

# NORDKALK ENVIRONMENTAL REPORT 2010





*Limestone has been extracted industrially since 1898 in the Pargas quarry in Väståboland, Finland. The quarry is located in the center of the town.*

In this environmental report we describe the effects of our operations on the environment, and our actions, either planned or accomplished, to reduce environmental impact in all our countries of operation. Nordkalk has been publishing environmental reports since 1996.

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*Cover photo: Nordkalk's lime plant and grinding plant Parfill in Pargas seen from the guest harbor.*



# RESPONSIBLE OPERATION

**We take our responsibility for environmental issues, and we actively work to minimize the impacts of our operations to the surrounding environment.**

Many of Nordkalk's products contribute to the maintenance and improvement of the standard of living in our community. Our products are needed for the manufacture of many daily necessities, and the products are also necessary for environmental care, for example water cleaning, pH regulation and flue gas cleaning.

Nordkalk's operations have many various impacts on the environment. We use a non-renewable raw material and we cause changes in the environment in our mines and quarries. These changes are not possible to restore completely. We also emit so called greenhouse gases as the refinement of our raw material often includes emission of carbon dioxide (a chemical-thermal process from calcium carbonate to calcium oxide + carbon dioxide).

Nordkalk's operations are characterized by the idea of responsible actions. We take our responsibility for environmental issues, we make our role clear to ourselves and we actively work to minimize the impacts of our operations to the surrounding environment. Concerning our operations, we are very careful about health & safety concerns and well-being at our operation plants and in the surrounding environment.

Responsible actions are more and more often prerequisites set by society as well as by the authorities and permit-granting bodies. Local legislation as well as directives and requirements from the European Union call for more knowledge, lobbying and information on important environmental issues.

Nordkalk assures its capacity to proactively meet these challenges by updating and improving the internal knowledge base by means of education and recruitment. We are visibly present and we actively participate in important forums as well as in trade organizations locally and internationally.

Nordkalk meets the requirements of ISO 9001, ISO 14001 and OHSAS 18001, and acts in compliance with the EU directive on handling of chemicals, for example. We also actively participate in various development programmes aiming at a more environmentally friendly industry, for example in connection with Motiva, the Finnish Energy Efficiency Agreement.

At Nordkalk responsible actions stand for taking

responsibility for ourselves and for each other, our working environment and the environment around our production plants. Our operations form a part of the community and we are convinced that it is possible to have a long-term sustainable limestone industry and simultaneously promote environmental values in accordance with current environmental legislation.

*Bertel Karlstedt  
President & CEO*



# LIMESTONE IS A PART OF OUR DAILY LIFE

Nordkalk's products are needed for the manufacture of a large number of daily necessities which form the basis for our current standard of living.

Nordkalk extracts and refines limestone for the industry, agriculture and environmental care. We all use limestone-based products daily: for example on our breakfast tables, there are many products, the manufacture of which has required the use of limestone at some stage. Limestone is needed for the production of paper, steel, sugar and glass as well as for water treatment. Crops grow in well-limed soil, and hens need lime to produce strong egg shells.

In short: Lime is used for filling, cleaning and stabilizing. Its chemical qualities are needed for various processes and in many cases it can be said that the community is truly built on limestone.

Nordkalk is the leading manufacturer of limestone-based products in Northern Europe and the third largest manufacturer in the whole of Europe.

A particularly positive economic development was recorded in 2010 and the demand for limestone-based products increased considerably. Most of the customer segments seem to have recovered from the economic depression last year. Still there is uncertainty about the future market development.

#### **Health and safety are primary issues**

Nordkalk continued its systematic work to improve occupational health and safety in the company. At present the operations in Finland, Sweden, Poland and Estonia are certified according to OHSAS 18001 and in Russia the certification is expected to be completed in 2011.

#### **Nordkalk is fully-owned by Rettig**

On 19 May 2010 Rettig bought the whole share capital in Nordkalk and on 12 August the agreement was approved by the EU Competition Authority. Nordkalk ceased to be a public company and the Finnish name is now Nordkalk Oy Ab (earlier Oyj Abp).

#### **New limestone quarry on Gotland**

Nordkalk's plan to open a new limestone quarry in Bunge on Northern Gotland was ensured in October 2010 when the Supreme Court of Sweden informed that it will not hear the case. This means that Nordkalk will invest approximately EUR 50 million and the operations will continue for 25-40 years. Gotland's limestone is an irreplaceable raw material for the Nordic steel industry.

#### **Environmental permit for the limestone mine in Kolari**

To meet the increasing needs of the mining industry, Nordkalk is going to resume its operations in Kolari lime quarry in Northern Finland. At the end of December 2010, Nordkalk was granted an environmental permit for extraction. The full-scale extraction will reach an annual volume of maximum 400 000 tons.

#### **New dolomite quarry in Estonia**

Nordkalk's only dolomite deposit is in Kurevere in

South-Western Estonia. The quarry is nearly fully extracted, and last year extraction was begun in the nearby Esivere quarry.

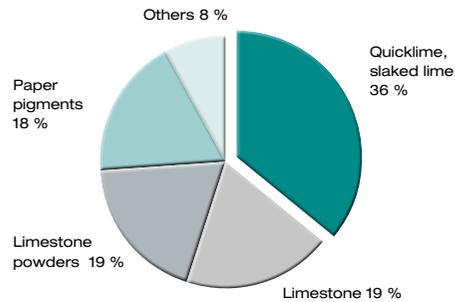
#### **Support to environmental projects and research**

In Finland Nordkalk is supporting the association Häll Skärgården Ren (Keep the archipelago clean), which is in charge of waste disposal in the archipelago and actively informs about environmental issues. In Nokia, Nordkalk is following up the water quality of the Alinenjärvi lake system and, if needed, a possible acidification is hindered by means of added liming. In connection with the 100-year anniversary of the factory plants in Lappeenranta on 15 November 2010, Nordkalk donated 100 000 euros to the local Technical University to support research and education.

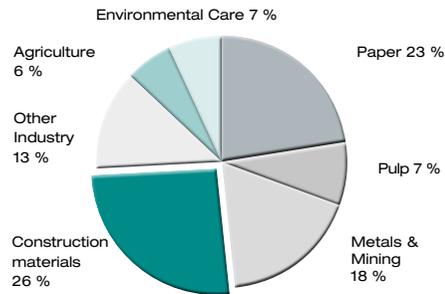
In Sweden Nordkalk is actively participating in the activities of the MinFo association, operations of which include investments in the environment

Flotation plant,  
Lappeenranta, Finland

SALES BY PRODUCT GROUPS 2010  
(% of net sales)



SALES BY CUSTOMER SEGMENTS 2010  
(% of net sales)



and a sustainable development. Nordkalk has also participated in a survey on the use of alkaline by-products for solving environmental problems in old mining areas. The results of the survey were published in 2010.

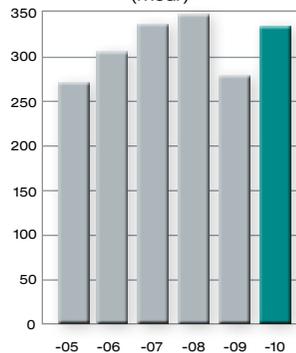
of the Year 2010, for managing and registering lime products in compliance with REACH, the European Community Regulation on Chemicals.

#### Systematic environmental work in entire Nordkalk

The objective of the environmental work is to systematically emphasize primary goals for improvement and to maintain an environmental management system in cooperation with the line organizations. Nordkalk's operations in Finland, Sweden and Poland have already earlier been certified according to ISO 14001 and this was expanded to include Estonia as well in 2010. The objective is to certify the operations in Russia in 2011.

This year the Environmental Manager of the corporation, Tua Welin was awarded with Nordkalk's Award of Merit, the Environmental Achievement

TURNOVER  
(meur)





*At the Vimpeli plant in Finland the personnel had worked without accidents more than 3100 days by the end of 2010. From left: Jaakko Mässbacka, Sari Tuohimaa, Petri Saarela, Asmo Lehtorinne, Mika Metsälä and Tero Mikola.*

# HEALTH AND SAFETY ARE PRIMARY ISSUES

**The most important factor in preventing occupational accidents is the employees' positive attitude towards Health & Safety issues and common rules.**

In comparison to the year earlier, the number of occupational accidents in the whole Group rose somewhat in 2010. This is partly due to the increased activities and to an integrated reporting system. The most common injuries are slipping and stumbling. Last year there were no injuries with lethal outcome.

Reports on near misses and other hazardous situations received much attention. The production units are encouraged to stimulate reporting by means of various prizes and campaigns. This led to results: The number of reports doubled in comparison to 2009 and a total of ca 1000 near-miss incidents were reported. By correcting hazardous conditions in the work environment, it is possible to prevent accidents. As the employees report about risks and hazards they simultaneously become more aware of safety issues.

## **Safety revisions are a possibility to influence**

In 2010 a lot of work was done to improve issues concerning the safety management system. The objective is to certify all production locations according to OHSAS 18001. Many employees participated in the work and in risk assessment of different work tasks; many had an opportunity to influence on his or her work and the work environment. At the end of the year the certification was granted in Finland, Sweden, Poland and Estonia to the locations that had not previously been certified. The organization in Russia will be audited in spring 2011.

Safety audits concerning heavy machinery and mining continued. All the biggest mines in all operational countries have been audited. The audits offered an excellent opportunity to improve the safety routines in the whole corporation.

## **Safety is an attitude issue**

A policy of zero tolerance for drugs and alcohol that began in 2009 is still prevailing. The policy, which concerns the whole group, was implemented in a manner that is supported by local regulations as well as local culture. The superiors were given specific methods in order to deal with faults. The most important message of the zero tolerance policy is for all to have the right attitude towards questions concerning safety and wellbeing. The employees have been informed about health related and social effects of intoxicants.

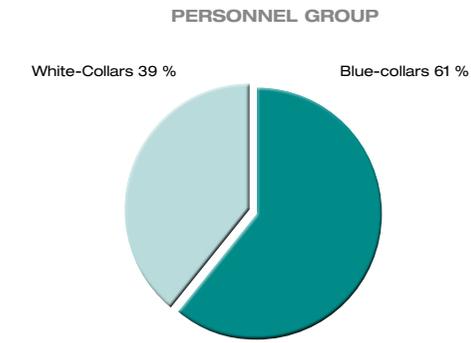
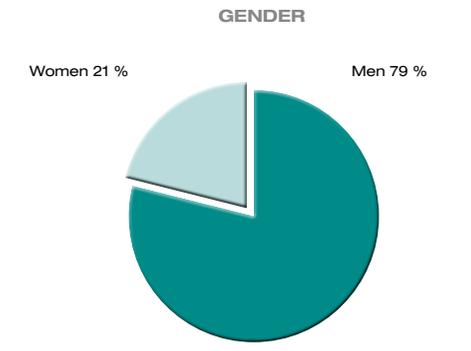
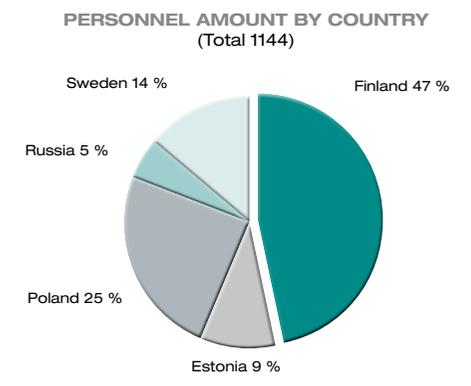
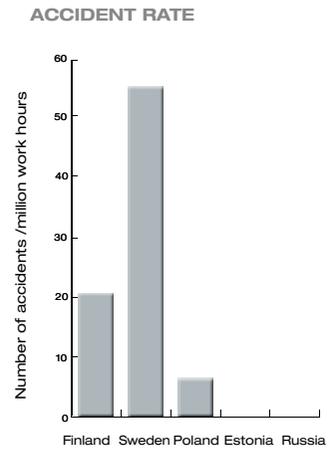
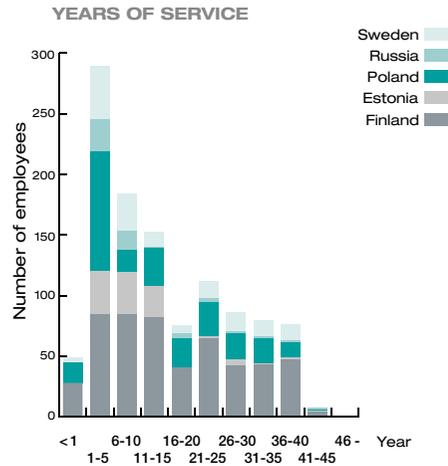
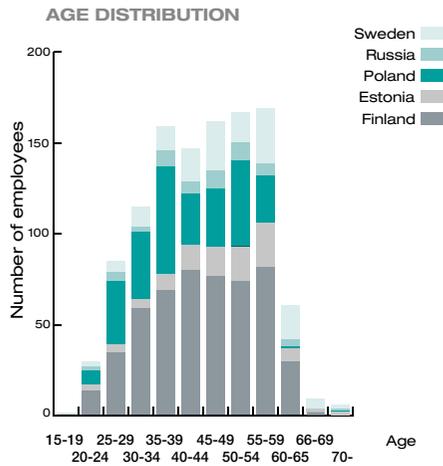
For the first time a Health & Safety Day was arranged on corporation level, and it joined participants from all operational countries. The objective of the H&S Day is to convey knowledge and readiness and to present a possibility to exchange experiences.

## **The employees get on well and are motivated**

In autumn 2010 an employee survey was carried out and it showed that the Nordkalk employees are happy with their jobs. Development needs that were identified in the previous survey in 2007 have been met and especially in Poland the employees are more content than before. These positive results are connected to following issues: employee's own work, responsibilities and arrangements of work, workload and clear goals. During the coming years the whole corporation is going to concentrate on developing an appreciative, confident and equitable working environment.

## **Know-how is continuously being developed**

The personal development discussion is an important part of leadership and know-how development in Nordkalk. The objective is to have personal



development discussions every year with all employees and to follow up development needs that have been agreed upon. The needs to develop know-how are carefully assessed during the discussions.

#### Cooperation across borders

Nordkalk's International cooperation body, EWC (European Works Council) held its first meeting in Helsinki in June, 2010. Present were representatives of the employees as well as the management from Finland, Sweden, Poland, Estonia and Russia. In future the international cooperation structure is going to change as Nordkalk joins the Rettig Group's international cooperation body, Euroforum.

The cooperation network HR Network, which consists of HR specialists from Nordkalk's different operational countries will continue its work. In 2010

a system development work was initiated in order to integrate the strategic personnel management in the operational countries into one system. In future this will make knowledge development more efficient and secure an integrated operation.

The H&S Network works on unifying the health and safety practices and reporting in the whole group.

The Environmental Network gathers Nordkalk's environmental specialists to share knowledge, and in energy issues the Energy Team is the international co-operation forum.



# FROM RAW MATERIAL TO PRODUCT

**Environmental matters are taken into consideration already in the planning of the production. Continuous efforts are made to reduce noise, dust and vibration.**

Nordkalk is actively working to minimize the impacts of its operations on the surrounding environment as well as on the employees' working environment. Limestone is extracted from quarries or underground mines. The stone is then transported for preliminary crushing and sorting and further on for processing. The operations cause vibrations, noise and dust and the quarry changes the landscape. Other inconveniences are surplus stone in connection with the extraction and secondary products from the production processes. Water runs down into the mines and can have an impact on groundwater levels in the surrounding environment.

Limestone products include crushed, ground or sieved limestone, i.e. calcium carbonate ( $\text{CaCO}_3$ ). Limestone grinding is usually a dry process, which causes dust at the grinding plants and this is the main inconvenience for the environment. The dust can effectively be controlled by filtering the out-coming air. By watering roads and stored stone material the dust can be reduced around the quarries.

Nordkalk processes calcite and wollastonite in Lappeenranta. The subsidiary Suomen Karbonaatti Oy processes the concentrated calcite into paper pigment. The flotation process mainly takes place in a confined space.

## **Continuous environmental work on the production plants**

In 2010 many investments were made to reduce noise and dust on the production plants. In Poland the noise isolation on the sorting equipment in Miedzianka has been improved and the test results show that the noise level has been lowered. In Miedzianka a mobile washing unit for car wheels was taken into use.

In Storugns on Gotland the exceptionally dry summer and fall caused problems with dust from the filter dust dumps. The neighbors have complained, and the authorities have noticed this inconvenience. The situation with filter dust will be improved this year; the primary goal is to increase utilization of

the filter dust. As the modernization of the plant proceeds, also diffuse dusting will decrease.

In Luleå the personnel has been working to find usage areas for the filter dust which builds up in all lime kilns.

In Raahe there was a problem with dust emissions from the kilns. Filters will be repaired and renewed during 2011.

## **Making the most of the resources**

In addition to extracting the proper useful stone, also surplus stone is extracted. It can be used as macadam. The amount of surplus stone extracted has to do with geological factors and extraction plans. The objective is to further increase the usefulness of the surplus stone and to extract in an environmentally friendly way. In Nordkalk Group the utilization of quarried stone was 88 percent in 2010. All mines are making a plan for how to manage and store surplus

stone according to the regulation on management of waste from extractive industries.

In Pargas, new methods for using grayish limestone instead of white limestone have been developed together with customers. The availability of the whitest limestone is limited, which means that the using of grey limestone makes it easier to utilize the different limestone qualities of the quarry. The stone storage area has been expanded, which makes it easier to separate the different stone fractions.

## **Environmental products**

Nordkalk's products are also used for environmental care. By means of various limestone-based applications it is possible to prevent and deal with environmental problems. Soil improvement is about liming the fields in order to reduce the acidity of the soil, which also decreases need for fertilizers.

Lime products play an important role in water

# NORDKALK'S PRODUCTION PROCESS

Nordkalk extracts limestone at 21 locations and processes it into crushed and ground limestone, concentrated calcite, and quick and slaked lime. Nordkalk's range of products also includes dolomite and wollastonite.

Limestone is extracted from the bedrock in either quarries or underground mines. The stone is then transported for rough handling and sorting, after which it goes on to be processed further elsewhere. Carbonate or limestone products, i.e. calcium carbonate ( $\text{CaCO}_3$ ), consist of crushed, ground or sieved limestone.

Quicklime is produced by heating crushed and sorted limestone to a temperature of some  $1,100\text{ }^\circ\text{C}$  in either a rotary or shaft kiln. Quicklime ( $\text{CaO}$ ) is grainy or floury in appearance. It is sifted into different fractions or ground to a fine flour. Slaked lime is made by adding water to quicklime. The calcium dioxide reacts with the water to produce calcium hydroxide ( $\text{Ca}(\text{OH})_2$ ), slaked lime, which is a dry, powder-like flour, light in colour.

treatment. Limestone products, as well as quicklime and slaked lime, are used to purify drinking water and clean waste water. Liming of watercourses returns the quality of the water to a level preceding the acidification. Nordkalk is strongly taking steps to develop products and methods to reduce diffuse watercourse loading. In Sweden a state subsidy is granted for cutting phosphorous emissions from fields into watercourses. This opens new possibilities for Nordkalk's limestone-based Fostop concept.

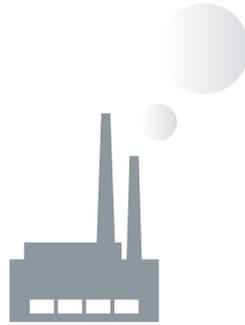
The flue gases of power plants can be efficiently neutralized with the help of quicklime, slaked lime or limestone powder. Also the waste incineration emissions can be reduced with the help of different limestone-based products.





# USE OF ALTERNATIVE FUELS INCREASES

Nordkalk emphasizes the research and development of new and environmentally friendly technologies.



Nordkalk is using various types of energy in the manufacturing of its products and continuous work is done to improve the energy efficiency at all production plants. This is also an important aspect when planning new investments, and existing production processes are optimized in order to cut down the specific energy consumption.

When it comes to lime burning, coal, oil and natural gas have traditionally been used, but now an intensive work is being done to find alternative forms of energy. Electricity is used for crushing and grinding, fuel oil and liquid petroleum gas for the drying process. Nordkalk emphasizes research and development of new and environmentally friendly technologies.

The work on improving process efficiency and reducing the operations' impact on the environment continues. In Finland Nordkalk has already for many years been associated with the energy efficiency agreement for industries, whose objective is to introduce new energy efficient technology

and increase the use of renewable energy sources.

## Many extensive projects in 2010

In Finland a development project continues in order to implement bio fuels at the lime kiln in Pargas, which also means development of the burning process in the kiln. The project received funding from Tekes (the Finnish Funding Agency for Technology and Innovation).

The grinding plant in Vampula has received a new burner, which also makes it possible to use biogas. The test period started in December 2010 and the burner was taken into full-scale use at the beginning of 2011. The gas is delivered through a 1.5 km pipeline from Vambio, a biogas producer nearby. There the gas is produced of by-products from the food industry, slaughter houses, livestock production and of wastewater sludge.

The lime kiln in Köping in Sweden has already for many years been running on alternative fuels in

addition to traditional ones. In 2010 storage facilities and equipment were improved in order to increase the use of alternative fuels. In autumn Nordkalk met a preliminary agreement on delivery of biogas with the Swedish company Cortus, which is planning to build a pilot scale gasification plant in Köping. The gasification process makes it possible to refine problematic and low-quality biofuels to high-quality, CO<sub>2</sub> neutral fuel gas, which is suitable for lime burning. During the coming three years the process will be fine-tuned, different fuel combinations will be tested and the cost-effectiveness will be assessed.

## The whole Nordkalk saves energy

A great deal of the energy saving at Nordkalk is done via better equipment, improved process control and new routines at the plants. The personnel is trained to take energy efficiency into consideration in the daily routines and beside the big investments small improvements are continuously done at the plants.

In Köping a new control system for the lime kiln

has been taken into use, which has led to remarkable energy savings.

In Tytyri tests to run the lime kilns with converted oil continued during the year. The compressor station was renewed in the end of 2009, which had a considerable positive impact on the energy consumption in 2010.

The Parfill plant in Pargas has improved the pneumatic conveyor, which transports products directly to the customer. This makes it easier to optimize the energy consumption.

During several years the quarry personnel has systematically been trained to drive the quarry machines as economically as possible, which decreases the impact on the environment.

## Less emissions and more recycling

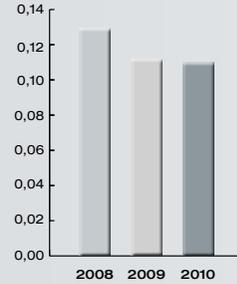
Nordkalk is actively participating in the research on reduction of carbon dioxide emissions, capture and permanent storage of CO<sub>2</sub>.

## EMISSIONS IN AIR, NORDKALK GROUP

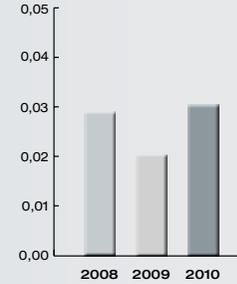
Nordkalk's production process releases particles (dust) into the air, and flue gases from the process contain oxides of nitrogen ( $\text{NO}_x$ ), carbon dioxide ( $\text{CO}_2$ ) and varying amounts of sulphur dioxide ( $\text{SO}_2$ ).

The figures show the most essential emissions in relation to quarried limestone. They are based on measurements and calculations for Nordkalk's plants in the whole Group. The increase of particle emissions results from filter disturbances at one Finnish lime plant. The situation is corrected by changing or repairing filters.

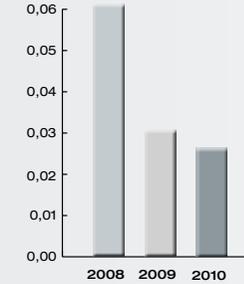
**CO<sub>2</sub>**  
(CO<sub>2</sub> t/quarried limestone tonnes)



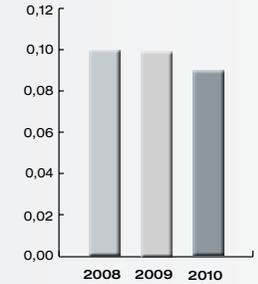
**PARTICLES**  
(kg particles/quarried limestone tonnes)



**SO<sub>2</sub>**  
(kg SO<sub>2</sub>, quarried limestone tonnes)



**NO<sub>x</sub>**  
(kg NO<sub>x</sub>/quarried limestone tonnes)

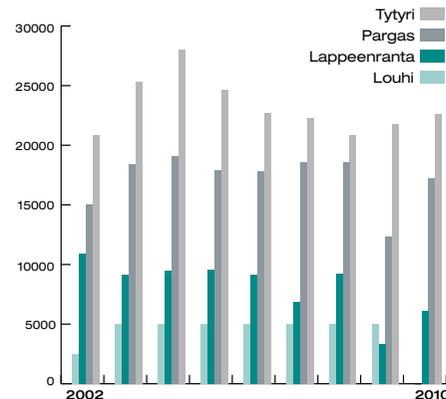


Regarding lime burning, about two thirds of the emissions are process discharges from the raw material, i.e. limestone when it is being refined into quicklime. The rest of the emissions are due to the use of fossil fuels.

Carbon dioxide capture means that the CO<sub>2</sub> is separated, for instance, from a plant's flue gases. The separated carbon dioxide is stored in such a way that it won't escape into the atmosphere. This can be done, for example, in porous geological formations. CO<sub>2</sub> can also be used in different products, for example when making paper pigment (PCC) the CO<sub>2</sub> released during burning is re-entered into the permanent product.

The waste heat of the lime kilns is utilized in the district heating network in the Finnish towns of Lappeenranta, Lohja and Pargas. In 2010, the amount of heat delivered by Nordkalk was equivalent to an amount needed for heating and providing warm water to about 2300 households.

**UTILIZED WASTE HEAT**  
(MWh)



The grinding plant in Vampula has received a new burner, which enables the use of biogas.



# OBJECTIVES OF ENVIRONMENTAL WORK AND MEASURES IN 2010

RAW MATERIAL	ENERGY	VIBRATION, NOISE AND DUST
<p><b>OBJECTIVE:</b></p> <ul style="list-style-type: none"> <li>• Increase utilization of quarried material to 90% by 2013 and to 95% by 2016.</li> <li>• Find new usage areas for surplus stone.</li> </ul>	<p><b>OBJECTIVE:</b></p> <ul style="list-style-type: none"> <li>• Reduce electricity consumption: 5% during 2008-2016.</li> <li>• Reduce the use of fossil fuels in lime production: 2-5% during 2009-2013.</li> </ul>	<p><b>OBJECTIVE:</b></p> <ul style="list-style-type: none"> <li>• Cut down vibration, noise and dust caused by production.</li> </ul>
<p><b>MEASURES 2010:</b></p> <ul style="list-style-type: none"> <li>• Active engagement to find useful use for filter dust in Luleå and Storugns (Sweden) and Raahe (Finland)</li> <li>• In Pargas (Finland) new methods were taken into use in order to use gray limestone instead of white limestone. Expanded raw material storage areas also make it easier to homogenize the raw material.</li> </ul>	<p><b>MEASURES 2010:</b></p> <ul style="list-style-type: none"> <li>• The test run with converted oil in the lime kilns in Tytyri (Finland) continued. The compressor station was modernized at the end of 2009, and it resulted in considerable energy savings in 2010.</li> <li>• The grinding plant in Vampula (Finland) has received a new burner for biogas.</li> <li>• In Köping (Sweden) storage facilities and equipment have been improved in order to increase the use of alternative fuels. Here a gasification plant for biogas is planned to be built. A new control system for the lime kiln was taken into use to keep the rotary kiln fuel consumption down.</li> <li>• At all locations the employees are taught to operate mine machinery as economically as possible. This saves fuel and reduces environmental load.</li> <li>• In Finland a development project continues in order to introduce the use of bio fuels in the Pargas lime kiln.</li> <li>• In the Parfill factory in Pargas the pneumatic conveyor which transports products directly to the customer was improved in order to further optimize the energy consumption and therefor car transports are not needed.</li> <li>• New energy saving technology has been implemented in the lime kiln in Luleå.</li> </ul>	<p><b>MEASURES 2010:</b></p> <ul style="list-style-type: none"> <li>• Enhanced sound isolation on the plants in Miedzianka (Poland), Landskrona (Sweden) and Sipoo (Finland).</li> <li>• A project for follow-up observations of diffuse dusting was started in Pargas in cooperation with the additional industry and with the authorities of the city.</li> <li>• Watering of flotation sand basins in Lappeenranta (Finland)</li> <li>• New dust filters in Tytyri (Finland) and Rakke (Estonia).</li> <li>• Asphalted roads and places of loading in Tytyri (Finland) and Karinu (Estonia).</li> <li>• New release routines reduce dusting in the port of Landskrona (Sweden).</li> </ul>

## AFTER-CARE OF QUARRIES

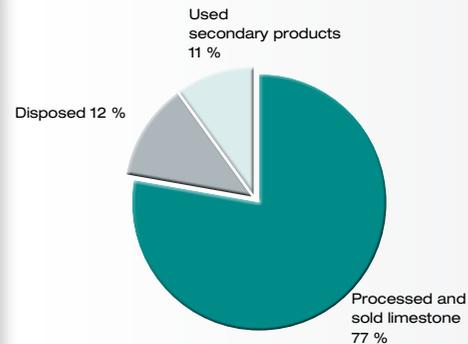
### OBJECTIVE:

- All Nordkalk quarries must have an after-care plan.
- Exhausted mines are used for new purposes.
- The operations are integrated into the community.

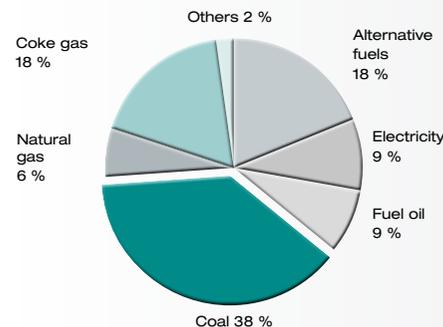
### MEASURES 2010:

- Restoration of one disposal area in Pargas (Finland) is completed.
- The final restoration plans of the old Ignaberga site (Sweden) are established by the authorities. The final goal is to create bird ponds and natural vegetation in the surroundings.
- An orchid area in the quarry in Esivere (Estonia) is taken into consideration in the operations plan.

**MATERIAL EFFICIENCY**  
(2010)



**ENERGY SOURCES**  
(2010)



## OPERATING POLICY OF NORDKALK GROUP

**Nordkalk extracts, processes and delivers limestone, and offers services related to these operations.**

### Guidelines for operations

The working environment shall be good and safe for everybody.  
We comply with environmental legislation, regulations and agreements.  
We strive to minimise the environmental impact of our operations.  
Our values - Trust, Competence and Quality - guide our operations.  
We deliver the right product, quality and service at the agreed time.

### Continuous improvement

Our aim is to continuously improve our products, services and processes, while taking the economic aspects, environmental impact and energy consumption of our operations into consideration.

We maintain active communication with our customers and we improve our performance by investigating all found deficiencies.

As part of our strategic and annual planning, we make plans for improvements that cover the work environment, quality and environmental aspects and energy related costs together with goals, measures and investments related to these. When an investment is evaluated at Nordkalk, an assessment of its impact on the working environment and the environment must be carried out.

We regularly monitor our goals defined for the working environment, quality and environmental impact.

### Responsibility

All persons in supervisory positions are required to ensure that the personnel understand their role and have the authority and competence needed for their work. We all bear a duty to point out defects and errors. Nordkalk's President has the overall responsibility for ensuring that the operating policy is followed.

### Communication

This policy is reviewed regularly and updated when necessary. It is distributed to the personnel and is also available to Nordkalk's stakeholders.

Bertel Karlstedt  
President and CEO



*Juha Pykälä, researcher at the Environmental Centre of Finland, has studied biodiversity near Nordkalk's quarries.*

# EACH MINE TO HAVE A PLAN FOR AFTER-CARE

Important raw materials are extracted from mines in the course of several decades. Once the active quarrying has ended, it is time for after-care, which is planned already during the launch of the quarrying operations.

Nordkalk's Mine Closure Policy defines how to carry out after-care. For each mine a plan is drawn up and it pays regard to the characteristics of the mine and the environment. The aim of these plans is to better take the needs of the community in consideration in the future. The lifespan of a mine is tens of years and the plan is updated according to how the extraction is advancing and how the area is changing. The initial point of after-care is to guarantee the safety at the quarry area, for example, with a fence. Often parts of the steepest sides are leveled and the quarry is enhanced to positively contribute to the surrounding landscape.

## **The mine is part of the community**

The characteristics that a mine or quarry offers can even be utilized in many other ways. In the underground mine in Tytyri, Finland, there is a museum, exhibition hall and festival hall in the parts that are no longer in mining use. Some of the empty mine shafts in Tytyri are used for final storage of power plant ash. A lift manufacturer is using the abandoned shaft for testing lifts. At Storugns on Gotland a motorsports

track has been built in a ceased quarry, and close by, land is appointed to a wind power plant. In the mining areas concerts have been kept and the spectacular landscape in the operating mine in Pargas has been eternalized on pictures and advert films, as well as in movies. Economically it is possible to use the lime-rich soil, for example, for truffle cultivation as they do on Gotland.

## **The landscape is formed as quarrying proceeds**

After-care of parts that are no longer in use at the Ignaberga quarry in Southern Sweden is taking place while extraction is continued in other parts of the quarry. Some of the steepest sides have been leveled out, stone heaps removed, and areas still with steep sides protected by a fence. The work is carried out in good understanding with the authorities. Green areas have formed on the area in the course of many years, and this has been taken into consideration in the after-care work. Decreasing the amount of pumped water is being planned in order to create bird ponds for the rich birdlife of the area. The Ignaberga quarry

is connected to a water protection area which is the source of the county's drinking water. In the future, the landscaped areas can serve as a nature attraction and hiking area.

In cooperation with the University of Tartu an after-care plan is made up for the Kamariku quarry near Rakke, Estonia. The cooperation has continued for many years and similar plans have been made for the quarries in Kurevere and Vasalemma. One of Nordkalk's objectives is to increase the utilization of soil that has been removed because of quarrying. The objective is to separate soil material (e.g. humus and clay) that can be used, for example, for after-care and to separately deposit this material for future use. Also in Karinu quarry in Estonia an after-care project is carried out while quarrying continues in other parts.

The after-care of the old disposal area of the Pargas mine in Skräbböle was completed in 2010. The plan was already drawn up in 2005 in compliance with authority requirements. The plan, as well as

the completed work, included utilization of clean material from the city's field works and extraction of moraine and mould in the mine to form the disposal site. The surface was covered with harmless compost material from an industry nearby in order to improve vegetation and to create an attractive green area for the future.

## **2010 was the Year of Biodiversity**

The UN designated 2010 as the International Year of Biodiversity. The theme is still current as EU did not reach the objectives set to stop impoverishment of biodiversity. It is necessary to improve the understanding of fundamental socio-economic aspects to reach the objectives set for 2020.

In limestone-rich mining environments you can find several rare plants and living organisms and a finished quarry provides an excellent environment for plants thriving in lime-rich soil. Biodiversity is prevalent in lime-rich environments and always superior in comparison to nearby lime-poor environments. A survey of different groups revealed that you can find

*After-care of parts that are no longer in use in the Ignaberga quarry in Southern Sweden is taking place simultaneously with the extraction in other parts of the quarry. Bird ponds are formed on the bottom of the quarry.*

the largest number of various species in Finland in the lime-rich areas of Väståboland. Esivere in Estonia is another example of the fact that plants thrive in the lime-rich soil of quarries. In order to save the orchids growing in Esivere, Nordkalk has protected some areas in the vicinity to the mine.

The Environmental Centre of Finland carried out a survey on moss and lichen at the open pits of Tytyri and Mustio in Lohja and at the mine area in Pargas in 2009. The survey revealed several rare and to some extent endangered species. The project continued during 2010 and the examined areas expanded to include Vimpeli, Vampula and Sipoo. The Environmental Centre is planning to make a record of the species living in Nordkalk's mines and inventories are planned in Lappeenranta and Kolari. The limestone mines contribute considerable aspects for preserving the biodiversity and can offer guided nature experiences for tourists when quarrying operations are finished.





# PREREQUISITES FOR MINING MUST BE ENSURED

There is an obvious need to find a functional balance between the protection of nature and the exploitation of natural resources, which are essential for maintaining our current standard of living.

## Access to land must be guaranteed

Nordkalk has actively participated in the communication of the European Union's Raw Material Initiative of 2008. The background is the rising awareness of the need to secure mineral-based raw materials in the growing global competition. The essential content of the Initiative is focused on the issue of access to land, which means that identified raw material sources must be made accessible for exploitation by the means of functional mining regulations and a land use planning which balances different land use interests.

EU is not aiming for a mining directive or any other binding, harmonised mining legislation. This is considered to be the competence of the member states, due to the sovereignty in land control issues.

Based on the EU's Raw Material Initiative, a mineral strategy has been formulated in Finland. It defines the common policy regarding mineral resources and

supply of raw material taking environmental issues in consideration. In Finland the new mining law was approved by the Parliament in the spring of 2011. The new law includes certain new fees and responsibilities for the mining companies but it is not expected to have a considerable effect on Nordkalk's operations, partly because some elements in the new law are well known from the existing environmental legislation. Draft of a national mineral strategy is being planned also in Sweden.

## It is possible to combine the interests of industry and nature

A new EU Guidance on Non-energy mineral extraction and Natura 2000 was published in June 2010. Natura 2000 areas are sometimes overlapping with mineral exploitation interests. In northern Gotland there are a number of Natura 2000 areas adjacent to Nordkalk's quarries. The new guidance states that there is no automatic exclusion of non-energy

activities in or near Natura 2000 areas. It also recognises that some extraction projects can be beneficial to biodiversity because flora and fauna enjoy lime-rich soils. There is an obvious need to find a functional balance and ratio between nature protection and the exploitation of the natural resources which are so essential in maintaining the standard of living.

The continued work on the raw materials initiative has been based on two main topics which were reported during 2010. They are sharing best practice experiences in the area of access to land, within the member states in the EU and identifying the critical and important mineral-based raw materials. Limestone is listed among the important ones especially concerning the white calcite used in carbonate-based paper pigments. Access to raw material may be considered critical in a regional context as well. This is the case of the Gotland limestone which is an irreplaceable raw material for the Nordic steel industry.

## Emission rights vital for the lime business

The lime industry has participated in the preparation of the EU ETS (emission trading scheme) for the third phase 2013-2020. The European Parliament is going to take a stand on this revised directive during 2011. Based on the proposed directive, the lime industry will be granted free emission rights according to a benchmark value of 0.954 emission rights per produced ton of quicklime. This is a crucial question for the lime producers, as the industry has brought up on different forums.

Lime production is given only one ratio, which means that the conditions for burning limestone in a shaft kiln are different than in a rotary kiln. This emphasizes the importance of cutting emissions from rotary kilns and increasing the use of non-fossil fuels.

Nordkalk's efforts for replacing fossil fuels by alternative ones in order to decrease CO<sub>2</sub> emissions are

*Miedzianka, Poland*

described under the heading “Use of Alternative Fuels Increases”.

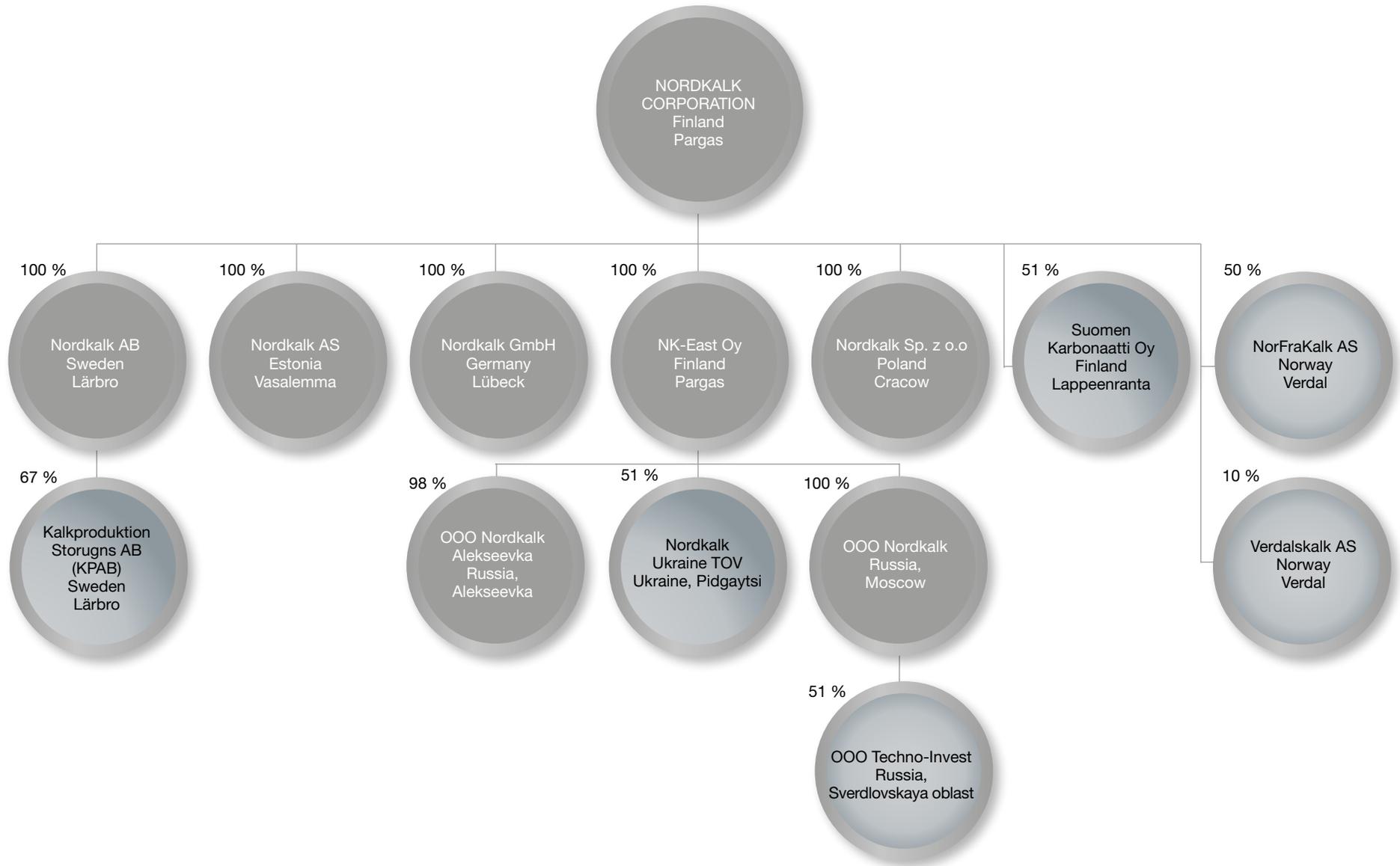
#### **REACH registration accomplished**

The new European Chemicals Regulation, REACH, for registration, evaluation, authorisation and restriction of chemicals became effective on 1 June 2007. Nordkalk Group’s products quicklime ( $\text{CaO}$ ), slaked lime ( $\text{Ca(OH)}_2$ ) and dolime ( $\text{CaMgO}_2$ ) were registered according to the REACH regulation.

Chemically unmodified minerals, which occur in nature, are exempted from registration. Consequently Nordkalk’s products limestone, aggregates, calcium carbonate and wollastonite fall under this exemption and were not registered. REACH aims at improving the protection of human health and the environment and maintaining the competitiveness of the EU’s chemical industries.



## Group Structure



-  Grinding
-  Sales/office
-  Quarry
-  Kiln
-  Own harbour/depot





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