reststoffenunie

added value from water

RESTSTOFFENUNIE WATERLEIDINGBEDRIJVEN B.V.

Annual Report 2013

Annual Report 2013
Reststoffenunie

Contents

Foreword by Hay Koppers

Movement is progress – and 2013 was certainly a year with plenty of movement. In the run-up to the 2014-2017 Business Plan, at the request of our shareholders, we had an independent market evaluation conducted. The evaluation report concluded that the enterprise produces positive results, both financially and with regard to sustainability. The exercise also highlighted a number of points that oblige us to take a closer look at the future course of the business. The results of this effort will be incorporated in the (following) 2015-2018 Business Plan, which we will present to our shareholders at the end of 2014.

At the same time we have taken some important steps for our shareholders. In 2013, while disposal expenses dropped slightly we realised more than € 1,000,000 in net earnings from the sale of residuals. This figure reflects a continuation of the growth trend started in 2010, and for which the leading Dutch financial newspaper, *Het Financiële Dagblad*, presented us with a Gazelle Award, with which it recognises the nation's fast-growing companies.

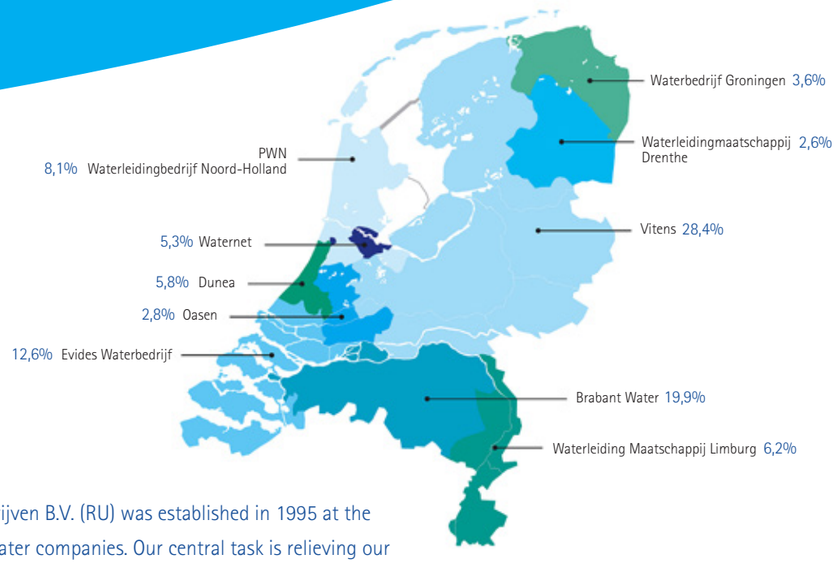
Our staff members have also worked hard in achieving, or surpassing, all the objectives of the 2010-2013 Business Plan on schedule. We can rightly be proud of having done more than well.

A word of thanks also to our shareholders. They are putting more and more effort into providing residuals of better quality and into better managing operational costs. This is good for them, good for Reststoffenunie and good for the environment!

Sincerely,

Hay Koppers
Managing Director

1 About Reststoffenunie Waterleidingbedrijven B.V.



Reststoffenunie Waterleidingbedrijven B.V. (RU) was established in 1995 at the initiative of the Dutch drinking water companies. Our central task is relieving our shareholders of the residuals resulting from the preparation, transport and distribution of drinking water.

In doing so, we are governed by economic and sustainability objectives. RU sells the residuals – waste products and by-products – as (secondary) raw materials to clients in a variety of economic sectors. These include the building and glass industries, mineral commodity traders, fossil fuel and biofuel energy generators, agriculture and horticulture players, and the water treatment branch.
Together with our shareholders, supply-chain partners, (potential) clients and service providers, we continually develop new application possibilities and search for functional markets and sales channels.

RU is a private limited company. All of its shares are held by the Dutch drinking water companies. These shareholders exercise their vote on the occasion of the General Meeting of Shareholders (GMS) which is held twice a year. The Supervisory Board (SB) consists of five members who, upon the recommendation of the SB, are appointed by the GMS.

RU was set up as a private limited company (B.V.), but in its daily activities actually operates as a Shared Service Centre (SSC) for its shareholders. This SSC is a reflection of a joint strategy, which combines the advantages of centralisation and decentralisation. It provides the opportunity to conduct all activities concerning the residuals in approximately the same manner, bringing them together under a semi-autonomous entity, which then provides services to its shareholders. As an SSC, RU is not a form of centralisation, since it is premised on collaboration, solidarity, equality and dependence.

To the General Meeting of Shareholders
We hereby present you with the financial statements for 2013 together with the management report. According to article 24 of the company's statutes, the management of RU presented the annual accounts for 2013 to the SB on the occasion of its meeting of 14 May 2014. The financial statements have been audited by the accountants Meeuwsen Ten Hoopen.
The SB has adopted the financial statements as an accurate representation of the company's financial position and established that the management report meets transparency requirements. Accordingly, we ask the GMS to adopt the financial statements. We also propose that the GMS discharge the management for its management, and the Supervisory Board for its supervision of said management.
The net result amounted to € 107,300; we propose that this amount be added to general reserves.

Pure marble from Dutch drinking water

Pure lime pellets have been successfully produced from the water-softening reactors at drinking water companies. WML Maastricht has been taking important steps to this end since 2010. Following a successful large-scale operational test, in early 2014 the entire softening installation was converted to the use of calcite as its seeding material. The softening process with calcite works in the same way as it does with garnet sand.

The installation requires no major modification and the softening is conducted normally, using milk of lime or sodium hydroxide. But calcite is more fragile than garnet sand because it is softer. WML uses calcite from the Dolomites in Italy.

Earlier this year, Waternet also converted its Weesperkarspel water production installation in Amsterdam to calcite; its next step is to reuse the resulting pure calcite lime pellets as the seeding material in its own processes. This procedure was successfully tested in the winter of 2012-2013. To obtain the first load of pure pellets, Waternet starts with the same Italian calcite as WML. When the first pellets are collected in the course of the summer of 2014, then the first wholly Dutch – pure marble – pellets will be a reality.

As soon as the first one-hundred-percent calcite pellets are available at Waternet, Reststoffenunie will have them processed into seeding material to be reused in the installation. The pellets will have to be dried, ground and sieved to the required particle fractions measuring about half a millimetre in diameter. If, at the end of the summer, it is clear that the softening process operates well, then it would be worthwhile for Reststoffenunie to repeat the experience in other softening reactors. By using one's own pellets as seeding material one cuts down on transport and thus on CO_2 emissions too. For Waternet alone, the environmental benefit is expected to be two percent. In addition, the loop will be closed, since the material will be entirely reused and there will no longer be any need to extract lime from the quarries. Pure calcite, as a by-product of drinking water production, has a high market value and many application possibilities.

Pure lime pellets have been successfully produced from drinking water companies' softening reactors

2 Supervisory Board Report

In accordance with the statutes of the company, the most important powers within RU are attributed to the management and the SB. The SB appoints the management, and the GMS appoints the supervisors upon the recommendation of the SB. Specific key management decisions require the approval of the SB. The management directs the company, and is responsible for achieving the objectives, for strategy and the associated risk profile, for the financial results and for societal aspects. It is accountable in this regard to the SB and the GMS, and provides the SB, as the supervisor and economic proprietor of the company, in a timely manner, all the information it needs to carry out its tasks.

Activities in 2013

In the year under review, the SB met with management on five occasions. Four of these were regular meetings; on 25 June an extra meeting was held in connection with the RU market evaluation. During the regular meetings operational and financial matters were duly discussed. Apart from these formal meetings, informal consultations regularly took place among SB members and between them and management over the course of the year. The matters addressed by the SB during 2013 included:

- the development of the organisation's finances and results
- the operational and financial developments in light of the budget and other objectives
- the profit appropriation
- the approval of the Annual Report 2012
- the 2014-2017 Business Plan and subsequent request to the GMS for its postponement
- the conduct of the RU market evaluation; Mr S. Corvers was added to the steering group as delegated supervisor. The steering group made its recommendations to the SB, which then advised the GMS on decision-making.
- the reappointment of Ms H. Doedel as Chairperson of the SB until 31 December 2014
- the reappointment of Messrs K. Hoogsteen and S. Corvers to the SB for an additional period of three years
- the appointment of Mr P. Fransman as Vice-Chairperson of the SB for a period of three years
- the Standards for Remuneration Act (WNT)
- the market developments
- the developments in the regulatory and legal framework
- the identification of business risks
- the separate purchasing conditions for drinking water companies and other suppliers
- the decision to add € 53,700 of the reserved contribution to REACH to the results, and to return € 120,000 to the shareholders.

The General Meeting of Shareholders was held on two occasions, during which the following was agreed:

- the approval of the Annual Report 2012, consisting of the Report from the SB, the Management Report and the financial statements for 2012
- the discharge of the management for its management during fiscal year 2012
- the discharge of the members of the SB for their supervision during fiscal year 2012
- the approval of the transfer of the shares from the city of Amsterdam to Waternet
- the addition of the 2012 result to the 2012 reserves
- the extension of Ms Doedel's term as Chairperson until 31 December 2014
- the reappointment of Messrs K. Hoogsteen and S. Corvers for further terms as SB members

The Supervisory Board, from left to right: Mr Fransman, Ms Doedel, Mr Corvers and Mr Schmitz. The fifth supervisor, Mr Hoogsteen, unfortunately couldn't be present.

- the appointment of Mr Fransman as member of the SB for a term of three years
- the approval of the annual plan and budget for 2014
- the establishment of an overview of positive- and negative-value residuals for fiscal year 2014
- the management of the market evaluation and endorsement of the study's conclusions.

In this annual report, SB Chairperson Ms Doedel looks back, for the last time, over the previous year under review. In accordance with the rotation plan, her term came to an end in December 2013. However, in the context of the RU market evaluation, the SB asked Ms Doedel to remain chairperson for an additional year. The GMS approved this decision.

Ms Doedel writes:
"The past year was to a great extent marked by the market evaluation, by the question of the value added by the company. The result was positive. Independent research, which addressed the main question: "How does Reststoffenunie compare to similar enterprises active in the collection, processing and marketing of residuals?", concluded that RU was without any doubt fulfilling the mission it was created for.

The activities surrounding this research led to a delay in the 2014-2017 Business Plan. The SB asked management to put the plan's development on-hold until the situation became clearer. In retrospect, this turned out to be a good decision. The research and its results oblige us to take a closer look at the future course of the business: What direction should we take? Not only in terms of business economics, but also with regard to making RU less dependent, and thus less vulnerable. The company has to broaden the basis of its business and/or extend the range of its activities. Management will be working this out and presenting its conclusions in the course its lays out in the 2015-2018 Business Plan.

We also have to more sharply define our role when it comes to sustainability. The drinking water companies have different ideas about this. Some feel it is very important that the residuals be disposed of sustainably, some want more emphasis to be given to the financial result, and some just want the residuals *removed*. We need an operational management that has the flexibility to satisfy all of the different stipulations.

Apart from these operational management items, significant developments are also occurring with regard to the residuals themselves. Let me highlight the production of lime pellets with pure calcite nuclei, the pelletization of ferric (hydr)oxide and, of course, the unique opportunity of linking our residuals to eco-design!

When I look back on my term, it is clear to me that RU has made huge progress in its professionalization.
We have truly left the pioneer phase behind us and grown into a professionally functioning organisation with an highly capable staff. This small club of people is producing extremely professional work. The SB is solidly behind the staff members, who together are achieving fantastic results in the recycling of residuals.

Nieuwegein, June 2014

In the name of the Supervisory Board
H. Doedel, Chairperson

Supervisory Board composition

In 2013, in accordance with the rotation plan, three vacancies arose on the Supervisory Board. The SB members believe it to be very important for the company that continuity in their board be preserved. For this reason, Messrs Corvers and Hoogsteen have indicated that they would be available for reappointment for a full term of three years. As already mentioned, Ms Doedel will remain as Chairperson for an extra year in connection with the completion of the market evaluation. Mr Fransman has been appointed Vice-Chairperson of the SB for a term of three years. The recommendations of the SB have been ratified by the GMS. Mr Th. Schmitz, having reached retirement age, resigned as supervisor as of 31 December 2013. Ms R. Bergkamp, Director of Vewin, will replace Mr Schmitz in the function of a "free" supervisor, appointed on the recommendation of the Association of Dutch Water Companies (Vewin).

Per 31 December 2013, the SB's composition was as follows:
- Ms H. Doedel (1956), Chairperson Director N.V. Waterleiding Maatschappij Limburg
- Mr P. Fransman (1962), Vice-Chairperson CFO Evides N.V.
- Mr Th. Schmitz (1949), Director Vewin
- Mr K. Hoogsteen (1950), Director N.V. Waterleidingmaatschappij Drenthe
- Mr S. Corvers (1963), Director Corvers Holding B.V.

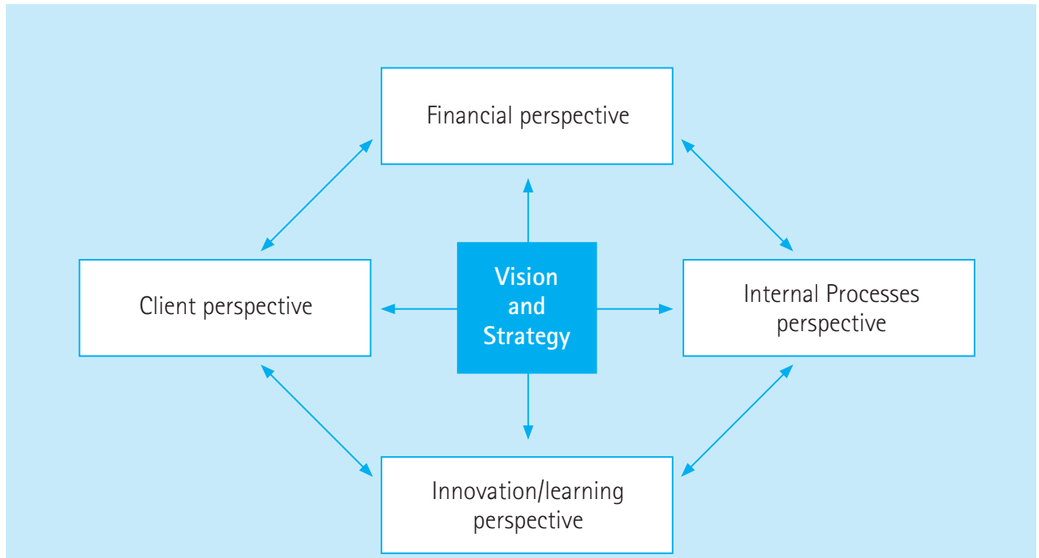
(Re)appointment schedule 2014:

As a result of the changes in the Supervisory Board, the rotation plan has also been adjusted.

	appointed	reappointed	resignation
H. Doedel	31 December 2007	31 December 2010	31 December 2014
R. Bergkamp	31 December 2013	(possible) 31 December 2016	
K. Hoogsteen	1 July 2010	1 July 2013	1 July 2016
S. Corvers	1 July 2010	1 July 2013	1 July 2016
P. Fransman	31 December 2012	(possible) 31 December 2015	

3 Management Report for fiscal year 2013

We use the Balanced Scorecard framework to describe the general situation at RU. This allows us to express our strategic objectives in concrete, measurable terms. As its name indicates, the framework's guiding principle is the achievement of balance, or equilibrium. Balance between short- and long-term objectives, between financial and non-financial criteria, between external and internal performance perspectives. But certainly also balance among the four themes and RU's vision and strategy. The framework also establishes a connection between the past (financial results), the present (internal processes and clients) and the future (innovation and learning).



Balanced Scorecard

3.1 Financial perspective

Main objective: lower total costs for the use or application of residuals.

Key figures

	2013	2012	2011	2010*
Results				
Earnings	€ 4,016,000	€ 3,800,000 **	€ 3,180,000	€ 4,272,000
Non-shareholder turnover (%)	2.5	3.6	7	-
Total disposal expenses	€ 2,779,000	€ 2,881,000	€ 2,725,000	€ 3,500,000
Gross margin (% of turnover)	31	24	14	18
Net operating result	€ 107,300	€ 70,300	€ 33,500	€ 151,800
Assets				
Balance Sheet total	€ 1,622,600	€ 1,616,300	€ 2,094,000	€ 1,720,200
Shareholders' equity	€ 686,100	€ 578,900	€ 508,600	€ 412,380
Liquidity (quick ratio)	1.7	1.5	1.3	1.3
Residual figures				
Supply (tons) ***	175,700	185,500	191,000	185,000
Recycling percentage ****	94	92	75	77
Transport kilometres per residual ton *****	3.5	3.6	5.4	4.8
Personnel				
Number of employees FTE per 31 December 2013	6.1	5.7	4.3	4.5
Absenteeism (%)	1	4	8	7
Average net sales per FTE	€ 190,000	€ 185,500	€ 93,300	€ 70,700

* old earnings model
** corrected for unrealised earnings from depots
*** exclusive of plastic and AC pipes
**** destination other than (infrastructural) works/landfill
***** calculated starting at Dutch water production facilities

Quality residuals increase returns

Over the last few years an important turnaround has occurred: residuals are no longer a cost item but are increasingly bringing in money. The by-products of drinking water production processes are selling well and profitably as secondary raw materials.

Vitens wants the disposal of its residuals to be cost-neutral by 2015. The costs and the earnings are transparent; and the higher the residuals' quality the higher the earnings. To reach its objective, the company is examining which of its production sites offer the greatest cost-reduction potential and, via residual quality improvements, the greatest earnings increase prospects.

By considering all residuals as products, business cases have been built with a view to developing optimal sales routes for them. For example, establishing transport silos to be able to guarantee delivery at any time of liquid ferric (hydr)oxide with a dry matter content of 8%; or separating iron-lime sludge streams, and thereby producing two profitable by-products from a single unprofitable residual stream.

By making production site staff aware that their quality-delivery role applies to residuals as well, Vitens believes cost-savings can be made by tapping the residuals and by raising their quality. Residuals no longer have a negative image, but are seen as sources of economic value.

Residuals are no longer a cost item but are increasingly bringing in money

Balance Sheet details

	2013	2012
Fixed assets	10,000	11,000
Current assets	1,612,600	1,605,400
Total assets	1,622,600	1,616,400
Shareholders' equity	686,100	578,900
Current liabilities	936,500	1,037,500
Total liabilities	1,622,600	1,616,400

Compared to 31 December 2012, the Balance Sheet total increased by € 6,000. Fixed assets remained practically the same, as did current assets. The addition of the results to reserves led to an increase in shareholders' equity of € 107,300. In 2013, there were fewer receivables from suppliers than in 2012.

Current assets

Receivables decreased by € 130,000. In 2013, a decision was taken to make a provision for bad debts of € 45,000 in connection with the possible uncollectable debt of one client. In the beginning of 2013, stocks in the depots were valued at € 50,000; at the end of 2013 their value was practically unchanged. Per 31 December 2013, a claim was submitted to the Tax Office regarding the VAT for the fourth quarter of 2013.
The costs of the RU market evaluation requested by the shareholders, will be charged through to the shareholders in 2014. The amount of pre-paid expenses per 31 December 2013 was practically the same as per December 2012. This relates to the same contractual obligations. Those invoices received in 2014 for disposal expenses incurred in 2013 will be booked in 2014.

Shareholders' equity

Compared to 2012, shareholders' equity increased by € 107,300; this is wholly attributable to the positive result. The 2013 result has been entirely added to the "other reserves" item.

Current liabilities

As of 31 December 2013, the total liabilities to suppliers decreased by € 115,000 compared to 2012. The payment of the national insurance and pension contributions for December 2013 will be made in January 2014. In 2013, several research obligations were undertaken; upon their termination the associated financial obligations will be settled in early 2014. This also applies to the development of a new information structure for the financial and product flows.
Since 1 July 2012, disposal expenses have been directly netted from shareholder earnings, which can result in payment obligations on our part. At the end of 2012, the earnings still to be settled amounted to € 48,500. This amount subsequently decreased significantly to € 6,900. Obligations to employees, in the form of holidays, holiday pay and the Availability Budget, increased by € 9,300 compared to 2012. As a consequence of the market evaluation study, the drafting of the 2014-2017 Business Plan was postponed. The leftover budget was added as a reserve to the 2014 budget for the completion of the (following) 2015-2018 Business Plan.

In the name of the water companies, RU participates in the European consortium that is responsible for the diiron trioxide dossier. Thanks to the large intake of new participants, about one third of the original contribution for the Letters of Access (LoA) could be returned to the early registrants, which included the Dutch water companies. This amount was credited by RU to the shareholders.

On 1 January 2013, the provision for REACH activities amounted to € 104,100. In 2013, € 23,300 was spent and a total income of € 92,900 received from the sales rights for the LoA for diiron trioxide. The remaining balance therefore amounted to € 173,700.
Because activities related to REACH constitute an increasingly important part of normal operations, a decision was taken to abolish this specific provision.

The shareholders agreed that a sum of € 120,000 be restituted in proportion to the contributions paid in 2010. The remaining € 53,700 was credited to RU's 2013 results.

Profit and Loss account details

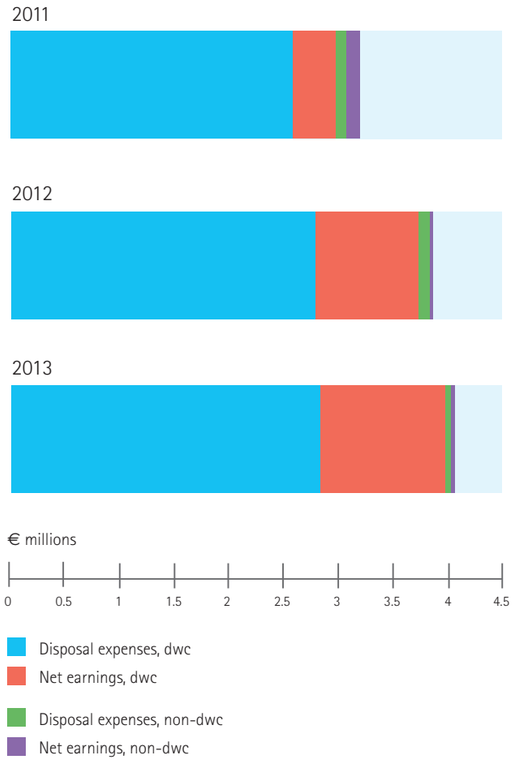
	2013	2012
Earnings (turnover + consulting)	4,016,200	3,799,900
Shareholders' annual contribution	932,500	832,700
Other earnings	49,000	23,400
Total	4,997,700	4,609,200
Direct disposal expenses	2,779,400	2,880,600
Shareholders' earnings	1,028,800	786,500
Operating expenses	1,082,200	871,800
Total	4,890,400	4,538,900
Net operating result	107,300	70,300

Earnings

The earnings reflect the sale of residuals, the passing on of the disposal expenses to shareholders and non-shareholders, and consulting activities. Total earnings grew by € 388,500. The net operating result from the sale of negative- and positive-value residuals was plus € 1,178,000, an increase of 20% over 2012.

Positive returns increased by 11%. This is due primarily to the resumption of supplies of lime pellets to the glass industry, but also to increased demand for dewatered ferric (hydr)oxide on the part of biogas producers.
The supply of negative-value residuals decreased by 20% compared to 2012. The disposal of carbon sludge was partly delayed and postponed to 2014. The drying of aluminium sludge meant that 3,600 tons less of the residual was disposed of in 2013 compared to the previous year.

Earnings development



Net earnings from the sale of liquid and dewatered ferric (hydr)oxide from non-shareholders decreased by € 35,000. This was due primarily to the reduced supply.

According to the legal competition and procurement provisions applicable to RU, turnover associated with activities for non-shareholders must not exceed 10% of total turnover. In 2013 these activities accounted for 2.5% of total turnover, which is almost 1 percentage point down from the previous year.

Shareholders' annual contribution

The annual contribution of shareholders to RU's administrative expenses in 2013 amounted to € 932,492, an increase of 12% compared to 2012. Higher personnel expenses and larger expenditures on research and consulting were the main contributing factors.

Other earnings

Consulting services for shareholders and non-shareholders generated earnings of € 25,000. The consulting processes initiated in 2012 for the acceptance of residuals from two industrial water plants (under the Implementing Rules of the Fertiliser Act and for registration under the REACH provisions) were successfully completed. Moreover, a French company contracted for consulting services concerning the disposal of its lime pellets. Lastly, consulting services were also offered in connection with the clean-up of old supplies in a water abstraction area.

Direct disposal expenses

The annual supply in 2013 from our shareholders and third parties amounted to 175,700 tons, that is, 5% less than in 2012. In particular, there was less liquid ferric (hydr)oxide, aluminium sludge and carbon sludge. The disposal expenses of residuals (extraction, transport, storage, analysis and acceptance) reflect the drop in supply, decreasing by 4%.

Gross margin

The gross margin, as a percentage of total earnings, increased by 7%; this was due, on the one hand, to increased earnings from the sale of residuals and, on the other, to lower disposal expenses. On balance, the gross margin amounted to 31%.

Shareholder's earnings

According to the earnings model, our shareholders receive 90% of the market earnings. Thanks to the sharp increase in earnings from the sale of residuals in 2013, a total of € 1,025,000 was paid out to shareholders, which represents a 23% (€ 189,000) increase over 2012.

Operating expenses

Operating expenses increased by € 210,000 compared to 2012.

Personnel expenses
As in 2012, RU had seven employees in 2013. Due to staff movements, the number of FTEs increased slightly to 6.1 for the fiscal year. Total personnel expenses, including temporary staff, increased by more than 8%. Indirect salary expenses decreased by 29% compared to 2012 because of lower expenditures on training, among others.

Cost of sales
Public relations activities were sharply boosted in 2013 (see page 18)). Total acquisition and PR costs increased by € 20,000 to € 100,000. Research and consulting activities related to the Finance, Client, Internal Processes and Innovation/Learning perspectives have been essentially completed. The associated expenditures increased by € 24,000 compared to 2012. In 2013, the amount reserved for postponed projects was reduced by a total of € 85,000, so that, on balance, an additional € 109,000 was charged to the results. The initiative to develop a new information structure, begun in 2012, will be completed in 2014.
A decision was taken in 2013 to create a provision for bad debts of € 45,000, because of the preoccupying financial position of one client.

Premises
Expenses related to premises, such as office rental, services and rental of external storage space, increased by 8%. This was related primarily to the higher service costs associated with the increase in permanent FTEs.

Other operating expenses
Other operating expenses decreased by 20%. This was due primarily to lower expenditures on HRM activities, lower postal charges, fewer maintenance activities on the quality assurance system, and a lower contribution to the Water Company Employers' Association (WWb).

Interest income
In 2013, interest income dropped as a result of lower interest rates on deposits and a decrease in the average monthly account balance.

3.2 Client

Main objective: have drinking water companies sense RU's client focus.

Share transfer

In November 2011, Amsterdam municipal council called on the mayor and aldermen to dispose of its drinking-water related shareholdings, and to explore whether these could be placed with Stichting Waternet (Waternet Foundation). The holdings included shares in RU. In June 2012, a decision in principle was taken to transfer the shares. In consultation with its shareholders, and based on legal advice, RU reached a judgement that Stichting Waternet meets the shareholder quality requirements (article 6 of the Reststoffenunie statutes). In June 2013, a decision was taken to transfer the Amsterdam municipal council shares in RU to Stichting Waternet, and, in August 2013, the transfer was notarized.

RU market evaluation

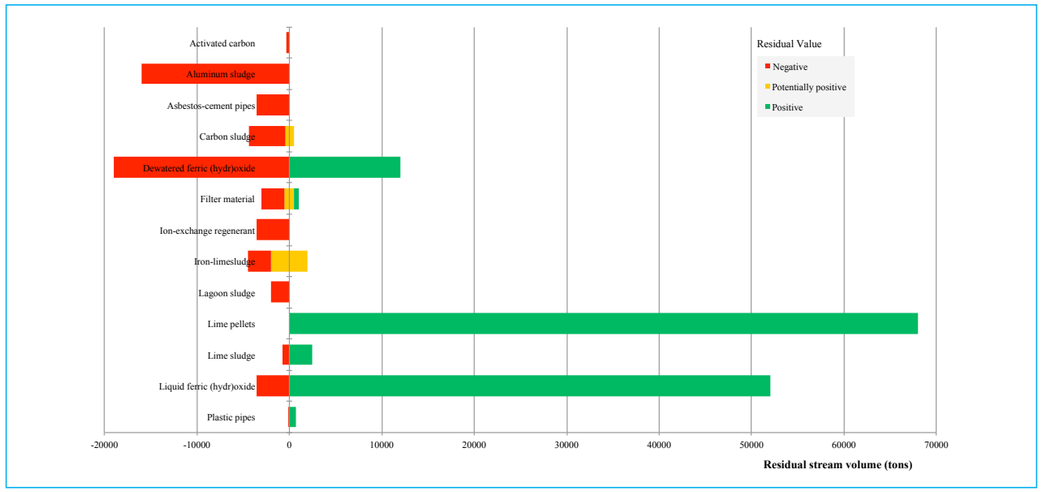
On 17 June 2013, the directors of the Dutch drinking water companies asked RU to demonstrate the added value of the company for its shareholders. RU commissioned Arcadis Benelux B.V. to examine how RU compares to similar enterprises. A benchmark method was developed which measured both the financial-economic performance as well as the sustainability performance. *The study was also to compare the situation of the activity in the Netherlands with that in neighbouring countries. The study concluded that without RU the water companies would be financially worse off and, what is more, that RU's solutions are more sustainable than the alternatives.*

To continue providing added value into the future, we could make a number of improvements: (further) lower disposal expenses; increase returns on the sale of residuals; and, by way of a foundation, establish a good organisation of the entire residual chain, from origin to application. The following are important in this context: "road maps" for the future; a guarantee process to control residual quality, and investment decisions targeted at quality. In 2014 we will examine whether it is possible to make a residuals-oriented performance comparison as a part of the Vewin benchmark.

The research was supervised by a committee, consisting of the chairperson of the SB (who also chaired the committee), two water company directors, a delegated supervisor and RU's managing director. The committee provided advice to the SB which, in turn, in December 2013, provided decision-making advice to the members of the GMS.

Earnings model, negative- and positive-value residuals

In December 2012, the GMS took a number of decisions following the system evaluation of the earnings model. One of these was to exclude from the earnings model those residuals expected to be of negative value. Every year, RU establishes an overview of its expectations regarding those residuals that will be of negative and those of positive value in its economic transactions during the upcoming fiscal year. This list is always presented at the shareholders' June meeting to support them in their decision-making.



Value and volume of residuals (RU AVA 13-05)

Mechanical dewatering of drinking water sludge

The iron sludge residual created at the Evides drinking water production sites in Rotterdam and Dordrecht is mechanically dewatered to produce dewatered sludge cake. The dewatering is carried out by Indaver Impex, a company that specialises in mobile sludge dewatering. The final processing of the residuals produced is coordinated by RU.

The iron sludge is stored in basins where it slowly settles. On a regular basis, it is mechanically dewatered on-site using a mobile decanter centrifuge. The sludge is then dredged up with an electrically powered dredger. After the addition of flocculants, a dewatered sludge cake, with a dry matter content of about 35%, is produced using the decanter centrifuge.

The mechanical dewatering of iron sludge significantly reduces the volume (by a factor of 5) of the sludge to be disposed of. This reduces logistical expenses, greatly extending the possible disposal area for the iron sludge and facilitating RU's task of matching supply and demand. The entire process of storage, dredging and dewatering also produces iron sludge that is of very good quality: unadulterated and with a guaranteed dry matter content.

Disposals in 2013
Baanhoek, Dordrecht : 568 tons
Kralingen, Rotterdam: 1998 tons

The sludge is dredged up with an electrically powered dredger

To ensure the supply of residuals by the water companies, RU enters contractual arrangements with its shareholders. The proposals to this end will be presented to the GMS in 2014. This involves an adjustment of the shareholder agreements and a review of the purchasing conditions, which will be implemented in the contracts (also see page 21). As agreed, the shareholders have reported their current contract position as far as their own residuals are concerned. RU has since taken over a number of the positions.

Moreover, advice was obtained on the competition and procurement legal provisions, with regard to the position of the subsidiaries of RU shareholders within the context of the earnings model. The question was whether the earnings – be they positive or negative – should be calculated according to the earnings model, or whether they should be accounted for as "third party" earnings. Valid arguments can be found to support either option. RU's management believes that the shareholders themselves are obligated to comply with the legal competition provisions. RU is discussing the matter with the affected water companies with the aim of reaching an agreement.

PR, communication and information

Status reports
Since 2010, RU has issued annual status reports to each individual drinking water company containing a detailed account of financial and product flows. These reports offer insight into the nature, composition, volume, destination and expenses of the company's residuals over the preceding four years. They also present the situation at the national level for purposes of comparison. The reports provide the basis for the drafting of the development plans and "road maps" for the residuals of the individual companies.

Quarterly reports
Since 2011, RU has also issued quarterly financial overviews to its shareholders. These report on the current supply per residual type versus the forecasted volumes, and the current earnings and expenses per residual type versus the budget and year-end forecasts.

Online immediate insight
A software company, specialised in the waste and recycling branch, has supported RU in connecting an application to Exact for the registration of product and financial flows. Previously, this registration was carried out in a separate, Access-based, database (disposal registration). Now RU can centrally administer the product and financial flows in a single application, and connect to Exact via an interface. The application offers a number of advantages in terms of chain management. This development allows RU to accelerate its administrative processes and offer its shareholders a new information structure.

Knowledge sharing
To realise our ambitions in the field of sustainability, we collaborate with water companies both within and outside of the Netherlands, national and regional governments, businesses, knowledge institutes, the Vereniging Industriële Bouwstoffen (Association of Industrial Building Materials), the Dutch Waste Management Association, and Nutrient Platform NL. RU is also a member of the KWR Watershare® initiative, which is an international collaboration platform dedicated to water-cycle-related knowledge. RU's knowledge and expertise are embodied in the Watershare® project in the form of the ResidualCycle tool. In addition, RU and its partners can submit proposals via the EIP ARREAU Water Action Group for the European innovation subsidies in the field of water and wastewater treatment and resources.

Public Relations
The financial newspaper, *Het Financiële Dagblad*, presented RU with one of its 2013 Gazelle Awards. This incentive prize is given to Dutch companies that record more than 20% annual turnover growth over three successive years. RU placed an ad in the newspaper's special magazine to publicise the event and to thank shareholders for their contribution to this performance.
RU also collaborated in a television programme about organisations or companies that are sustainability leaders or have set in motion the transformations required for business sustainability. Press releases were issued about a much-discussed development project involving the drying of lime pellets onboard a transport vehicle. We also organised several information events.
Because of our expanding international contacts, various RU publications – like the Annual Report 2012, the "Stof tot Nadenken" newsletter, and the Safety Data Sheets – have been translated into English and also, in part, into German. A trilingual brochure was also published.

RU staff members also made presentations in Dresden (Germany) and The Hague upon the invitation of the Deutscher Verein des Gas- und Wasserfaches e.V (DVGW) and the International Water Association, respectively – the subjects were "Der Niederländische Weg" and "Policies and regulation to accelerate recycling and re-use".

3.3 Internal processes

Main objective: equip and professionalise the organisation.

RU is professionalising its organisation in every area: by working on a project basis, introducing the planning and control cycle, investing in an administrative system, and implementing risk management and good governance.

Business Plan

Pending the results of the market evaluation, it was decided, in consultations with the SB, that the drafting of a follow-up to the 2010-2013 Business Plan should be postponed. The findings and results of the market evaluation will partly guide the plan for 2015-2018, which will be presented for the approval of shareholders in December 2014.

Statutes

Our notary has updated the statutes of the company in accordance with the Act on Simplification and Flexibilisation of the Law Governing BVs (Flex BV Act). Other matters that will be incorporated into the statutes are the changed role and activities of RU, the introduction of the new earnings model, and the desire to remain open to other actors in the (public) water cycle. Changes in the statutes will be on the agenda of the shareholders' meeting of December 2014, during which the 2015-18 Business Plan will also be determined.
In 2014, a distribution test will also be developed in the context of the Flex BV Act. A BV may only make a distribution (such as a dividend) to shareholders if it represents no threat to payables to other creditors. This has to be demonstrated through a distribution test. RU is being supported in this matter by N.V. Waterleidingmaatschappij Drenthe and Waterbedrijf Evides N.V.

Risk management and improvement points

Risk management forms part of the company's management model. RU's risk profile is conditioned by the fact that it has always to remove residuals from its shareholders and then sell or find a destination for them in an efficient, effective and environmentally responsible manner.

It was agreed with the SB that an annual risk inventory would be carried out, and that it would be evaluated at the first SB meeting of the year. It was also agreed that RU's annual report would always present the main operational risks identified. In 2013, they were the following:

1. loss of buyers/markets
2. bankruptcies
3. security of supply of residuals by shareholders
4. pressure on sale of residuals as construction material in (infrastructural) "works".

Risk 1: Loss of buyers/markets
Adverse economic circumstances, changing market conditions and modifications in regulatory and legal frameworks can potentially lead to drops in demand. The effect of this is lower coverage of administrative expenses and lower added value for shareholders. Thanks to its thorough knowledge of the sales markets and of the regulatory and legal frameworks, RU is well-positioned to anticipate developments that might affect the sales of its products. In the event of short-term drops in demand (see also "bankruptcies"), RU will attempt to get new clients or to sell more products to its current clients.
In addition RU is active in market development. Over the past two years, various new product/market combinations have been developed, particularly for lime pellets, carbon sludge and filter sand. Product development is an important priority in order to guarantee the removal of residuals for our shareholders, and to add financial and sustainability value to current and future residuals. Since residuals are also produced in neighbouring countries of a type and composition comparable to those of the Dutch water companies, these could elbow out our "own" residuals. Through consultations and coordination with water companies in Belgium, Germany and France, and support in the development of their own domestic markets, the impact of foreign residuals can be limited.

Risk 2: Bankruptcies
No bankruptcies occurred in 2013. Before we enter contracts for the structural supply of residuals, we assess whether the buyer can meet its financial obligations. The assessment results are taken into consideration during the contract negotiations. This is set down in our quality management system.
If a buyer were nonetheless (unexpectedly) obliged to cease operations, then our supply to it would be stopped and the delivery would have to be directed elsewhere. Apart from a financial risk related to the (no longer) recoverable amount, a substitute sales destination would have to be found. The effect, as in the case of Risk 1, would be lower coverage of administrative expenses and lower added value for shareholders. For liquid and dewatered ferric (hydr)oxide,

New prospects for an old technology

At its Dalen site, WMD is consciously producing iron-coated filter sand. Since 2012, an innovative treatment process has been implemented at the renovated production station: biological adsorptive iron-removal. This process was used more frequently in the past, but had fallen into oblivion in the Netherlands.

The filter bed's height increases by about 5 cm per month. Currently, the filter sand is not yet collected separately because of the other sludge produced at this site. How best to manage the separation process is still the object of experimentation. As more information is obtained, it will be easier to make a choice on how the various residual streams might be separated.

The fact that the process of separation is worthwhile has been confirmed at the other WMD sites. Previously, filter sand was disposed of for use as construction material for (infrastructural) "works" or as landfill. This meant paying disposal fees! The filter sand was also stored on-site for lengthy periods, which meant that overgrowth grew on the sand! In the end, this approach also resulted in a useless material that ended up in "works" or landfills. Since 2012, the filter sand – such as that found in filter backwash water – is collected in an own-designed container. The container, which is suitable for several modes of transport, separates the water and the filter sand. The disposal, which is jointly conducted with Reststoffenunie, takes place the same week. This approach avoids the adulteration with other components like iron sludge, plant material, and other "objects" such as stones. The clean material has a positive use-value and thus leads to significant cuts in disposal costs.

When you know the client's wishes, you can make all of the appropriate choices at the drinking water production sites for a direct delivery. Some sites produce iron-coated filter sand, which has a different application compared for example to marble filter material. By indicating early on what we will be disposing of over the course of the year, we can quickly deliver appropriately separated filter material to the right client. This reduces the disposal expenses and the filter material can be employed as a secondary raw material in a variety of applications. Negative acceptance expenses are a thing of the past. In this way an old technology offers new prospects for the reuse of residuals.

By indicating early on what we will be disposing over the course of the year, we can quickly deliver properly separated filter material to the right client

RU disposes of storage capacity of at least one month (spread geographically). For lime pellets, there is a backstop of at least one month, while several buyers could also easily absorb larger amounts.

Risk 3: Security of supply of residuals by shareholders

The risk regarding the security of supply by shareholders consists of two parts:

a. shareholders cease the supply of positive-value residuals.
During the GMS of December 2012, a decision was taken that concrete (contractual) agreements would be signed between RU and the individual shareholders, as a means of guaranteeing the supply security over the contract period. As a first step, detailed disposal plans were drawn up for the residuals (time, quantity and quality), and RU asked the shareholders to formally confirm them as operational programmes for 2014. The operational programmes establish, by production site and by residual, the quantity of residual produced monthly, the intended destination of the residual, and the quality it must meet to this end. Besides the planning, operational procedures have been drawn up for reporting the residuals and communicating any changes. In 2014 the contractual agreements will be further detailed, partly on the basis of the experience with the operational procedures.
RU has developed a proposal for the form and contents of these binding agreements. The RU purchasing conditions would be applied (general paragraph); then the contracts would cover the specific conditions pertinent to the shareholder and product in question.

b. shareholders offer large quantities of residuals with a (strong) negative value.
As a mitigating measure, the GMS decided in December 2012 that a list of negative- and positive-value residuals be established in June every year. The negative-value residuals would subsequently be excluded from the earnings model (see also "Client: "Earnings model", page 16).

A further financial risk is represented by residuals that, in principle, are of positive value, but because of quality flaws cannot generate positive value in the market. Examples of this would be adulterated residuals, or residuals with an (excessively) low dry matter content. Quality control measures have been taken: consultations with the staff responsible for operations at the water companies, and more frequent sampling and analysis. In addition, the binding supply agreements also contain clauses concerning product quality.

Risk 4: Pressure on sale of residuals as construction material in (infrastructural) "works".

Obtaining a permit for the use of residuals as construction material in (infrastructural) "works" is becoming increasingly problematic. As a matter of policy, governments want to discourage the use of residuals as construction material in (infrastructural) "works" because it is a low-value application. Intensive effort is being put into finding alternatives for those streams that are still being directed at these applications. Examples include using ferric (hydr)oxide in cement or in expanded clay pellets, carbon sludge as a secondary adsorbate or structural material for compost, and iron-coated filter sand and gravel as an adsorbate for phosphorus.
On the other hand, this risk has diminished because coagulation sludge from surface water abstraction is now in principle officially considered – by the Ministry of Infrastructure and the Environment, following consultations with RU – as "dredging spoil" instead of "construction" material. There are no limitations on the use of dredging spoil in (infrastructural) "works" (see also Chapter 3.4, page 25).

Purchasing terms and conditions, and protocols

Purchasing terms and conditions
Following agreement with shareholders, in 2012 an evaluation process was begun of the RU purchasing terms and conditions. This led to a decision to establish separate purchasing terms and conditions for residuals and for other purchases. In 2013, lawyers of the Legal Branch Platform and three residual coordinators from the water companies began working on the revised purchasing terms and conditions for residuals. These will be confirmed in 2014 in conjunction with the contract agreements between RU and its shareholders, which still need to be reached.

Protocols
The supervisory Operational Guidelines Project Group has formally established the protocols for sampling & analysis and storage & transport (components of the RU purchasing terms and conditions), according to the operational guideline system for drinking water. The sampling & analysis protocol guarantees that the quality samples are representative, so that the client receives the quality agreed to, all legal requirements are met, and the sampling is both practicable and affordable. The analysis requirements – mostly related to the regulatory framework – have as much as possible been made uniform, which allows for comparisons of the quality information.

The transport & storage protocol guarantees the quality of the residuals during their transport and storage, and that all legal requirements, like those concerning safety and the environment, are met. The protocols are available on RU's website.

Financial policy

Financing expenses
RU receives a contribution from its shareholders to finance its administrative expenses. The disposal costs are pre-financed and entirely charged to the residual suppliers. Apart from a current account and a monthly savings account, in 2013 RU opened a third account at Deutsche Bank: a business quarterly savings account. This account offers a higher rate of interest and the funds can be freely withdrawn. The interest differential offered by business savings accounts is minimal, so that a transfer is not, or is hardly, worthwhile.

Liquidity risks
The outlays for organisation expenses are limited by the budget. The shareholders cover 90% of the administrative expenses, while RU is responsible for the remaining 10%. The disposal expenses (extraction, storage, transport, analysis and acceptance) are charged 100% to the suppliers of the residuals. In 2013, a provision of € 45,000 was made for bad debts. Receivable invoices were settled within an average of 43 days, compared to 39 in 2012. The four-day increase is related to the longer payment periods that several buyers include in their contracts. RU's settlement period remained unchanged at an average of 35 days. Because of the distribution of payables, receivables and the account settlements with shareholders over the year, the cash and cash receivables decrease gradually and the liquidity risk is limited.
If the earnings model is not altered, the quick ratio will remain relatively constant in the years ahead.

Resilience
The RU resilience level is set at one annual salary of full-time employees. Per 31 December 2013, this amounted to € 620,000, while shareholders' equity amounted to € 686,100.

Collaboration with accountants
According to the SB Regulations and the Management Regulations, the SB and management must assess the performance of the external accountants at least once every three years. After agreement on a plan of action to address a number of improvement points, a decision was taken in 2012 to extend the collaboration with Meeuwsen Ten Hoopen for two years.

Personnel and organisation

As of 1 April 2013, Mr Tom Trouwborst, at the age of 72, retired as RU's environmental expert. He was replaced by Ms Aalke Lida de Jong, who studied Systems Engineering at TU Delft and worked on policy issues in several ministries. In February 2013 Wendy Bouma was seconded to RU, via a (pay-rolling) contract, as office sales operations staff. Quality and Product Manager, Tonnie Hemme, obtained the Certificate of Professional Competence on Waste (VIHB), according to the Dutch Regulation for Collectors, Transporters, Dealers or Brokers of Waste (RIA). Professional competence is one of the requirements for being placed by the NIWO on the VIHB list.

Quality management

Internal audits revealed that a divergence existed between the description and the development of actual processes. A new ERP system was introduced (PieterBas Automatisering) which partly determines the form of processes. The administrative processing and settlement are somewhat complex. Operational procedures were established to guarantee the continuity of the administrative processing.

Kiwa audits
In 2013, Kiwa carried out a periodic and a recertification audit. Neither audit revealed any critical shortcomings, but the recertification audit identified a few issues. In response, an action plan was developed ; Kiwa accepted the plan, which was accorded a positive recommendation for recertification. According to the last external audit, more clarity is required in the description of the client groups and in the manner clients are surveyed about their satisfaction. In early 2014, a standard form will be developed to measure and monitor client satisfaction.

Complaints
In 2013, 17 complaints were recorded, compared to 10 in 2012. These had to do mostly with "poor" delivery of ferric (hydr)oxide and lime pellets. Specifically, they concerned too low dry matter content of liquid ferric (hydr)oxide, adulteration by foreign substances of dewatered ferric (hydr)oxide and lime pellets, load losses, excessive humidity percentages of lime pellets, and a high proportion of seeding sand. In no case was a fine imposed. To prevent repetition, several preventive measures were taken, both by the water companies concerned and the service providers.

Waterbedrijf Groningen

Aluminium sludge:
the thicker it is, the less it costs

At the De Punt site, drinking water is produced from surface water from the Drentsche Aa river. Surface water abstraction at this location has an annual capacity of more than 7 million m³, with an average production rate of 600 m³/h.

In the first treatment step a flocculating agent, based on polyaluminium chloride (Sachtoklar), is added so that the floating particles in the surface water agglomerate to form flocs and then sink. A lamella separator then ensures that the sludge is separated from the surface water, which undergoes further treatment.

The sludge (the agglomerated particles) that is released as a waste stream in the first treatment step is discharged, at an average capacity rate of 5 m³/h, into two sludge collection lagoons. These lagoons are used for variable functions: three weeks for settlement, and three weeks for thickening.
The sludge collection lagoons are equipped to let off the clarified surface water when the lagoon is in production (settlement). When the lagoon is being used for thickening, the clarified water is drained off as bottom water. The natural dewatering process of aluminium sludge is very slow: when the lagoon is emptied after three weeks and sludge disposed of, its average dry matter content is still only 1.0%. Due to insufficient storage capacity, the lagoons cannot be used for thickening purposes for more than three weeks.

In mid 2012, the sludge collection lagoons began to be operated in a new manner: more sludge layers were laid, and the lagoons were put into production alternately. This raised the average dry matter content to 2%. In 2013, 12,707 m³ of aluminium sludge was disposed of, 22.5% less than in 2012. The reduced disposal tonnage meant that transport and acceptance expenses also decreased; this represented a financial saving of 30% compared to 2012.

At this time, some other tests are being carried out on further thickening the sludge, on promoting the drying process via a tunnel greenhouse, and on accelerating the thickening using a band screen.

Sludge collection lagoons are put into production alternately

Residual production course
At RU's initiative, the Foundation for Water Education developed an in-company course for (to start with) commercial operational staff. The objective was to increase the awareness of staff members responsible for residuals and/or site management of the importance of good "housekeeping" – which is ultimately reflected in lower total costs and more sustainable destinations for the residuals. Among other themes, the course covers: process technique, legal and regulatory frameworks, and the responsibility of the water companies for the provision of residuals of good quality. The course participants also learn to look at things from the perspective of the buyers who use the residuals in their processes. The first course began in the last quarter of 2013 and included 16 participants. The course will be given twice in 2014.

Archive and document management system
In 2011, a new archive and document management system was instituted in order to accelerate and simplify the storage, location, linking and sharing of business information.
In 2012, the initial steps were taken toward achieving a paper-free office in 2014. To this end, improvements were made in the system at the indication of the users. Work is underway on an archive and a workflow module; the latter allows for the internal harmonisation of invoices, following which they can be settled. Moreover, a list is being prepared which describes the characteristics of specific data (metadata).

3.4 Innovation and learning

Main objective: successfully promote new markets and developments.

By developing knowledge and anticipating opportunities and risks originating in the market, government policy and regulations, RU is capable of developing new markets for residuals and of securing their current destinations.

Product innovation

In collaboration with knowledge partners and buyers, RU has carried out research into the use of calcite as a seeding material for lime pellets, the granulation of iron pellets for binding phosphorus and sulphur, and new applications for aluminium sludge and ferrous filter sand (see also Chapter 5, page 30).
Within the framework of Watertech 2013, Wageningen University submitted a research proposal on the production of magnetite from groundwater. RU is one of the co-financers. The proposal has been approved by the Technology Foundation STW. The research focuses on the formation of magnetite as a high-value binding compound for application in ferrous fluids, magnetic inks and MRI contrast agents. Magnetite has a significantly higher commercial value than iron trioxide [ferric (hydr)oxide] as a residual from drinking water production.

By-product status

RU deals with lime pellets, lime sludge and ferric (hydr) oxide as "by-products" according to the Environmental Management Act. To this end, a registration was acquired under the European REACH provisions for chemicals. Since 2012, RU has worked on securing, and communicating about, this by-product status. Also, the monitoring of the quality of the by-products has been sharpened so as to comply with the REACH provisions. This is done by means of the sampling & analysis protocol established in 2013.

REACH

In 2013 RU updated the water companies' REACH dossiers. The European Chemicals Agency (ECHA) also verified the original registrations.

National Waste Management Plan 2

The Ministry of Infrastructure and the Environment agreed to review the text, concerning drinking water production residuals, of Sector Plan 17 of the National Waste Management Plan 2 (LAP2). The text as it stood conflicted with the existing law regarding the maximum arsenic concentrations for useful applications. As a consequence, many reusable residuals would have to be disposed of. Agreement was reached on a revised text as early as 2011. However, the review of the LAP2 is taking longer than originally planned and is now expected to be completed in early 2014.
RU called attention to the conflict between, on the one hand, the landfill ban on all drinking water sector residuals, which came into force on 1 January 2013 (Decree on Landfill Sites and Landfill Bans), and, on the other, the obligation, under the Sector Plan in LAP2, to actually landfill residuals with high arsenic concentrations. As a solution, the ministry wants to apply a general exemption for the landfilling of drinking water residuals with high arsenic concentrations, so that RU will not need to request a special exemption in each individual instance.
In 2013, exemptions were requested – and granted for a two-year period – for the landfill of residuals containing arsenic at two sites. RU is thus out of the woods for the time being. On the other hand, as of 1 April 2014, the landfill charge will be increased by € 17 per ton.

Own application of ferric (hydr)oxide in co-fermentation plants

In June 2013, the Ministry of Economic Affairs, at the request of RU, included in Annex Aa of the Implementation Rules under the Fertiliser Act, a provision that ferric (hydr) oxide resulting from the production of industrial water be approved as a feedstock in co-fermentation plants. Previously, this application had only been approved for ferric (hydr)oxide originating in drinking water plants. The inclusion in the annex is particularly important for two water companies which have industrial water subsidiaries. In anticipation of the increase of the arsenic standard in the LAP2 to 500 mg/kg dry matter, RU is holding discussions with the National Service for the Implementation of Regulations (Dienst Regeling) about the permitted quantity of arsenic in ferric (hydr)oxide used as a sulphur binding agent during co-fermentation. More than a third of the annual production of ferric (hydr)oxide is used in this sector.

Soil Quality Decree

Up until now, coagulation sludge from the treatment of river water was used as construction material in (infrastructural) "works". Following consultations with the Dutch Directorate for Public Works and Water Management (Rijkswaterstaat), regarding the application of a load of over 200,000 m3 of coagulation sludge in a sand extraction pit, the Ministry of Infrastructure and the Environment issued the following policy statement: "Coagulation sludge from surface water treatment shall in principle be considered dredging spoil". This implies that this type of sludge, inasmuch that it does not have the by-product status and as long as it meets the criteria for dredging spoil, must be considered and used as dredging sludge and not as a "construction" material. This opens up new, less costly destinations for the residual. At the same time, there is an increased risk that a load will have to be landfilled or cleaned because of the stricter dredging spoil standards related to polluting substances.

Natural radioactivity in residuals

In early 2014, a European Basic Safety Standard (BSS) directive on ionising radiation is to be issued. It refers to the production of water from groundwater as a target sector, which means that the sector's residuals are subject to a reporting obligation and an inspection system. In anticipation of the implementation of the BSS in the Netherlands, RU is studying whether there is significant natural radioactivity present in drinking water residuals in the Netherlands. Preliminary research indicates that there is no reason to believe this to be the case. In the beginning of 2014, the residuals from various sites will be studied.

Registration as supplier of lime fertilisers

RU has registered itself at the Dienst Regeling of the Ministry of Economic Affairs as a supplier of lime fertilisers. This is a requirement if one is to market lime pellets as a slow-release lime fertiliser.

Collection and disposal structure for AC and plastic pipes

Shareholders were informed at the June meeting about the current national collection and disposal structure for asbestos-cement (AC) and plastic pipes, which are used in the transport and distribution infrastructure for drinking water. Details of the various disposal routes and the costs involved were presented. The shareholders expect RU to play an active role in the collection and processing of pipe materials. At the same time, according to the shareholders agreement, the shareholders must commit themselves to transfer new contracts to RU whenever this is deemed advantageous.
BureauLeiding, the Dutch plastic pipe producers' branch association, and RU have decided to establish a collaboration, which will be officialised in an agreement in early 2014. The objective is to promote the recycling of most of the plastic pipe waste – following expert collection and processing – in the form of new pipe material and new plastic products.

AC pipes (non-friable asbestos) come under Sector Plan 37 of the LAP2, which establishes that the minimum requirement for their disposal as landfill is that it be done at a landfill site suitable for this purpose. The destruction of asbestos fibres using thermal or chemical techniques is also permitted.
On 1 January 2013, the modified Decree on Landfill Sites and Landfill Bans came into force. In the Decree's explanatory note, the government confirms its preference, for reasons of risk management, for the new denaturation technique over landfill. The decision leaves the possibility open for the landfill ban only to become effective once the processing techniques of these waste products is operational. In anticipation of a landfill ban, RU will develop a plan to have "old" asbestos-cement pipes collected by a system covering the entire country, and then providing the pipes to processing entities. Contractual agreements will be reached with these entities, setting the supply, delivery and pricing conditions.

Lime sludge as an agricultural fertiliser

Brabant Water annually produces about 2,300 tons of lime sludge from dry matter. The residual comes from the Nuland, Seppe, Schijf, Veghel and Wouw water production companies, where water softening is carried out. Lime sludge began being used as a lime fertiliser in agriculture in the late eighties. At that time, Brabant Water, as the first water company involved, submitted a request to RIKILT – Institute for Food Safety, an institute of the Ministry of Economic Affairs, for an exemption to the prohibition clauses of the Fertiliser Decree. After a critical assessment, the exemption was granted in 1988.

The sludge is transported from the water production company silos to the farmers' property by tank truck. This amounts every year to more than 9,000 m^3, which represents about 250 truck loads. The application as a lime fertiliser in agriculture is an interesting and acceptable one for lime sludge. All of the logistical elements – mixing, transportation and spreading the fertiliser on the buyer's land – are carried out by third parties. The costs charged to the buyer depend on the number of product's kg abv (acid-binding value). The abv is a function of the calcium content of the production site and of the dry matter content. With each delivery, the buyer receives an accompanying document including the sludge's origin, type, composition and acid-binding capability. Detailed maintenance liming instructions make it simple for the user to determine how much of the specific drinking water company's sludge to apply per hectare. Moreover, Brabant Water and the contracting firm have sufficient in-house expertise to advise users in specific cases.

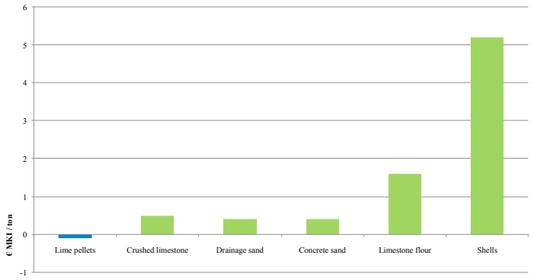
This application has countless advantages. It is of course sustainable and high-quality; it replaces lime from the Limburg marl quarries (Dolokal); the chain costs are quite acceptable because no dewatering needs to be done; the sludge is disposed of in liquid form at an acceptable cost, since the sale also generates returns; the purchase assurance is strong and a large client base has been built up all over the Province of North-Brabant.

The application as a lime fertiliser in agriculture is an interesting and acceptable one for lime sludge

4 Sustainability and CSR

Even though RU produces outstanding results for its shareholders, the sustainable disposal of drinking water production residuals is a basic pillar of our work. We recycle as much as 94.5% of our shareholders' residuals, and do so with a limited impact on the environment (measured in CO2 emissions). We also feel a strong sense of responsibility when it comes to minimizing the environmental impact of our own operational activities. Moreover we work on raising the sustainability awareness of our shareholders, buyers and service providers, and call on them to be creative, daring and flexible.

Lime pellets as sustainable construction material



Lime pellet environmental costs, Reststoffenunie.

In 2013, a research agency established an LSA dossier for lime pellets originating from the central partial-desalination of drinking water. This was done in accordance with the Dutch MRPI (Environmental Product Information) protocol, with a view to obtaining a certificate of the same name. Following tests of the MRPI certificate for lime pellets by a sustainability research and consulting agency of the University of Amsterdam (IVAM UvA), an official certificate was granted. MRPI certificates make it possible for information on a product's environmental properties to be communicated through the chain. The certificate granted to RU is valid for five years, beginning June 2013.

Sustainability aspects in the benchmark

For the RU market evaluation, the residuals were assessed with regard to two sustainability aspects: environment and raw material efficiency. Environmental sustainability was assessed on the basis of the level of CO_2 emissions (transport activities) and the position in the waste management hierarchy, according to Article 4 of the European Waste Framework Directive. Resource efficiency refers to the efficient use of natural resources.
For 44% of the lime pellets, the solutions chosen by RU are neutral regarding the two aspects; more than half score better than the current market alternatives.
For (liquid and dewatered) ferric (hydr)oxide, 75% of the solutions are better regarding the two aspects.
In short: the applications chosen by RU systematically score better than comparable market alternatives. This shows that, besides the financial aspects, RU demonstrably also incorporates sustainability considerations into its choices concerning the ultimate destination/application of residuals.

Recycling percentage

In 2013, 5.5% of the supplied residuals, that is, almost 10,000 tons, was used in (infrastructural) "works" or landfill. This concerned primarily negative-value residuals: aluminium sludge, some of the filter sand and gravel, carbon sludge and a small portion of the iron/lime sludge. We had set the objective of reducing the application of ferric (hydr)oxide (liquid and dewatered) as construction material in (infrastructural) "works" by 25%, based on 2009 as the reference year. We are happy to report that in 2013 practically no ferric (hydr)oxide was directed to these applications. Instead, the residual was purchased on a large scale by biogas producers and the brick industry.

Transport kilometres

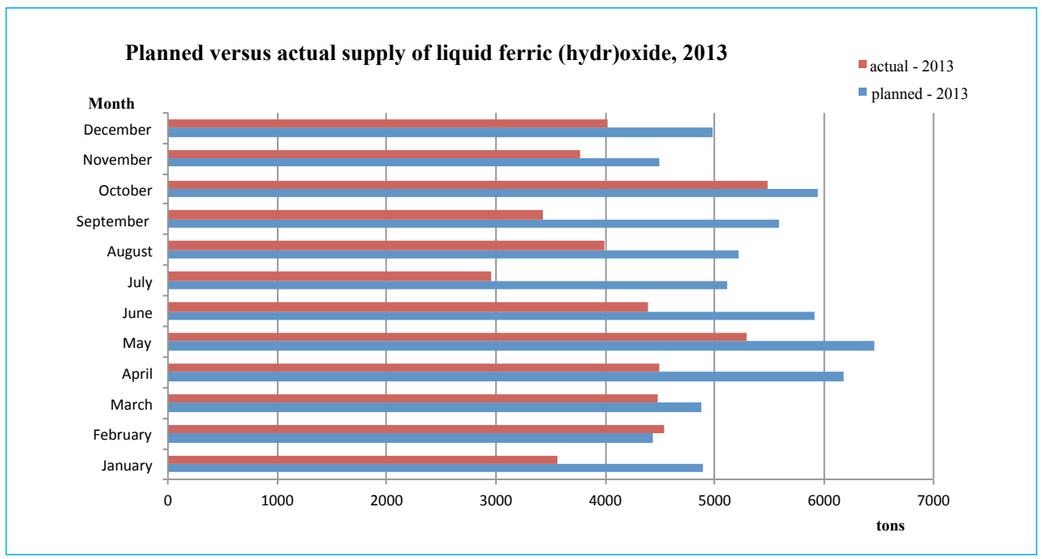
The average transport distance per ton decreased by more than 27% last year, while our target was to cut it by 20% over six years! This was achieved, among other ways, by selling residuals closer to home. The sale of lime pellets and liquid ferric (hydr)oxide to regional buyers was especially decisive. In addition, large deliveries are increasingly being transported by ship.

5 Developments by residual

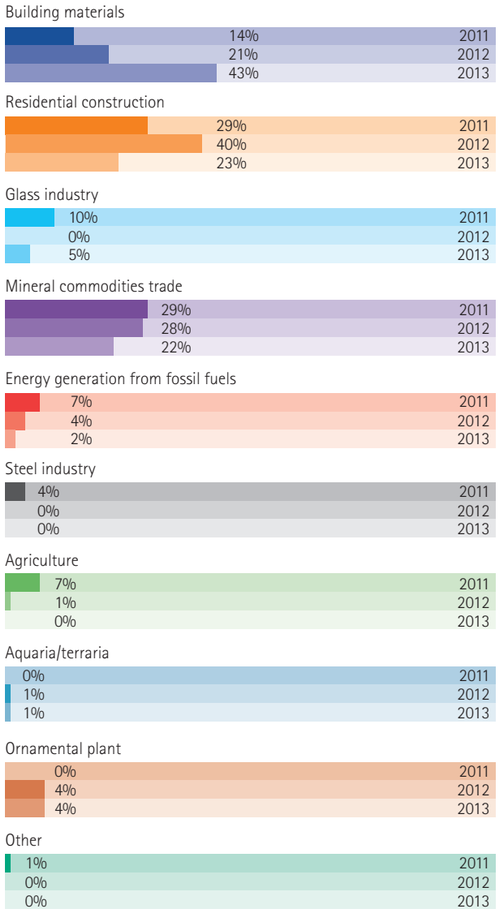
If we want to be a reliable supplier of (secondary) raw materials, we must fully master the chain process. We need a well-oiled collaboration with the drinking water companies if we are to meet the time, volume and quality requirements. This will allow us not only to avoid unnecessary storage and transhipment expenses and peak disposals, but also to increase the returns on our products. Buyers will after all pay more for a high-quality product that is moreover available on call. In 2013, the "failure expenses" for all the residuals offered to RU reached almost 10% of the total disposal amount. These expenses included waiting-hours for the trucks, operational rules at the sites – such as manhole guards and the laying of drive plates – and failure to fulfil delivery agreements.

The quality and composition of the residuals and their control are important requirements for the REACH registration, and the by-product classification is in part dependent on this. With the introduction of the sampling & analysis and storage & transport protocols, an important step was taken toward Total Quality Management (TQM).

Improvement recommendations will be elaborated with two pilot companies, using historical data on the outgoing residuals. The feasibility of the recommendations will be assessed through separate business cases. KPIs will also be developed for critical chain activities in the disposal of residuals. Both the water company and RU will in this way gain insight into their own performances.



Lime pellets



Supply and sale

The supply of lime pellets remained practically unchanged in this fiscal year, amounting to about 67,000 tons. This represents more than a third of all the residuals supplied by our shareholders. The increase in this residual's average sales value was practically entirely cancelled out by higher disposal expenses, which were mainly the result of extra outlays for the drying of the product for the glass industry. The net sales result compared to 2012 remained the same.

The most important changes in our client portfolio involved the termination of the supply of lime pellets to an energy producer because of the closure of a power plant; the renewal of deliveries to a white glass manufacturer; and a growth in sales to the concrete construction material industry.

A stronger, more structural, demand is anticipated from England. Until now, deliveries to the country were ad hoc, usually involving a single annual delivery of 1,600 tons of lime pellets transported by ship. To be in a position to supply England in a more structural manner with lime pellets from the north and east of the Netherlands, we have established a chain that includes a storage and transhipment facility in Hoogersmilde, and a wharf and harbour in the north of the country (Harlingen, Eemshaven).

In 2012, the high humidity percentage of lime pellets led to a complete cessation of their delivery to a white glass manufacturer. Thanks to the development of a cost-effective drying technique, which lowered the humidity percentage to less that 1 weight percent, the deliveries could be resumed in the second quarter of 2013. The drying technique involves using the residual heat of the transport vehicle's engine to dry the pellets during their transport.

The pellets are dried en route to the buyer.

In order to cut transport costs for the supply of 25,000 tons of lime pellets to a large manufacturer of concrete construction materials, a multiple private tendering process was organised. Four transport companies were selected, two on the side of the buyer and two via RU. The requirements were jointly formulated by the receiving cement plants and RU. The tender is expected to result in a saving of more than 25% over the transport expenses in 2013 – this, at the same service level.

Quality control

The protocol requires that the quality of lime pellets be (re) confirmed in the event of (important) changes in the conditions of the water softening process, or of the start-up of a new softening installation. In such cases, a certification study must also again be carried out.

Product development

Lime, together with sand, is perhaps one of the most used mineral raw materials. In contrast to quarry lime, lime pellets contribute to a better sustainability profile for the "user". But the water companies' lime pellets frequently do not satisfy the requirements of a number of end-users. To make the product more attractive in the market, the pellets need to be processed. This is why, in 2013, RU initiated a number of research projects to assess the economic viability of, among others, drying, grinding and classifying the pellets. The research was carried out jointly with chain partners and a consultancy. The results show that it is technically and also – at sufficient volumes – financially feasible to process the residual into a variety of products for which there is a demand in the market. In 2014, we will reach further agreements with our strategic partners with the aim of selling lime pellets to more market segments.

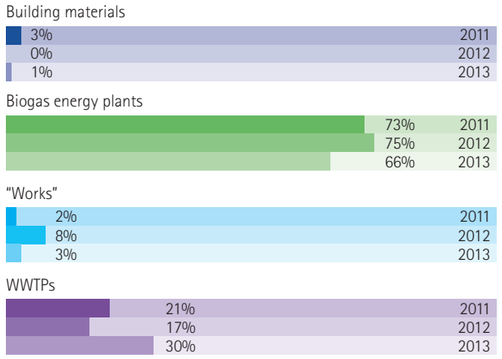
Another very promising path of development involves modifying lime pellets to produce a pure material: calcite, without the "blending" of silicate (garnet, river or silver sand). Since 2011, Waterleiding Maatschappij Limburg (WML) has made great progress in this direction. Following a successful large-scale field trial – in which garnet sand was replaced as a seeding material in softening reactors by pure calcite from "quarries" – a decision was taken to gradually switch the IJzeren Kuilen water production company over to the use of calcite as its seeding material, beginning in the last quarter of 2013. It is expected that the conversion operation will be completed before mid 2014.

Dunea, PWN and Waternet have also undertaken research into the use of calcite as a seeding material. At the Weesperkarspel water production company, Waternet will start a company-wide trial involving the replacement of garnet sand – its current seeding material – with calcite of its "own" production. The research is being led by KWR Watercycle Research Institute in partnership with Waternet, Dunea, PWN, WML and RU, and receives financial support from the Ministry of Economic Affairs within the framework of the Top consortium Knowledge and Innovation (TKI) scheme. RU is involved as the supplier of the seeding material produced from calcite pellets.

Lime pellet risks

Quality and supply security are becoming more and more important in serving specific market segments. The interchangeability of lime pellets from different water production companies is diminishing; in the future, water production companies will increasingly be linked to specific applications and buyers, for example, on the basis of the pellets' colour, chemical composition and/or grain-size distribution. These developments require that the water companies secure their softening process in order to generate the lime pellets. Process disruptions, (temporary) drops in production, but also product adulteration can have direct consequences in terms of legal liability.

Liquid ferric (hydr)oxide



Supply and sales

In 2013, RU received almost 6% less liquid ferric (hydr) oxide than in 2012. This is mainly the consequence of the higher concentration level of the suspension. The annual volume amounted to more than 50,000 tons. The average sales value per ton increased by almost 18%, while the disposal expenses rose by 5%. There were no big changes in the client portfolio for this residual in 2013.

The sale of liquid ferric (hydr)oxide is under pressure. An important reason for this is that the capacity expansion for the production of biogas is beginning to stagnate. Moreover, the number of bankruptcies in this sector is on the rise, chiefly because of increasing raw material prices.

Part of the liquid ferric (hydr)oxide is disposed of via external silos. This provides the flexibility to adjust to oversupply or even extra demand. The silos also play an important role in bringing the liquid ferric (hydr)oxide to the desired specifications. But this route is costly and over the past few years RU has worked with its suppliers on a number of initiatives to reduce the volumes reaching the silos.

Dewatering on drying beds cuts costs

In 2005–2006, Oasen installed roofing over its concrete drying beds at several of its sites. These beds can stockpile a year's production of sludge. The liquid sludge is disposed of at € 45.50 per ton and has a dry matter content of 10%; this amounts to € 455 per ton at a dry matter content of 100%. When the drying beds were built, it was assumed that the expenses for the disposal and acceptance of the dewatered sludge would be € 30 per ton if it was still too wet and had to be dried further in a depot, and € 23.30 per ton if it was sufficiently dewatered, that is, had a dry matter content of 40% or more.

In 2013, the expenses were about € 27.25 for the disposal of dewatered ferric (hydr)oxide that was still too wet, and € 12.36 per ton of dewatered ferric (hydr)oxide with a dry matter content of more than 40%.

The installations are meeting expectations, but there is room for improvement. If the dewatered sludge is dried more, the handling costs will drop; post-drying at a depot will no longer be necessary, and the material can be directly sent to a client. Because the dewatered sludge is well protected by the roofing, the risk of adulteration from the outside is minimal. The disadvantage is that the humidity does not escape as easily. In the period ahead, the question of how to improve the drying process will be tackled; hopefully, the associated costs will be so low that the greater earnings from clean dewatered ferric (hydr)oxide will produce a positive balance overall.

The risk of adulteration from the outside is minimal thanks to the roofing over the dewatered sludge

Quality is the fundamental concern, but in 2013 a great deal of attention was directed to centralising supply and demand, to further optimise the logistics. This led to a drop in the disposal via silos of over 20% in the fourth quarter of 2013 compared to the same period in 2012. The development of a new information structure at RU over the course of 2014 will reinforce this optimisation process.

The application of liquid ferric (hydr)oxide in municipal wastewater treatment, for purposes of the recovery of phosphorus from biological sewage sludge, was a matter of some debate in the past. Iron disturbs the recovery of phosphorus from the incinerator ash of the sewage sludge. In 2012, about 40% of the ash at N.V. Slibverwerking Noord-Brabant (SNB) satisfied the standards for iron in relation to phosphorus. To achieve this, the use of iron had to be curtailed.
Now that phosphorus recovery via Thermphos has been terminated, SNB is going to recover phosphorus using wet-chemical applications. For this approach to phosphorus recovery iron presents no problem.

Quality control

Samples show that the water companies are getting better at thickening the ferric (hydr)oxide.

Client complaints regarding the quality of liquid ferric (hydr)oxide concern mostly the residual's dry matter content and the presence of foreign substances, such as sand, gravel and plant material. At this point in time, there is no fast, simple and reliable measurement method, which would allow production staff at the water companies to identify the product's dry matter content *prior* to its transport. This would enable an early determination as to whether the residual can be directly delivered to the client or should be sent to a silo, where the quality of the dry matter can be adjusted. Samples show that the water companies are getting better at thickening the ferric (hydr)oxide. The average dry matter content of the sampled batches of ferric (hydr)oxide in 2013 increased by more than 1 percentage point over 2012. This corresponds to a drop of more than 10% in the disposal volume. To cut transport kilometres and expenses, a storage facility was created in the south-west of the Netherlands. Because of our concern with cost-cutting, direct deliveries and quality control will remain key priorities in 2014.

Product development

In late 2012 research began on the production of pellets from iron sludge. Among other uses, iron pellets can be applied in combating the eutrophication of surface water. The research is being conducted by KWR with financial support from the Ministry of Economic Affairs within the framework of the TKI scheme. The initial results are encouraging: the first batches of iron pellets show a performance comparable to that of products already available on the market. In 2014, the business case will be developed and, if the outcome is positive, we will seek partners for iron pellet production.

At the end of 2013, the TKI Programme Board approved a research proposal to study the application of iron pellets for the desulphurisation of biogas. The research, involving KWR and two strategic partners of RU, will get under way in early 2014.

A few years ago, the knowledge institutions Alterra and Deltares started a project to study the reduction of the phosphorus load in surface water through the use of a phosphorus-binding drain. This research project is supported by RU, the Province of North-Holland, two waterboards, a supplier of drainage systems and an association of flower bulb growers. The goal is to develop knowledge on the process of phosphorus binding to ferrous residuals, like ferric (hydr)oxide, iron pellets or ferrous filter sand from iron-removal filters. The results show that, after a period of three years, the drain enveloped with ferrous filter sand still removes 94% of the phosphorus from the drain water, and the drain continues to function perfectly.

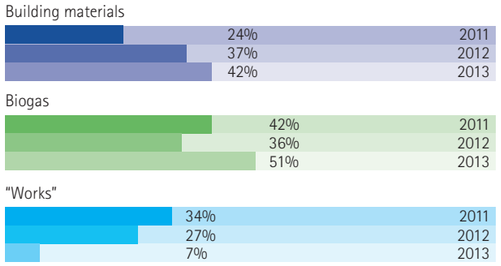
Liquid ferric (hydr)oxide risks

The most important risks for the sale of liquid ferric (hydr)oxide are the quality of the product and the dependence on a couple of markets. Cheap imports from abroad certainly also present a threat.

It remains quite a challenge to get hold of "clean" ferric (hydr)oxide of sufficient quality. Certainly at production sites where no adequate provisions have been taken for the sedimentation and/or thickening of the residual, the necessary investments often need to be made to render the product appropriate for sale on the market. As it does for other residuals, RU provides advice to its shareholders on how to put the management of their liquid ferric (hydr)oxide in order. RU proposes improvement projects and develops business cases working together with the shareholders.

Liquid ferric (hydr)oxide has two key markets: biogas generation and wastewater treatment. Market and product development efforts must reduce the extent of this dependence. All the more so since the application of the residual as construction material in (infrastructural) "works" is being curtailed by the government.

Dewatered ferric (hydr)oxide



Supply and sale

The supply of dewatered ferric (hydr)oxide in 2013 was approximately the same as it was in 2012, that is, about 27,000 tons. The sales value increased by almost 38%, while the disposal expenses grew by 4%. The demand for good quality dewatered ferric (hydr)oxide remained strong in 2013. Because more water companies managed to meet the specifications set for the product, and conditions permitted an increase in the sales price, the net sales value of dewatered ferric (hydr)oxide practically doubled. Germany is a particularly important market, but deliveries were also made to Luxembourg, France, Switzerland, the Czech Republic and Poland. In 2013, the deliveries for "works" experienced a specially significant drop.

In 2014, we will be building more strategic stocks of dewatered ferric (hydr)oxide in order to better serve the sometimes volatile demand. This will involve using the storage facilities at the sites of a few water companies or external depots. At the end of 2013 we stopped working with a distribution site where the product was stored on hardened ground. The risk that stones would get into the shipment during the loading of the transport vehicles was too great. Now we use exclusively locations that are paved with asphalt. To guarantee the quality of dewatered ferric (hydr)oxide we are making use of a new storage site at Tiel.

We are working in close collaboration with Waternet on the application possibilities available for the "historical" stocks of coagulation sludge at one of the company's water production sites. This residual has a relatively low ferrous content and many inert components, such as clay and organic matter. The sales path has been successfully explored, and several alternative routes are being studied from technical, logistical and legal perspectives. A definitive choice will be made in 2014.

Quality control

As in 2012, a great deal of attention was paid in 2013 to the quality and the quality assurance of the dewatered ferric (hydr)oxide. There were fewer complaints in 2013 about the product's quality, and most of those received related to the presence of foreign matter in the residual. The consistency of the stored dewatered ferric (hydr)oxide at water production sites was, in a number of cases, not satisfactory. Because of the vibrations undergone by the product during transport, the dewatered ferric (hydr)oxide starts to "run", so that it cannot be stacked at the buyer's.

Dewatered ferric (hydr)oxide risks

This residual's two most important risks relate to quality and availability. In many instances, dewatered ferric (hydr) oxide is stored outside for lengthy periods, so that it can become adulterated by foreign matter. The longer supply chains also contribute to the risks of adulteration. This residual stream becomes available in batches, which calls for a good coordination of supply and demand: shortfalls can occur which cannot be quickly filled.
For dewatered ferric (hydr)oxide of lesser quality there is the risk that government policy might reduce the amounts that may be used as construction material in (infrastructural) "works". These limitations render the sometimes needed flexibility impossible, and can lead to price increases for the disposal of loads of poor quality.

Other residuals

Supply and sale

The supply of other residuals (exclusive of plastic and AC pipes) dropped in 2013 by more than 6,600 tons,

A solution for old stocks of coagulation sludge

Waternet (or actually its corporate predecessor) has operated the Cornelis Biemond water abstraction station in Nieuwegein since the fifties. This is where water from the Amsterdam-Rhine canal is pre-treated before being transported to the water supply dunes at Leiduin. The key step in the process is the iron coagulation of the suspended solids present in the surface water. This produces a few thousand tons of coagulation sludge every year. The sludge is a lot like dredging spoil and contains 6 to 7% iron.

For a number of years now, the sludge has been dewatered and used in applications. However, the sludge produced *before* this period is still stored in Nieuwegein, partly below ground level. Waternet would like to remove this material in the near future and sell some of the land. RU was asked to conduct a market study to identify one or more possible destinations for the sludge. Since late 2012, Waternet and RU have consulted intensively on the project. In 2013, after concentrated work, a number of new applications were developed which, beforehand, had not seemed possible. In the meantime, there is a clear picture of the sludge's quality and quantity, and available volume (both above and below ground level); the conditions have been defined for its transport by ship; and the legal status of the material has been clarified (there was a question as to whether it was soil, dredge spoil or construction material). And most of all: destinations have been found where it is suitable for one of the specified applications.

A small number of studies will have to be carried out in 2014, but, in principle, Waternet will be able to dispose of the loads efficiently and cost-effectively within a relatively short period of time. Thanks to the efforts of Waternet and RU, high-quality destinations were identified and the costs per ton will be lower.

The Cornelis Biemond Water abstraction station in Nieuwegein

to 28,000 tons. In particular, a lot less aluminium sludge and carbon sludge was supplied. The supply of filter sand and gravel, lime sludge and iron-lime sludge remained basically the same. The sales value of this category of residuals was also negative in 2013. Relatively more residuals of a negative value were received. The disposal expenses decreased compared to 2012, so that the net result improved slightly.

Product development

Most of these residuals end up as construction material in (infrastructural) "works". This is undesirable from a financial point of view but, more particularly, from a sustainability one. For this reason, new applications are being sought for the different categories of residuals.

Aluminium sludge is still disposed of with an average dry matter content of less than 2 weight percent. Waterbedrijf Groningen, in consultation with a buyer and RU, has taken various initiatives to increase the dry matter content of the suspension. As a result, in 2013, there was an approximate drop of 22% in the disposed volume, which brought with it corresponding savings in transport and processing expenses. Research was also carried out into the feasibility of reactivating aluminium sludge with a view to using it for phosphorus binding in a neighbouring WWTP. Unfortunately, the study did not produce the desired result. In late 2013, an exploratory market research project was begun into other possible applications for aluminium sludge.
Filter sand and gravel is for the most part centrally collected and inspected, according to the provisions of the Soil Quality Decree. In 2013, two new applications were developed: (1) in self-cleaning roadside berms, in which the polluted, rainwater run-off is filtered, and (2) by a company that washes the residual and resells it as gravel. In both these applications the sand and gravel cease being of negative value. Both these applications will be further developed in 2014.
In 2013, Wageningen University reported on the application of filter sand in the "enveloped drain" project. In the context of this study, filter sand was used to envelop drains used in the lowering of groundwater levels in bulb fields (see also Chapter 5, "Liquid ferric (hydr)oxide").
Lime sludge is sold as a positive-value residual to the agricultural sector. Its usefulness resides in its acid-binding value. But if the acid-binding value is too low, other applications are looked at – for example, like those for iron-lime sludge.
Iron-lime sludge is actually a mixture of lime sludge and ferric (hydr)oxide. Until 2013, all of this residual was dewatered and used as construction material in (infrastructural) "works", in noise barriers for instance. In 2013 a portion of the iron-lime sludge was used as "B quality" ferric (hydr)oxide in biogas plants. The supply was made free of charge. In 2012, € 16 to € 23 was paid per ton to dispose of this sludge mixture.
Carbon sludge was in 2013 temporarily stored at the water companies that produce the residual. This was done at RU's request, in anticipation of new application possibilities for the residual. There appeared to be a chance for its use as structural material in compost, or as a secondary adsorbate for water or soil decontamination. These chances still exist, but they could not be realised in 2013.
Plastic pipes (PVC-PP-PE). According to water company figures, a total of 830 tons of plastic pipes were disposed of in 2013, compared to the 2012 amount of around 500 tons. The plastics industry has in fact been working on closing the plastics loop for about twenty years now. This inevitably pushes up the value of the recylate, in a context of big increases in raw material prices. Frequently, we do not know exactly how plastic pipe waste is disposed of. Figures on the quantities of used plastic pipes that reach recycling companies indicate that under half of the pipes used for the transport and distribution of drinking water are recycled (see also Chapter 3, "Plastic pipes").
AC pipes. A total of about 4,000 tons of AC pipes were disposed of by landfill contractors in 2013. This is an increase of more than 30% over 2012 (see also Chapter 3, "AC pipes").
Regenerant, also known as brine, is released from the regeneration of ion exchangers. It is a saline residual, which could be qualified as "seawater", containing a high concentration of organic substances, like humic and fulvic acids. PWN asked RU to develop a sales route for this residual, and, in 2013, we carried out a market research project. The discharge of the regenerant into saline or fresh surface water, or its infiltration underground, is not seen as sustainable. For this reason, RU, working closely with the water company, has drawn up an inventory of cases in which this residual might possibly add value. Such cases have been identified and will be further elaborated during the first half of 2014.
The regenerant residual has an added value essentially when its different components are offered after having been partly or entirely separated. RU is working on this course with various stakeholders, with an anticipated time horizon of two to three years.

6 Prospects and expectations

RU has developed a good position as a supplier of secondary raw materials produced by the water cycle. To strengthen and extend this position, we need to invest the required energy in controlling the quality of the residuals, on the one hand, and in controlling the expenditures related to putting them on the market, on the other. Water companies operate in a client-oriented manner when it comes to drinking water; RU is strongly committed to further strengthening this orientation when it comes to the by-products of drinking water production. We expect to be able to cut disposal costs by about 20% by improving the processing and storage of the residuals at the company sites, and through good coordination with the logistics service providers. To guarantee the quality of our products for buyers, and also raise process management to a higher level, we will be carrying out random tests and inspections.

Future vision

To render future-proof the chains and cycles within which our residuals are used, we will have to cast our eyes more broadly and look beyond the term of our 2015-2018 Business Plan. By working with a 2030 time horizon, the sector will be able to timely respond to and direct the changes needed for a sustainable and, at a minimum, cost-neutral residual chain. The good results of the past 20 years in this field were achieved by taking a lead in the "valorisation" of residuals. We need a vision, and then a plan to realise it, if we are to continue creating and leading proactively. The Platform bedrijsvoering (Management Platform) will function as a sounding-board in determining the road maps.

Collaboration with the waterboards

RU is engaged in ongoing discussions with the waterboards to consider how we can collaborate with regard to the residuals of the entire water cycle. With our knowledge and expertise, we will be able together to determine the savings potential for the disposal of wastewater treatment residuals. This is also in harmony with the objectives of the Administrative Agreement on Water Affairs. At the initiative of a number of waterboards, a proposal was made to RU to develop marketing expertise at the Resource Factory for residuals from SWTPs and WWTPs. Our shareholders warmly welcome this development.

Markets abroad

We expect to increase our activities in international markets in the years ahead. We have done business with England since 2005, and with Germany and Belgium since 2008. This involves not only the sale of Dutch ferric (hydr)oxide or softening lime, but also the purchase of drinking water residuals abroad to satisfy the needs of our Dutch clients. There is also a lot of interest in the "Reststoffenunie concept" in neighbouring countries. Within the context of the 2015-2018 Business Plan, we will be discussing foreign markets, and the role we should play in them, with our shareholders.

Residual sales

The market for the residuals of drinking water production has developed well over the past few years. Through research, development and innovation, and good collaboration in the chain, efficiency and cost-effectiveness have increased significantly. The market for liquid and dewatered ferric (hydr)oxide as a binding agent for phosphorus and sulphur, in fermentation and water treatment plants, has continued developing to the point of becoming a mature market. For lime pellets, in their current form, a stable market has been developed in a number of key economic sectors, such as glass, building and agriculture. Nonetheless, we expect that the demand for this by-product will grow even more, because businesses increasingly perceive an economic interest in acquiring materials from sustainable sources. Indeed, many companies have set the objective of steadily increasing the proportion of these materials in their processes.

A second life for activated carbon sludge?

Dunea has used the embanked Meuse river as a source for its drinking water since 1976. Close attention has to be paid in drinking water production to the pesticides discharged into the Meuse as a result of agricultural and horticultural activities. If the pesticide levels in the river water are too high, extra measures need to be taken. Dunea therefore works closely with other parties in the area to keep the water source as clean as possible.

The embanked Meuse water is transported to the infiltration pools in the dune areas of Berkheide in Katwijk, Meijendel in The Hague, and Solleveld in Monster. The Meuse water percolates through the dune sand layer. It is during this dune passage that microbial removal treatment takes place, before the water reaches the three post-treatments. During post-treatment, pulverised activated carbon is used to remove the pesticides, but also to improve the water's taste and odour. This pulverised carbon is applied in batches to the rapid filters. After about a week the filters are flushed, which means that the pulverised carbon is removed and transported in the backwash water for treatment. In the repetitive process, new pulverised activated carbon is then applied to the rapid filters. During the backwash water treatment, ferric chloride is added to the water as a flocculant to transform the pulverised carbon into carbon sludge. Every six months, the backwash water treatment site, where the pulverised carbon settles into sludge, is dredged out and the sludge is taken to the sludge depot. As soon as sufficient sludge has been collected at the depot, test samples are taken to determine the sludge's category.

Every year about 3,500 tons of activated carbon sludge is disposed of via Reststoffenunie, mostly as construction material in (infrastructural) "works", for example in noise barriers.
A decontamination project is currently underway in Katwijk in which activated carbon sludge could also possibly play a part. The polluted soil is going to be excavated and as much as possible of the residual pollution removed.
Perhaps this residual pollution can be removed by activated carbon: a unique opportunity to give activated carbon sludge a second life. In anticipation of a decision on this new application possibility, no activated carbon sludge is being disposed of for the time being. Dunea is thinking along with Reststoffenunie on sustainable applications for this residual as well.

Scheveningen water towers

Thus, water, as a source of sustainable lime, harmonises nicely with an eco-design label.

There are also the challenges we face – alongside our shareholders, knowledge institutions, market players and service suppliers – in creating and realising new functionalities for our products, and thereby adding value.

Thus, for example, starting next year, lime pellets made of pure calcite will be offered on the market. There is also a demand for lime pellets with specific grain fineness and size-distribution. There is a strong interest in ferric (hydr) oxide in granular form for use in controlling eutrophication of surface waters, combating odour and corrosion, and removing arsenic. Development processes have been initiated for a number of negative-value residuals: in 2016 we expect that at least 50% of these products will have a positive sales value.

Residual supply

In the short term, we do not expect any big changes in the annual supply of traditional residuals from drinking water production. In the years ahead, RU will however increasingly function as a coordinator in the recycling of plastic water pipes and the disposal/destruction of AC pipes. Programmes are currently underway for the acceleration of the disposal of AC pipes, so that the volumes of this waste product will increase.
Changes in the water treatment technologies employed also have an impact on the nature, quantities and composition of the residuals. Thus the increasing use of ion exchange and membrane filtration processes will generally result in larger volumes of saline streams. The introduction of such technologies on a significant scale will lead to a reduction in the supply of the more traditional residuals.

As a market-oriented enterprise, RU has many close contacts with companies that are active in the water cycle. We believe these could also offer good growth opportunities in the years ahead.

Sales growth through dewatered ferric (hydr)oxide of optimal quality

There are two water production companies in Andijk. Fully-treated drinking water is produced at the Andijk site, and a semi-finished product at the Juliana site. The semi-finished product has a number of destinations. A permanent stream flows to the ultra- and hyper-filtration plant in Heemskerk, and to the dunes at Wijk aan Zee and Castricum for infiltration. Another large stream goes to the steel and paper industry in Velsen. The pumping station's remaining capacity is used for emergencies; for example, when no water can be drawn from the Lek river, lake IJsselmeer water is used. PWN collaborates with Waternet on the provision of this security.

The ferrous backwash water from the Juliana production plant is sent to one of the ten lagoons. There, it is drained and excess water is aspirated as much as possible from the surface. After eight to ten weeks, the ferric (hydr)oxide is sufficiently thickened to be removed from the lagoon and sprayed on the dike. There, the material is turned over as much as is needed until it is dry. It is then piled into small mounds to further accelerate the drying. Depending in part on the weather, the entire process takes about four months. In this way, about 5,000 tons of dewatered ferric (hydr)oxide is produced every year. It is transported by cargo ship to the German cooperative Münsterländische Reststoffverwertung (MRV), which then distributes it to the associated biogas plants. The ferric (hydr)oxide is used in the fermentation process to bind sulphur. This prevents odour nuisance and damage to the installations, while contributing to the plant's performance.

An expansion of this market is only possible if the ferric (hydr)oxide is of optimal quality. PWN has decided to allocate two (permanent) staff members to its production of dewatered ferric (hydr)oxide. Quality control of the entire chain is conducted in a close collaboration between PWN, RU and the ultimate client. This collaboration has resulted in a significant improvement in the quality of the residual over the last few years – a quality level that can be said to have stabilised. Thanks to the various improvement measures taken in 2011 and 2012, dewatered ferric (hydr)oxide now generates money: in 2011, transport, sales and analysis costs surpassed those of 2013 by more than € 15.00 per ton.

Thickened ferric (hydr)oxide is churned as much as is needed until it is dry

7

Financial statements 2013

Financial report

FINANCIAL REPORT

BALANCE SHEET per 31 December 2013
(after profit appropriation following recommendation)

	31-dec-2013	31-dec-2012
	€	€
ASSETS		
Fixed assets		
Tangible fixed assets	9.960	11.004
Current assets		
Receivables and accrued income	911.750	861.006
Receivables and accrued income	700.869	744.337
	1.622.579	1.616.347
LIABILITIES		
Shareholders' equity		
Issued and paid-up capital	427.297	427.297
Share discount	11.923-	11.923-
Share premium	6.148	6.148
Other reserves	264.609	157.331
	686.131	578.853
Current liabilities		
Current liabilities and accrued liabilities	936.448	1.037.494
	1.622.579	1.616.347

7

Financial statements 2013

Profit and Loss account

PROFIT AND LOSS ACCOUNT FOR 2013

	2013	2012
	€	€
Earnings		
Turnover residuals	3.991.242	3.800.331
Consulting	24.955	446-
	4.016.197	3.799.885
Shareholders' annual contribution	932.492	832.683
Other earnings	37.215	40.000-
Total earnings	4.985.904	4.592.568
Operating expenses		
Direct disposal expenses	2.779.373	2.880.549
Earnings distributed to shareholders	1.025.195	836.236
Pre-netted earnings for shareholders	3.640	49.740-
	3.808.208	3.667.045
Gross turnover result	1.177.696	925.523
Operating expenses		
Personnel	621.973	569.795
Depreciation	3.546	3.573
Costs of sales and PR	145.009	81.010
Research & consulting costs	196.229	87.351
Premises	40.609	37.645
Supervisory Board	7.100	6.900
Other operating expenses	67.691	85.555
	1.082.157	871.829
Total expenses	4.890.365	4.538.874
Operating result	95.539	53.694
Interest income	11.739	16.597
Net operating result	107.278	70.291

7

Financial statements 2013

Financial statement notes

Financial statement notes

Accounting policies

General
The company's most important activity is relieving the water companies of the residuals they produce in their water production processes. The company has prepared its financial statements in accordance with the legal provisions of Title 9, Book 2 of the Dutch Civil Code. The financial statements were prepared on 24 May 2013

Tangible fixed assets
The tangible fixed assets are valued at purchase prices and depreciated straight-line on the basis of the expected operating life of the asset concerned. The rate of depreciation applied is 20%.

Receivables
The receivables are valued at nominal value after the deduction of a possible required provision for doubtful debts.

Other assets and liabilities
These are valued at nominal value.

Accounting policies for the determination of results
Earnings, expenses and interest are attributed to the period with which they are associated.
The earnings concern the passed on disposal expenses plus the realised earnings (positive and negative) from buyers and consulting services provided.
The direct disposal expenses concern outlays for extraction, transport, storage and analysis.

Pension expenses
The company has a defined pension contribution plan.
Payable pension contributions are incorporated into the profit and loss account in the year with which they are associated.

Corporate tax
Beginning 1 January 2011, the tax obligation of Reststoffenunie was terminated in accordance with article 2 paragraph 7 of the Corporate Income Tax Act, 1969.

7

Financial statements 2013

Balance sheet notes

BALANCE SHEET NOTES

ASSETS	**31-dec-2013**	31-dec-2012
	€	€
Fixed assets		
Tangible fixed assets		
Inventory		
Book value per 1 January	11.004	11.984
Plus: investments	2.502	2.593
	13.506	14.577
Minus: depreciation fiscal year	3.546	3.573
Book value per 31 December	9.960	11.004
Cumulative depreciation	7.934	4.388
Current assets		
Receivables and accrued income		
Receivables	620.118	750.357
Taxes and national insurance contributions	83.824	29.920
prepayments	207.808	80.729
	911.750	861.006
Receivables		
Nominal value	665.118	750.357
Provision for bad debts	45.000-	-
	620.118	750.357
Taxes and national insurance contributions		
Value added tax December	83.824	29.920
Accrued income		
Pre-paid depot expenses	-	20.109
RU market evaluation study to be charged to water companies	123.798	-
Disposal expenses yet to be charged to water companies	17.492	-
Transport expenses yet to be received	7.005	-
Pre-paid contract costs	13.413	10.880
Pre-netted water companies' earnings	46.100	49.740
	207.808	80.729
The maximum term of the repayments is one year		
Cash and cash equivalents		
Deutsche Bank, current account	80.506	235.726
Deutsche Bank, month/quarter savings account	620.363	508.611
	700.869	744.337

BALANCE SHEET NOTES

LIABILITIES	31-dec-2013	31-dec-2012
	€	€
Shareholders' equity		
Issued and paid-up capital		
Status per 31 December (issued)	427.297	427.297

Authorised share capital amounts to € 910,000 divided into 20,000 shares with a nominal value of € 45.50, of which € 421,522 is paid up.

Share premium
This item arose through the sale of 1,242 shares in 2011 with a premium of € 4.95 per share.

Share discount
This item arose through the sale of 568 shares with a discount of € 21.00 per share

Other reserves		
Status per 1 January	157.331	87.040
Plus: profit appropriation	107.278	70.291
Status per 31 December	264.609	157.331
Current liabilities		
Current liabilities and accrued liabilities		
Payables	584.213	698.974
Taxes and national insurance contributions	28.935	27.531
Other debt and accrued liabilities	323.300	310.989
	936.448	1.037.494
Taxes and national insurance contributions		
Pension contributions	7.897	7.244
Payroll tax and national insurance contributions	21.038	20.287
	28.935	27.531
Other debt and accrued liabilities		
Accrued expenses	125.535	77.013
Revenue received d in advance on depots	21.930	18.200
Earnings to be settled with shareholders	6.901	48.521
Holidays	13.481	12.280
Holiday pay	5.546	5.447
Collective Labour Agreement obligations	13.409	5.406
Received for projects yet to be realised	16.500	40.000
Yet to be settled regarding REACH follow-up for water companies	119.998	104.122
	323.300	310.989

Off-balance-sheet items
Reststoffenunie has signed contracts concerning its premises, equipment rental and lease cars. Obligations than range beyond one year: € 90,276, and for more than five years: € 0.00

7

Financial statements 2013

Profit and loss account notes

PROFIT AND LOSS ACCOUNT NOTES

	2013	2012
	€	€
Earnings		
Turnover residuals		
Settled disposal expenses shareholders	2.761.573	2.719.670
Settled disposal expenses non-shareholders	51.502	99.830
Earnings residual sales shareholders	1.145.803	944.436
Earnings residual sales non-shareholders	32.364	36.395
	3.991.242	3.800.331
Consultancy services		
Consultancy for shareholders	8.255	-
Consultancy for non-shareholders	16.700	446-
	24.955	446-
	4.016.197	3.799.885
Direct disposal expenses	2.779.373	2.880.549
Gross margin	1.236.824	919.336
Turnover of non-shareholders of Reststoffenunie Waterleidingbedrijven B.V.	100.566	135.779
Idem as percentage	**2,5%**	**3,6%**
Other earnings		
Reserved contribution for postponed projects	16.500-	40.000-
Reserve available for REACH contribution	53.715	-
	37.215	40.000-

	2013	2012
	€	€
Operating expenses		
Personnel		
Direct salary expenses	444.512	334.259
National insurance contributions	76.706	54.105
Pension contributions	55.079	37.040
Indirect salary expenses	15.003	21.120
Short-term staff	30.673	123.271
	621.973	569.795

Personnel
The average staff size in 2013 was eight people (2012: seven people), seven of whom in permanent positions (2012: six), and one short- term hire.

Cost of sales		
Travel and accommodation	46.423	41.845
Contributions	8.433	5.392
Provision for bad debts	45.000	-
PR	45.153	33.773
	145.009	81.010
Research & Consulting expenses		
Perspective: Financial	73.708	55.375
Perspective: Client	138.431	48.151
Perspective: Internal Processes	13.785	28.370
Perspective: Innovation/learning	23.765	93.578
	249.689	225.474
Debited from research & consulting reserve	53.460-	138.123-
	196.229	87.351

7

Financial statements 2013

Other information

OTHER INFORMATION

Statutory profit appropriation

Article 27 of the company statutes establishes the following provisions regarding the profit appropriation:

1. The profit shall be at the free disposal of the General Meeting of Shareholders. The General Meeting of Shareholders may reserve an amount from the profit established in the financial statements that it has approved.
2. The company may only make distributions to the extent that its shareholders' equity exceeds the amount of the issued and called-up part of the paid-up capital, plus the reserves to be maintained in accordance with the law.
3. Profit distribution shall only be made after the adoption of the financial statement from which it appears that such distribution is allowed.
4. Shares or certificates held by the company, or shares and certificates in which the company has right of usufruct, shall not be included in profit appropriation calculation.
5. The General Meeting of Shareholders may decide to make interim distributions. The decision to pay an interim dividend from profits during the fiscal year in course can also be taken by management. Distributions referred to in this item may only be made if the provisions of item 2 of this article are met.
6. Unless the General Meeting of Shareholders establishes otherwise, the dividends shall be paid within 30 days after being approved.
7. The General Meeting of Shareholders may decide to pay dividends, in part or in whole, in a form other than cash.
8. A shortfall may only be settled through the reserves established by law inasmuch and to the extent that the law permits.
9. In the event that the total amount of the issued and called-up part of the capital, plus the reserves to be maintained in accordance with the law, is less than the most recently established legal minimum capital level, the company must maintain a reserve equal to the difference between the amounts.

Appropriations of 2013 results

In anticipation of the decision to be taken in this regard by the General Meeting of Shareholders, the result of € 107,278.00 for 2013 has been added to other reserves. This decision, which is yet to be taken, has already been incorporated in the 2013 financial statements.

reststoffenunie
added value from water

Colofon

Publication
Reststoffenunie Waterleidingbedrijven B.V.
Groningenhaven 7, 3433 PE Nieuwegein
P.O Box 1072, 3430 BB Nieuwegein
The Netherlands

Telephone: +31 (0)30 – 60 69 721
Fax: +31 (0)30 – 60 69 720

website: www.reststoffenunie.com
e-mail: info@reststoffenunie.com

Entered in the Commercial Register of the Chamber of Commerce
in Utrecht under number 30130247

Editing, design and production
Skrebbel Communicatie, Rosmalen
Melding ontwerp enzo, Oisterwijk

Photography
Iris Wuijster, Rosmalen
and own photos by staff and drinking water companies

Printing
Drukkerij NPC BV, Schijndel

June 2014

RESTSTOFFENUNIE WATERLEIDINGBEDRIJVEN B.V.

Annual Report 2013