this amounted to a 34% reduction of the transport impact.

At a number of drinking water production sites AquaMinerals coordinates the contract activities, such as the mechanical dewatering of aquafer or river sediment. Since 2023, HVO100 has been used as a fuel whenever possible. In 2024, this prevented the emission of 260 tonnes of CO_2.

Circular applications
Resource security is a hot topic. The circular use of materials in the water chain is not only sustainable, but it also reduces dependence on primary raw materials.

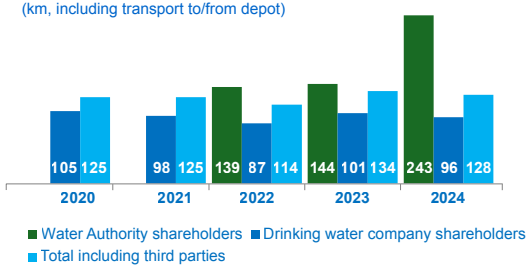
Seven drinking water companies now soften their water with their own seeding material. Work is underway, among others, on the use of Water Authority $C0_2$ in drinking water treatment, the production of coagulant from aquafer, the use of iron pellets for phosphate and arsenic removal, water softening with own calcite (see page 18), and the reuse of carbon sludge from drinking water to bind organic micropollutants in wastewater treatment effluent.

A pilot was launched for this latter application in 2024. If it succeeds, it will have a big impact: with one tonne of carbon sludge one can replace more than 100 kg of fossil coal, with a climate benefit in excess of 800 kg CO_2-eq per tonne of sludge.

Transport
To get the residuals to their destinations, a total of 12,318 transports were made by lorry and 23 fully-loaded ships. The average transport distance to the client or processor, including the transport to and from the depot, amounted to 129 km. That was lower than the previous year.

Because of the shortage of sludge processing capacity, it was however difficult to dispose of WWTP sludge. This made it necessary to transport over longer distances to processors, and to make more frequent use of a depot, which implied additional transport. In contrast, the drinking water residuals involved fewer transport kilometres.

Total transport distance per residuals tonne
(km, including transport to/from depot)



Interview

Bas Peeters is a member of the Executive Board of the De Dommel Water Authority, where his focus area is Circularity in the Chain. **Sam van Duifhuizen** of Fresh Valley makes use of their CO_2.

'We have become independent and resilient'

De Dommel Water Authority makes it possible to become resilient to changes in the world. Think of the energy crises or the Suez Canal blockage in 2021. Bas Peeters, member of the Water Authority's executive: 'Thanks to CO_2 from the residual streams, which "simply" comes from the Netherlands, companies and households are more independent. What is more, in this way our "waste" finds a good use.'

Fresh Valley is one of the companies that make use of CO_2 from the De Dommel Water Authority. The company cultivates (mini) cucumbers, strawberries and cherry tomatoes. Its vegetables can be found in practically all supermarkets in the Netherlands. Efficient cultivation is important if the demand is to be satisfied. The secret? High concentrations of CO_2. Sam van Duifhuizen, a director at Fresh Valley, explains: 'Plants grow by means of photosynthesis, a process in which sunlight, water and CO_2 are used to produce sugars and, ultimately, cucumbers. In our greenhouses we purposely work with increased CO_2 concentrations. This makes the cucumbers grow faster. During the energy crisis, the CO_2 concentration were by necessity dropped below the critical level of 400 ppm. We don't want that to happen again. So, when we heard through Pro4Agri [a collaboration of horticultural companies] of the possibility of using CO_2 from the De Dommel Water Authority, I spotted an opportunity.'

De Dommel is one of the first Water Authorities to market the CO_2 generated by water treatment in this manner. Bas Peeters, who works at the Water Authority on innovation and circular solutions, says: 'Circularity is an important part of our country's administrative agreement. AquaMinerals provides us with the knowledge and experience we need to make advances in the area. Since we are one of the pioneers, lots of brainstorming goes on; it is true collaboration.'

It was also AquaMinerals that brought the De Dommel Water Authority and Pro4Agri – and thereby Fresh Valley – together. Sam: 'We are very happy with this outcome. This CO_2 does not run out, which means that – regardless of what happens in the world – our cucumbers can continue to grow. This solution has made us independent and resilient.'

Resilience within AquaMinerals

Flexibility, adaptability and collaboration are more important than ever. Whether it concerns a tight processing market, changed legal and regulatory frameworks, or demand fluctuations: AquaMinerals works actively on strengthening its resilience, and thereby that of its participants.

Resilience means not only reacting to disruptions, but also actually thinking ahead and organising. Business Development explores new market opportunities and develops strategic collaborations. Within Planning & Logistics the organisation ensures flexibility in implementation and a robust day-to-day operation. And Projects & Innovation works on solutions that make these processes and chains more sustainable as well as resilient.

With this combined approach, AquaMinerals strengthens not only its own organisation but also the position of the water sector as a whole.

Projects & Innovation
Emma van Dobben
Environmental, Compliance and Sustainability Advisor

Clear methodology

'Circular applications within the water sector reduce reliance on finite raw materials. A good example: ground calcite pellets can be reused as seeding material for water softening, as an alternative to silver sand. Not all materials have fully circular applications, but many can be reused in other ways.

As set out in its policy objectives, the Netherlands aspires to achieve a circular economy. This requires structural reuse within and outside of the water sector. However, some materials currently have waste status. This is the case for instance of cellulose from waste-water. Such materials cannot be directly used as raw materials. For this to happen, an assessment has first to be made as to whether they are safe for the intended application and can thus be granted 'end-of-waste' status. This end-of-waste status is a condition for the use of secondary raw materials, and thus for reducing reliance on imported primary raw materials.

There is no national methodology to underpin this assessment, which means that companies face challenges in the task. The Sustainability & Compliance team is dedicated to the safe and sustainable reuse of materials. An end-of-waste status for residuals in the water sector is an inherent part of this. In the Moonshot PHA, AquaMinerals worked on the development of a method to achieve end-of-waste status faster and more efficiently by means of a self-assessment. An alliance of the Association of Water Authorities, Netwerk Groene Chemie, Nieuwe Economie (GCNE), Invest-NL and VNO-NCW is committed to developing this further into a Raw Materials Self-Assessment Tool ('Tool Zelfbeoordeling Grondstof'). Work is thus ongoing on enabling and maintaining delivery to markets.'

Business Development
Joshua de Jong
Business developer/Business intelligence specialist

New market opportunities

'Over the past few years, the continuity of our sector has been threatened by a variety of external factors, such as the corona crisis, the increase of gas prices, and the growing amount of contaminants in our water sources. This changed environment has affected the way in which our participants conduct their processes, but also the disposal possibilities for their residuals. The pressure these factors exert on our sector calls for a flexible and innovative approach. At AquaMinerals we support our participants in this regard, through our knowledge, our network, and our innovative and commercial capabilities.

The opportunity to brainstorm every day about solutions to make our sector future-proof is what makes working as a business developer at Aqua-Minerals so great. From researching the factor markets for purposes of sustainable procurement, to exploring new market opportunities for our residuals and entering strategic partnerships.

A fine example is the exploitation of the polishing pellets. A project that converts the aquafer from drinking water companies into small pellets, which can then be used in water treatment for the removal of phosphate or arsenic. This means that fewer scarce chemicals need to be used in the treatment process. Together with market players, we are now looking at the commercial production possibilities to strengthen our sector's resilience!'

Planning & Logistics
Raquel Diken
Supply Chain Manager

Resilient approach

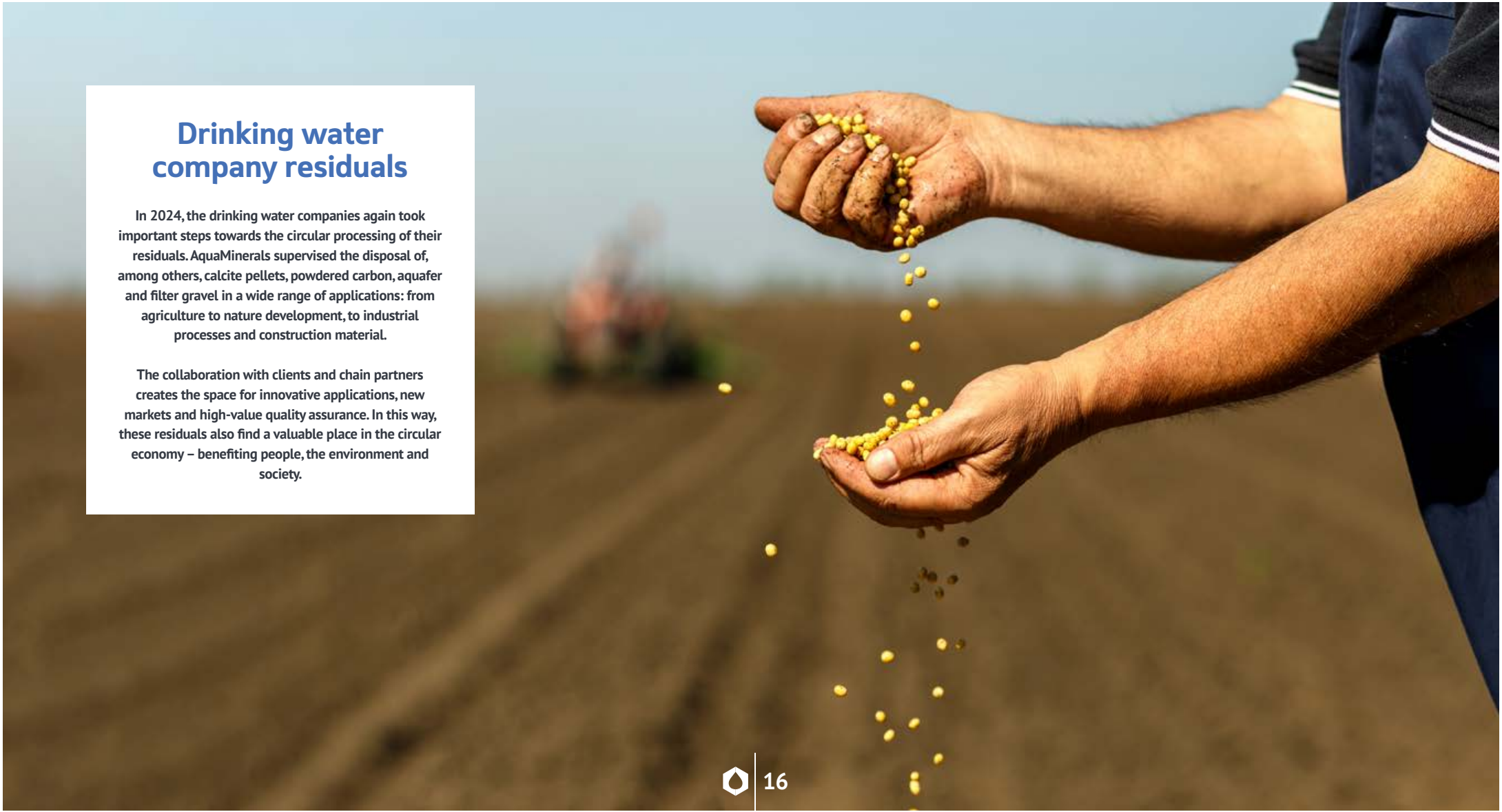
'Everything within Planning & Logistics revolves around the efficient and sustainable alignment of residuals with the right disposal locations. This requires flexibility and a resilient approach that enables a rapid response to a changing market demand and logistical challenges. As a planner, I daily coordinate the emptying of containers with residuals, such as sand, screenings, fine screenings and WWTP sludge. These containers need to be emptied on time, in close coordination with transporters, Water Authorities and processors.

Sometimes the scheduled transport to processors is unexpectedly cancelled. Such situations call for quick action and the finding of alternative solutions. I also offer support for other materials, such as aquafer and calcite pellets, which have constantly varying supply and demand. Resilience is essential in this role. It involves making quick decisions, finding solutions to disruptions, and continuous coordination between different parties. Thanks to the close collaboration with chain partners and a strong focus on innovation and sustainability, we make sure that our logistical processes remain resilient and future-proof. It is precisely these dynamics and challenges that make my work interesting and motivating.'

Drinking water company residuals

In 2024, the drinking water companies again took important steps towards the circular processing of their residuals. AquaMinerals supervised the disposal of, among others, calcite pellets, powdered carbon, aquafer and filter gravel in a wide range of applications: from agriculture to nature development, to industrial processes and construction material.

The collaboration with clients and chain partners creates the space for innovative applications, new markets and high-value quality assurance. In this way, these residuals also find a valuable place in the circular economy – benefiting people, the environment and society.



Calcite pellets

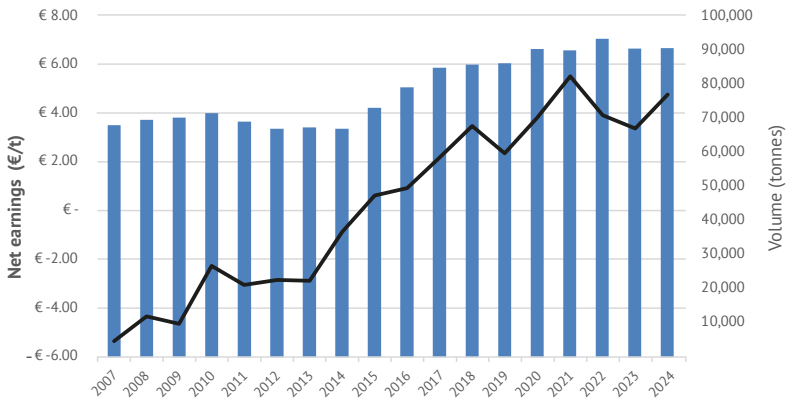
As in 2023, the supply of calcite pellets in 2024 fell a little below the budgeted level (circa 3%). This was probably the consequence of the numerous wet periods, which caused a decrease in water demand and thus of drinking water production. This decrease was evident at practically all of the participants. At the same time, market demand for pellets continued to grow, a reflection of the fact that more and more companies are increasing the sustainability of their production processes.

The growing interest in sustainable calcium carbonate resulted in an increase of the total sales value per tonne of calcite pellets, which surpassed the previous year's level by 18%.

This offers opportunities for further product development and market extension, like the use of (ground) calcite in various sectors.

In contrast to this positive development, transport expenses were higher (5%) than budgeted, mostly because of unexpected transport expenses for seeding material. The financial result for calcite pellets grew by more than 27% over 2023 (from € 332,502 to € 424,883)

More and more parties are also succeeding in finding international destinations for AquaMinerals calcite pellets. For example, calcite has recently begun to be exported to Canada, where Triqua uses it for the development of technologies to neutralise desalinated water. The pellets have also been sent to Gabon in Africa, where they are used as a high-value soil improver, contributing to the fertility of local agricultural soils.



Calcite seeding material

The demand for calcite seeding material in 2024 fell below forecasts. Drinking water companies purchased less seeding material than planned. This occurred primarily because the softening process with calcite seeding is more efficient than anticipated – resulting in higher yield. In addition, the roll-out to new locations proceeded slower than planned.

This resulted in a decrease of sales by 10% (€ 46,000) compared to 2023. At the same time, the participants made a comparable saving in their procurement expenses.

Circular hardening with calcite pellets – a sustainable innovation

In 2024 four drinking water companies – De Watergroep, WML, Brabant Water and Vitens – took an important step towards a fully circular water chain. They worked in a joint project on a more sustainable alternative for quarry lime, which has traditionally been used to harden overly-soft drinking water: calcite pellets.

These pellets are produced by the drinking water companies themselves during their water softening processes. The reuse of the pellets in water hardening creates a circular solution that considerably reduces the dependence on quarry lime, which is extracted by means of environmentally harmful mining. At the same time, it delivers a significant sustainability benefit.

AquaMinerals supported the drinking water companies in setting up the pilots. The results speak for themselves: three companies conducted tests successfully, while a fourth is ready to begin. At the hardening sites, the water quality using calcite pellets was at least as high as that using quarry lime. With this innovation the water sector has made a major advance in the direction of circularity. De Watergroep and WML are immediately rolling out the use of calcite pellets to their other hardening sites, and the other drinking water companies are also preparing phased transitions to this end.

Successful Danish pilot with Dutch calcite seeding material

The Danish drinking water company, Hofor, successfully completed a pilot using Dutch calcite seeding material. It is expected that Hofor will start with the large-scale application of its own ground calcite over the course 2025.

Opening Van Zutven Feed Processing in Veghel

On 12 September, the new Van Zutven Feed Processing production site was opened in Veghel. During this event, which was co-organised by AquaMinerals, the participants and chain partners learned about various sustainable applications and innovations using calcite.

Certification and quality assurance

AquaMinerals has extended its Material Health Platinum certification for calcite pellets until September 2025, under the highest standard: the Platinum category. This certification is granted by the Cradle to Cradle Certified Product Standard, with a specific assessment within the Material Health category.
AquaMinerals is also moving ahead in the area of quality assurance and product development. The external audits for ISO 9001 and GMP+ were successfully completed.

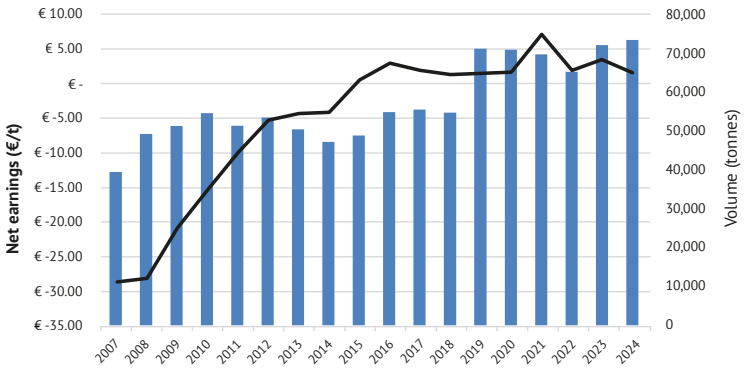
The continuous growth of demand and the successful implementation of circular applications underscore the sustainable value of calcite – both within and beyond the drinking water sector. With the positive results in various pilot projects, AquaMinerals is geared towards maximising calcite's circular potential – whether in ground form or not. In the years ahead, the focus will be directed at steadily higher-value applications and on strengthening partnerships to support this growth.

Liquid aquafer

In 2024, the supply of liquid aquafer exceeded the budgeted volumes by about 7,600 tonnes (over 12%). This was partly because a few 2023 batch-based deliveries – 3,000 tonnes from the Onnen site, for example – had been shifted to the following year. Furthermore, the clean-up of flushing ponds at WMD and in Noordbergum made for additional, unplanned transport. This meant that a considerable portion of the aquafer had to be temporarily stored in (mobile) silos, or be processed into dewatered material in dewatering depots.

At the same time, the demand in Northern Netherlands decreased substantially in the second quarter, in part because of the detection of amphetamine traces in biodigesters. This required extra (temporary) storage and more lengthy transport distances in serving clients in the south. Moreover, the shareholders did not supply their aquafer consistently; there were several delivery peaks, while the market demand generally remained constant.

These developments led to extra expenses for storage, processing and transport (circa € 400,000 in total). Part of the associated earnings, in the form of dewatered aquafer, were only realised in 2025. Although the earnings shortfall in the second half of 2024 was offset, there was a drop in the average net-earnings per tonne. This was caused by the extra storage, processing and biodigester transport expenses. In the medium term, AquaMinerals expects to have a more structured supply of liquid aquafer from the three large surface-water companies: Evides, PWN and Dunea. This will offer the opportunity to further optimise and extend the chain.



The extra storage and transport expenses for the dewatering depots have been left out of the chart, because the associated earnings (dewatered aquafer) were only realised in 2025. In this way, a more realistic picture is presented of the results in 2024. The decrease in earnings per tonne is therefore primarily attributable to the fact that a large part of the liquid aquafer went to clients by way of depots, because of the higher supply and the peaks in delivery, while market demand remained constant.

Dewatered aquafer

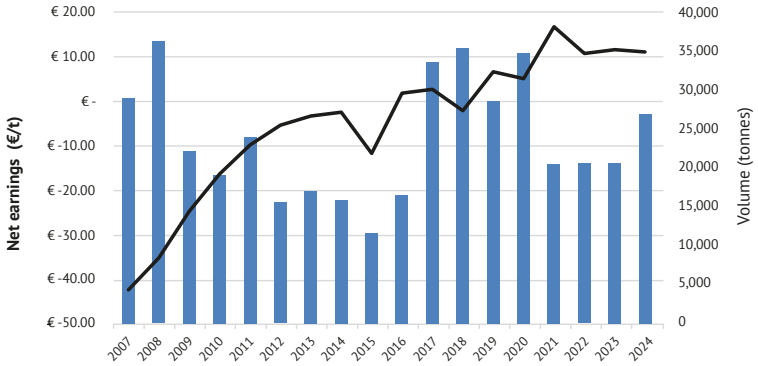
In 2024, the supply of dewatered aquafer fell short of the budgeted amount by about 14%. A key reason for this was the limited excavation of the mono-depot at De Watergroep, where safety and permit issues, together with unfavourable weather conditions, led to delays. For this reason, the planned recovery of 10,000 tonnes of aquafer was cut to about 4,000 tonnes.

This resulted in a 16% reduction in sales earnings, but also a 25% drop in transport expenses. The average net earnings per tonne remained essentially unchanged at € 11.

For 2025, AquaMinerals expects to make up for the earnings shortfall by means, among others, of the dewatering of liquid aquafer and the further excavation of the mono-depot. In addition, AquaMinerals made progress in the development of high-value applications for dewatered aquafer.

AquaMinerals in investigating with Natuurmonumenten how this iron-rich residual stream can be used to bind phosphate following dredging work in nature areas. This would reduce the conveyance of phosphate to surface water, while improving both water and soil quality.

Things are also moving ahead internationally. AquaMinerals supports a French start-up that aims to transport dewatered aquafer to be used as an additive in fermentation plants. The roll-out is still experiencing delays because of practical obstacles, such as the reverse charge VAT and REACH registrations.



Other drinking water company residuals

Filter gravel
In 2024, the supply volume of filter gravel was in line with the budgeted level. However, as in 2023, finding destinations for arsenic-rich filter gravel remained a challenge. The more limited disposal possibilities led to higher acceptance expenses, resulting in a negative impact of € 52,545 on the 2024 financial results.

Ferrous sand
The sale of ferrous sand – made from washed filter gravel – more than doubled in 2024, with earnings of € 53,847. An increased subsidy for ferrous sand as a drainage application contributed to this. A good example of this kind of application is subsurface water storage, as described below.

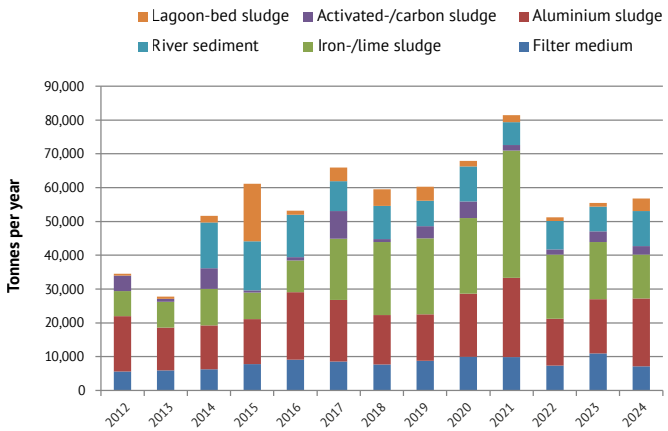
Subsurface water storage as a solution for freshwater shortage
The availability of freshwater for farmers and growers has come under pressure because of the salinisation of surface- and groundwater. Although the level of precipitation is sufficient, it occurs mostly in the autumn and winter.
By storing drainage or field water in wet periods, rather than discharging it, the water can be reused for irrigation later in the growing season. For this water to be infiltrated in the subsurface, it must of course meet quality requirements, including the phosphate standard.
In an ongoing research project, ferrous sand is being used to remove the phosphate, thus making subsurface water storage possible. The treated water is pumped under pressure into the ground, where a freshwater lens is created. The water can then be abstracted later in the growing season.
Acacia Water is carrying out several pilot studies into subsurface water storage, including in arable farming in Texel and Noordoost-Groningen, and in floriculture in Boskoop. These pilots also include research into the removal efficiency and lifespan of the ferrous sand filter.

Iron-lime sludge
Lime sludge is used in agriculture as a lime fertiliser. Sometimes a mixture is required to compensate for its low dry-matter content, which affects its acid-binding value. In 2024, 12,855 tonnes of iron-lime sludge was supplied, which was 26% below the budgeted volume. This resulted in lower transport expenses, but also lower earnings of € 21,765.

Aluminium sludge
In 2024, the disposed aluminium sludge was 1,309 tonnes (7%) above the budgeted level. This was the result of tests carried out at Waterbedrijf Groningen with an alternative polymer as a substitute for aluminium coagulant, which temporarily increased sludge production. The lower transport expenses of Belgian aluminium sludge fully offset the increased expenses.

Carbon sludge
Powdered carbon is used in the drinking water process to improve taste and remove organic micropollutants.

The disposal of carbon sludge in 2024 was more than double the 2023 volume. Following the use of activated carbon in powdered form in the drinking water process, the residual is transported as carbon sludge and used as a building material in landfill facilities.



Interview

Willemijn Bouland-Oosterwijk is Dunea's Programme Manager of Drinking Water for the Future.

Resilience requires collaboration and thinking ahead

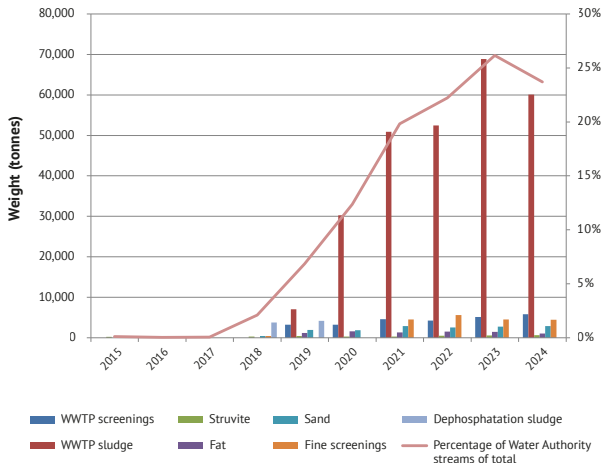
'Resilience for me has to do with two things: the robustness of our system, and the direct risks that confront us. On the one hand, you have to be able to handle fluctuations in the demand for drinking water and different water qualities. How adaptive are we? Can we, today and into the future, respond to changes? On the other hand, it's about issues like cyber threats, geopolitical tensions and vulnerabilities in our supply chain. How prepared are we to deal with these unexpected threats? Redundancy and restoration capacity are fortunately, thanks to a variety of statutory obligations, already effectively built into our current system.

The reuse of residuals plays an important role in this regard. It not only provides for sustainability, but also for self-reliance. We have therefore asked AquaMinerals to brainstorm with us about the development of a new form of water treatment. We want this to involve the use of as few additives and chemicals as possible. By bringing in AquaMinerals at an early stage, we hope to increase the chance of enhancing circularity. We have jointly brainstormed, shared knowledge and looked at possible applications for residual streams. We are currently in the stage of selecting a preferred alternative. A key challenge in the use of membrane technology is that a leaves behind a residual stream with treated, captured materials. As the water sources deteriorate, this problem becomes bigger. Intensive research is being done into solutions, but there are as yet no large-scale applications. The collaboration with AquaMinerals can also contribute to this in the future.

We are also working together on extending the lifespan of powdered carbon that is no longer suited for drinking water, by using it in wastewater treatment. We hope that a decision on scaling-up this initiative can be made this year. AquaMinerals helps us strengthen our resilience through creative brainstorming and by collaborating on smart solutions.'

Water Authority residuals

In 2024, AquaMinerals disposed of more than 80,000 tonnes of residuals for the Water Authority sector shareholders. Of this volume, more than 54,000 tonnes was WWTP sludge from the Limburg Water Authority. The screenings, PWTP sludge, fine screenings, and sand jointly accounted for about 20,000 tonnes. The other residuals involved smaller annual volumes of about 1,000 tonnes – of fat or struvite for example. A newcomer in 2024 was the disposal of the CO_2 from the De Dommel Water Authority.



Struvite

In 2024, the supply volume of struvite exceeded the budgeted level by 28%, primarily because of an extensive clean-up of the struvite plant at the Amsterdam-West WWTP. These clean-up activities led to disposal expenses that were 50% above the budgeted level.

Since the struvite is in large part sold to clients that themselves collect it at the depot, the impact on the disposal expenses in 2024 was considerable. At the same time, the sales earnings were 58% lower than budgeted. EU regulations were the reason for this: beginning in the second quarter of 2024, struvite could no longer be supplied to producers of EU fertilisers because of the presence of traces of Clostridium perfringens. Since these traces are difficult to remove, the supply to producers of EU fertilisers was suspended as of the second quarter of 2024.

With the aim of improving the product quality, Aqua-Minerals is working with the 'struvite lead-group' on a strategy for central processing. This plan includes the addition of a hygienisation step, which will effectively remove Clostridium perfringens and thus restore the struvite sales market.

CO_2

In 2024, the production of liquid CO_2 was 28% under the budgeted level, which led to returns 23% below anticipated levels. The analysis and sampling expenses – entered under disposal expenses – were 112% higher than budgeted.

This was mainly due to the start of direct sales, in the fourth quarter, to end-users in greenhouse horticulture via a new partner. This strategic change required supplementary analyses and controls.

Because of the removal of an intermediate link in the chain, the sales price in the fourth quarter was almost 40% higher than the prices applied by the other market players in mid-2024.

Moreover, at the end of 2024 the Delfland Water Authority joined the collective for liquid CO_2, and plans to begin supplying liquid CO_2 from the Houtrust site (Delfland) in 2025.

Phosphate

Phosphate is an indispensable building block for life. It plays a key role in food production and is essential for plant growth. About 90% of the world's extracted phosphate rock is used for the production of artificial fertilisers. AquaMinerals is also a source of such nutrients for agriculture. In addition to food production, phosphate is also increasingly being used in innovative sectors, for instance, in the production of batteries and fire-retardant products.

Despite the wide availability of phosphate rock, Europe is highly dependent on imports from a small number of countries, like Morocco, Russia and China. This explains the presence of phosphate rock on the European Union's list of critical raw materials. The recovery of phosphate from residuals offers an important opportunity to reduce this dependence and to close the phosphate loops.

Phosphate recovery from wastewater
The Water Authorities play a crucial role in the reuse of phosphate. Following its use in the food chain, a large portion of the phosphate ends up in sewage water. Wastewater treatment plants remove more than 90% of the phosphate and concentrate it in the treatment sludge. Through the application of smart techniques, a substantial portion of this phosphate can be recovered and reused.

There are three key routes for phosphate recovery:

1. Struvite recovery.
   Phosphate, in combination with magnesium and ammonium, precipitates into struvite, a high-value fertiliser.
2. Vivianite extraction.
   In the application of iron salts, phosphate can be recovered in the form of vivianite. This technique is currently under development.
3. Recovery from sludge ash.
   Phosphate is contained in the ash that remains after the combustion of sludge, and can be again recovered from the ash by means of chemical processes.

Struvite recovery is currently the most proven technique. Several installations are running in the Netherlands, and globally more than one hundred are in operation. This not only contributes to a circular economy, but also has a lower environmental impact when compared to traditional phosphate extraction.

The role of AquaMinerals
AquaMinerals works with the Water Authorities on using phosphate as optimally as possible. The organisation provides support in the further development of struvite and vivianite recovery, and explores new disposal possibilities. AquaMinerals also contributes to research into high-value applications for recovered phosphate, thereby creating both economic and ecological added value.

By investing in circular phosphate chains, the dependence on imported phosphate rock can be reduced, the associated CO_2 emissions cut, and a contribution made to the sustainable food supply of the future.

Fine screenings

The disposal of fine screenings in 2024 remained virtually unchanged compared to 2023. An increase of about 2,000 tonnes per year is anticipated for 2025. This prevision is related to the re-start of operations at the Amstel, Gooi en Vecht Water Authority's plant at the Blaricum site. In addition, the Hoogheemraadschap De Stichtse Rijnlanden Water Authority continued to deliver fine screenings for the time being, since the plant at the Leidsche Rijn site is still at the start-up phase and is not yet operating optimally. This latter plant is intended to produce more cellulose and thereby reduce the volumes of fine screenings.

Screenings

AquaMinerals has been disposing of screenings for its shareholders since 2019. The supply of this residual has increased slightly since then. In 2019 the supply was around 3,200 tonnes. In 2024, AquaMinerals disposed of more than 5,800 tonnes of screenings. Although screenings are one of the residuals that are currently incinerated, the aim is to find a more useful and higher-value application for them in the future.

WWTP sludge

AquaMinerals disposed of more than 54,000 tonnes of WWTP sludge for the Limburg Water Authority in 2024. That is 10,000 tonnes below the 2023 volume. The decrease is explained by the drop in disposals of WWTP sludge from the Amstel, Gooi en Vecht Water Authority. For 2025, AquaMinerals expects an increase in disposal volumes, partly because of a shortage of processing capacity in the market.

Among the reasons for this shortage is the stricter regulations in Flanders for the processing of foreign sludge. In 2024, the WWTP sludge of the Limburg Water Authority was processed in the Netherlands, Belgium and Germany, with the latter accounting for the largest portion. It is expected that in 2025 a large amount will be processed in the Netherlands, thanks partly to the start-up of an extra production line at one of the Dutch processors.

PWTP sludge

AquaMinerals disposes of PWTP sludge for Industriewaterbedrijf Evides. Evides treats wastewater for various commercial parties at the CAB, Foodhub and Schiphol sites, among others. These treatment processes generate PWTP sludge. In 2024, AquaMinerals disposed of about 6,000 tonnes of this sludge. Because of a shortage in processing capacity and the material's current Euralcode, the processing possibilities are limited. AquaMinerals and Evides are together studying how the continuity of the disposal can be assured. In 2024, the PWTP sludge was processed primarily in Flanders.

Interview

Sven Mommers is the owner of Circufert, a company that uses industrial residuals as fertilisers or soil improvers.

Resilience through fertile land and circular chains

'In Gabon we're working on a project to make barren land fertile for sustainable plantations – for palm oil for instance. To make the land fertile, you need to increase the pH value of the soil. The AquaMinerals calcite pellets play a crucial role here. This project was launched two years ago and, so far, we have transformed 5,000 hectares of barren land into fertile land. Sustainable palm oil is now being produced on the land, and the destruction of the rainforest avoided. The AquaMinerals calcite pellets offer a great advantage compared to regular calcite: they are hard and can survive the rugged African sandy roads without becoming pulverised. They are also not soluble in water, but only in acid. This means that their effect on the soil is gradual. Regular calcite also raises the pH even if this is not necessary, which is not good for the soil and reduces the effectiveness.

The AquaMinerals calcite pellets don't have this problem. Their use contributes directly to the resilience of the soil and to a more sustainable food production. The project not only ensures that erosion is countered, but also that fertile land is preserved and extended. If you were to do nothing, you'd get erosion, which affects both barren and fertile land. By planting palm trees, you avoid erosion and you increase the surface of fertile land. Over the long term, this contributes to moisture retention and combating drought. Circular chains are essential in this context. It is a matter of minimising the use of fossil raw materials and of maximising the use of nutrients from by-products. This is not only central for my own company, but also for AquaMinerals.'

Product and market development of Water Authority residuals

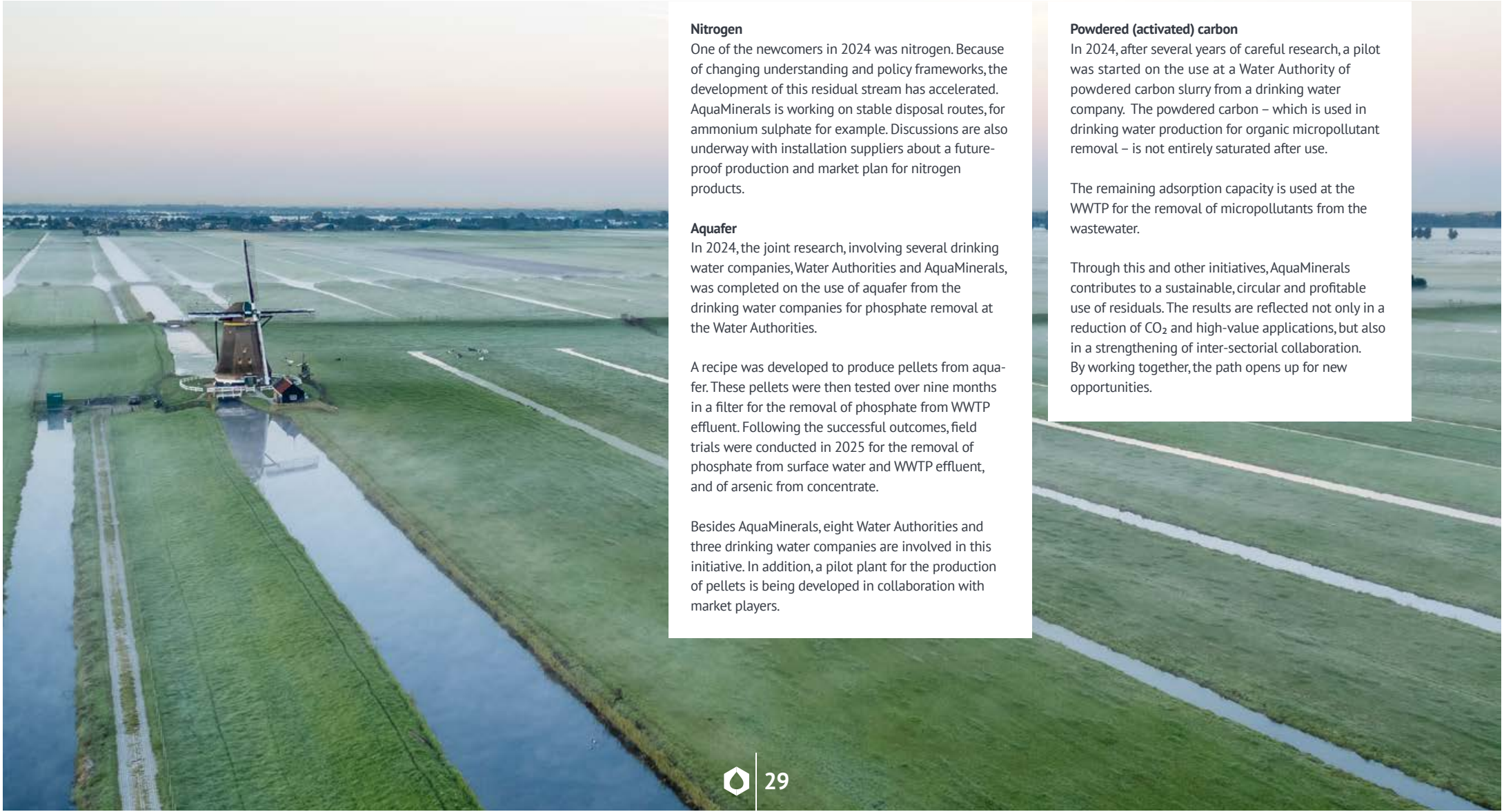
In 2024 big steps were taken in the product and market development of residuals at the Water Authorities. In this effort, AquaMinerals works closely with the Energy and Resources Factory, with which all 21 Dutch Water Authorities are affiliated.

Cellulose
For cellulose there are attractive opportunities on the horizon. For example, the Hoogheemraadschap Hollands Noor¬derkwartier and the Zuiderzeeland Water Authorities are investigating new disposal routes for their fine screenings, which offers prospects for innovative, circular applications. Collaboration is also occurring internationally: in the British BICE project, the possibilities of making glucose from cellulose are being researched.

Phosphate recovery
Advances are also being made in the area of phosphate recovery. The certification of struvite has been initiated, with a view to satisfying the provisions of the EU Fertilising Products Regulation – an important step towards wider disposal possibilities. For vivianite, the emphasis is on raising the Technology Readiness Level (TRL) within the Wetsus phosphate theme. In this collaboration AquaMinerals is studying additional applications for this material.

CO_2
The further development of the CO_2 product chain is high on the agenda. AquaMinerals is working on the consolidation of different production sites of 'green' CO_2 in order to supply the product directly to the market, but also to enable applications in the drinking water sector.

To this end, certification processes have been initiated in collaboration with KIWA, various Water Authorities and drinking water companies. Furthermore, AquaMinerals has been made programme manager for the acceleration programme for green gas and CO_2 – on a commission from and in partnership with the Association of Water Authorities – to further strengthen the business case for biogenic CO_2.



Nitrogen
One of the newcomers in 2024 was nitrogen. Because of changing understanding and policy frameworks, the development of this residual stream has accelerated. AquaMinerals is working on stable disposal routes, for ammonium sulphate for example. Discussions are also underway with installation suppliers about a future-proof production and market plan for nitrogen products.

Aquafer
In 2024, the joint research, involving several drinking water companies, Water Authorities and AquaMinerals, was completed on the use of aquafer from the drinking water companies for phosphate removal at the Water Authorities.

A recipe was developed to produce pellets from aquafer. These pellets were then tested over nine months in a filter for the removal of phosphate from WWTP effluent. Following the successful outcomes, field trials were conducted in 2025 for the removal of phosphate from surface water and WWTP effluent, and of arsenic from concentrate.

Besides AquaMinerals, eight Water Authorities and three drinking water companies are involved in this initiative. In addition, a pilot plant for the production of pellets is being developed in collaboration with market players.

Powdered (activated) carbon
In 2024, after several years of careful research, a pilot was started on the use at a Water Authority of powdered carbon slurry from a drinking water company. The powdered carbon – which is used in drinking water production for organic micropollutant removal – is not entirely saturated after use.

The remaining adsorption capacity is used at the WWTP for the removal of micropollutants from the wastewater.

Through this and other initiatives, AquaMinerals contributes to a sustainable, circular and profitable use of residuals. The results are reflected not only in a reduction of CO_2 and high-value applications, but also in a strengthening of inter-sectorial collaboration. By working together, the path opens up for new opportunities.

Expectations for 2025

(Stable) price increase due to scarcity

The last few years have been marked by sharp, often erratic, price increases. In 2025, both purchase and sales prices will continue to rise, though less sharply and more predictably. The market has become used to the idea that products and services are in short supply. The 'whatever the cost' reflex for a short-term delivery has become a lot less common; after all, it often produces disproportionately high costs and crowding out effects. The flip side is that parties more often await their turn, which leads to increasing waiting times.

Attention to 'small' residuals

AquaMinerals ensures destinations for several smaller volume residuals, which over the past years have been disposed of in a similar manner, without any innovation of note. Although the suppliers are given peace of mind and continuity is assured – in contrast with the larger volume residuals – no progress has been made in the financial or sustainability results.

In 2025, four of these materials will be analysed to explore the optimisation possibilities that might exist. Think for instance of improvements in the areas of logistics, processing, destinations or decentralised measures – individually or in combination. For a number of materials, AquaMinerals expects that an improvement of its proposition can lead to a growth in volumes. This growth would in turn strengthen the proposition, thereby creating an upward spiral. These smaller volume residuals will therefore receive extra attention in 2025.

Resilience and policy: greater focus on circularity

The past few years have made it clear that the availability of raw materials cannot be taken for granted. The reasons for this include COVID, the blockage of the Suez Canal, levies, the war in Ukraine, and other geopolitical developments. This has made AquaMinerals increasingly conscious of the need in Europe for a solid raw materials policy.

In March 2023, the European Commission proposed the Critical Raw Materials Act (CRMA) as a means of safeguarding access to strategically important raw materials. One of the act's targets for 2030, is that at least 15% of the annual consumption of these critical raw materials should come from recycling and circularity.

This policy – at European, national and sectoral level – will give circularity an added boost. AquaMinerals is monitoring these developments closely. How this policy is translated into concrete measures (such as subsidies, taxes or blending requirements) will strongly determine how AquaMinerals and the sector can respond.

Automatization

In the last thirty years AquaMinerals has grown steadily – in turnover, tonnage and tasks. Over the course of these years, several software packages have been used in the management of tonnages, knowledge, projects and finances. In practice, this was sub-optimal: the systems did not interconnect well with each other, which led to extra manual work. AquaMinerals has therefore shifted to a single, integrated system which incorporates all of these functions.

In 2025, the CRM and project module, among others, will become operational. AquaMinerals is also exploring the possibilities of using artificial intelligence (AI) to support its processes. External experts and the software provider will be consulted in 2025, and targeted training pursued.

Practice- and goal-oriented research

As in previous years, AquaMinerals invests a portion of its resources in research. This mainly concerns research on the higher Technology Readiness Levels (TRLs), in collaboration with participants, service providers and clients. In compiling the project portfolio, a balance is sought between the origin of the residuals (drinking water production or wastewater treatment), the size of the stream (large or small) and the motivation (financial, sustainability or reputational).

The focus is directed at innovations that contribute to reuse within the water cycle, such as the iron pellets and the liquid, green CO_2 described in this annual report. In 2025, AquaMinerals will focus on innovations in the area of soil improvement, green nutrients, energy, sludge dewatering, brine, green coagulants and slaked lime.

Governance and financial policy

Governance

According to the statutes of AquaMinerals, the most important powers are vested in the management and the Supervisory Board (SB). The General Meeting of Shareholders (GMS) appoints the SB members upon the recommendation of the SB; the SB appoints the managing director.

The management leads the company, is responsible for achieving its objectives, the strategy and associated risk profile, the financial results and the societal aspects. In this regard, the management is accountable to the SB in its role as supervisor, and to the GMS as the economic proprietors of the company. The management provides both entities, in a timely manner, with all the information they need to exercise their tasks.

AquaMinerals is not obligated to implement the principles and best practice provisions of the Dutch Corporate Governance Code. Nonetheless, the levels of transparency and responsibility established by the Code fit seamlessly with the organisation's objectives and operational management. To reflect in more detail the principles of the Governance Code, in 2011 various regulations and statutes were implemented or adjusted and, in 2012, the treasury statute was added. In 2024, this treasury statute was updated and adopted in the GMS.

Financial policy

Treasury

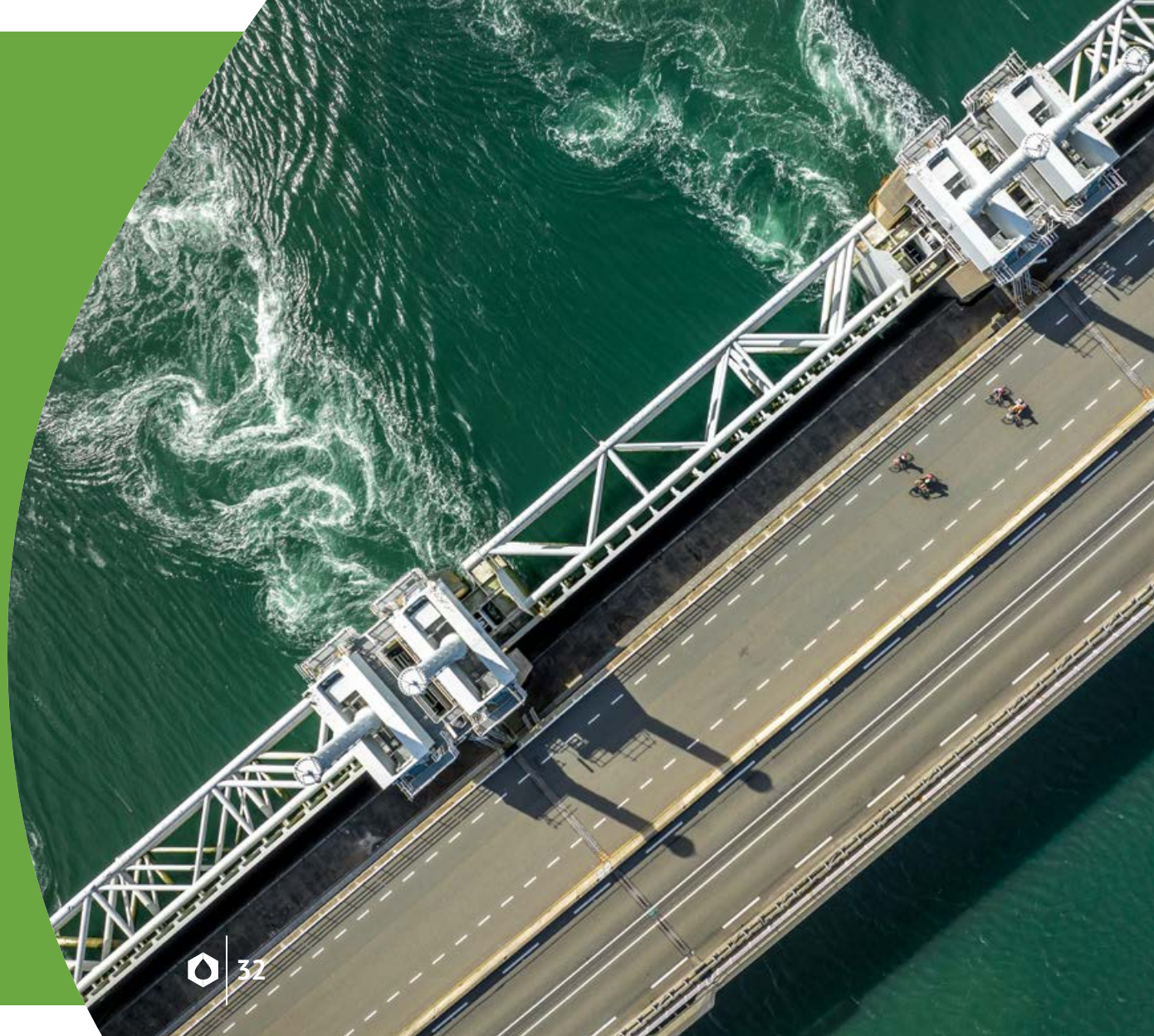
In accordance with the treasury statute, the final dividend test has been instituted. On this basis, the management will assess whether the company, following a distribution made to the shareholders, is able to continue paying its due debts.

On the basis of this assessment for 2024, it was decided that no distribution be made, because the shareholders' equity at year-end 2024 was under the standard target: the sum of the annual personnel expenses. Per 31 December 2024, the annual personnel expenses amounted to € 1,939,366. At the same date, shareholders' equity amounted to € 1,789,211. The positive cash flow from business operations, of € 10,998, was therefore added to shareholders' equity.

In 2024, AquaMinerals had no investments, nor did it lend any funds to third parties. Since 2024, the organisation has held a deposit account at the Rabobank, with a maximum interest-rate term of six months.

Liquidity risk

The quick ratio per 31 December 2024 was 1.4 (equal to that of 2023) and thus remains above the standard target of 1.2. The solvency at the reporting date was 30%, that is, 1 percentage point below that of year-end 2023 (31%). This still meets the minimum standard target of 30%. The average settlement period by clients of 32 days was one day shorter than in 2023 (33 days). The average settlement period by AquaMinerals was 30 days, which was the same as that of 2023.



Risk management

Risk management forms part of the AquaMinerals management model, and is discussed on a regular basis with the SB. A risk-inventory system is employed with the aim of providing a clear, transparent and reproducible picture of priority risks. The following were identified as the most important risks for 2024.

1. Role management

AquaMinerals is welcoming a growing number of shareholders. Besides being proprietors, these shareholders are also service clients, which creates a special relationship. With the growing number of shareholders – and thus also of clients – it becomes increasingly important to keep an eye on both the company interests of AquaMinerals as well as on the individual interests of the service clients. AquaMInerals wishes to operate effectively, but in doing so, constantly takes into account the growing number of individual wishes.

In 2024 the following actions were taken:

- the subject was discussed in the sounding-board group, the SB and the General Meeting of Shareholders (GMS);
- in the documentation, more explicit reference started to be made to the capacity of a GMS representative when they are mentioned: as shareholder or as service client;
- consideration was given to dividing the GMS into a shareholders' meeting and a users' meeting. The idea was abandoned, because a combined meeting offers more advantages than does a divided one.

In 2025:

- it was agreed to proceed with further discussions of this subject, in which the sounding-board group will play a central role.

2. Defaulting client credit risk

In 2023, AquaMinerals had to write off a number of receivables, partly as a result of bankruptcies and partly because of differences about invoices. In the past, no reserve was created to deal with such circumstances, because the damage remained limited and could be absorbed within the regular budget. However, in view of the increasing value of residuals the financial risk has grown.

In 2024, AquaMinerals took the following actions:

- established that the write-off amount in 2023 was exceptionally high; in other years, including 2024, the write-offs amounted to only a few thousand euros;
- noted that about 75% of the invoices were sent to shareholders, involving a very small credit risk;
- concluded from analysis that contentious invoices largely originated in operational mistakes at AquaMinerals or at service providers, and therefore are not covered by insurance;
- paid extra attention to receivables management. A new measure was also taken: for clients with an annual turnover < €10,000 and a payment delay of >90 days, delivery is suspended until the arrears have been cleared.

Because of these measures, in 2024 no reserve was needed for bad debts or uncollectable receivables.

In 2025:

- insurance was taken out for the credit risk for debtors that are not shareholders.

3. Insufficient management of increasingly complex contracts

With the increasingly lengthy chains and high-value applications, contracts are becoming more and more complex. Although AquaMinerals is capable of establishing solid contracts, there are risks related mainly to monitoring, internal allocation of responsibilities, and follow-up in the case of irregularities, particularly in the context of an expanding organisation.

In 2024 the following actions were taken:

- internal responsibilities were assigned for:
  - contract drafting
  - contract monitoring
  - contract execution;
- a case and account manager were assigned to each residual stream and participant, respectively;
- depot management was centrally assigned to a single person.

In 2025:

- the AFAS CRM module was set up for contract management in 2024. This is currently being trialled, and will be fully operational in the first quarter of 2025.

Interview

Sabrina Helmyr has been Water Chain Director at the Aa en Maas Water Authority since 1 January. In this role she provides leadership to departments occupied with advice, automatization, data and treatment processes.

Jointly building a resilient water chain

'Resilience to me has multiple facets. Since digitalisation is also in my portfolio, cyber-resilience immediately comes to mind. This is something we're currently working on, as we are on physical resilience. But when I consider our treatment processes, resilience for me also means robustness. How can we ensure that our installations can take a blow, can cope with influent fluctuations, or with variations in the prices of raw materials? These are real challenges. A current bottleneck is grid congestion. New treatment techniques often require more energy, but it isn't always available because of shortages in the power grid. There are also shortages in the market: there are only a few contractors available to carry out all our building projects. This puts pressure on achieving our ambitions.

And this is exactly why I see great potential in the collaboration with AquaMinerals. If we succeed in recovering and marketing raw materials from our own processes in an ongoing manner, we will not only strengthen our circular objectives, but also our independence from external markets. As a shareholder representative, I hope that AquaMinerals will continue inspiring us to explore new recovery paths. Working together with all partners, we can bundle our knowledge, create scale and take concrete steps towards the circular chain.

My ambition? To get even more Water Authorities to participate. Maybe even other parties from industry or from abroad. The bigger the community, the more we can learn and achieve. I am proud to have been there at the start of the Top 5 Raw Materials initiative in 2017. What then began as an idea, has now grown into a broad movement in which the valorisation of raw materials has become widely accepted. And together we can still contribute a lot more.'

Supervisory Board

The Supervisory Board (SB) oversees, among other things, the policy of the managing director and provides the latter with advice. Its supervision also concerns the financial performance and developments, regulatory compliance and risk management.

Activities of the SB in 2024

The Supervisory Board met on four regular occasions in 2024 and, among others, addressed the following items:

- monitoring the results of the company in light of the 2024 budget and the Business Plan 2022-2024;
- determination and monitoring of actions related to priority risks;
- determination of the 2023 annual figures and profit appropriation of that year;
- establishing the budget and annual plan for 2025;
- updating the treasury statute;
- appointment of Ms J. Spoeltman as vice-chairperson of the SB;
- the policy for sustainable procurement;
- IT and cybersecurity;
- the strategic and operational plan 2025–2027;
- the denaturation of AC pipes;
- the IP policy;
- the reappointment of Mr G.J. van Nuland as chairperson of the SB;
- the modification of the supply agreement;
- discussion of the performance of the managing director, and monitoring of the personal development plan.

Activities of the GMS 2024

The General Meeting of Shareholders (GMS) was held twice in 2024, and took the following decisions:

- approval of the Annual Report and Financial Statements for 2023;
- discharge of the managing director for his management, and of the members of the SB for their supervision during fiscal year 2023;
- the profit appropriation for 2023;
- approval of the transfer of 751 'WS' shares of the Limburg Water Authority Company to the Limburg Water Company;
- determination of the strategic and operational plan 2025–2027;
- determination of the updated version of the treasury statute;
- determination of the weighting of green gas in the shareholders' contribution;
- ratification of the annual plan and budget for 2025;
- approval of the reappointment of Mr G.J. van Nuland as chairperson of the SB for a new four-year term.

Composition of Supervisory Board

Mr G.J. van Nuland

(1956), Chairperson

Profile: Managerial

Appointed: 1 January 2021

Reappointed: 1 January 2025

Other functions and positions:
Chairperson SB, VB Groep (Building and Project Development); Chairperson SB, Rabobank 's-Hertogenbosch e.o.; Advisor, National Register Governance; Member Advisory Council, Gubbels BV (Infra); Chairperson Central Administration, Brabants Landschap; Arbitrator at the NAI; advisor at various companies

Ms J.H.P. Spoeltman

(1969), Vice-Chairperson

Profile: Financial

Appointed: 15 March 2019

Reappointed: 1 July 2023

Resignation: 1 July 2027

Other functions and positions:
Head Audit Retail NL, Rabobank; Member SB, Stichting De Nieuwe Arbeid Noordoost Brabant

Mr C. Collart

(1964), Member

Profile: Legal and sustainable business

Appointed: 1 July 2023

Reappointed: (possible) 1 July 2027

Other functions and positions:
Director, Pallieter RENEFF BV; Member SB, 4BLUE BV; Board Member, Gyled Ltd (China); Member Advisory Committee, Global CleanTech Capital Fund II; Member Governing Board, Brabants Landschap; Chairperson, Eindhovensche Golf

Ms W. de Wild

(1975), Member

Profile: Sustainability and innovation

Appointed: 1 January 2024

Reappointed: (possible) 1 January 2028

Other functions and positions:
General Director, NVRD; Chairperson, ANBO

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