



Sustainability report

2016

Cover photograph

Kevin van Dijk, assistant operator
at the post-shredder technology
plant in Tiel.

Sustainability report

2016



Working towards high-value recycling

Innovation in the automotive recycling sector is essential to support the circular economy. ARN are the recycling experts in the mobility sector. We strive constantly to achieve innovation in the recycling of cars and batteries. Our mission is to bring about high-value recycling, with a sound balance between costs, recycling performance and CO₂ footprint.

The result of our efforts is clearly visible: we have already efficiently achieved and even exceeded the statutory 95% recycling target.

Cooperation that works

Our primary task is to fulfil the manufacturers' responsibility for end-of-life cars and batteries on behalf of automotive manufacturers. We do this in collaboration with all our chain partners, because the recycling of cars is a joint task. The car dismantling companies dismantle usable parts for sale, and remove the legally required materials so they can be collected and processed responsibly. The shredder companies process the vast majority of the metal parts while our post-shredder technology (PST) plant finally extracts the remaining reusable materials from the shredder residue.

Active exchange of knowledge

All links in the chain make a contribution, including the collection companies, processing companies and the intermediate traders. We attach huge importance to a positive relationship with our stakeholders. We regularly organise stakeholder surveys to

identify their wishes, expectations and experience in our combined effort to achieve high-value recycling. We view knowledge exchange as one of the most important cornerstones for cooperation within the automotive recycling chain.

ARN is part of the chain

To be able to fulfil our task in line with statutory requirements, we at ARN became active participants in the recycling chain, in 2011. In that year, we commissioned the PST plant in Tiel. At this installation, more than 180 machines process shredder residue into reusable materials or for recovery. Since 2013, the PST plant has made a real contribution to successfully achieving the 95% recycling target, of which at least 85% material reuse, boosted to 95% recovery. In 2016, a total of 88.9% of the target comprised material reuse, and of that total, the PST plant generated the final 6.5%

Higher recycling performance at lower costs

Post-separation using post-shredder technology in the plant also results in cost savings, as shown by a comparison of the results achieved in 2016 and 2010. Without a PST plant, in 2010 we achieved a recycling performance of 95.3%, of which 83.3% material reuse, at a cost of € 22 million. In 2016, the costs on balance amounted to € 18.8 million, including € 9.3 million for the PST plant, generating a recycling performance of 98.7%, of which 88.9% material reuse. In other words, we

Our primary task is to fulfil the manufacturers' responsibility for end-of-life cars and batteries on behalf of automotive manufacturers

now achieve a higher recycling performance at a lower cost.

Assistance in innovation

Over the next few years, we will continue in our efforts to further reduce costs in the processing of shredder waste. This can for example be achieved by optimising the production line and further improving the purity of the recovered materials. We are also actively involved in developing a higher-value sales market for our recycled materials. One of the ways we hope to achieve this is by contributing ideas to innovative manufacturers about possibilities for recycled materials. The expected result of these combined efforts is further growth in the revenue from higher-value recycling.

Consumer gain

The recycling system for cars is financed by the recycling fee paid by consumers whenever they buy a new car. Due to the planned cost savings, that recycling fee will be gradually reduced over the next few years, in four increments of € 2.50, to € 35 per car in 2020. We reached this agreement with our clients, the car importers affiliated to the RAI Association, in 2016.

Innovation and optimisation will further improve recycling performance.



| | |
|------------------------------------|-------|
| Total recycling performance | 98.7% |
| Reuse | 88.9% |
| Energy recovery and other recovery | 9.8% |

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Contributing to a sustainable society is in our DNA

The Dutch government is fully focusing its efforts on achieving a circular economy. By 2050, the aim is for economy to run entirely on recyclable raw materials. Together with almost two hundred social partners, the Cabinet has signed work agreements. As the leading recycling expert for the mobility sector, ARN has also signed the National Raw Materials Agreement.

Part of that agreement is the drawing up of a transition agenda for manufacturing industry. Our contribution is to fully recycle cars, and to produce high-value, renewed raw materials. Together with all our partners in the automotive recycling chain, we are working to achieve this goal, as quickly and as economically viable as possible,

in the knowledge that due to innovation in technology and materials, manufacturing industry is capable of processing more and more recycled materials into new products.

Contributing to a sustainable society is in our DNA. Responsible and efficient recycling is the reason for our existence. Our contribution to the circular economy includes supporting businesses throughout the automotive recycling chain to further professionalise their performance, and achieve more sustainable business practice. We help garages and consumers to responsibly dispose of their old cars. We also strive to achieve a level playing field in the recycling chain, which in the long term will result in the eradication of businesses that ignore the rules for environmentally responsible processing. We have been involved in these activities for more than twenty years, with the aim of efficiently achieving the 95% recycling target required by law. This report describes our efforts in 2016.

Automotive recycling chain

Our relationship with the car dismantling companies has entered a new phase. The pillars of that phase are service provision by ARN, and greater freedom for businesses in their day-to-day practice. The necessity for reducing the costs of automotive recycling has led to the replacement of the dismantling fee for car dismantling companies with an administrative fee. Within that process, tasks required by law are no longer paid for. The recycling fee paid by anyone who buys a new car is also falling.

The draft for a new National Waste Management Plan (LAP3) led us to respond with a formal vision. The draft LAP3 specifies that post-separation must become the minimum standard for the processing of shredder waste, as opposed to incineration. In our vision, we suggest that the minimum standard should apply to shredder residue from

cars. We also call for the separate shredding of cars, since that will improve our recycling efficiency. We must wait and see what is done with our contribution.

The PST plant has performed excellently. 6% more was produced, while costs fell by 11% per tonnes. This can be explained by the fact that the costs for maintenance and energy remained unchanged, while production levels in fact rose. The quality of the end fractions was also improved. The plant, which serves as a role model throughout Europe for the efficient and environmentally responsible recycling of cars, regularly received visitors from the Netherlands and abroad.

In 2016, costs for the PST plant totalled € 9.3 million, 5% less than in 2015. The saving was achieved by a higher throughput of shredder waste, subject to a higher gate fee. The operating result amounted to € 440,000.

Chain performance

In 2016, 185,740 end-of-life vehicles were processed within the ARN network, and a total of almost 57 million kg of material was dismantled and responsibly processed. The ARN market share fell to 85.9% (2015: 86.6%). In 2016, the shredder companies processed a total of 117,000 tonnes of material, and the PST plant in turn processed almost 42,000 tonnes of shredder waste. Together with our chain partners in the automotive recycling chain, we achieved a recycling performance of 98.7%, in 2016.

Vehicle fleet development

In 2016, a total of 453,677 new passenger cars and light commercial vehicles were sold. That number represents a fall of almost 11% as compared to 2015, when sales were boosted to 507,877 vehicles by various factors, including tax incentives for business drivers. In 2017, we above all expect to see a fall in the sale of new hybrid cars, because tax policy has been altered.

Internal organisation

In 2016, we focused on our primary task: the environmentally responsible recycling of cars at the lowest possible costs, while generating the highest possible return. Through high-value recycling, we are able to continue to make a valuable contribution to the circular economy. ARN Recycling Services, the partner responsible for the collection and processing of waste flows from garage companies, was no longer a relevant element of our strategy, and as a result was wound up. Emphasis at ARN Sustainability will now switch to knowledge development.

Management and supervision

At the end of 2016, the board member of Stichting Auto & Recycling proposed by Stiba, Mr Marc van den Brand, left us. He was succeeded by Mr Albert de Boer. In mid-2016, the Chairman of the Board of Supervisory Directors, Mr Ton van Soest, retired from his position. His tasks have been taken on by Mr Peter Janssen. ARN would like to thank Messrs van Soest and Van den Brand for their sterling efforts.

Finally, I would like to express my gratitude to everyone in the automotive recycling chain and the mobility sector for the successful cooperation in 2016. I would like to thank all employees of ARN for their enthusiasm and their dedication. I address a special word of thanks to the staff in Tiel, for their extremely loyal and entirely adequate response in the summer period in tackling a brief smouldering fire in the bunker hall at the PST plant.

Recycling cars together. Once again in 2017, we will be working towards that goal, with renewed élan.



Arie de Jong – Managing Director ARN



“Our relationship with the car dismantling companies has entered a new phase”



Technical innovations as drivers for high-value recycling

ARN carries out the statutory obligations arising from the End-of-life Vehicles Management Decree (Bba) and the Battery Management Decree (Bbb). These Decrees do not exist in isolation. They are based on European and Dutch legislation that itself is regularly adapted to developments in society and technology.

In 2016, two policy documents were published that deserve notice: the government programme for the Circular Economy and the draft decision for the new National Waste Management Plan LAP3. There were also developments on the market that we will have to take into account in carrying out our tasks.

Dutch Circular Economy by 2050

In September 2016, the government launched the national programme ‘Nederland Circulair in 2050’ (Dutch Circular Economy by 2050). This programme outlines the routes to be followed to convert the Dutch economy into a sustainably driven, fully circular economy by 2050. ARN will contribute to achieving one of the three strategic objectives: the high-value recycling of raw materials and returning them to the supply chain. Above all in waste management, namely converting waste materials into resources and sharing knowledge, we have an important role to play. However, the circular economy cannot be achieved by simply flicking a switch. It is a gradual process that requires numerous intermediate steps. To facilitate high-value recycling of residual materials, technological

innovations will be essential. One vital precondition for this is knowledge sharing, also with businesses and organisations abroad.

Old materials in a circular supply chain

At the same time, steps will have to be taken via low-value recycling, whereby the recycled raw material no longer has the purity of the original material. This process of downcycling is essential for acquiring knowledge and experience, designing new separation techniques and identifying new applications for materials. The automotive recycling chain is already well advanced in recycling old cars, but there is still room for improvement. That is why we have the ambition of achieving high-value recycling in a responsible manner. However, what we cannot change is that cars have an average useful life of eighteen years, and that the reusable materials we produce are themselves also eighteen years old. Those old materials are not easily recycled in the modern automotive industry.

Draft National Waste Management Plan

In the draft National Waste Management Plan 2017-2029 (LAP3), the government has earmarked the PST plant as ‘best available technology’ for the processing of shredder residue. In the proposal as it is at present, post-separation will become the minimum standard in place of incineration. In a vision document we submitted in 2016, we call for this requirement to apply to shredder residue from cars. We also call for the separate shredding

of cars, to enable us to monitor the process as accurately as possible and because separate shredding will reduce the volume of disruptive components in the car shredder waste. The resources available to ARN for the processing of shredder residue are intended for the recycling of cars. Backed up by the recycling fee fund, we have been able to develop and refine post-shredder technology for the automotive industry. The broad deployment of this technology for other shredder waste, and achieving the same recycling results with non car-related shredder waste as those achieved with car shredder residue, will be a tough challenge.

Developments within the automotive recycling sector

We are seeing changes take place in the material composition and drivelines of cars. By undertaking research and developing knowledge, we are able to prepare for the recycling of cars that will only reach the end of their lifecycle in the future. It should also be noted that automotive manufacturers are slowly but surely starting to use more and more materials that make manual dismantling worthwhile, such as cable harnesses, light metal components, electrical motors and certain plastic parts. For car dismantling companies, it is therefore becoming more and more lucrative to deal in more types of higher-value materials for material reuse. One of the potential consequences is that the shredder residue supplied to the PST plant will itself become less valuable. The question then arises at what point the PST plant is no longer necessary for achieving the statutory recycling requirements for cars and at what point the plant could possibly be deployed for other waste flows.

We contribute to achieving a circular economy through high-value recycling.

ARN has called for the separate shredding of cars, to allow more accurate monitoring of the process

The composition of cars is changing



Car recycling is a joint activity

Over the past twenty years, automotive recycling has become a fully professionalised branch of industry. ARN and its chain partners have played an important role in that process. Collaboration is crucial if we are to correctly carry out our tasks.

ARN works alongside all the links in the automotive recycling chain so that year in year out we achieve the statutory 95% recycling target, of which at least 85% material reuse, topped up to 95% recovery.

We monitor the flow of end-of-life vehicles and report on the recycling result. This process has become increasingly efficient, thanks to collaboration with over 300 chain partners who were affiliated to ARN in 2016: 231 car dismantling companies, 8 collection companies, 11 processing companies, 41 intermediate traders and 13 shredder companies. Our PST plant recovers the reusable materials from the shredder residue. Car recycling is a joint activity.

More grip on the chain

To be able to eradicate leakage flows and to report reliably on our market share, year after year, we have striven to acquire grip on the flow of end-of-life vehicles. In 2016, for example, we took measures to further eradicate leakages in the flow of end-of-life vehicles disposed of, between the car dismantling and the shredder companies.

An eye on the recycling flows

On 1 January 2017, at the affiliated shredder companies, we switched to monitoring the number of end-of-life vehicles as opposed to their quality. Information about the number of

vehicles placed on transport, and a comparison of those figures with transport documents, enables us to maintain an eye on the numbers of vehicles in the recycling flow. The market operates on the basis of vehicle weight; for its reports, however, ARN needs vehicle numbers. We wish to make the conversion process from kg to numbers more accurate. An account manager has been appointed to carry out that task.

Reduced administrative burdens

To become even more accurate, we initiated a pilot scheme in 2016 for the use of an electronic form that accompanies the disposal of end-of-life vehicles. By digitising the transport documents, we can check and analyse the details of weights, numbers and movements in the recycling chain fast and accurately. The chain partners who took part in the experiment have expressed enthusiasm for the digitised administration, and see it as a way of reducing administrative burdens. ARN is investigating the possibility of introducing this system across the board in 2017.

The monitoring of end-of-life vehicles

Monitoring of the movements of end-of-life vehicles is essential in order to fulfil our reporting obligation. We therefore have a contract with all companies in the Netherlands that shred cars. The agreement is that they register all the cars delivered to them from all car dismantling companies, including those not affiliated to ARN. We have also reached agreement with the intermediate traders on the flow of end-of-life vehicles between car dismantling companies and shredder companies. Using the records from the shredder

companies, we at the PST plant know how much shredder residue we need to purchase.

Monitoring by ILT

To improve the reliability of our calculation of the reuse percentage, and to identify possibilities for increasing our market share, we remain in constant consultation with the government. In addition, inspectors from the Human Environment and Transport Inspectorate (ILT) have visited companies in the automotive recycling chain, including non-ARN companies, to check on the reported reuse percentage. We expect to receive their report in 2017. Over the past few years, ARN has invested a great deal of money, time and energy in increasing the accuracy of the calculation of the reuse percentage. In 2015 and 2016, we undertook shredder trials at the four companies that shred Dutch vehicles. The fact that intermediate traders joined our extranet 'My ARN' in 2015 has helped improve that accuracy further.

Closed material cycle

To increase our market share, we have agreed with the Dutch shredder companies that they should deliver the residue from all the end-of-life vehicles that they collect, including what they collect from non-ARN-affiliated car dismantling companies, to the PST plant. In 2015, we reported on this aspect for the first time. In 2016, we processed 4,600 tonnes more shredder residue than the total volume of end-of-life vehicles from the ARN car dismantling companies. That process cost around € 1 million. This figure relates to the remaining market share of 14.1%, over and above the 85.9% market share already held by ARN. In other words, we have made serious efforts to responsibly process the non-ARN end-of-life vehicles, and in that way to come even closer to a closed material cycle.

We are constantly improving our insights into and grip on end-of-life vehicles at ARN.

Over the past few years, ARN has invested a great deal of money, time and energy in increasing the accuracy of calculating the reuse percentage



Total number of cars registered for disassembly in the Netherlands **216,281**

Of which registered with ARN-affiliated car dismantling companies **185,740**

Appreciation for the entrepreneurial spirit of car dismantling companies

In the automotive recycling chain, the 231 car dismantling companies affiliated to ARN represent the initial link in the sustainable recycling of cars. Our relationship with those companies has entered a new phase, focused on greater freedom for the businesses in their day-to-day operations, and even more active service by ARN.

Since ARN was established in 1995, ARN-approved companies have received a fee for dismantling various materials specified in law: oil, brake fluid and coolant, windscreen washer fluids, oil filters, refrigerants, LPG tanks, tyres, airbags and seatbelt tensioners, and any remaining fuel. However, times have changed. Over the years, the value of cars has risen, and car dismantling has become more professional and more efficient. Based on those developments, the Board of Directors of the *Stichting Auto & Recycling* decided to gradually reduce the payment for the car dismantling activities required by law over the coming years, and to convert the dismantling fee into an administrative fee.

Switch to the administrative fee

The switch to an administrative fee in 2017 is part of the transition to a new form of cooperation between the car dismantling companies and ARN. We wish to cooperate

on the basis of partnership, but we must continue to be able to monitor the flow of end-of-life vehicles, in order to fulfil the requirements of our task. In line with that requirement, we have reduced the number of contractual obligations for car dismantling companies wishing to become affiliated to us, from 56 to just ten.

Simpler contracts

By simplifying the contracts, collaboration with ARN remains attractive for the dismantling companies. From 1 February 2017 onwards, the car dismantling companies will receive an administrative fee of € 20 for each end-of-life vehicle. In 2018, that amount will be reduced to € 15, and in 2019 to just € 10. We will also continue to reimburse collection and processing costs, and the costs for obtaining and maintaining a KZD certificate, the quality management system for the vehicle dismantling sector. The costs for service and maintenance of the draining installations will also still be paid by us.

Service and maintenance of draining installations

We are happy to invest in sustainable automotive recycling. At the end of 2016, ARN leased a total of 206 draining installations to car dismantling companies. These closed systems guarantee the responsible and safe



Draining installations for the responsible and safe collection and processing of environmentally harmful substances from cars

collection and processing of environmentally harmful substances from cars. Over the next few years, we will continue to carry out and indeed pay for service and maintenance on those installations. We will also be responsible for the collection and environmentally responsible processing of the materials that must be dismantled according to the law. In 2016, the collection and processing costs for ARN amounted to € 0.9 million, while the costs for the service and maintenance of the draining installations cost a further € 0.9 million.

Trial with the collection and processing of car tyres

In the spring of 2017, a trial was started with a new method of paying for the collection and processing of car tyres. The trial will last four months and be evaluated at various stages in the interim. 30 companies are taking part, all of them in the car dismantling sector. We will directly reimburse the costs for the collection and processing of tyres to the car dismantling companies. This method allows the businesses greater freedom in reaching direct agreements with tyre processing companies. For all other materials, collection and processing will continue to be dealt with by ARN.

Collaboration between car dismantling companies and ARN receives a boost.



A level playing field

Continued combating of unfair competition and the sealing of leakage flows have top priority at ARN. A level playing field for all chain partners is a precondition for a smoothly operating automotive recycling system. It is good news that illegal practices in the sector are now enjoying attention on a European scale.

Without a level playing field, ARN and our chain partners cannot perform. One persistent leakage flow is fake exports. A fake export is when a car is deregistered for export purposes, but then remains in the Netherlands. A calculated estimate suggests that at least 30,000 Dutch vehicles disappear each year into the illegal circuit.

Worrying European figures

In 2016, the German Öko-Institut held a survey on behalf of the European Commission in all 28 Member States, and reported that each year, between 3.4 and 4.6 million *End of Life Vehicles* (ELVs) disappear in Europe. They can cause severe damage to both man and the environment if not legally dismantled. According to the EU, the hazardous liquids alone amount to between 20 and 55 million litres, excluding fuels. The survey should result in a new approach to tackling European leakage flows, which will prevent the illegal processing of end-of-life vehicles. ARN answered the survey questions in consultation with stakeholders, the RAI association, the RDW and the Ministry for Infrastructure and the Environment. The cause of the disappearance of end-of-life vehicles in several countries is the fact that the vehicle registration system is not watertight. The Dutch RDW system is linked to the payment of road tax, as long as someone is registered

as an owner. In addition, costs are charged for the suspension of cars. Many countries do not have that link, so cars are able to disappear from the radar. That fact helps promote the illegal dismantling and processing of ELVs.

Watertight vehicle registration

Key conclusions from the survey are that the registration authorities, the counterparts to the RDW in the Netherlands, must gain more control of the vehicle flow, and that better agreements are needed between the authorities that reregister cars traded within the EU. More rules could also be imposed on the dismantling of end-of-life vehicles by certified companies. There should be greater incentives for handing in cars to a certified car dismantling company.

In 2017, the European Commission is preparing measures for improving registration in the Member States, and tightening up the supervision of car dismantling companies. Rules with which those companies throughout Europe must comply are also expected. In the Netherlands, we operate according to the Quality Assurance Dismantling Certificate (KZD). In the future, Europe will have to make more work of imposing uniform reporting rules. At a stakeholders' meeting in Brussels, together with the RDW, we gave a presentation about the efficient Dutch process of vehicle registration. The exchanging of knowledge and experience with other Member States is vital for tackling the leakage flows.

Platform for Reporting unfair competition

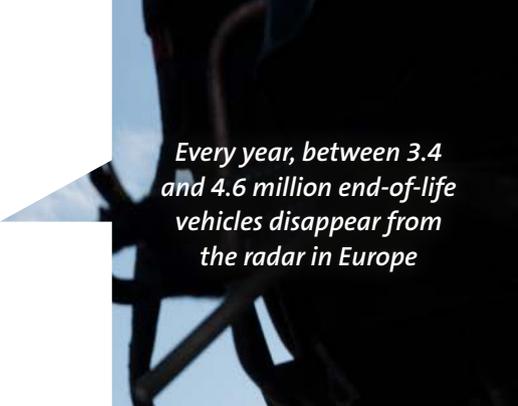
In the Netherlands, we will continue to collect evidence of fake exports, together with our

chain partners. Using that evidence, the RDW will be able to convince the Ministry of Infrastructure and the Environment that this illegal practice needs to be halted. We will continue to work to convince the authorities that measures must be taken to restrict and prevent abuse of the export approvals. We at ARN promote the tackling of malafide car traders and illegal car dismantling via our online platform for reporting unfair competition via which companies are able to simply and confidentially report such practices, and monitor the status of their report. It is essential to gain an insight into the numbers of end-of-life vehicles that disappear into illegality.

Tackling the malafide trade in car parts

We are also participating in a pilot programme in Gelderland, aimed at tackling the mala fide trade in stolen car parts. The core of this programme is the central collection of information on car crime by the LIV – the National Information Centre on Vehicle Crime. Supervisory authorities like the RDW and the Environmental Services, the sector organisations BOVAG, FOCWA, Stiba and ARN all supply information to the LIV. Reports are also received via the anonymous crime line *Meld Misdaad Anoniem*. The LIV processes the reports and passes them on to the enforcement services. The Foundation for Tackling Vehicle Crime (AVc), the body responsible for organising the project and in which ARN is associated, received around seventy reports in 2016 about the stealing, stripping and selling of stolen car parts. A number of these reports led to raids on businesses. Due to its success, this experiment has been extended until 1 April 2017. Following an evaluation, we look forward to a national rollout of the programme to tackle mala fide traders.

Illegal practices are receiving greater attention at both European, national and regional level.



Every year, between 3.4 and 4.6 million end-of-life vehicles disappear from the radar in Europe



The price of the final few percent

Materials from cars that have reached the end of their useful life are reused as raw materials in the production process or fully recovered with the exception of just a few percent. The necessarily high investments in the processing of shredder residue and the fact that not all relevant legislation has yet been developed mean that the definitive closure of the material cycle is still a bridge too far.

The processing of shredder waste using post-shredder technology at the PST plant in Tiel is crucial if we are to eventually close the cycle. Innovations and continuous optimisation of the production line are able to provide the additional few percent needed to achieve the minimum recycling performance of 95%. Our raw materials technologists work alongside knowledge institutes and businesses to identify increasingly high value applications for the end fractions from the plant. In this way, we succeed in keeping waste processing in the chain both efficient and sustainable.

Improved plant capacity and efficiency

In 2016, the PST plant processed 41,903 tonnes of shredder residue, 6% more than in 2015. This result was made possible by further refinements in the production line and even better structured maintenance. We expanded the production line with two additional modules that help improve the efficiency of the production of end fractions. The modules in question are a pelletising line and a mineral

crusher, which together represented an investment of more than € 1 million. The pelletising line compresses separate fibres into hard pellets, enabling a considerable saving on transport costs. It is in fact now cheaper to sell the pellets as a fuel to a cement furnace in Portugal, than to have them processed in an incinerator in Delfzijl. Because the pellets are transported by water, the CO₂ footprint is in fact considerably smaller. Via the Ecotest, co-developed by ARN, we have calculated that by following the route to the cement furnace in Portugal, we prevent 138 tonnes of CO₂ emissions, for every tonnes of shredder waste. ARN has now been awarded a patent for the innovative application of this existing technology.

Dutch shredder residue centralised

In 2016, all shredder companies that process Dutch end-of-life vehicles originating both from the Netherlands and abroad, transported their automotive shredder waste to Tiel. This waste originates both from end-of-life vehicles from car dismantling companies affiliated to ARN and from non ARN-affiliated car dismantling companies. This means that the share of shredder waste processed in Tiel is higher than would normally be expected on the basis of our market share.

The increased production capacity means that we can also process waste from suppliers outside the automotive sector, at market-conforming rates. In 2017, for example, we will be taking delivery of

Because we are being joined by suppliers from outside the automotive sector, material is being reused that would otherwise disappear into incinerators

materials from shredder companies in Belgium and Germany. As a result, the plant capacity will be fully utilised. Because suppliers from outside the automotive sector are now joining us, material is reused that would otherwise disappear into the incinerator. This is positive both for the environment and for the profitability of the plant.

Optimised material reuse

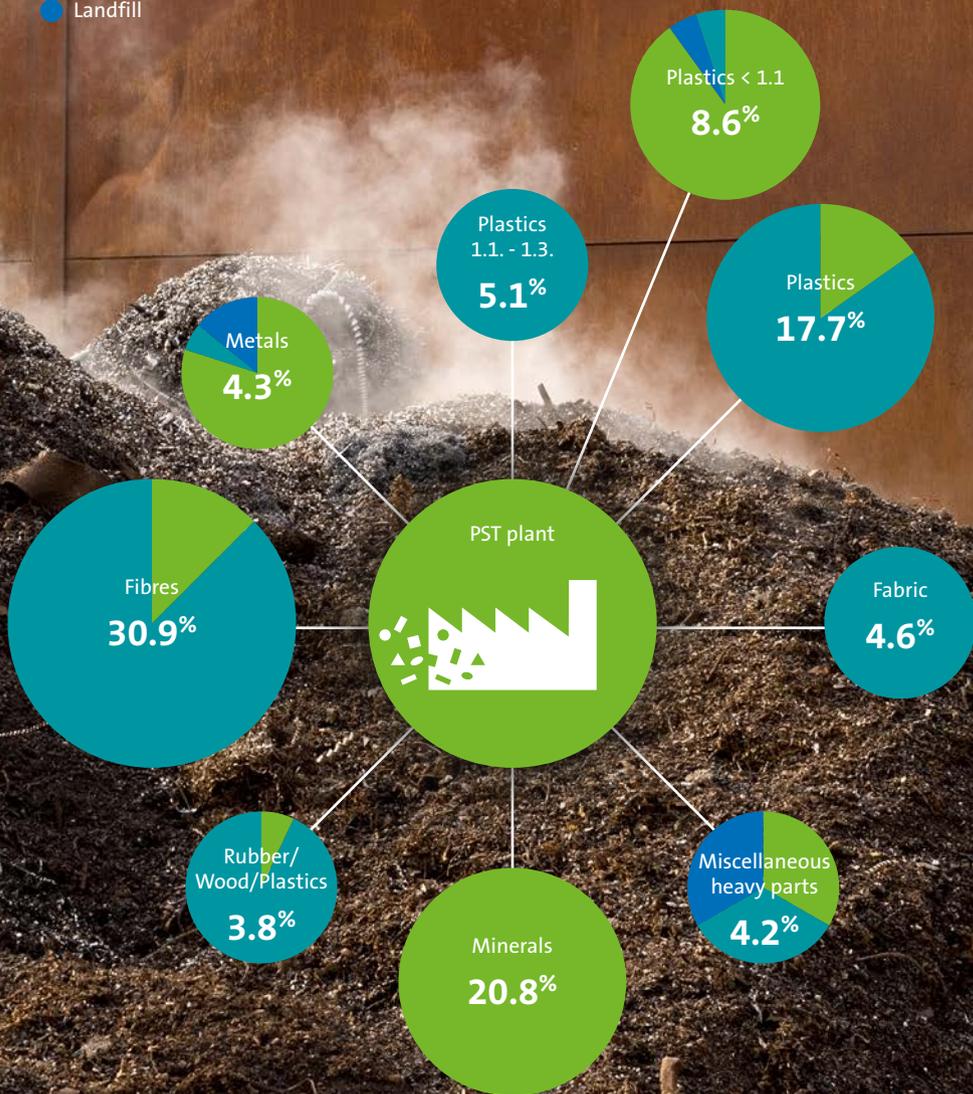
On the road to a closed cycle, in 2016 we reaped further rewards from our constant efforts to achieve higher-value recycling. We were able to take several more steps upward in the ranking for waste disposal. For example, we achieved 40% material reuse from the submitted shredder residue, as compared to a 35% score, one year previously. That 5% additional reuse of materials means that 1% less is disposed of in landfills, while 4% less was used for recovery. The new crusher line reduces the coarse mineral fraction to granules of just 0.5 mm, enabling us to recover the copper present in this waste fraction. Furthermore, the fraction of fine minerals that remains behind can be used in road construction. This was not possible in the past, because it contained too much copper and other metals. Crushing in this way reduces the costs of selling the end fractions.

Purity of end fractions as a point for development

However, our position in the automobile cycle does raise a number of critical questions. The materials we produce in the plant are as pure



- Recycling
- Recovery
- Landfill



as possible given the existing installation. However, for the time being, our end fractions are still not clean enough for many high-value applications. They can however be reused as raw materials for example in the plastics industry. Our plastics are used for the production of coarser products, such as plastic posts, and for heavy-duty plastic profiles used to prevent air conditioning being blown off flat roofs. For higher-value applications in thin profiles such as bumpers, however, the material has to be both homogeneous and pure. For the time being, our material flows do not yet meet those requirements.

PST plant Ecotest

At present, we are not able to return 100% of our materials to the automotive industry. If we wish to achieve full reuse of materials, additional steps will have to be taken in processing the shredder waste so that the end fractions are made cleaner. That in turn calls for major investments. The question is how much additional energy and above all how much money are we willing to invest in achieving what is a relatively minor environmental gain. To identify the optimum in the costs we must incur to further develop the plant and to reduce our CO₂ footprint, we are making use of the so-called Ecotest. Using this test, we can compare and contrast the environmental impact of the plant, the costs of the process and the recycling percentage. Policy is currently being developed within ARN about which factor prevails in taking specific investment decisions. When purchasing energy, for example, since 1 January 2016, we have opted for certified Dutch onshore wind

energy, despite the fact that this choice costs an additional € 20,000 per year.

Undesirable side-effects of environmental permits

There are other issues that affect whether we are able to close the material cycle. We must for example be able and authorised to sell to the required sales channels. The primary challenge is that the materials we produce are currently classified in a standard way by the government as waste materials. Take for example the medium fraction of plastics which we wish to upgrade to reuse via the thermal route. Those plastics could be used as filler material in the production of plastic panels. Panels of this kind are mainly produced by small companies, and they in turn often do not have the necessary environmental permits. For that reason, they are not allowed to take delivery of waste materials, and therefore cannot purchase our end fractions.

New legislation urgently required

We will leave no stone unturned in convincing government that several of our end fractions can in fact be classified as products. Such a notation would tie in seamlessly with the national waste policy: From Waste To Resource (VANG). The problem is that VANG is a programme and not a law. Enforcement bodies, however, only consider statutory rules and permits. That then is a major challenge for many companies that offer smart solutions for waste materials.

An innovative and collaborative government is crucial in closing the material cycle.

Automotive recycling in the Netherlands



At ARN, we work according to the End-of-life Vehicles Management Decree (Bba) and the Battery Management Decree (Bbb). This legal framework specifies that 95% of the weight of a car must be recycled or recovered. The majority of the resultant raw materials are returned to the supply chain. In this way, the recycling sector can make a contribution to the transition to a sustainable and circular economy.





Superb performance by the Dutch automotive recycling sector

In 2016, together with its partners, ARN demonstrated its position as an international yardstick, with a recovery rate of 98.7%. Companies affiliated to us responsibly processed almost 57 million kg of materials. These are figures of which the Dutch automotive recycling sector can be duly proud.

In calculating the recycling performance, ARN complied closely with the detailed regulations from the European Commission. The basis for the calculation is European Directive 2000/53/EC, which describes the handling of end-of-life vehicles and the related reporting requirements. The methodology we are required to employ in calculating the achieved recycling performance is described in more detail in the European Commission's Decision 2005/293/EC. The Netherlands embedded the European Directive and the resultant decisions in the End-of-life Vehicles Management Decree (Bba). On the basis of the European rules, ARN submits a report each year to the RAI association about the performance of the automotive recycling chain.

Recycling performance 2016

In 2016, ARN achieved recovery of 98.7%, of which 88.9% as reuse as a product or material, and 9.8% as energy recovery, or some other useful recovery application. In that way, in 2016 we also complied with the statutory

obligations arising from the Bba. Companies affiliated to ARN also collected and responsibly processed almost 57 million kg of materials from cars.

Performance calculation

The recycling performance in the automotive recycling chain in 2016 was calculated on the basis of:

- Weighing data from the chain partners;
- Three shredder trials carried out in 2015 and one in 2016;
- Mass balance data from shredder companies in Belgium and Germany.

Netherlands opts for shredder trial

The European Commission offers countries a choice between two methods for determining the recycling performance. The calculation can be based on an assumption of the metal content of vehicles, or a shredder trial. We in the Netherlands opted for the latter method. A shredder trial is a practical test that enables us to accurately determine the proportion of recycling and recovery. In that sense, in our opinion, a shredder trial does most justice to the actual performance we achieve in the recycling of cars.

In 2015, ARN carried out three shredder trials at companies shredding Dutch vehicles, and in 2016 a single shredder trial at a fourth company that shreds Dutch cars.

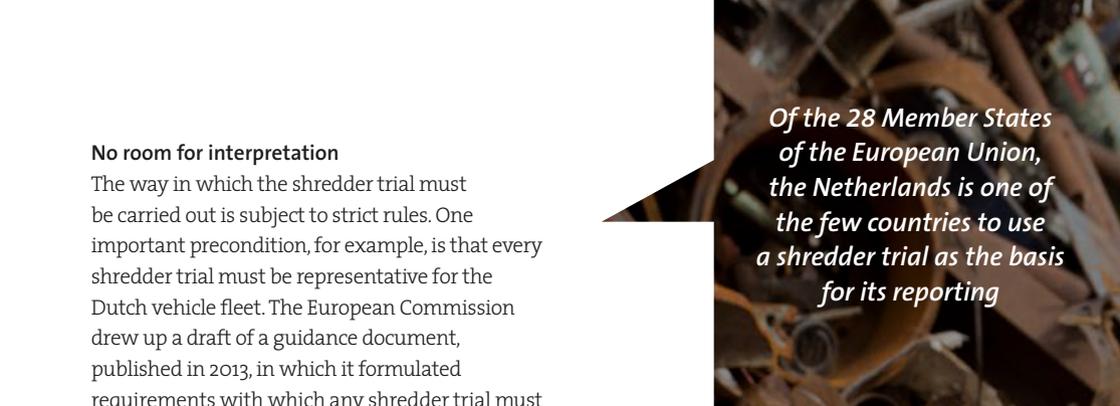
No room for interpretation

The way in which the shredder trial must be carried out is subject to strict rules. One important precondition, for example, is that every shredder trial must be representative for the Dutch vehicle fleet. The European Commission drew up a draft of a guidance document, published in 2013, in which it formulated requirements with which any shredder trial must comply. This document, however, leaves much room for interpretation differences between the various EU Member States.

For that reason, we drew up our own protocol for carrying out shredder trials. In that protocol, we elaborated the instructions in detail, and worked with the fewest possible assumptions. Certification organisation SGS inspected and approved the drawing up of the protocol and the measurement method. During the implementation of the shredder trials, representatives of SGS were in attendance. They carried out on-the-spot checks to determine whether we correctly followed the protocol. For that aspect, too, we received a statement of approval from SGS.

Determining the share of car dismantling companies

Calculating the recycling performance starts with determining the average empty weight of all vehicles registered for dismantling in any year in ORAD (Online Registration Car Dismantling) operated by the RDW. On the basis of that information, the average weight of an end-of-life vehicle in 2016 was set at 1,035 kg. In 2016, 185,740 end-of-life vehicles were registered for dismantling at car dismantling companies affiliated to ARN (2015: 185,110). The total number of deregistered end-of-life vehicles in 2016 at ARN-affiliated car dismantling companies and non ARN-affiliated car dismantling companies was 216,281. In addition to the number of cars registered in ORAD, we also know how many end-of-life



Of the 28 Member States of the European Union, the Netherlands is one of the few countries to use a shredder trial as the basis for its reporting



Material

| (in kg) | | Material reuse | Energy recovery | Landfill |
|-----------------------------|-------------------|-----------------------|------------------------|-----------------|
| Spent oil | | 842,199 | 18,112 | 45,280 |
| Oil filters | | 26,539 | 22,608 | 0 |
| Brake fluids | | 53,189 | 1,144 | 2,860 |
| Antifreeze fluids | | 335,958 | 17,682 | 315,750 |
| Refrigerants | | 4,055 | 0 | 83 |
| Tanks for liquid gas | | 74,083 | 0 | 0 |
| Lead batteries | | 267,040 | 4,067 | 0 |
| End-of-life tyres | | 4,091,982 | 0 | 0 |
| Glass | | 30,720 | 0 | 1,280 |
| Total kg reuse | 50,791,035 | 5,725,765 | 63,613 | 365,253 |
| Recycling percentage | 24.80% | 2.80% | 0.03% | 0.18% |

vehicles were delivered to the shredder companies by the car dismantling companies. In 2016, that number amounted to 197,488 (2015: 167,777). The weight of the stripped end-of-life vehicles placed on transport, divided by the number of vehicles, results in the average weight of an end-of-life vehicle of 747 kg in 2016.

Reuse is an important part of the total

The share of car dismantling companies in the recycling percentage represents the difference between the total weight of vehicles registered in ORAD and end-of-life vehicles disposed of by the companies headed for the shredder companies. In 2016, that difference was on average 288 kg. Part of that is the weight of the materials that must be dismantled by law, and which we have collected and processed, such as liquids, tyres and airbags. In 2016, material reuse from the car dismantling companies totalled 2.8%, plus 24.8% product reuse. The remainder consists of the parts and materials sold for recycling that were dismantled from the car by the car dismantling companies. In 2016, as a result, the total share

of car dismantling companies in the recycling percentage amounted to 27.6%.

Determining the share of shredder companies

Monitoring of the recycling chain reveals that from end-of-life vehicles, on average 288 kg are dismantled by a car dismantling company. A stripped end-of-life vehicle has an average weight of 747 kg when sold to a shredder company. Car dismantling companies are required by ARN to report the shredder company to which they deliver. In 2016, 197,488 dismantled end-of-life vehicles from ARN-affiliated car dismantling companies arrived at the shredder companies (2015: 167,777).

Improved administrative accuracy

There still remains a discrepancy between the number of end-of-life vehicles disposed of by the car dismantling companies, and the number that reach the shredders. This can partly be explained by stocks held by intermediate traders. As for the remainder, the explanation lies in the inaccuracy of the records. Partly to increase the accuracy of

the records concerning the flow of end-of-life vehicles, in 2016, ARN launched a pilot involving electronic registration forms.

Relationship with Belgium and Germany

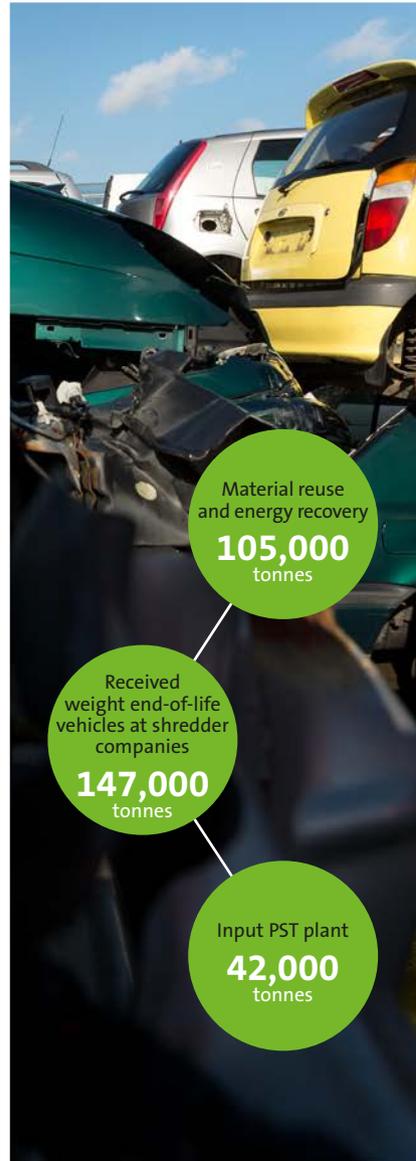
Shredder companies are required to indicate how many end-of-life vehicles they receive, broken down into two categories: ARN end-of-life vehicles and non-ARN end-of-life vehicles. In the Netherlands, we count how many end-of-life vehicles arrive at each shredder company. Based on the outcome of the shredder trial, we can then calculate the contribution by Dutch shredder companies to the recycling performance. In 2016, this share was 56.4%. End-of-life vehicles that are exported must be reported according to the recycling yield of the country of destination. In 2016, around 18% of Dutch end-of-life vehicles crossed the border to shredder companies in Belgium and Germany. For these end-of-life vehicles, we base our report on the recycling calculations of those countries, and request their recycling statements. They are also required to report to us on the number of ARN end-of-life vehicles they take delivery of. Using that information, we calculate the arithmetic average of the contribution by foreign shredder companies to the recycling percentage.

Determining the PST plant share

Based on the shredder trials, we know how much waste remains for each shredder company. The PST plant calculates the total number of kg that must be supplied by each shredder company, and purchases that amount. The plant accepts four waste flows: two light fractions (fine and coarse) and two heavy fractions (fine and coarse). In 2016, the PST plant contributed 14.7% to the recycling performance.

ARN processes practically all shredder residue from Dutch end-of-life vehicles.

Electronic monitoring forms should result in a more accurate insight into the flows of end-of-life vehicles



The positive side of batteries

More and more car owners are driving electric vehicles. In just two years, the number of electric cars in the Netherlands has doubled to more than 100,000 registrations. The rapid expansion of electric transport brings with it new issues for the automotive recycling sector. Seventy importers now make use of ARN's battery collection and processing system.

The rapid expansion of electric cars demands smart and above all safe solutions when it comes to the storage, collection, transport and processing of end-of-life batteries. At ARN, we are working alongside the various stakeholders to find solutions for the reuse of end-of-life batteries from cars, for example for sustainable energy storage.

Cooperation with the Stichting Batterijen

In accordance with the Battery Management Decree (Bbb), automotive manufacturers and importers are required to take back starter batteries and batteries for the drive system in hybrid and electric cars, at the end of their useful life. In collaboration with Stibat (*Stichting Batterijen*, Batteries Foundation), the collection companies and recycling companies, we are responsible for the collection, logistics and processing of end-of-life batteries with a negative residual value.

Guaranteed sustainable performance

Manufacturers can register all batteries they place on the market in the myBatbase system, used by both Stibat and ARN. All collection companies for end-of-life portable batteries have signed collective agreements with Stibat to register the collected batteries

in the registration portal myBatterybalance. Via this system, we obtain the essential collection data that enables us to submit our report on batteries and starter batteries to the government. To ensure optimum sustainable performance, recycling companies that process batteries on behalf of Stibat or ARN are subject to an Ecotest that demonstrates the environmental performance of the company.

Collective system of manufacturers

Based on this approach, since 2008, we have fulfilled the obligations arising from the Bbb Decree. The manufacturers themselves remain legally responsible for compliance with those obligations, but by participating in the collective system, they can entrust the implementation of those obligations to ARN and Stibat. We for our part are responsible for the collection and processing of (starter) batteries with a negative residual value (Li-ion batteries) and for relevant information provision. We also report on batteries with a positive residual value (lead batteries and NiMH batteries).

Tailor-made service from ARN

Importers can choose between organising their own network for the handing in of batteries or making use of the network established by ARN. Within this process, any form of cooperation desired by the importer is possible. In total, at the end of 2016, seventy importers had signed up to ARN's collective system. In the Netherlands, 52 million kg of batteries are placed on the market every year, of which 17 million kg are handled via the ARN system. The remainder are processed via the collection systems of the major importers. We report

to the government on the batteries from the participants in the ARN system. In total, 223 batteries were collected last year, 191 of which were sent to a processing company; the remaining 32 were given a second life.

Safe dismantling

To safely dismantle end-of-life electric vehicles, it is important that the car dismantling companies know exactly how Lithium-ion batteries work and how they should be dismantled. ARN offers a training programme 'Safe dismantling of Hybrid and Electric Cars for car dismantling companies' with an e-learning module and a practical day. This hands-on day is concluded with a special test. Following completion, participants will have all the knowledge they need to safely dismantle the battery from a hybrid or electric car, in line with the procedures. It is also important that the employees in question closely follow the manufacturers' instructions, which they can access at any time via the IDIS information system.

Management fees

ARN collects a management fee from importers to cover the recycling costs for batteries. Each year, we report to the Ministry of Infrastructure and the Environment, and provide a nationwide network of collection points, where end users can hand in their starter batteries free of charge. Drive batteries cannot be handed in separately. The management fee for lead batteries, NiMH (starter) batteries and batteries for hybrid cars will remain unchanged in 2017, at: € 0.05 (excluding VAT). By developing possibilities for second use of Li-ion batteries, the management fees for these batteries can be further reduced. In 2017, two new categories were added that tie in with the current range of Li-ion batteries.

The next stage of development is the transition to widespread reuse.



ARN trains employees of car dismantling companies to safely dismantle end-of-life electric vehicles



Management fees Li-ion (starter) batteries 2017 (incl. VAT)



The disposal car of tomorrow

The materials and composition of cars are also subject to technological developments. At the same time, electric vehicles are making an unstoppable advance. ARN has investigated the latest materials and drivelines, as a way of investing in sustainable automotive recycling.

Automotive manufacturers are increasingly using lightweight metals and high-tech plastics. They are also mixing materials to combine the best characteristics of different components in a single composite. At the same time, electric cars are composed entirely differently from the vehicles that currently end up at the car dismantling companies.

New cars challenge the recycling chain

The cars of today – the disposal cars of tomorrow – are very different under the skin from the on average eighteen year-old end-of-life cars that are ripe for dismantling now. This fact has obvious consequences for the recycling chain, from car dismantling through to post-shredder technology. ARN has investigated the influence of new materials and drivelines with a view to ensuring its ability to fulfil its tasks in the future, while still achieving the 95% recycling target. In other words, we are constantly investing in high-value automotive recycling, now and in the future.

Major rise in non-ferrous metals

Cars today roughly comprise three quarters metal; the remainder is made up of plastics, fibres and glass. One important trend revealed in an internal ARN study into the disposal cars of the future is that the proportion of light, non-ferrous metals is set to grow considerably;

above all aluminium. Heavier ferrous-based metals, such as steel, are on the way out. The use of rare metals is also growing. At the same time, more electronics in cars mean a growing technological recycling challenge.

The shift from metals to plastics and glass is above all a challenge for these companies.

End-of-life cars with less metal are less valuable, and so generate lower returns for the shredder companies. The increased use of aluminium in cars could soften that effect. For car dismantling companies, the future challenges lie in the latest technical components in cars. The highly diverse use of rare metals in cars, and the required expert knowledge of material composition, mean that the dismantling of these materials is not yet profitable.

Composite materials are the new standard

New technologies are first used in luxury cars. There are already cars in which the basic structure consists entirely of aluminium or carbon fibre-strengthened composites. Luxury cars are also equipped with interior parts made from natural fibre composites and technical components such as leaf springs and air filter housings made from composite plastics. Developments of this kind will in the future also find their way into midrange and compact cars. For the entire recycling chain, our aim is to develop technological and economic solutions for the sustainable processing of lightweight composite materials, in good time.

Hybrid and full-electric cars

The advent of the (plug-in) hybrid and full-electric cars has boosted the development of new materials. Manufacturers are looking

for lighter materials to counterbalance the relatively heavy batteries. Lithium-ion batteries have confronted the automotive sector with a separate class of materials that are subject to the rules for hazardous waste substances, and which represent a health hazard to the processing industry. The logistic process for these batteries is specific and special measures are required for the transport of these materials. In 2016, we purchased three transport boxes in different sizes, that are certified for the retrieval of damaged and unstable batteries. One of these boxes was used to transport a battery that suffered damage when the owner attempted to drive his car through a special bus lane.

Second life for end-of-life batteries

The highly negative residual value of Li-ion batteries and the expectation that these batteries will become ever more widely used has led us to continue our studies into a possible second life for end-of-life Li-ion batteries. ARN took part in a trial on the island of Pampus, which demonstrated that using these batteries for a second life is a viable option. We also plan to prepare for the replacement of lead-acid starter batteries with Li-ion variants.

Liquids

Also, when it comes to liquids, much is changing. Hybrid and full-electric cars, for example have fewer moving parts and as a result less lubricating oil. On the other hand, they are often equipped with liquid-cooled batteries. Furthermore, in traditional combustion engines, above all diesel engines, special liquids are more often used to burn harmful soot particles. These so-called regeneration fluids, such as AdBlue and Eolys, that limit the emission of harmful substances, have to be captured and separately processed when the vehicle is dismantled.

Our research is keeping pace with the technological developments in the automotive sector.

For car dismantling companies, challenges in the future lie in the latest technical components in cars



Number of new vehicles for which a recycling fee was collected:



We broaden our knowledge and share it willingly

At ARN, we encourage all important stakeholders to help make automotive recycling even more successful. With an open mind to our environment, we constantly broaden our knowledge of sustainable recycling through our own research and innovation. Perhaps even more importantly, we share that knowledge willingly.

The recycling of cars can only be achieved by sharing knowledge throughout the chain. Combined innovation is essential in achieving and fulfilling our primary tasks in the framework of the End-of-life Vehicles Management Decree (Bba) and the Battery Management Decree (Bbb). Europe is an important source for gathering knowledge and establishing innovation networks.

New_Innonet

Based on our knowledge of and experience with recycling and sustainability in the automotive recycling sector, we are helping to establish a new European waste platform, New_Innonet. Within this network of European recycling companies and knowledge centres that was established at the request of the European Commission, ARN represents the voice of the automotive value chain. The task of the platform is to map out the bottlenecks in three high-volume regulated waste flows: electrical and electronic equipment, packaging and vehicles.

Policy makers and industry unite

Within New_Innonet, we have together drawn up a research agenda for the Commission,

which offers policy makers a clear overview of future innovation issues in striving towards a near-zero waste economy. ARN is in charge of the component End-of-Life Vehicles (ELVs). With New_Innonet, the European Commission aims to bridge the gap between policy makers and industry. A consortium of knowledge and research centres and industrial service providers is responsible for the implementation. The network will form a blueprint for a European Technology Platform (ETP). The project is financed by Brussels from its subsidy programme Horizon 2020 that promotes research and innovation in order to boost the competitive strength of Europe.

Exchanging knowledge

In 2016, we were exchanging knowledge with shredder companies in a number of areas. They want to know how to retrieve the very last metal residues from their shredder waste, while we are interested in how to dismantle complex materials. Another area in which we have exchanged knowledge is fire prevention. After the PST plant suffered a small smouldering fire in June 2016, caused by overheating in a bunker hall containing shredder residue, we spoke to people from one of the shredder companies about preventing recurrence in the future. They shared with us their results of a study into fire prevention. We in turn offered the company an insight into how we have embedded the maintenance system in our organisation. Knowledge was also exchanged about wear-resistant materials for machines. Wear in our

installations costs € 40 per tonnes, which represents 20% of the cost price. Exchanging knowledge is part of our continuous search to optimise the production line.

ARN participation in conferences

We are happy to share our knowledge, and like to listen to others. Europe is an important source for gathering knowledge and establishing innovation networks. As part of that process, we visit conferences where we monitor technological developments, and offer presentations about our automotive recycling system, for example at the annual International Automobile Recycling Congress (IARC), sponsored by ARN. This multiday conference brings together representatives of the European recycling and automotive industries to share knowledge about the latest developments in the field of technology, reporting, legislation and innovations. Our attendance in 2016 resulted in an invitation to the Spanish 'ARN', SIGRAUTO. In Madrid, we gave a presentation about our experiences with shredder trials.

ARN memberships

ARN is member of the VPN (Association for Manufacturers' responsibility in the Netherlands), of Eucobat and of the Association of Waste Companies. We benefit from these networks and the exchange of knowledge between the members. In 2016, we set up a location at the Automotive Campus in Helmond, to be able to participate actively in a network of almost 40 innovative businesses and knowledge institutes. Within the active knowledge exchange networks, we are for example interested in the rapid developments in the field of electric vehicles. We expect to see the first tangible results in 2017.

Our knowledge network extends well beyond the national borders.

Europe is an important source for gathering knowledge and establishing innovation networks



The dedicated people working at ARN

ARN employs a staff of 78 people who day in day out are working to advance automotive recycling in the Netherlands. Within our organisation, making connections is a key theme. Connecting refers to maintaining sound relationships with stakeholders as well as maintaining an internal combined focus on achieving our mission. We operate as a single organisation, internally and in respect of our external partners.

In 2017, we aim to regularly focus attention on the way in which we can achieve these goals together. We will continue to invest in training for our employees based on our desire to ensure that the right people with the right knowledge and skills are able to fulfil their tasks to the best of their ability.

Adapted internal organisation

In 2016, we brought our internal organisation into line with the renewed focus on our core task: the efficient recycling of end-of-life vehicles. The field service at ARN Autorecycling will be responsible for structuring the renewed relationship with the car dismantling companies, aimed for example at improved service provision and partnership.

New service team

In consultation with our partner businesses, our account managers are working towards optimising the sustainable process of automotive recycling. In Amsterdam, a service team has been established

to ensure that all processes within our organisation run even more efficiently.

Reformulation of core tasks

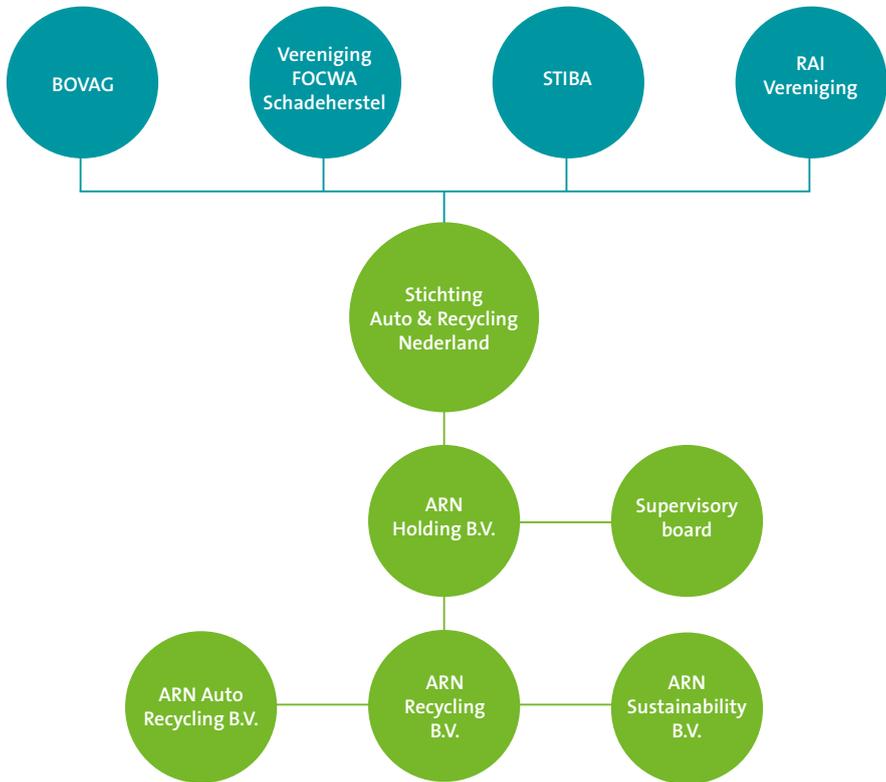
We decided to stop the activities of ARN Recycling Services, the organisation responsible for the collection and processing of waste flows from garage companies, and to halt the trade in batteries and cable harnesses. ARN Sustainability, which was established in 2013 by combining the knowledge and expertise of the Institute for Sustainable Mobility (IvDM) with ARN, will be offered a different role within ARN. The core tasks of ARN Sustainability will now be to develop and deploy knowledge in optimising the automotive recycling chain. Internal knowledge development should offer us further support in securing the sustainable recycling target for the future. Less focus will be placed on carrying out external consultancy assignments.

New accommodation

The planned move to new offices in the second half of 2017 offers opportunities for implementing a more up-to-date work style. This will be built around efficient connections with one another and the outside world. We will be taking steps towards smarter, more efficient and more effective work processes. These are the spearheads for the internal organisation in 2017.

Employee Motivation Survey

In 2017, we plan to once again hold an Employee Motivation Survey (EMS). This is



the logical follow up to the EMS held in the spring of 2015. The survey, in which we ask our employees for their input, will above all help to determine the structure for the new style of working and help make connections, all with the aim of strengthening the organisation.

ISO 9001 and 14001

ISO certification helps clarify our working approach and makes ARN more transparent as an organisation. In 2016, the PST plant retained both ISO certificates: ISO 9001 for the quality management system and ISO 14001 for the environmental management system. We will remain active in seeking improvements and reporting on our efforts.

Stakeholder survey

In the framework of Integrated Reporting, two graduates from Avans University of Applied Sciences carried out a stakeholder survey in 2016. This process took the form of short stakeholder interviews with both internal and external stakeholders. Integrated reporting is a new form of accountability, based around value creation and the impact of an organisation. Account was taken of the outcome of this survey in preparing this report.

We are working together to implement our mission: high-value automotive recycling.

Financial report 2016

The following pages contain the financial statements for the Stichting Auto & Recycling. At ARN, our goal is the responsible and high-value recycling of cars, on the basis of solid partnerships. Our objective is not to maximise profit. In all our financial reporting, transparency is a vital underlying principle.

The recycling activities for cars and as a consequence the activities of ARN are financed by the recycling fee fund. Our activities for battery recycling are in turn financed by the battery management fee fund. As implementing body, ARN is in charge of the recycling chain, from car dismantling companies right through to the PST plant.

ARN Sustainability funds its activities from paid assignments and projects for internal customers and for third parties. All the positive results these activities generate are added to the fund, and eventually benefit the entire organisation.

Our clear task

The task of ARN is to achieve a 95% recycling performance as effectively and as efficiently as possible, and in that way to guarantee the continuity of automotive recycling. In order to be able to carry out our statutory task for the environmentally responsible recycling of end-of-life vehicles, buyers of new passenger cars and light commercial vehicles pay a recycling fee. Our goal is not to maximise profits. For ARN, improved recycling performance means making a responsible choice between economy (costs), ecology (CO₂ footprint) and the recycling

percentage. The eventual outcome is the optimum sustainability performance.

The market in which we operate

ARN operates in the automotive recycling chain, in the market for end-of-life vehicles and all related activities. At the PST plant, our activities are focused on converting residual materials into secondary raw materials. ARN Sustainability advises market parties based on acquired knowledge of the use of recycling technology, chain management, waste management and sustainable business practice in the mobility sector.

Focus on sustainable investment

The Stichting Auto & Recycling operates a defensive, risk-avoiding investment policy, on a sustainable basis. In our investment statute, the focus is on sustainable investment. The so-called ESG criteria are integrated in our investment process. ESG stands for ecology, social policy and good corporate governance. The ESG policy is based on internationally accepted guidelines, such as the UN Global Compact and the Principles for Responsible Investment (PRI) of the UN. These guidelines are aimed at respecting human rights, respecting labour rights, preventing corruption, protecting the environment including preventing climate change, and respecting the standards for good corporate governance.

Implementing the investment policy

We have appointed two asset managers to implement our investment policy. Each quarter, they report to the *Investment Committee* of the Stichting Auto & Recycling. The figures

Improved recycling performance at ARN means a responsible choice between economy, ecology and recycling percentage

for Stichting Auto & Recycling, ARN Holding B.V., ARN Auto Recycling B.V., ARN Recycling B.V. and ARN Sustainability B.V. all appear in the consolidated balance sheet and the consolidated profit and loss account.

The consolidated financial statements of ARN Holding B.V. were drawn up on the basis of Book 2 Title 9 of the Dutch Civil Code. The financial statements of the Stichting Auto & Recycling were drawn up on the basis of our own principles. The most important difference between Book 2 Title 9 of the Dutch Civil Code and our own principles is the establishment of the recycling fee fund and the non consolidation of the group companies.



Consolidated balance sheet as at 31 December

(following appropriation of profits in euros)

| | 2016 | 2015 |
|-----------------------------|-------------------|-------------------|
| 01 Intangible fixed assets | 74,174 | 215,030 |
| 02 Tangible fixed assets | 27,954,791 | 29,111,304 |
| 03 Financial fixed assets | 50,017,257 | 45,687,036 |
| <i>Total fixed assets</i> | <i>78,046,222</i> | <i>75,013,370</i> |
| 04 Stocks | 521,720 | 332,495 |
| 05 Receivables | 5,388,973 | 8,726,145 |
| 06 Liquid assets | 2,200,878 | 3,257,351 |
| <i>Total current assets</i> | <i>8,111,571</i> | <i>12,315,991</i> |
| Total assets | 86,157,793 | 87,329,361 |
| 07 Equity capital | 14,521 | 14,521 |
| <i>Total equity capital</i> | <i>14,521</i> | <i>14,521</i> |
| 08 Recycling fee fund | 71,198,503 | 72,780,265 |
| 09 Battery management fund | 9,529,607 | 7,239,939 |
| 10 Provisions | 62,757 | 649,221 |
| 11 Long-term liabilities | 10,528 | 10,710 |
| 12 Current liabilities | 5,341,877 | 6,634,705 |
| <i>Total liabilities</i> | <i>86,143,272</i> | <i>87,314,840</i> |
| Total liabilities | 86,157,793 | 87,329,361 |

Consolidated profit and loss account

| (in euros) | 2016 | 2015 |
|---|-------------------|-------------------|
| 13 Income from recycling fee | 16,538,060 | 18,574,235 |
| 14 Income from battery management fee | 2,284,909 | 4,559,281 |
| 15 Investment income | 2,819,759 | 1,111,618 |
| 16 Other income | 5,693,988 | 5,134,564 |
| 17 Interest receivable and similar income | 11,184 | 25,011 |
| Total income | 27,347,900 | 29,404,709 |
| 18 Cost of sales | 14,785,199 | 14,106,231 |
| 19 Cost of outsourced work and other external costs | 2,911,895 | 3,636,038 |
| 20 Wages and salaries | 4,195,072 | 4,074,730 |
| 21 Social insurance contributions and pension charges | 918,628 | 882,902 |
| 22 Depreciation of fixed assets | 3,938,042 | 3,721,229 |
| 23 Other impairments | 23,025 | 341,083 |
| 24 Other business expenses | -587,695 | 572,067 |
| 25 Interest and similar costs | 177,565 | 114,712 |
| Total operating expenses | 26,361,731 | 27,448,992 |
| Operating profit | 986,169 | 1,955,717 |
| 26 Tax on the result | -278,263 | 3,663 |
| Result after tax | 707,906 | 1,959,380 |

Explanatory notes to the financial report 2016

1. *Intangible fixed assets*

The intangible fixed assets consist of purchased software and are amortised in a straight line to zero over a period of five years.

2. *Tangible fixed assets*

Tangible fixed assets comprise land, buildings, machinery and equipment. At year end 2016, ARN Auto Recycling B.V. had 206 drainage installations (2015: 210) which were lent to affiliated car dismantling companies.

3. *Financial fixed assets*

The Stichting Auto & Recycling has delegated the management of the investment portfolio to two asset managers. The funds are invested in both bond and share funds. The asset managers have been given a defensive and sustainable mandate, derived from the statement of investment principles of the Stichting Auto & Recycling. In this way, the risks connected with investment are limited as far as possible and sustainable investment is guaranteed.

4. *Stocks*

The stocks consist primarily of shredder residue for the production of ARN Recycling B.V. and stocks of end fractions. Any loss in value as at the balance sheet date is taken into account in the valuation of stocks.

5. *Receivables*

The receivables consist mainly of debtors, the battery management fees still to be invoiced and other amounts receivable.

6. *Cash and cash equivalents*

The cash of the Stichting Auto & Recycling, ARN Holding B.V. and its subsidiaries is held at creditworthy banking institutions.

7. *Equity*

The capital of the Stichting Auto & Recycling has been paid up by the directors RAI Vereniging, BOVAG, Vereniging FOCWA Schadeherstel and STIBA. Each organisation has contributed a proportional share to the capital.

8. *Recycling fee fund*

The fund incorporates the annual results of the Stichting Auto & Recycling with respect to the End-of-Life Vehicles (Management) Decree (Bba). The annual result of the Stichting Auto & Recycling with respect to the Bba is visibly contributed to or deducted from the recycling fee fund in the statement of income and expenditure. The fund is to be considered as a reserve for both anticipated and unforeseen future expenditure.

9. *Battery management fund*

The fund incorporates the annual results of the Stichting Auto & Recycling with respect to the Bbb. The annual result of the Stichting Auto & Recycling with respect to the Bbb is visibly contributed to or deducted from the battery management fund in the statement of income and expenditure. The fund serves for both anticipated and unforeseen future expenditure.

10. *Provisions*

A provision is established for major maintenance to buildings at ARN Recycling B.V. on the basis of expected costs over a period of 15 years.

The provision established in 2015 for the expected costs for alterations to the quality fee was released in 2016.

11. *Long-term liabilities*

The affiliated car dismantling companies have deposited a guarantee for the use of logo signs. As at 31 December 2016, 231 (2015: 236) car dismantling companies had an affiliation agreement.

12. *Short-term liabilities*

The short-term liabilities consist mainly of accounts payable and the item 'liability to car dismantling companies for materials'. The item 'Liability to car dismantling companies for materials' shows the dismantling payment still to be made to the car dismantling companies as well as the costs still expected for collection and processing. This liability is linked to the outstanding material balances of each company. Outstanding material balances represent the materials that are still in the end-of-life vehicles that have been registered for dismantling, or are in the existing packaging or have already been disposed of but not yet been claimed for.

13. *Income from recycling fee*

In 2016, a recycling fee was charged for 445,361 (2015: 500,024) newly registered vehicles.

14. *Income from the battery management fee*

For Li-ion batteries, the management fee is between € 15 and € 180 including VAT, depending on the weight of the battery. The management fee for lead (starter) batteries is € 0.05 excluding VAT. In 2016, management fees were charged for 20,400 (2015: 32,669) Li-ion batteries and for 787,207 (2015: 767,161) lead (starter) batteries.

15. *Income from investments*

The Stichting Auto & Recycling has issued a defensive mandate to its asset managers, which is characterised by investing mainly in bonds and shares.

16. *Other income*

Other income consists mainly of the proceeds from the sale and purchase of materials and marketing of knowledge to third parties.

17. *Interest and similar income*

Interest consists mainly of the interest on deposits and savings.

18. *Costs of sale*

In 2016, there were 231 (2015: 236) affiliated car dismantling companies which between them dismantled 185,740 (2015: 185,110) end-of-life vehicles. Dismantling reimbursements are paid to the car dismantling companies. In addition, the costs of sale include costs for the collection and processing of the ARN materials.

The costs of sale also relate to the production costs of ARN Recycling B.V.

The costs of sale also relate to the cost price of purchase, collection, lease of packaging and storage of materials.

19. *Costs of outsourced work and other external costs.*

Costs and other external costs relate to such items as publicity, accommodation, offices, transport and other operating costs.

20. *Wages and salaries*

The average workforce consists of 73.0 FTE (2015: 73.0 FTE). The employees perform work for the Stichting Auto & Recycling, its subsidiaries and external parties. The Stichting Auto & Recycling has a Board consisting of four members, ARN Holding B.V. has a Supervisory Board comprising five members.

21. *Social insurance contribution and pension costs*

In addition to the compulsory social insurance contributions, this item also includes pension costs. From the moment of entering service, employees participate in a group pension scheme.

22. *Depreciation on fixed assets*

This item relates mainly to the depreciation on the drainage installations that ARN Auto Recycling B.V. has lent to the car dismantling companies and the depreciation on the machinery of ARN Recycling B.V.

23. *Other impairments*

Further optimisation of the production line in the ARN Recycling plant has led to the replacement and decommissioning of a number of machines. The valuation of

these machines is subject to a permanent impairment.

24. *Other operating costs*

The other operating costs concern the addition to provisions.

25. *Interest and similar costs*

This relates mainly to investment management fees.

26. *Tax on the result*

ARN Holding B.V. together with its subsidiary companies forms a fiscal entity for corporation tax.

Colophon

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