

Rehabilitating quarries and enhancing the biodiversity associated with them are key elements in our ambition to operate as a sustainable business. This year we took our first major step towards realizing the biodiversity potential of our sites, while maintaining our rehabilitation commitments.

Biodiversity and quarries

A biodiversity enhancement program for Heracles

We are pleased to report the development of a program with the University of Thessaly (Volos), which will become the backbone of our future work to enhance biodiversity. Starting in 2011, with our quarries supplying our Volos plant, the university's ecology experts will assess existing flora and fauna at the quarry, and in a 500 meter zone around it; they will assess damage done and propose how to establish on the site the species found in its surroundings. They will also make recommendations for the safeguarding of any rare or endangered species found. In the future, we plan to extend the learning from this program to our other quarries.

Rehabilitation

Rehabilitating quarries is a requirement in Greek law but we try to go beyond these requirements to ensure that the worked-out quarries deliver their full potential.

In 2009 we had completed screening in accordance with the Lafarge standard. This enabled us in 2010 to focus on those quarries where, for historical reasons, rehabilitation work was not sufficient; we have now developed action plans for these locations and rehabilitation is in progress. Regrettably, in the case of the schist quarry serving the Halkis plant, this was not adequate and a fine was imposed.

Our rehabilitation practice takes into account the after-use of the quarry, when the exploitation period ends and the quarry is returned back to community. For example, wherever feasible and despite the loss of mineral reserves that this causes, we reduce the height of our quarry working benches to five meters so as to improve the after-use. Selecting the appropriate after-use is a key issue; we operate most of our quarries under lease from private or public owners, which means that after-use cannot be altered; at our own sites we have more scope to select the best outcome for biodiversity.

Year of biodiversity

The United Nations designated 2010 as the year when the world would be invited to celebrate the importance of biodiversity and take action to safeguard it. We contributed to the raising of awareness of biodiversity, both internally among employees and externally. For this, we translated into Greek and distributed to our stakeholders a Lafarge publication on biodiversity and quarries describing the methodology applied in quarry management and rehabilitation in order to protect natural ecosystems and enhance biodiversity. This, together with case studies detailing our approach to rehabilitation of our quarries in Greece, was posted on our website. An internet campaign we aired in 2010 also featured biodiversity as a key sustainability commitment effort and invited visitors to view our website for our efforts. At a local level, our Halkis plant organized for the local schools a tree planting day with a presentation on biodiversity.

Towards greater understanding

We are aware that not everybody shares our perspective on the potential for quarries to contribute to biodiversity. We hope that our work with the University of Thessaly will promote understanding especially if, as we hope, it becomes possible to provide for public access to quarries, once extraction ceases, to observe flora and fauna. We also intend to engage more directly with interested stakeholders on the subject of biodiversity.

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MONTH CONTRACT TO HELP US
REALIZE BIODIVERSITY POTENTIAL

example

KATAKALOU SCHIST QUARRY (MILAKI)

We have always tried to make our quarries as environmentally-friendly as possible and have often been prepared to go further than legal requirements. The schist quarry at Katakalo, which is situated near the Milaki cement plant, is an example.

The quarry was mined and according to the approved rehabilitation study had a typical bench formation with trees, bushes planted alongside the benches. However, following an agreement with the archaeological authorities, we decided to embark on a better rehabilitation plan in which the slope of the benches was altered so that the site no longer resembled a worked-out quarry. In addition an area of 50-55,000 m² was planted with olive trees and vines to blend in with the local environment.

Our initiative was very well received by the local authorities and the local community, and made our people proud.

example

A UNIQUE CASE: OUR PUMICE STONE QUARRY ON YALI ISLAND

On a desert island in the Dodecanese, Yali, which belongs to the Municipality of Nissiros, our affiliate LAVA, mining and quarrying company, operates since 1952 a pumice stone quarry, which is a volcanic material, with natural properties (heat-insulating, sound-dampening, non-combustible, homogenous, white colored, high mechanical strength and low specific weight) that make it ideal for sustainable construction applications.

For the rehabilitation of the quarry, a nursery with more than 2,200 plants has been built, to grow various local species such as pines, oak-trees, fig-trees, musk-trees, cypress-trees and acacias, as well as some of particular interest such as juniperus macrocarpa. Construction of the nursery began in 2009, and the first plants were placed in March 2010. Later, after the autumn rains, plants were transplanted and taken out to the sun. Quarry employees aspire that next year their nursery will have 3,500 items, making this nursery the second in size for Heracles.

The quarry activity and exports of pumice stone generates a significant local income, the company being one of the largest foreign-exchange generating production businesses in the Dodecanese. The Municipality of Nissiros collects revenues in excess of

€ 1,000,000 annually generated by the company's operation. A good deal of the company's gross income is allocated to the constant presence of a tugboat in the frontier area of Kos island; Moreover LAVA rents a boat to ensure commuting between Nissiros and Kos islands. LAVA's exporting activity is the reason why a Customs' Office is located on Nissiros island. Additionally, the loading of dozens of ships annually for the domestic and international markets stimulates decisively the area's economic life. Beyond export activity, LAVA has initiated a partnership with the Agricultural University of Athens, for a research program on "The promotion of good culture practices for pumice horticulture and their spread in culture practice". The program aims at providing the university with data and monitoring of cultivation in pumice, with a view to identifying any problems and finding ways to solve them, while in parallel supports the training of geotechnical experts and producers in hydroponic culture in pumice. All the above activities will be combined so as to contribute as much as possible, both to recording and generating new knowledge, and to disseminating this knowledge to Greek farmers, finally aiming at helping improve the competitiveness of Greek hydroponic greenhouse pumice units.

Progress with rehabilitation

(Area affected and rehabilitated, in thousand m²)

| | Total area | Already Rehabilitated | Rehabilitated in 2010 | Mined |
|--------|------------|-----------------------|-----------------------|-------|
| Volos | 2,906 | 1,240 | 40 | 815 |
| Halkis | 1,225 | 106 | 2 | 386 |
| Milaki | 1,940 | 320 | 50 | 640 |
| Milos | 439 | 135 | 10 | 280 |
| Total | 6,510 | 1,801 | 102 | 2,121 |

About one-third of our total land-holdings is in use for mining, and one-third has already been rehabilitated. The balance has yet to be mined

Progress with planting

(Area affected and rehabilitated, in thousand m²)

| | 2007 | 2008 | 2009 | 2010 |
|--------|--------|--------|--------|--------|
| Halkis | 750 | 3,400 | 2,500 | 1,000 |
| Volos | 23,925 | 20,110 | 17,350 | 25,000 |
| Milaki | 2,700 | 2300 | 2,000 | 2,200 |
| TOTAL | 27,375 | 25,810 | 21,850 | 28,200 |

Establishing trees and other plants is one part of our rehabilitation program. The high number of plants used at Volos is due to the number of quarries to rehabilitate (5) and the different requirements of the rehabilitation plan.